



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

December 27, 2002

Ronald R. Bohannon, P.E.
Tierra West, LLC
8509 Jefferson NE
Albuquerque, New Mexico 87113

Re: DESERT PINE SUBDIVISION UNIT 2 (L-9/D24A)
Engineers Certification for Release of Financial Guaranty
Engineers Stamp dated 5/9/2002
Engineers Certification dated 12/24/2002

Dear Mr. Bohannon:

Based upon the information provided in your Engineers Certification submittal dated 12/24/2002, the above referenced plan is adequate to satisfy the Grading and Drainage Certification for Release of Financial Guaranty.

If I can be of further assistance, please contact me at 924-3981.

Sincerely,

Teresa A. Martin
Hydrology Plan Checker
Development & Bldg. Ser. Division
BAB

c: Arlene Portillo, COA--Project # 655582
✓ *File*

DRAINAGE AND TRANSPORTATION SHEET

(REV. 1/11/2002)

PROJECT TITLE: Desert Pine Subdivision Unit 2
DRB # 1001289 EPC #: _____

ZONE MAP/DRG. FILE #: L9/D24A
WORK ORDER #: 6555.82

LEGAL DESCRIPTION: Desert Pine, Unit 2

CITY ADDRESS: North of Eucariz, between 98th Street and 94th Street

ENGINEERING FIRM: Tierra West, LLC
ADDRESS: 8509 Jefferson NE
CITY, STATE: Albuquerque, NM

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

OWNER: KB Home
ADDRESS: 4921 Alexander Blvd, NE Suite B
CITY, STATE: Albuquerque, NM

CONTACT: Jeff Dorwart
PHONE: (505) 344-9400
ZIP CODE: 87107

ARCHITECT: N/A
ADDRESS: _____
CITY, STATE: _____

CONTACT: _____
PHONE: _____
ZIP CODE: _____

SURVEYOR: Aldrich Land Surveying
ADDRESS: 4800 Juan Tabo NE, Suite D
CITY, STATE: Albuquerque, NM

CONTACT: Tim Aldrich
PHONE: (505) 844-1990
ZIP CODE: 87111

CONTRACTOR: Construction Contract Management
ADDRESS: 8019 Edith Blvd. NE
CITY, STATE: Albuquerque, NM

CONTACT: Scott Davis
PHONE: (505) 898-7777
ZIP CODE: 87113

CHECK TYPE OF SUBMITTAL:

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

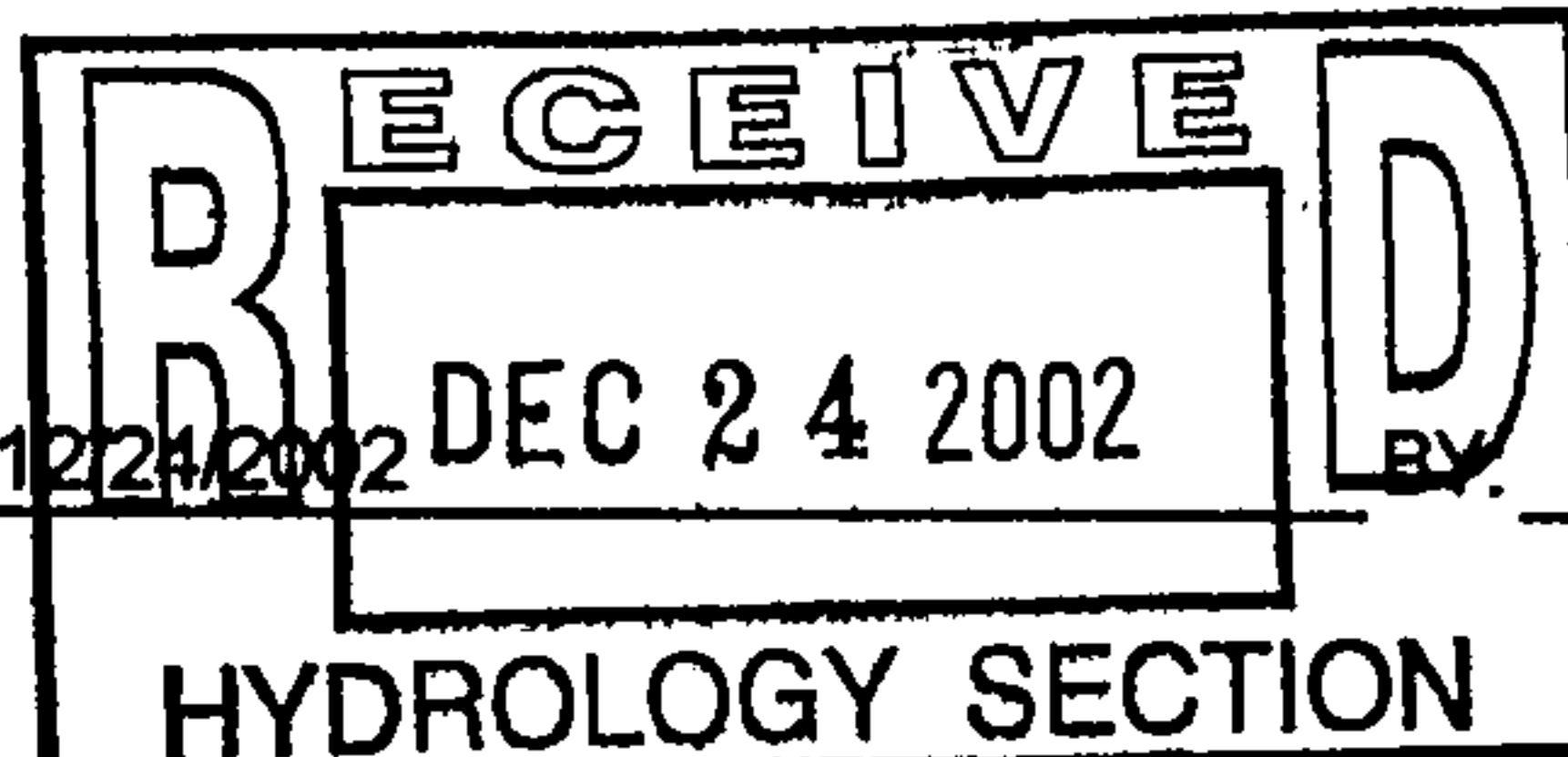
CHECK TYPE OF APPROVAL SOUGHT:

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

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ☐ YES
- ☒ NO
- ☐ COPY PROVIDED

DATE SUBMITTED: _____



Ronald Wright (259-5635)

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

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



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

June 14, 2002

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

Re: Desert Pine Subdivision Unit II Amended Grading Plan
Engineer Stamp date 5-9-02 (L9/D24A)

Dear Mr. Bohannon,

Based on information provided in your submittal dated 5-21-02, the above referenced plan can be approved for Amended Site Plan for Subdivision and Preliminary Plat action by the Development Review Board.

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

Sincerely,

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

C: file

DRAINAGE AND TRANSPORTATION SHEET

(REV. 1/11/2002)

PROJECT TITLE: Desert Pine Subdivision Unit 2
DRB #: _____ EPC #: _____

ZONE MAP/DRG. FILE #: L9/D24A
WORK ORDER #: _____

LEGAL DESCRIPTION Lots 33, 34, 35 Town of Atrisco Grant Unit 2
CITY ADDRESS: North of Eucariz, between 98th Street and 94 Street

ENGINEERING FIRM: Tierra West, LLC
ADDRESS: 8509 Jefferson NE
CITY, STATE: Albuquerque, NM

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

OWNER: KB Home
ADDRESS: 4921 Alexander Blvd, NE Suite B
CITY, STATE: Albuquerque, NM

CONTACT: Jeff Dorwart
PHONE: (505) 344-9400
ZIP CODE: 87107

ARCHITECT: _____
ADDRESS: _____
CITY, STATE: _____

CONTACT: _____
PHONE: _____
ZIP CODE: _____

SURVEYOR: Aldrich Land Surveying
ADDRESS: 4800 Juan Tabo NE, Suite D
CITY, STATE: Albuquerque, NM

CONTACT: Tim Aldrich
PHONE: (505) 844-1990
ZIP CODE: 87111

CONTRACTOR: _____
ADDRESS: _____
CITY, STATE: _____

CONTACT: _____
PHONE: _____
ZIP CODE: _____

CHECK TYPE OF SUBMITTAL:

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

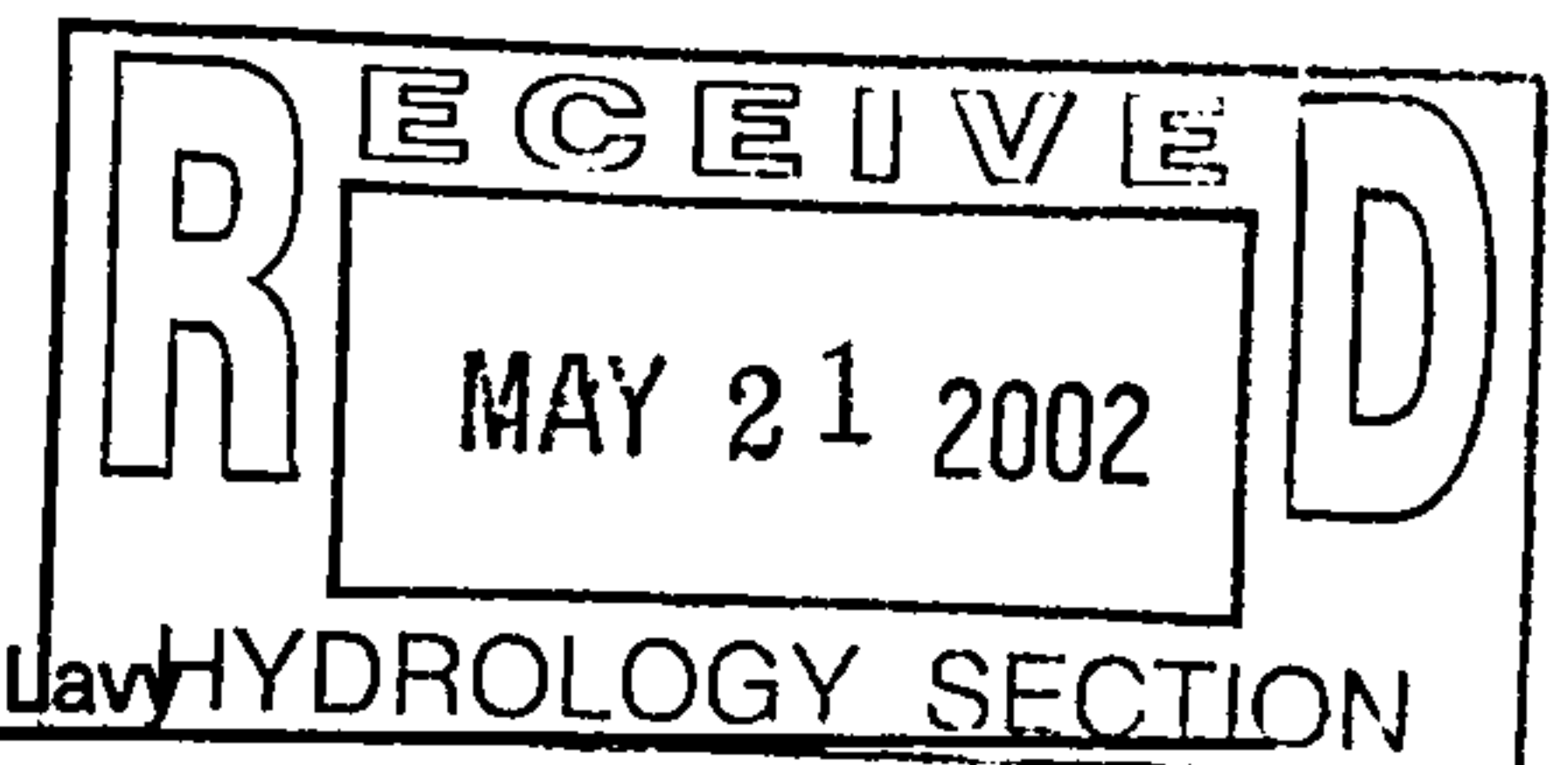
CHECK TYPE OF APPROVAL SOUGHT:

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

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ☐ YES
☒ NO
☐ COPY PROVIDED

DATE SUBMITTED: 5/21/02 BY: Sara Lavy



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

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

TIERRA WEST, LLC

8509 Jefferson NE
Albuquerque, NM 87113

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

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

May 21, 2002

Mr. Brad Bingham
Sr. Engineer, Hydrology
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

Re: Desert Pine Subdivision Unit 2 (L9/D24A)

Dear Mr. Bingham:

We are resubmitting the Grading and Drainage Plan for Desert Pine Unit 2 because we are removing the retention pond. A new storm drain system was constructed with SAD 222 that is now complete and functional. This eliminates the need for the on-site retention pond. We have shown grades and pad elevations for the seven lots where the pond was located. The original drainage report for this site included the SAD 222 storm drain as the ultimate drainage solution for this area.

If you have any questions or need additional information, please contact me.

Sincerely,

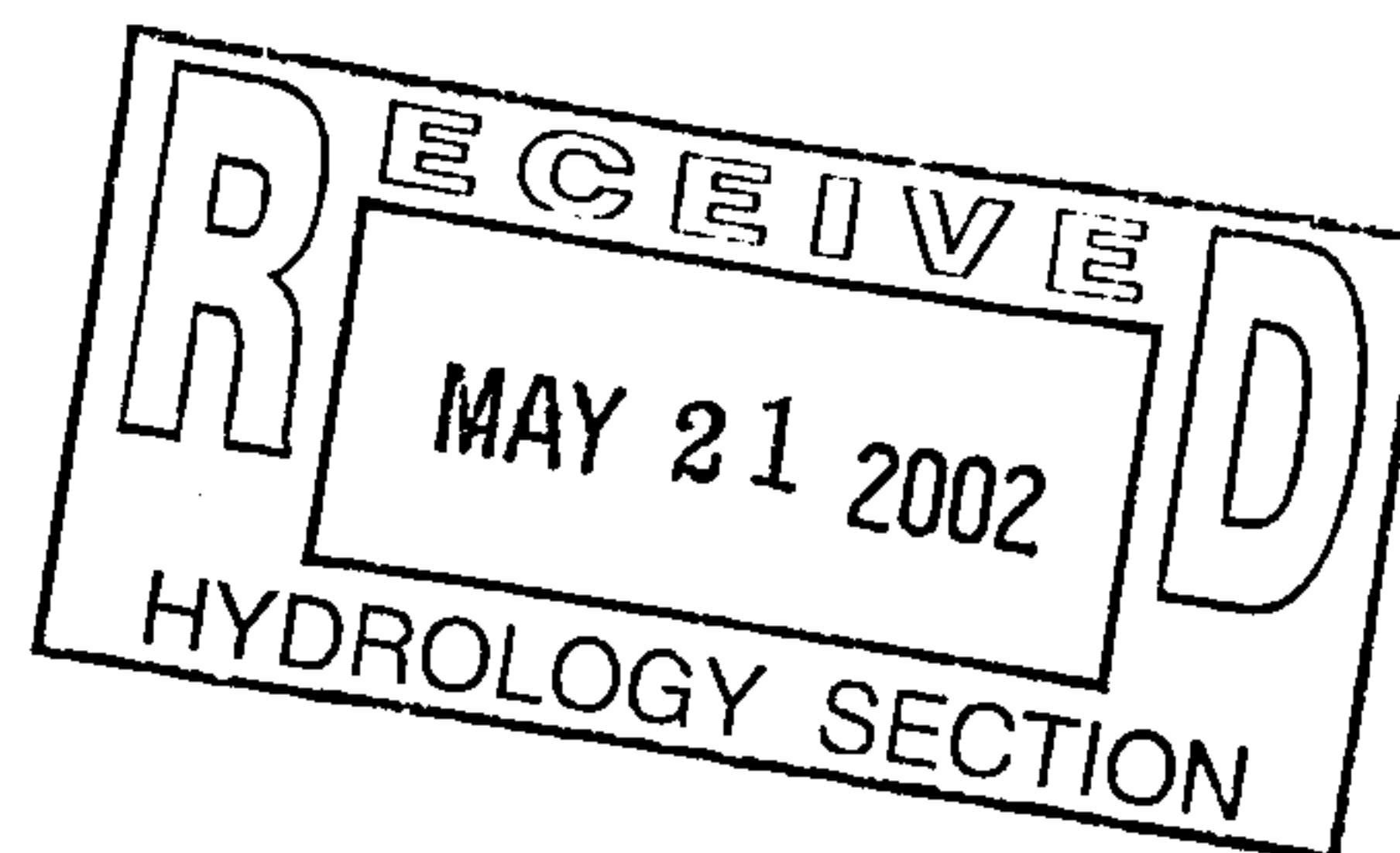
Sara Lavy
Sara Lavy, PE

Enclosures

cc: Jeff Dorwart

JN: 21034
scl

21034: 2134 hyd pond removal ltr.doc





City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

November 9, 2001

Ron R. Bohannan
Tierra West, LLC
8509 Jefferson NE
Albuquerque, New Mexico 87113

RE: Grading and Drainage Plan For Desert Pine Phase II (L9-D24A) Dated October 25, 2001

Dear Mr. Bohannan:

The above referenced drainage plan received October 26, 2001 is approved. Based upon the information in your submittal the above referenced drainage plan is approved for Preliminary Plat and Site Development for subdivision action by the DRB.

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

Sincerely,

Carlos A. Montoya
City Floodplain Administrator

1700

655581
scanned to DMD
mapped

3/23/01

AGREEMENT AND COVENANT

This Agreement and Covenant, between the City of Albuquerque, New Mexico ("City") and **K B HOME NEW MEXICO INC.**, ("User") is made in Albuquerque, New Mexico and is entered into as of the date of recording this Agreement with the Bernalillo County Clerk.

1. Recital. The User is the owner of certain real property ("User's Property") located at **DESERT RIM ROAD SW & 94TH STREET SW**, in Albuquerque, New Mexico, and more particularly described as: (give legal description and filing information)

**TRACT "A" & LOTS 1-119, DESERT PINE SUBDIVISION
(COMMONLY KNOWN AS TRACT 36-A, AS THE SAME IS SHOWN
AND DESIGNATED ON THE PLAT ENTITLED "GRIEGO'S REDIVISION
OF TRACT 36, UNIT 2, TOWN OF ATRISCO GRANT", FILED IN THE OFFICE
OF THE COUNTY CLERK OF BERNALILLO COUNTY, NEW MEXICO ON
FEBRUARY 9, 1978, IN PLAT BOOK B14, FOLIO 64)**

The City is the owner of certain real property, easement or public right-of-way ("City's Property") in the vicinity of, contiguous to, abutting or within User's Property, and more particularly described as:

SEE ATTACHED EXHIBIT "A"

The User wishes to construct upon, improve or repair and to maintain the following "Improvement" on the City's Property (or already has done so):

A sketch of the proposed or existing Improvement is attached as Exhibit A and made a part of this Agreement.

The City agrees to permit the Improvement to exist on the City's Property provided the User complies with the terms of this Agreement.

2. City Use of City's Property and City Liability. The City has the right to enter upon the City's Property at any time and perform whatever inspection, installation, maintenance, repair, modification or removal ("Work") it deems appropriate without liability to the User. If the Work affects the Improvement the City will not be financially or otherwise responsible for rebuilding or repairing the Improvement. The User promptly will repair the Improvement to the City's satisfaction. User will pay the cost of repairing the Improvement.

3. User's Responsibility for Improvement. The User will be solely responsible for constructing, maintaining, repairing and, if required, removing the Improvement, all in accordance with standards required by the City as per the approved Grading and Drainage Plan **L-9/D24** on file at the City Engineer's office. The User will be solely responsible for paying all related costs. The User will be solely responsible for paying all related costs. The User will not permit the Improvement to constitute a hazard to the health or safety of the general public or to interfere with the City's use of the City's Property. The User will conform with all applicable laws, ordinances and regulations.



4. Use of the Improvement. If the City's Property is a public right-of-way, it shall be open to the use of the general public at all times, subject to reasonable curtailment during periods of construction, maintenance or repair.

5. Demand for Repair, Modification or Removal. The City may send written notice ("Notice") to the User requiring the User to repair, modify or remove the Improvement within 30 days ("Deadline") and the User will comply promptly with the requirements of the Notice. If removal is demanded, the City also may require the User to return the City's Property to its original condition by the Deadline. The User will perform all required work by the Deadline, at User's sole expense.

6. Failure to Perform by User and Emergency Work by City. If the User fails to comply with the terms of the Notice by the Deadline stated, or, if the City determines that an emergency condition exists, the City may perform the work itself. The City then may assess the User for the cost of the work and for any other expenses or damages, which result from User's failure to perform. The User agrees promptly to pay the City the amount assessed. If the User fails to pay the City within thirty (30) days after the City gives the User written notice of the amount due, the City may impose a lien against User's Property for the total resulting amount.

7. Cancellation of Agreement and Release of Covenant. This Agreement may be canceled and User's covenants released by the City at will by the City's mailing to the User notice of the City's intention to record a Cancellation and Release with the Bernalillo County Clerk. The Cancellation and Release will be effective thirty (30) days after the date of mailing the notice to the User unless a later date is stated in the notice or the Cancellation and Release. After the effective date, the City will record the Cancellation and Release with the Bernalillo County Clerk.

8. Condemnation. If the City ever condemns any part of the User's Property, the User will forego all claims to compensation for any portion of User's structure, which encroaches, on City Property and for severance damage to the remaining portion of User's structure on User's Property.

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

10. Notice. For purposes of giving formal written notice to the User, User's address is:

**K B HOME NEW MEXICO INC.
4921 ALEXANDER BLVD NE SUITE B
ALBUQUERQUE, NM 87107**

Notice may be given to the User either in person or by mailing the notice by regular U.S. mail, postage paid. Notice will be considered to have been received by the User within 3 days after the notice is mailed if there is no actual evidence of receipt. The User may change User's address by giving written notice of the change by certified mail, return receipt requested, to the City Engineer at P.O. Box 1293, Albuquerque, New Mexico 87103.

11. Indemnification. The User agrees to defend, indemnify and hold harmless the City, its officials, agents and employees from and against any and all claims, actions, suits or proceedings of any kind brought against said parties as a result of User's use of the City's Property. To the

extent, if at all, Section 56-7-1 NMSA 1978 is applicable to this Agreement, this Agreement to indemnify will not extend to liability, claims, damages, losses or expenses, including attorney's fees, arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications by the indemnitee, or the agents or employees of the indemnitee; or (2) the giving of or the failure to give direction or instructions by the indemnitee, where such giving or failure to give directions or instructions is the primary cause of bodily injury to persons or damage to property.

12. Term. This Agreement shall continue until revoked by the City pursuant to Section 7 above.

13. Binding on User's Property. The covenants and obligations of the User set forth herein shall be binding on User, his heirs assigns and successors and on User's Property and constitute covenants running with User's Property until released by the City.

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

15. Changes of Agreement. Changes to this Agreement are not binding unless made in writing, signed by both parties.

16. Construction and Severability. If any part of this Agreement is held to be invalid or unenforceable, the remainder of the Agreement will remain valid and enforceable if the remainder is reasonably capable of completion.

17. Captions. The captions to the sections or paragraphs of this Agreement are not part of this Agreement and will not affect the meaning or construction of any of its provisions.

CITY OF ALBUQUERQUE:

By: [Signature]
Chief Administrative Officer
Dated: 3-23-01

USER:

By: [Signature]
Title: FORWARD Planning Director
Dated: 2-27-01

APPROVED:

[Signature] 3/23/01
Director, Public Works Dept.

Reviewed by:

[Signature] 3/23/01
City Engineer



Mary Herrera

Bern. Co. AGRE

R 17.00

2001033477

5484283

Page: 3 of 6

03/27/2001 11:30A

Bk-A17 Pg-1954

CITY'S ACKNOWLEDGMENT

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

This instrument was acknowledged before me on the 23rd day of March 2001,
by Fred J. Aguirre Chief Administrative Officer for the City of Albuquerque, a New Mexico
municipal corporation, on behalf of the corporation.

Gloria S. Shaveda
Notary Public

My Commission Expires:

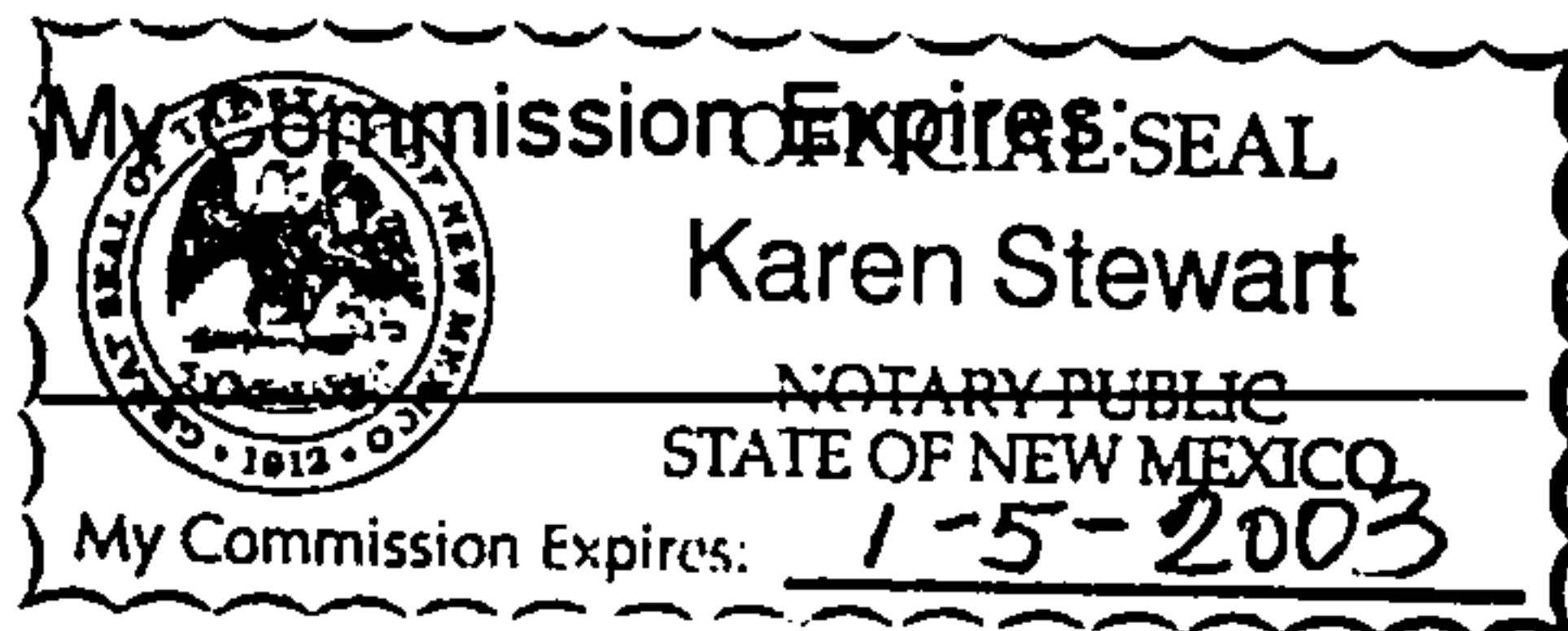
11-15-2003

USER'S ACKNOWLEDGMENT

STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

This instrument was acknowledged before me on the 27th day of February 2001, by
Jeff Dolowitz, Dir. of Forward Planning on behalf of KB HOME NEW MEXICO INC.

Karen Stewart
Notary Public



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5484283
Page: 4 of 6
03/27/2001 11:30A
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Legal Description

A TRACT OF LAND LYING AND SITUATE WITHIN PROJECTED SECTION 28, TOWNSHIP 10 NORTH, RANGE 2 EAST, TOWN OF ATRISCO GRANT, NEW MEXICO PRINCIPAL MERIDIAN, CITY OF ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO, COMPRISING OF A PORTION OF TRACT NUMBERED THIRTY- SIX (36), IN UNIT NUMBERED TWO (2) OF PLAT SHOWING TRACTS ALLOTTED FROM TOWN OF ATRISCO GRANT, FILED IN THE OFFICE OF THE COUNTY CLERK OF BERNALILLO COUNTY, NEW MEXICO ON DECEMBER 5, 1944, IN PLAT BOOK D, FOLIO 116, TOGETHER WITH SAID REMAINING PORTION OF TRACT 36, ALSO KNOWN AS TRACT 36-A, AS THE SAME IS SHOWN AND DESIGNATED ON THE PLAT ENTITLED "GRIEGO'S REDIVISION OF TRACT 36, UNIT 2, TOWN OF ATRISCO GRANT", FILED IN THE OFFICE OF THE COUNTY CLERK OF BERNALILLO COUNTY, NEW MEXICO, ON FEBRUARY 9, 1978, IN PLAT BOOK B14, FOLIO 64, SAID TRACT BEING BOUNDED ON THE WEST BY TRACT 36-B OF SAID GRIEGO'S REDIVISION, ON THE NORTH BY TRACT 37, UNIT 2, OF SAID TRACTS ALLOTTED FROM THE TOWN OF ATRISCO GRANT, ON THE EAST BY 94TH STREET, S.W., AND ON THE SOUTH BY TRACT 35, UNIT 2, OF SAID TRACTS ALLOTTED FROM THE TOWN OF ATRISCO GRANT, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHWEST CORNER OF DESCRIBED TRACT, FROM WHENCE A TIE TO ACS MONUMENT "9-L9" BEARS S 77°10'48" W, A DISTANCE OF 653.19 FEET;

THENCE FROM SAID BEGINNING POINT, N 05°58'20" W, A DISTANCE OF 75.03 FEET TO A POINT OF CURVATURE;

THENCE ALONG A CURVE TO THE RIGHT, HAVING A RADIUS OF 25.00 FEET, AN ARC LENGTH OF 39.24 FEET, A DELTA ANGLE OF 89°56'26", AND A CHORD OF N 38°59'53" E, A DISTANCE OF 35.34 FEET;

THENCE N 83°58'06" E, A DISTANCE OF 316.72 FEET TO A POINT OF CURVATURE;

THENCE ALONG A CURVE RIGHT, HAVING A RADIUS OF 25.00 FEET, AN ARC LENGTH OF 39.64 FEET, A DELTA ANGLE OF 90°50'58", AND A CHORD OF S 50°36'26" E, A DISTANCE OF 35.62 FEET, TO A POINT LYING ON THE WEST RIGHT OF WAY LINE OF 94TH STREET, S.W.;

THENCE ALONG SAID WEST RIGHT OF WAY LINE S 05°10'57" E, A DISTANCE OF 74.64 FEET TO THE SOUTHEAST CORNER OF DESCRIBED TRACT;

THENCE LEAVING SAID RIGHT OF WAY S 83°58'06" W, A DISTANCE OF 365.70 FEET TO THE POINT OF BEGINNING CONTAINING 0.8348 ACRES (36,366 SQUARE FEET) MORE OR LESS.



Mary Herrera

Bern. Co. AGRE

R 17.00

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Page: 5 of 6

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EXHIBIT "A"
Page 1 of 2

Exhibit "A"

Page 2 of 2

SCALE: 1"=60'

94th. Street, S.W.

TRACT 37, UNIT 2
TRACTS ALLOTTED FROM THE
TOWN OF ATRISCO GRANT
(12/05/1944, D-118)

R=25.00'
L=39.64'
Tan=25.37'
Delta=90°50'58"
S 50°36'26" E
35.62'

R=25.00'
L=39.24'
Tan=24.97'
Delta=89°56'26"
N 38°59'53" E
35.34'

REMAINING PORTION TRACT 36

SPECIAL WARRANTY DEED
(12/17/1997, BK. 97-35-PG. 3777)

REMAINING PORTION
TRACT 36

City of Albuquerque Property
AREA RESERVED FOR DRAINAGE RETENTION POND
AREA = 36,366 sq.ft.±
0.8348 acres±

TRACT 35, UNIT 2
TRACTS ALLOTTED FROM THE
TOWN OF ATRISCO GRANT
(12/05/1944, D-118)

Point of
Beginning

TRACT 36-B
GRIEGO'S REDIVISION OF
TRACT 36, UNIT 2,
TOWN OF ATRISCO GRANT
(02/09/78, B14-64)
SPECIAL WARRANTY DEED
(12/17/1997, BK. 97-35, 3778)

SURVEYOR'S CERTIFICATE

I, LARRY W. MEDRANO LICENSED UNDER THE LAWS OF THE STATE OF NEW MEXICO, DO
HEREBY CERTIFY THAT THIS EASEMENT SURVEY WAS PREPARED BY ME OR UNDER MY
DIRECTION FROM NOTES OF AN ACTUAL FIELD SURVEY, AND THE SURVEY MEETS THE
MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO.

LARRY W. MEDRANO
N.M.L.S. NO. 11993

3/9/2001
DATE



PRECISION SURVEYS, INC.

8414-D JEFFERSON ST., N.E. PHONE 505 856 5700
ALBUQUERQUE, NEW MEXICO 87113 FAX 505 856 7900

008129EX

Barry Herrera
Bern. Co. AGRE
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DRAINAGE REPORT

for

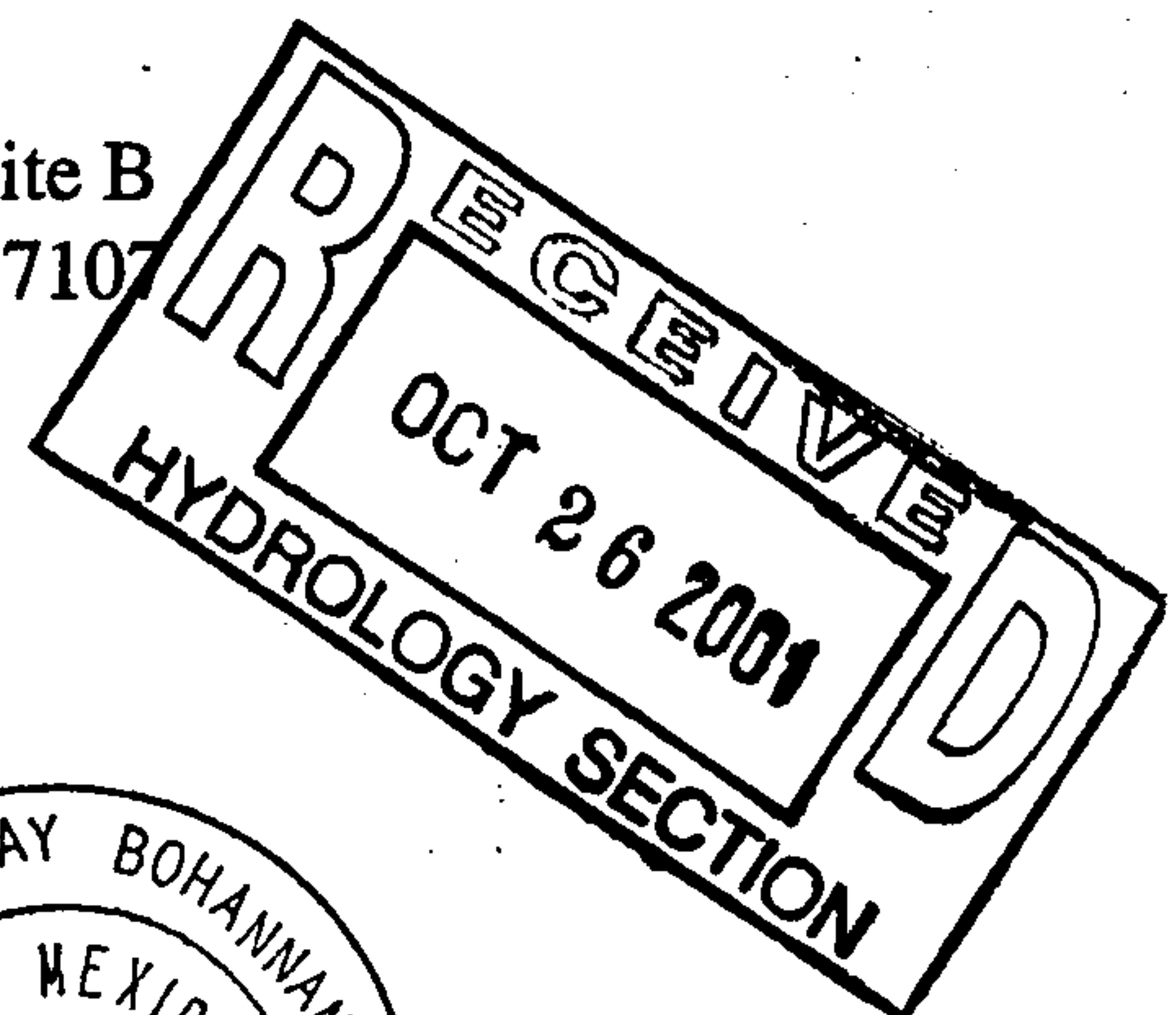
Desert Pine Subdivision Phase II

Prepared by

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

Prepared for

Kaufman & Broad
4921 Alexander Blvd, NE Suite B
Albuquerque, New Mexico 87107



August 2001
Revised October 2001

A handwritten signature in black ink, appearing to be "R. Bohannon".

Ronald R. Bohannon P.E. No. 7868

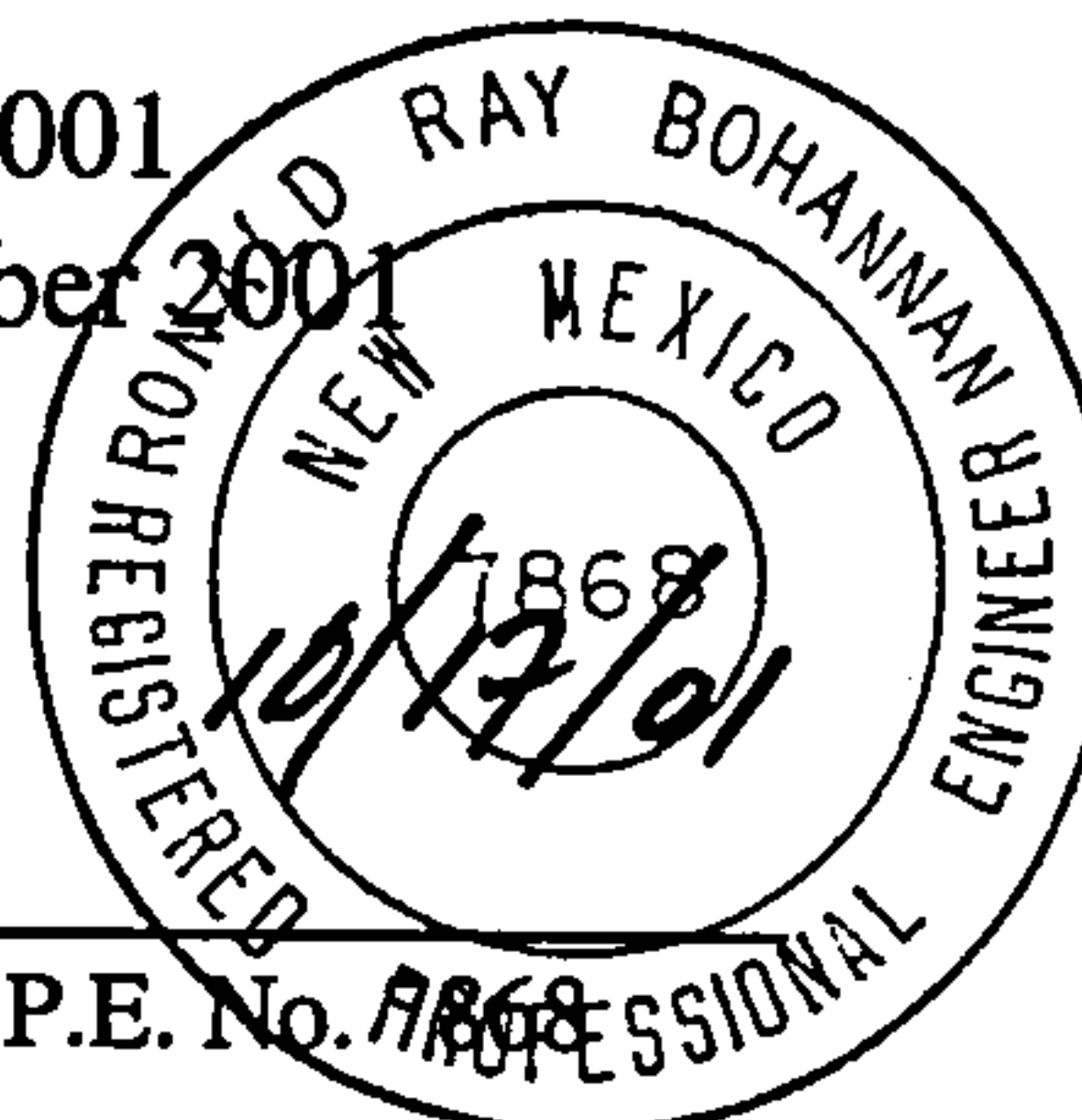
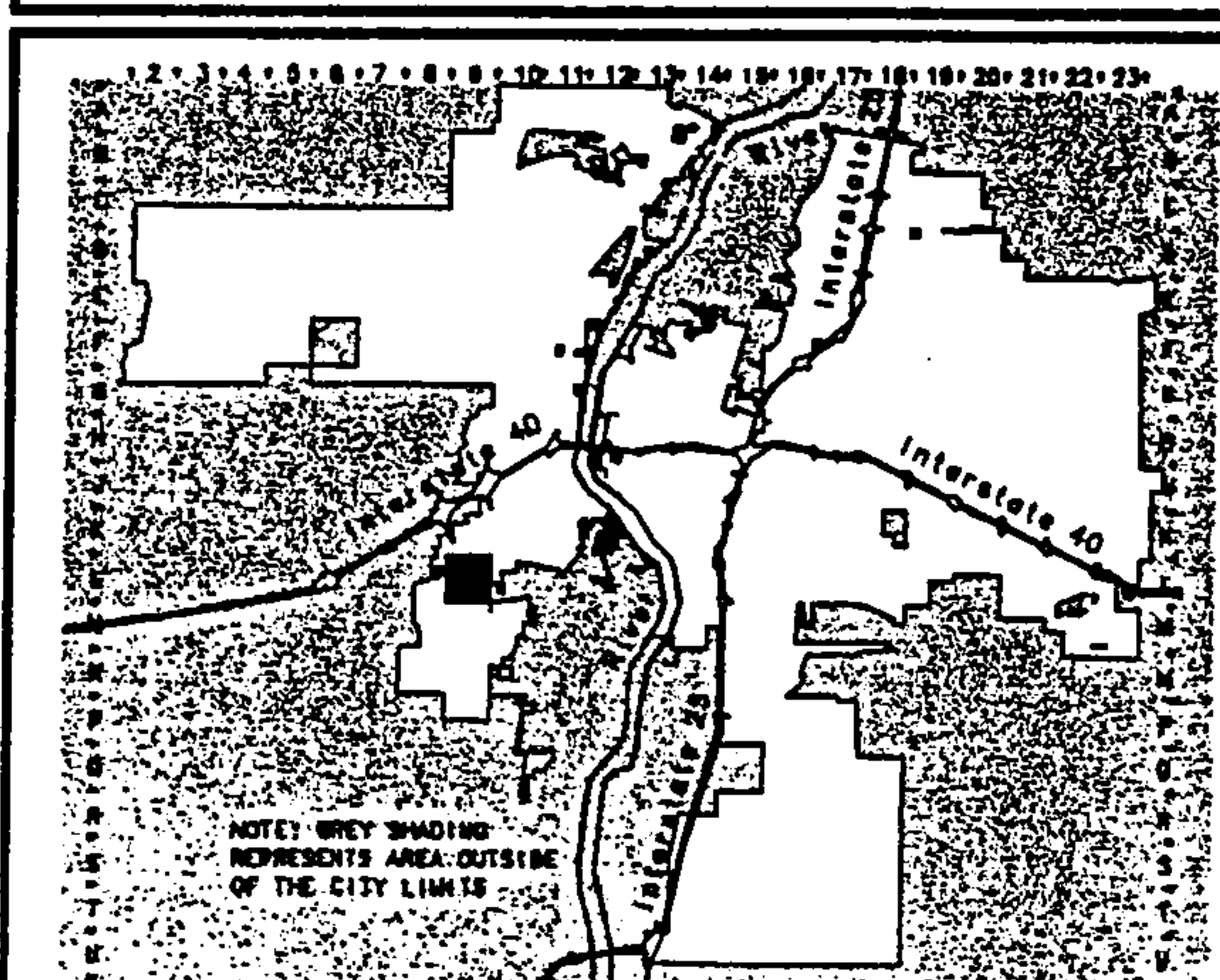


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L-9-Z

Map Amended through August 15, 2000

Location

Desert Pine Subdivision Phase II is a proposed 114 unit single family subdivision. It is located north of Eucariz Road between 98th Street and 94 Street. The site is shown on the attached Zone Atlas Map L-9 and contains approximately 15.2 acres. The purpose of this report is to provide the drainage analysis and management plan for the subdivision.

Existing Drainage Conditions

The site is currently undeveloped. The natural slope of the site is from west to east at approximately 3%. There is one existing basin (Basin U1) on the site. Basin 1 sheet flows southeast with an undeveloped runoff of 33.19 cfs.

The adjacent streets (98th Street and Eucariz) prevent any runoff from entering the site from the west and south. The natural topography of the site cuts off any runoff from the east and north is Desert Pine Phase I.

FIRM Map and Soil Conditions

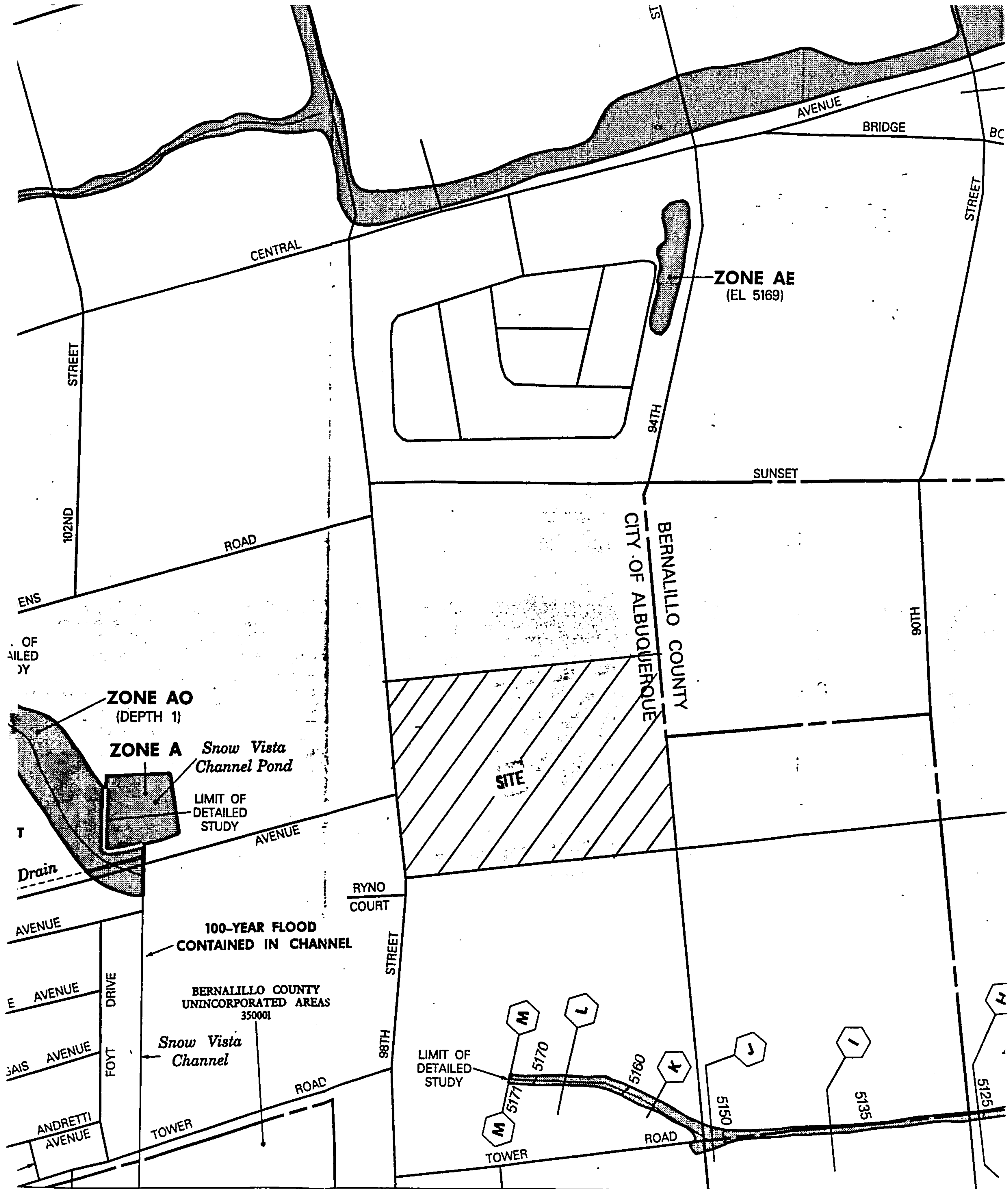
The site is located on FIRM Map section 35001C0328 D as shown on the attached excerpt. This map shows that the site does not lie within any 100 year flood plains.

The site contains one soil type from the Soil Conservation Service Soil Survey of Bernalillo County. The soil found on the site is a Pajarito loamy fine sand and has slow runoff, severe hazard of soil blowing and permeability is moderately rapid.

On-Site Drainage Management Plan

The proposed drainage management plan is to collect the developed flows in the adjacent streets. The flows will be conveyed via a new storm drain to a new temporary retention pond located in the SE corner near the 94th Street and Eucariz. In the future, when downstream improvements are built, the retention pond will be removed.

The site is within the boundaries of SAD 222, which is in the process of being approved. The SAD will build downstream storm drain improvements. Until that time, a temporary retention pond



JOINS PANEL 0336

will be constructed to contain the developed flows from the site. When the improvements are in place, the pond will be removed and the area reclaimed for lots.

A new storm drain system will be constructed in Water Stone Road. This storm drain will convey the on-site drainage to the retention pond. This is a total of 48.66 cfs and a 100-year, 10-day volume of 2.85 ac-ft.

In the future, the retention pond will be removed and the seven lots under the pond will be reclaimed. The storm drain system has been designed for future and interim conditions. The future lines will be constructed at this time and will remain dry until the pond is removed. Plugs will be installed to ensure runoff does not enter the future lines. In the future, the plugs will be removed and relocated to the interim lines to block the lines that entered the pond. The future flow rate of 48.66 cfs includes all the on-site basins.

The half street basins of Eucariz (Basin 6) has a developed runoff flow of 2.23 cfs. A new single C storm drain inlet will be built in Eucariz west of 94th Street to capture this flow. The drop inlet will connect to a 18" stub provided by the development south of Eucariz and currently under review by DRC. Frank Wilson is the developer of the area south of Eucariz. Mr. Wilson indicated his temporary pond has capacity for the volume from Basin 6. Basin 7, the north half street basin of 94th Street will drain north towards Phase I. This basin will be captured in the storm drain built with Phase I. This storm drain was designed for this basin. Basin 8, the south half street basin of 94th Street will drain to Eucariz Street. This basin has a developed flow of 0.96 cfs. This basin will flow east in Eucariz Street to a small desilting pond built with Mr. Wilson's development. We will obtain a letter from Mr. Wilson verifying his concurrence with this solution.

If Pond 1 overflows the runoff will enter 94th Street. We do not anticipate this occurring unless there is a storm event greater than a 100-year storm. An emergency overflow has been installed to allow events greater than the 100-year storm to exit the pond and enter 94th Street.

OUT PARCEL (NOT A PART)

FULL AREA RESERVED
SEE GRADING AND DRAINAGE PL

GEMSTONE ROAD

BASIN 1
Q=11.05 CFS

BASIN 2
Q=9.29 CFS

BASIN 3
Q=8.43 CFS

BASIN 4
Q=10.72 CFS

BASIN 7
Q=0.98 CFS

SANDSTONE DRIVE

RIDGE STONE DRIVE

RIVER STONE DRIVE

TREASURE STONE DRIVE

94TH ST.

BASIN 8
Q=0.96 CFS

BASIN 5
Q=9.17 CFS

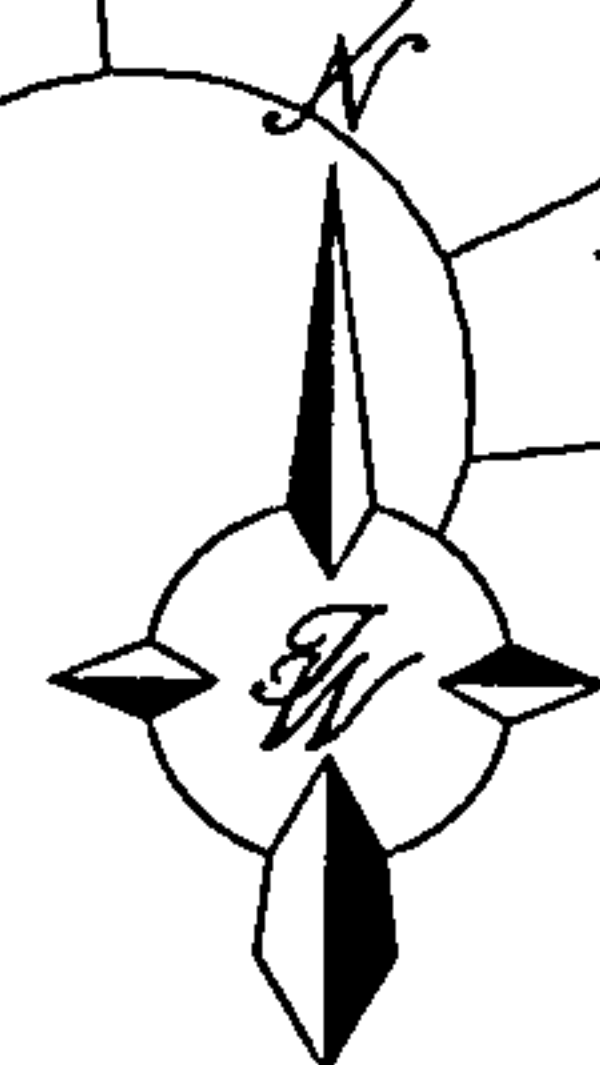
RETENTION POND

WATER STONE ROAD

EUCARIZ ROAD

BASIN 6
Q=2.23 CFS

DEVELOPED BASIN LAYOUT



Calculations

The Weighted E method from the "City of Albuquerque Development Process Manual Volume 11 – Design Criteria, 1997 Revision" was used to calculate the runoff and volume for the site.

Summary

The site consists of five on-site basins and three off-site basins. The five on-site basins were included in the storm drain and pond capacity calculations. A retention pond will be located in the at the southwest corner of the site. The pond was designed for the 100-year-10-day volume. This pond will be removed in the future when the SAD 222 downstream improvements are constructed. Basins 6, 7, and 8 consist of the adjacent developed streets. Basin 6 will be captured in a storm drain and conveyed south through Mr. Wilson's development to a temporary retention pond. Basin 7 will drain north to Phase I and be captured in the existing storm drain in 94th Street. Basin 8 will drain south to Eucariz Road and then east to a temporary desilting pond. The required infrastructure list for this project has been included with this report and will be bonded with the project.

Runoff Calculations

Weighted E Method

Developed On-Site Basins

Basin	Area (sf)	Area (acres)	Treatment A		Treatment B		Treatment C		Treatment D		100-Year, 6-Hr			10-Year, 6-Hr			100-Year, 10-Day		
			%	(acres)	%	(acres)	%	(acres)	%	(acres)	Weighted E	Volume (ac-ft)	Flow cfs	Weighted E	Volume (ac-ft)	Flow cfs	Weighted E	Volume (ac-ft)	Flow cfs
1	150,473	3.45	0%	0	50%	1.73	0%	0	50%	1.73	1.320	0.380	11.05	0.730	0.210	6.30	1.320	0.592	11.05
2	126,488	2.90	0%	0	50%	1.45	0%	0	50%	1.45	1.320	0.319	9.29	0.730	0.177	5.30	1.320	0.497	9.29
3	114,733	2.63	0%	0	50%	1.32	0%	0	50%	1.32	1.320	0.290	8.43	0.730	0.160	4.81	1.320	0.451	8.43
4	145,946	3.35	0%	0	50%	1.68	0%	0	50%	1.68	1.320	0.369	10.72	0.730	0.204	6.11	1.320	0.574	10.72
5	124,854	2.87	0%	0	50%	1.43	0%	0	50%	1.43	1.320	0.315	9.17	0.730	0.174	5.23	1.320	0.491	9.17
6	30,390	0.70	0%	0	50%	0.35	0%	0	50%	0.35	1.320	0.077	2.23	0.730	0.042	1.27	1.320	0.119	2.23
7	9,759	0.22	0%	0	0%	0.00	0%	0	100%	0.22	1.970	0.037	0.98	1.240	0.023	0.65	1.970	0.064	0.98
8	9,595	0.22	0%	0	0%	0.00	0%	0	100%	0.22	1.970	0.036	0.96	1.240	0.023	0.64	1.970	0.063	0.96
Total	712,237	16.35		0		7.95				8.40		1.823	52.84		1.014	30.31		2.851	52.84

Undeveloped On-Site Basins

Basin	Area (sf)	Area (acres)	Treatment A		Treatment B		Treatment C		Treatment D		100-Year, 6-Hr			10-Year, 6-Hr			100-Year, 10-Day		
			%	(acres)	%	(acres)	%	(acres)	%	(acres)	Weighted E	Volume (ac-ft)	Flow cfs	Weighted E	Volume (ac-ft)	Flow cfs	Weighted E	Volume (ac-ft)	Flow cfs
U-1	712,237	16.35	0%	0	100%	16.35	0%	0	0%	0.00	0.670	0.913	33.19	0.220	0.300	12.43	0.670	0.913	33.19

Equations for Weighted E Method:

$$\text{Weighted E} = \frac{E_a \cdot A_a + E_b \cdot A_b + E_c \cdot A_c + E_d \cdot A_d}{\text{Total Area}}$$

$$\text{Volume} = \text{Weighted D} \cdot \text{Total Area}$$

$$\text{Flow} = Q_a \cdot A_a + Q_b \cdot A_b + Q_c \cdot A_c + Q_d \cdot A_d$$

$$\text{Volume (10-day)} = V_{360} + A_d \cdot (P_{10\text{days}} - P_{360}) / 12 \text{ in/ft}$$

Excess Precipitation, E (inches)		
Zone 1	100-Year	10 - Year
E _a	0.44	0.08
E _b	0.67	0.22
E _c	0.99	0.44
E _d	1.97	1.24

Peak Discharge (cfs/acre)		
Zone 1	100-Year	10 - Year
Q _a	1.29	0.24
Q _b	2.03	0.76
Q _c	2.87	1.49
Q _d	4.37	2.89

Depth (in) at 100-Year Storm	
	Zone 1
P ₃₆₀	2.2
P ₁₄₄₀	2.66
P _{4days}	3.12
P _{10days}	3.67

Pond Calculations

POND SUMMARY

	POND 1
Area of Pond Top (SF)	22566.5
Area of Pond Bottom (SF)	4963.19
Depth of Pond (FT)	10.00
Volume (CF)	137,648.45
Volume (AC-FT)	3.1600
Volume Required (CF)	124,189.56
Volume Required (AC-FT)	2.8510
Volume Provided (CF)	137,648.45
Volume Provided (AC-FT)	3.1600

Pond 1 includes developed basins 1-8

VOLUME OF POND

$$V = (A_t + A_b) / 2 * D$$

A_t = Area of Top

A_b = Area of Bottom

D = Depth

Storm Drain Calculations

Pipe Capacity

Pipe	D (in)	Slope (%)	Area (ft ²)	R	Q Provided (cfs)	Q Required (cfs)	Velocity (ft/s)
L1	30	1	4.91	0.625	41.13	24.33	4.96
L2	36	1	7.07	0.75	66.88	48.66	6.88
L3	54	0.212	15.90	1.125	90.79	72.31	4.55
L4	54	0.212	15.90	1.125	90.79	120.97	7.61
L5	18	1	1.77	0.375	10.53	2.23	1.26
L6	36	1	7.07	0.75	66.88	48.66	6.88

L3 = Phase 1 including 94th Street and Sunset Gardens

L4 = 72.31 + 48.66 = 120.97

L6 = Basins 1-5 = 48.66 cfs

* Pipe flowing under pressure, see Phase 1 for calculations.

Manning's Equation:

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

A = Area

R = D/4

S = Slope

n = 0.013

CAPACITY OF DOUBLE 'C' STORM DROP INLET

Capacity of the grate:

$$\begin{aligned} L &= 88.75'' - 2(6'' \text{ ends}) - 6'' \text{ center piece} - 14(\frac{1}{2}'' \text{ middle bars}) \\ &= 63.75'' \\ &= 5.3125' \end{aligned}$$

$$\begin{aligned} W &= 25.5'' - 13(\frac{1}{2}'' \text{ middle bars}) \\ &= 19'' \\ &= 1.583' \end{aligned}$$

$$\begin{aligned} \text{Area} &= 1.583' \times 5.3125' \\ &= 8.41 \text{ ft}^2 \end{aligned}$$

$$\begin{aligned} \text{Effective Area} &= 8.41 - 8.41 (0.5 \text{ clogging factor}) \\ &= 4.21 \text{ ft}^2 \text{ at the grate} \end{aligned}$$

Orifice Equation

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

$$Q = 0.6 \times 4.21 \times \sqrt{2 \times 32.2 \times 0.67}$$

$$Q = 16.59 \text{ cfs}$$

Capacity of the throat:

$$\begin{aligned} L &= 88 - \frac{3}{4}'' \\ &= 7.3958' \end{aligned}$$

Weir Equation

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

$$Q = 2.95 \times 7.3958 \times 0.67^{3/2}$$

$$Q = 11.97 \text{ cfs}$$

Total Capacity:

$$Q = 16.59_{\text{grate}} + 11.97_{\text{throat}}$$

$$Q = 28.56 \text{ cfs}$$

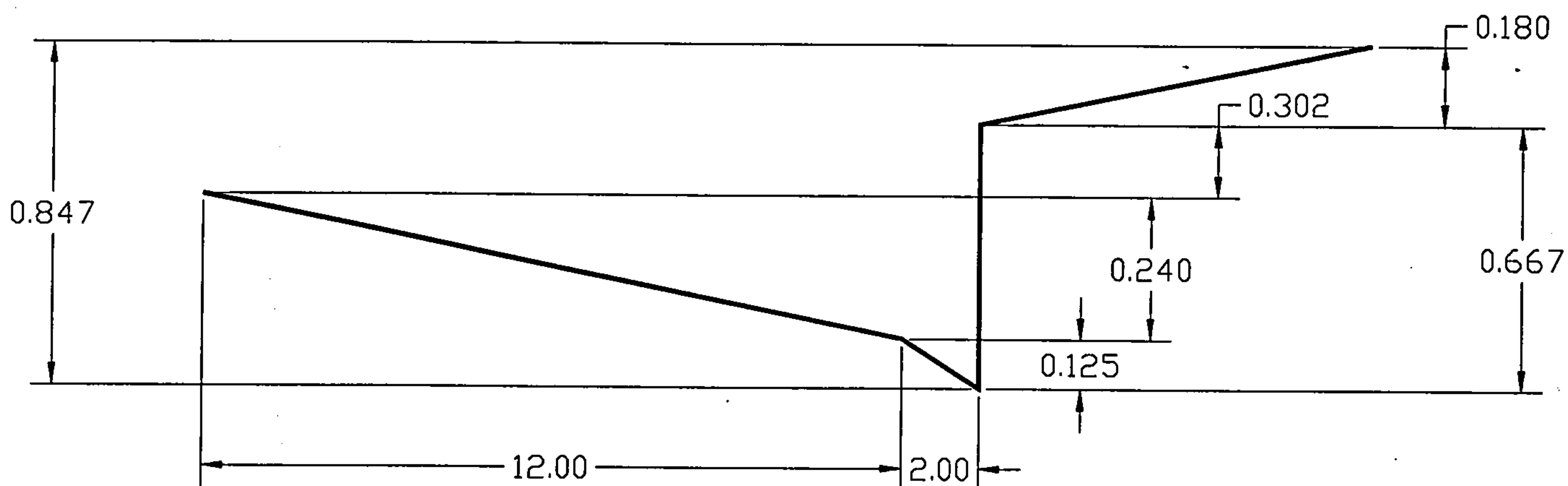
$$\text{Flow required} = 48.66/2 = 24.33 \text{ cfs}$$

$$24.33 \text{ cfs} < 28.56 \text{ cfs} : \text{Double C inlet has capacity}$$

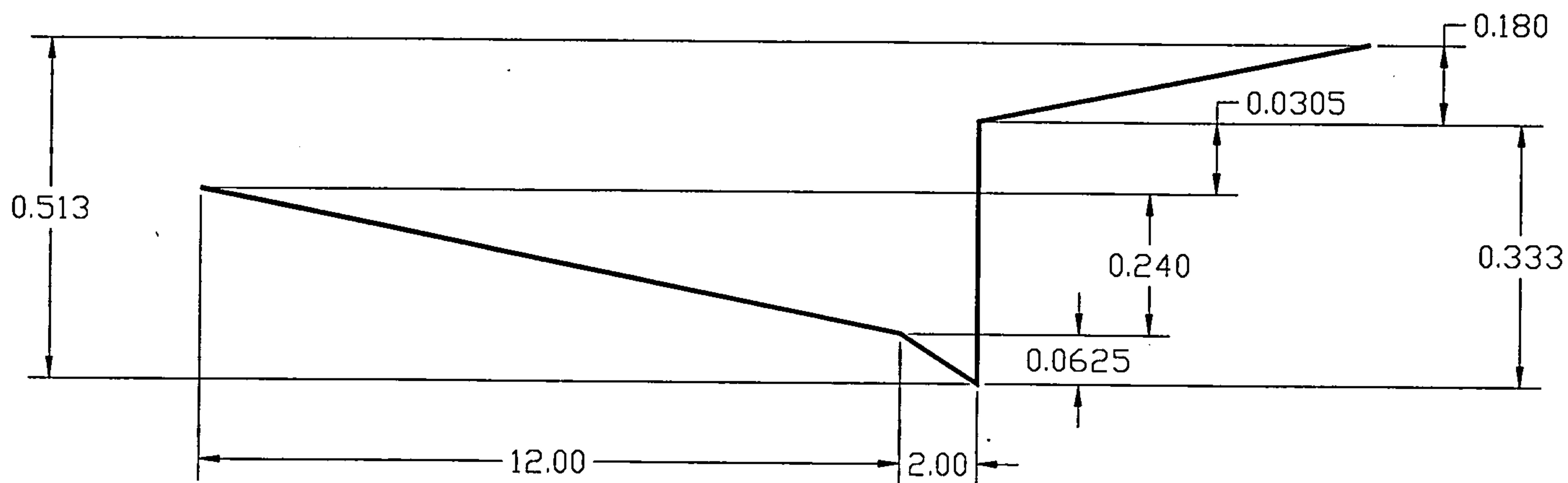
Street Capacity Calculations



ANALYSIS POINT EXHIBIT



28' F-F STREET SECTION W/ 8" CURB



28' F-F STREET SECTION W/ 4" CURB

Street Capacity Calculations

AP-1 with Q=11.05
Sandstone Drive
28' F-F Street Section with 4" curb
Slope= 0.83%

For water depths less than 0.0625 feet

Y= Water depth
Area = $16 \cdot Y^2$
P= $\text{SQRT}(1025 \cdot Y^2) + Y$
n= 0.017

Depth (ft)	Area (ft ²)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.010	0.002	0.33	0.00	0.00	0.00	0.23	0.00	0.40	0.0026
0.020	0.006	0.66	0.01	0.00	0.00	0.36	0.01	0.45	0.0062
0.025	0.010	0.83	0.01	0.00	0.01	0.42	0.01	0.47	0.0082
0.035	0.020	1.16	0.02	0.01	0.02	0.53	0.02	0.50	0.0126
0.045	0.032	1.49	0.02	0.02	0.04	0.62	0.03	0.52	0.0173
0.052	0.043	1.72	0.03	0.03	0.06	0.68	0.04	0.53	0.0208
0.060	0.058	1.98	0.03	0.04	0.09	0.75	0.05	0.54	0.0249
0.063	0.063	2.06	0.03	0.05	0.10	0.77	0.05	0.55	0.0262

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

Y1= Y-0.0625
A2= $A1 + 2 \cdot Y1 + 25 \cdot Y1^2$
P2= $P1 + \text{SQRT}(2501 \cdot Y1^2) + Y1$

Depth (ft)	Area (ft ²)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.063	0.064	2.09	0.03	0.05	0.10	0.78	0.05	0.54	0.0264
0.100	0.173	3.98	0.04	0.17	0.34	0.98	0.10	0.55	0.0423
0.130	0.311	5.51	0.06	0.37	0.73	1.17	0.15	0.57	0.0589
0.160	0.495	7.04	0.07	0.67	1.34	1.36	0.22	0.60	0.0772
0.200	0.810	9.08	0.09	1.29	2.58	1.59	0.32	0.63	0.1035
0.255	1.374	11.88	0.12	2.60	5.19	1.89	0.48	0.66	0.1424
0.280	1.680	13.16	0.13	3.39	6.79	2.02	0.57	0.67	0.1609
0.303	1.983	14.31	0.14	4.23	8.46	2.13	0.65	0.68	0.1779

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

Y2= Y - 0.3025
A3= $A2 + Y2 \cdot 14$
P3= $P2 + Y2$

Depth (ft)	Area (ft ²)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.303	1.990	14.31	0.14	4.25	8.51	2.14	0.65	0.68	0.1786
0.304	2.002	14.31	0.14	4.30	8.59	2.15	0.65	0.69	0.1798
0.305	2.022	14.31	0.14	4.37	8.74	2.16	0.66	0.69	0.1817
0.308	2.054	14.31	0.14	4.48	8.97	2.18	0.67	0.69	0.1849
0.313	2.123	14.32	0.15	4.73	9.47	2.23	0.70	0.70	0.1916
0.318	2.204	14.32	0.15	5.04	10.08	2.29	0.73	0.71	0.1996
0.327	2.330	14.33	0.16	5.53	11.05	2.37	0.78	0.73	0.2121
0.333	2.410	14.34	0.17	5.84	11.69	2.43	0.81	0.74	0.2200

Street Capacity Calculations

AP-2 with Q=9.29
Ridge Stone Drive
28' F-F Street Section with 4" curb
Slope= 1.06%

For water depths less than 0.0625 feet

Y= Water depth
Area = $16 \cdot Y^2$
P= $\text{SQRT}(1025 \cdot Y^2) + Y$
n= 0.017

Depth (ft)	Area (ft ²)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.010	0.002	0.33	0.00	0.00	0.00	0.26	0.00	0.45	0.0031
0.020	0.006	0.66	0.01	0.00	0.01	0.41	0.01	0.51	0.0075
0.025	0.010	0.83	0.01	0.00	0.01	0.47	0.01	0.53	0.0100
0.035	0.020	1.16	0.02	0.01	0.02	0.59	0.02	0.56	0.0153
0.045	0.032	1.49	0.02	0.02	0.05	0.70	0.03	0.58	0.0209
0.052	0.043	1.72	0.03	0.03	0.07	0.77	0.04	0.60	0.0251
0.060	0.058	1.98	0.03	0.05	0.10	0.85	0.05	0.61	0.0300
0.063	0.063	2.06	0.03	0.05	0.11	0.87	0.05	0.62	0.0316

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

Y1= Y-0.0625
A2= $A1 + 2 \cdot Y1 + 25 \cdot Y1^2$
P2= $P1 + \text{SQRT}(2501 \cdot Y1^2) + Y1$

Depth (ft)	Area (ft ²)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.063	0.064	2.09	0.03	0.06	0.11	0.88	0.06	0.62	0.0317
0.100	0.173	3.98	0.04	0.19	0.38	1.11	0.11	0.62	0.0509
0.130	0.311	5.51	0.06	0.41	0.83	1.33	0.17	0.65	0.0707
0.160	0.495	7.04	0.07	0.76	1.52	1.53	0.25	0.68	0.0926
0.200	0.810	9.08	0.09	1.46	2.91	1.80	0.36	0.71	0.1239
0.255	1.374	11.88	0.12	2.93	5.87	2.14	0.54	0.75	0.1700
0.300	1.941	14.15	0.14	4.64	9.29	2.39	0.72	0.77	0.2094
0.303	1.983	14.31	0.14	4.78	9.56	2.41	0.73	0.77	0.2121

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

Y2= Y - 0.3025
A3= $A2 + Y2 \cdot 14$
P3= $P2 + Y2$

Depth (ft)	Area (ft ²)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.303	1.990	14.31	0.14	4.81	9.61	2.42	0.73	0.77	0.2129
0.304	2.002	14.31	0.14	4.86	9.71	2.43	0.74	0.78	0.2143
0.305	2.022	14.31	0.14	4.94	9.87	2.44	0.75	0.78	0.2166
0.310	2.088	14.31	0.15	5.21	10.41	2.49	0.77	0.79	0.2241
0.313	2.123	14.32	0.15	5.35	10.70	2.52	0.79	0.79	0.2282
0.320	2.228	14.32	0.16	5.80	11.59	2.60	0.83	0.81	0.2403
0.324	2.282	14.33	0.16	6.03	12.07	2.64	0.86	0.82	0.2466
0.333	2.410	14.34	0.17	6.60	13.21	2.74	0.91	0.84	0.2614

Street Capacity Calculations

AP-3 with Q=8.43
River Stone Drive
28' F-F Street Section with 4" curb
Slope= 1.31%

For water depths less than 0.0625 feet

Y= Water depth
 Area = $16 \cdot Y^2$
 P= $\text{SQRT}(1025 \cdot Y^2) + Y$
 n= 0.017

Depth (ft)	Area (ft ²)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.010	0.002	0.33	0.00	0.00	0.00	0.29	0.00	0.50	0.0037
0.020	0.006	0.66	0.01	0.00	0.01	0.45	0.01	0.57	0.0089
0.025	0.010	0.83	0.01	0.01	0.01	0.53	0.01	0.59	0.0118
0.035	0.020	1.16	0.02	0.01	0.03	0.66	0.02	0.62	0.0179
0.045	0.032	1.49	0.02	0.03	0.05	0.78	0.04	0.65	0.0245
0.052	0.043	1.72	0.03	0.04	0.07	0.86	0.04	0.66	0.0294
0.060	0.058	1.98	0.03	0.05	0.11	0.95	0.06	0.68	0.0351
0.063	0.063	2.06	0.03	0.06	0.12	0.97	0.06	0.69	0.0369

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

Y1= Y-0.0625
 A2= $A1 + 2 \cdot Y1 + 25 \cdot Y1^2$
 P2= $P1 + \text{SQRT}(2501 \cdot Y1^2) + Y1$

Depth (ft)	Area (ft ²)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.063	0.064	2.09	0.03	0.06	0.12	0.97	0.06	0.68	0.0371
0.100	0.173	3.98	0.04	0.21	0.43	1.24	0.12	0.69	0.0595
0.130	0.311	5.51	0.06	0.46	0.92	1.47	0.19	0.72	0.0825
0.160	0.495	7.04	0.07	0.84	1.69	1.71	0.27	0.75	0.1079
0.200	0.810	9.08	0.09	1.62	3.24	2.00	0.40	0.79	0.1441
0.255	1.374	11.88	0.12	3.26	6.52	2.37	0.61	0.83	0.1974
0.279	1.666	13.10	0.13	4.21	8.43	2.53	0.71	0.84	0.2215
0.303	1.983	14.31	0.14	5.31	10.62	2.68	0.81	0.86	0.2459

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

Y2= Y - 0.3025
 A3= $A2 + Y2 \cdot 14$
 P3= $P2 + Y2$

Depth (ft)	Area (ft ²)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.303	1.990	14.31	0.14	5.34	10.69	2.69	0.81	0.86	0.2468
0.304	2.002	14.31	0.14	5.40	10.80	2.70	0.82	0.86	0.2485
0.305	2.022	14.31	0.14	5.49	10.97	2.71	0.83	0.87	0.2511
0.310	2.088	14.31	0.15	5.79	11.57	2.77	0.86	0.88	0.2597
0.313	2.123	14.32	0.15	5.95	11.90	2.80	0.88	0.88	0.2643
0.320	2.228	14.32	0.16	6.44	12.89	2.89	0.93	0.90	0.2782
0.324	2.282	14.33	0.16	6.71	13.42	2.94	0.95	0.91	0.2854

Street Capacity Calculations

AP-4 with Q=10.72
Treasure Stone Drive
28' F-F Street Section with 4" curb
Slope= 0.60%

For water depths less than 0.0625 feet

Y= Water depth
Area = $16 \cdot Y^2$
P= $\text{SQRT}(1025 \cdot Y^2) + Y$
n= 0.017

Depth (ft)	Area (ft ²)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.010	0.002	0.33	0.00	0.00	0.00	0.19	0.00	0.34	0.0020
0.020	0.006	0.66	0.01	0.00	0.00	0.31	0.01	0.38	0.0048
0.025	0.010	0.83	0.01	0.00	0.01	0.36	0.01	0.40	0.0063
0.035	0.020	1.16	0.02	0.01	0.02	0.45	0.02	0.42	0.0097
0.045	0.032	1.49	0.02	0.02	0.03	0.53	0.02	0.44	0.0134
0.052	0.043	1.72	0.03	0.03	0.05	0.58	0.03	0.45	0.0161
0.060	0.058	1.98	0.03	0.04	0.07	0.64	0.04	0.46	0.0193
0.063	0.063	2.06	0.03	0.04	0.08	0.66	0.04	0.46	0.0203

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

Y1= Y-0.0625
A2= $A1 + 2 \cdot Y1 + 25 \cdot Y1^2$
P2= $P1 + \text{SQRT}(2501 \cdot Y1^2) + Y1$

Depth (ft)	Area (ft ²)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.063	0.064	2.09	0.03	0.04	0.08	0.66	0.04	0.46	0.0204
0.100	0.173	3.98	0.04	0.14	0.29	0.84	0.08	0.47	0.0327
0.130	0.311	5.51	0.06	0.31	0.62	1.00	0.13	0.49	0.0457
0.160	0.495	7.04	0.07	0.57	1.14	1.15	0.18	0.51	0.0601
0.200	0.810	9.08	0.09	1.10	2.19	1.35	0.27	0.53	0.0809
0.255	1.374	11.88	0.12	2.21	4.42	1.61	0.41	0.56	0.1116
0.279	1.666	13.10	0.13	2.85	5.70	1.71	0.48	0.57	0.1256
0.303	1.983	14.31	0.14	3.59	7.19	1.81	0.55	0.58	0.1397

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

Y2= Y - 0.3025
A3= $A2 + Y2 \cdot 14$
P3= $P2 + Y2$

Depth (ft)	Area (ft ²)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.303	1.990	14.31	0.14	3.62	7.23	1.82	0.55	0.58	0.1402
0.304	2.002	14.31	0.14	3.65	7.31	1.83	0.55	0.58	0.1412
0.305	2.022	14.31	0.14	3.71	7.43	1.84	0.56	0.59	0.1428
0.310	2.088	14.31	0.15	3.92	7.83	1.88	0.58	0.59	0.1480
0.313	2.123	14.32	0.15	4.03	8.05	1.90	0.59	0.60	0.1507
0.320	2.228	14.32	0.16	4.36	8.72	1.96	0.63	0.61	0.1591
0.324	2.282	14.33	0.16	4.54	9.08	1.99	0.64	0.62	0.1634
0.333	2.410	14.34	0.17	4.97	9.94	2.06	0.69	0.63	0.1736

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

Y3= Y - 0.333

A4= A3 + 14 * Y3 + 25 * Y3²

P4= P3 + SQRT(2501 * Y3²)

Depth (ft)	Area (ft ²)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.335	2.438	14.44	0.17	5.04	10.08	2.07	0.69	0.63	0.1747
0.343	2.558	14.86	0.17	5.36	10.72	2.10	0.72	0.63	0.1792
0.380	3.123	16.69	0.19	6.92	13.84	2.22	0.84	0.63	0.1998
0.420	3.809	18.67	0.20	8.94	17.88	2.35	0.98	0.64	0.2233
0.460	4.597	20.70	0.22	11.41	22.83	2.48	1.14	0.64	0.2486
0.504	5.535	22.89	0.24	14.54	29.09	2.63	1.32	0.65	0.2769
0.513	5.740	23.34	0.25	15.25	30.51	2.66	1.36	0.65	0.2828

Street Capacity Calculations

AP-5 with Q=23.55 cfs
 Water Stone Road
 28' F-F Street Section with 8" curb
 Slope= 4.25%

For water depths less than 0.125 feet

Y= Water depth
 Area = $8 \cdot Y^2$
 P= $\text{SQRT}(257 \cdot Y^2) + Y$
 n= 0.017

Depth (ft)	Area (ft ²)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.00	0.17	0.00	0.00	0.00	0.51	0.01	0.89	0.009
0.02	0.00	0.34	0.01	0.00	0.01	0.80	0.02	1.00	0.020
0.04	0.01	0.68	0.02	0.02	0.03	1.27	0.05	1.12	0.047
0.06	0.03	1.02	0.03	0.05	0.10	1.67	0.10	1.20	0.076
0.08	0.05	1.36	0.04	0.10	0.21	2.02	0.16	1.26	0.108
0.1	0.08	1.70	0.05	0.19	0.38	2.35	0.23	1.31	0.142
0.12	0.12	2.04	0.06	0.31	0.61	2.65	0.32	1.35	0.176
0.125	0.13	2.13	0.06	0.34	0.68	2.72	0.34	1.36	0.185

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

Y1= Y-0.125
 A2= $A1 + 2 \cdot Y1 + 25 \cdot Y1^2$
 P2= $P1 + \text{SQRT}(2501 \cdot Y1^2) + Y1$

Depth (ft)	Area (ft ²)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.13	0.14	2.38	0.06	0.36	0.72	2.67	0.35	1.30	0.183
0.16	0.23	3.91	0.06	0.61	1.21	2.69	0.43	1.18	0.200
0.2	0.42	5.95	0.07	1.27	2.54	3.05	0.61	1.20	0.255
0.24	0.69	8.00	0.09	2.40	4.81	3.50	0.84	1.26	0.324
0.28	1.04	10.04	0.10	4.11	8.21	3.96	1.11	1.32	0.401
0.32	1.47	12.08	0.12	6.47	12.95	4.42	1.41	1.38	0.483
0.34	1.71	13.10	0.13	7.94	15.87	4.64	1.58	1.40	0.525
0.365	2.05	14.37	0.14	10.04	20.09	4.91	1.79	1.43	0.579

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

Y2= Y - 0.365
 A3= $A2 + Y2 \cdot 14$
 P3= $P2 + Y2$

Depth (ft)	Area (ft ²)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.37	2.12	14.38	0.15	10.62	21.24	5.02	1.86	1.45	0.598
0.380	2.25	14.39	0.16	11.78	23.55	5.23	1.99	1.50	0.636
0.46	3.32	14.46	0.23	22.45	44.89	6.76	3.08	1.76	0.932
0.50	3.94	14.51	0.27	29.71	59.43	7.55	3.78	1.88	1.104
0.54	4.50	14.55	0.31	37.02	74.05	8.24	4.45	1.98	1.262
0.58	5.06	14.59	0.35	44.94	89.89	8.89	5.16	2.06	1.422
0.63	5.76	14.64	0.39	55.66	111.32	9.67	6.09	2.15	1.624
0.667	6.27	14.67	0.43	64.15	128.30	10.23	6.82	2.21	1.775

Street Capacity Calculations

AP-6 with Q=37.94 cfs
 Water Stone Road
 28' F-F Street Section with 8" curb
 Slope= 2.93%

For water depths less than 0.125 feet

Y= Water depth
 Area = $8 \cdot Y^2$
 P= $\text{SQRT}(257 \cdot Y^2) + Y$
 n= 0.017

Depth (ft)	Area (ft ²)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.00	0.17	0.00	0.00	0.00	0.42	0.00	0.74	0.007
0.02	0.00	0.34	0.01	0.00	0.00	0.67	0.01	0.83	0.016
0.04	0.01	0.68	0.02	0.01	0.03	1.06	0.04	0.93	0.036
0.06	0.03	1.02	0.03	0.04	0.08	1.39	0.08	1.00	0.060
0.08	0.05	1.36	0.04	0.09	0.17	1.68	0.13	1.05	0.085
0.1	0.08	1.70	0.05	0.16	0.31	1.95	0.19	1.09	0.111
0.12	0.12	2.04	0.06	0.25	0.51	2.20	0.26	1.12	0.139
0.125	0.13	2.13	0.06	0.28	0.57	2.26	0.28	1.13	0.146

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

Y1= Y-0.125
 A2= $A1 + 2 \cdot Y1 + 25 \cdot Y1^2$
 P2= $P1 + \text{SQRT}(2501 \cdot Y1^2) + Y1$

Depth (ft)	Area (ft ²)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.13	0.14	2.38	0.06	0.30	0.60	2.21	0.29	1.08	0.144
0.16	0.23	3.91	0.06	0.50	1.01	2.23	0.36	0.98	0.157
0.2	0.42	5.95	0.07	1.05	2.11	2.54	0.51	1.00	0.200
0.24	0.69	8.00	0.09	1.99	3.99	2.91	0.70	1.05	0.255
0.28	1.04	10.04	0.10	3.41	6.82	3.29	0.92	1.10	0.316
0.32	1.47	12.08	0.12	5.38	10.75	3.67	1.17	1.14	0.381
0.34	1.71	13.10	0.13	6.59	13.18	3.85	1.31	1.16	0.415
0.365	2.05	14.37	0.14	8.34	16.68	4.08	1.49	1.19	0.458

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

Y2= Y - 0.365
 A3= $A2 + Y2^2 \cdot 14$
 P3= $P2 + Y2$

Depth (ft)	Area (ft ²)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.37	2.12	14.38	0.15	8.82	17.64	4.17	1.54	1.21	0.474
0.400	2.54	14.41	0.18	11.91	23.82	4.70	1.88	1.31	0.567
0.46	3.36	14.47	0.23	18.97	37.94	5.65	2.59	1.47	0.752
0.50	3.94	14.51	0.27	24.67	49.34	6.27	3.13	1.56	0.883
0.54	4.50	14.55	0.31	30.74	61.48	6.84	3.69	1.64	1.011
0.58	5.06	14.59	0.35	37.32	74.63	7.38	4.28	1.71	1.141
0.63	5.76	14.64	0.39	46.22	92.43	8.03	5.06	1.78	1.304
0.667	6.27	14.67	0.43	53.27	106.53	8.49	5.66	1.83	1.427

Infrastructure List

Sum...
Project Number: _____

FIGURE 12

INFRASTRUCTURE LIST

EXHIBIT "A"
TO SUBDIVISION IMPROVEMENTS AGREEMENT
DEVELOPMENT REVIEW BOARD (D.R.B.) REQUIRED INFRASTRUCTURE LIST

Date Submitted: _____
Date Site Plan Approved: _____
Date Preliminary Plat Approved: _____
Date Preliminary Plat Expires: _____
DRB Project No.: _____
DRB Application No.: _____

Desert Pine Subdivision Phase II
PROPOSED NAME OF PLAT AND/OR SITE DEVELOPMENT PLAN

Tracts 33, 34 and 35 Town of Atrisco Grant, Unit 2
EXISTING LEGAL DESCRIPTION PRIOR TO PLATTING ACTION

Following is a summary of PUBLIC/PRIVATE Infrastructure required to be constructed or financially guaranteed for the above development. This Listing is not necessarily a complete listing. During the SIA process and/or in the review of the construction drawings, if the DRC Chair determines that appurtenant items and/or unforeseen items have not been included in the infrastructure listing, the DRC Chair may well as the related portions of the financial guarantees. All such revisions require approval by the DRC Chair, the User Department and agent/owner. If such approvals are obtained, these revisions to the listing required as a condition of project acceptance and close out by the City.

SIA Sequence #	COA DRC Project #	Size	Type of Improvement	Location	From	To	Private Inspector	City Inspector	City Cnst Engineer
		28' F-F	Residential Paving, Curb and Gutter, 4' Sidewalks (Both Sides)	Desert Mist Drive	Gemstone Road	Eucariz Road	/	/	/
		28' F-F	Residential Paving, Curb and Gutter, 4' Sidewalks (Both Sides)	Ridge Stone Drive	Gemstone Road	Water Stone Road	/	/	/
		28' F-F	Residential Paving, Curb and Gutter, 4' Sidewalks (Both Sides)	Desert Bluff Drive	North Property Line	Water Stone Road	/	/	/
		28' F-F	Residential Paving, Curb and Gutter, 4' Sidewalks (Both Sides)	Treasure Stone Drive	River Stone Drive	Water Stone Road	/	/	/
		28' F-F	Residential Paving, Curb and Gutter, 4' Sidewalks (Both Sides)	River Stone Road	Desert Bluff Drive	Treasure Stone Drive	/	/	/
		24' F-E	Residential Paving, Curb and Gutter, 4' Sidewalks (South Side Only)	Gemstone Road	West Property Line	Desert Bluff Drive	/	/	/
		28' F-F	Residential Paving, Curb and Gutter, 4' Sidewalks (Both Sides)	Water Stone Road	Desert Mist Drive	94th Street	/	/	/
		16' F-E	Arterial Paving, Curb and Gutter, 6' Sidewalk (West Side Only)	Eucariz Road	96th Street	94th Street	/	/	/

SIA Sequence #	COA DRC Project #	Size	Type of Improvement	Location	From	To	Private Inspector	City Inspector	City Cnst Engineer
		24' F-E	Arterial Paving, Curb and Gutter, 6' Sidewalk (West Side Only)	94th Street	North Property Line	Eucariz Road	/	/	/
		8"	SAS Gravity Line	Desert Mist Drive	Eucariz Road	Gemstone Road	/	/	/
		8"	SAS Gravity Line	Ridge Stone Drive	Water Stone Road	Gemstone Road	/	/	/
		8"	SAS Gravity Line	Desert Bluff Drive	Water Stone Road	Gemstone Road	/	/	/
		8"	SAS Gravity Line	Treasure Stone Drive	River Stone Road	Water Stone Road	/	/	/
		8"	SAS Gravity Line	River Stone Road	Desert Bluff Drive	Treasure Stone Drive	/	/	/
		8"	SAS Gravity Line	Gemstone Road	West Property Line	Desert Bluff Drive	/	/	/
		8"	SAS Gravity Line	Water Stone Road	Desert Mist Drive	94th Street	/	/	/
		8"	Water PVC Line	Desert Mist Drive	Eucariz Road	Gemstone Road	/	/	/
		6"	Water PVC Line	Ridge Stone Drive	Water Stone Road	Gemstone Road	/	/	/
		8"	Water PVC Line	Desert Bluff Drive	Gemstone Road	Treasure Stone Drive	/	/	/
		6"	Water PVC Line	Desert Bluff Drive	Treasure Stone Drive	Water Stone Road	/	/	/
		8"	Water PVC Line	Treasure Stone Drive	River Stone Road	Water Stone Road	/	/	/
		8"	Water PVC Line	River Stone Road	Desert Bluff Drive	Treasure Stone Road	/	/	/

SIA Sequence #	COA DRC Project #	Size	Type of Improvement	Location	From	To	Private Inspector	City Inspector	City Cnst Engineer
		8"	Water PVC Line	Gemstone Road	Desert Mist Drive	Desert Bluff Drive	/	/	/
		8"	Water PVC Line	Water Stone Drive	Desert Mist Drive	Treasure Stone Drive	/	/	/
		8"	Water PVC Line	Water Stone Drive	Treasure Stone Drive	94th Street	/	/	/
		36"	RCP Storm Sewer	Water Stone Drive	Treasure Stone Drive	94th Street	/	/	/
		54"	RCP Storm Sewer	94th Street	North Property Line	Eucariz Road	/	/	/
		Water Infrastructure to include Valves, Fittings, Valve Boxes and Fire Hydrants as required.					/	/	/
		Sanitary Sewer to include Manholes and Service Connections as required.					/	/	/
		Catch Basins and RCP connections included with Storm Sewer					/	/	/
		Temporary Retention Pond					/	/	/
		Residential Street Lights per DPM.					/	/	/
		Certified Grading and Drainage with Private Walls and Private Drainage (Non- work order item) Required for SIA/Financial Guarantee Release.					/	/	/

NOTES

1

2

3

AGENT / OWNER

DEVELOPMENT REVIEW BOARD MEMBER APPROVALS

Ronald R. Bohannon

NAME (print)

DRB CHAIR - date

PARKS & GENERAL SERVICES - date

TierraWest LLC

FIRM

TRANSPORTATION DEVELOPMENT - date

AMAFCA - date

[Signature]

SIGNATURE - date

UTILITY DEVELOPMENT - date

- date

MAXIMUM TIME ALLOWED TO CONSTRUCT
THE IMPROVEMENTS WITHOUT A DRB

CITY ENGINEER - date

- date

EXTENSION: _____

DESIGN REVIEW COMMITTEE REVISIONS

REVISION	DATE	DRC CHAIR	USER DEPARTMENT	AGENT / OWNER

DRAINAGE INFORMATION SHEET

L-9/D24A

PROJECT TITLE: Desert Pine Phase II
DRB #: _____ EPC #: _____

ZONE ATLAS/DRNG. FILE #: L-9
WORK ORDER #: _____

LEGAL DESCRIPTION Lots 33, 34, 35 Town of Atrisco Grant Unit 2

CITY ADDRESS: North of Eucariz, between 98th Street and 94 Street

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

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

OWNER: _____
ADDRESS: _____
CITY, STATE: _____

CONTACT: _____
PHONE: _____
ZIP CODE: _____

ARCHITECT: _____
ADDRESS: _____
CITY, STATE: _____

CONTACT: _____
PHONE: _____
ZIP CODE: _____

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

CONTACT: LARRY MEDRANO
PHONE: (505) 856-5700
ZIP CODE: 87113

CONTRACTOR: _____
ADDRESS: _____
CITY, STATE: _____

CONTACT: _____
PHONE: _____
ZIP CODE: _____

CHECK TYPE OF SUBMITTAL:

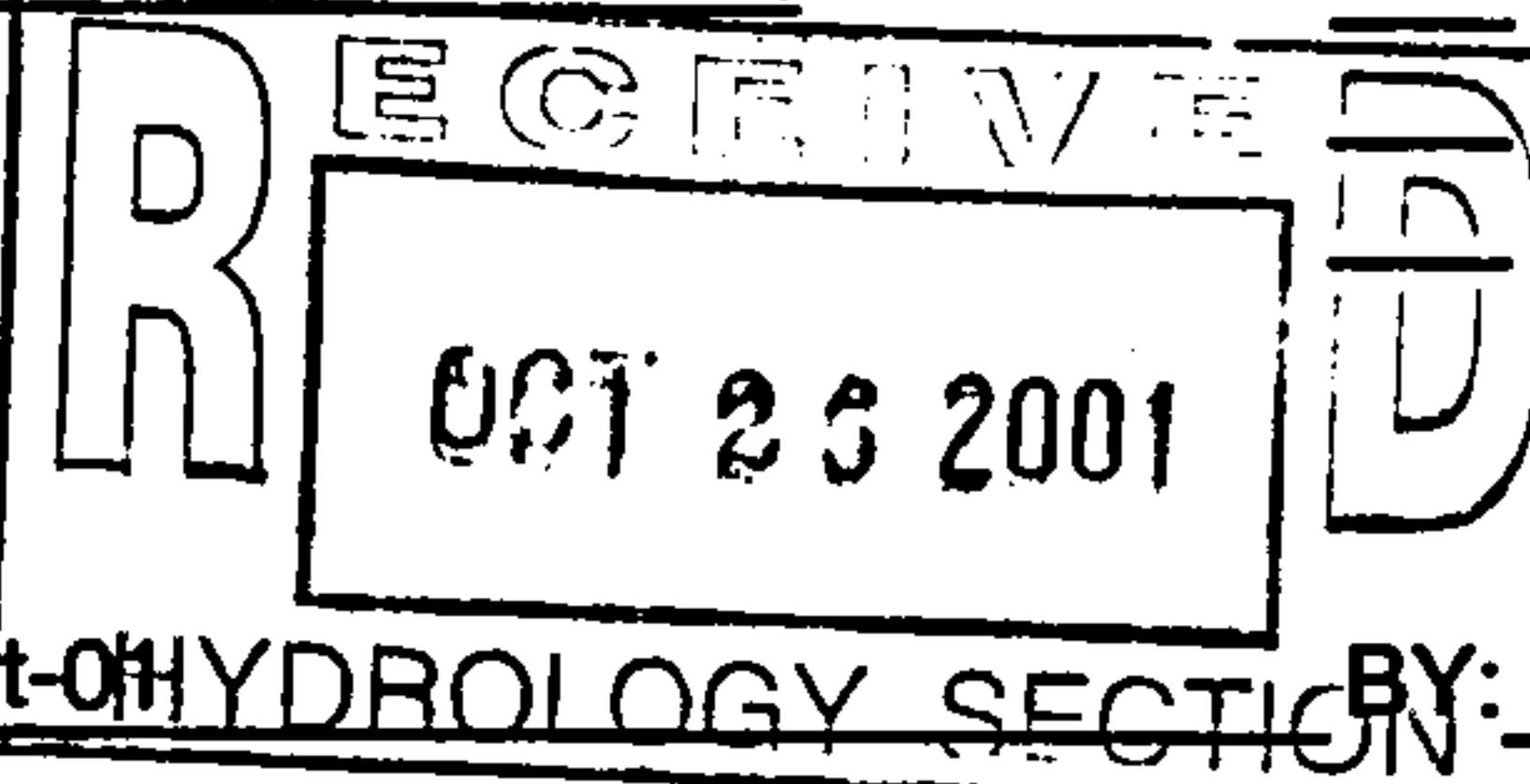
- ☒ DRAINAGE REPORT
☐ DRAINAGE PLAN
☐ CONCEPTUAL GRADING & DRAINAGE PLAN
☒ GRADING PLAN
☐ EROSION CONTROL PLAN
☐ ENGINEER'S CERTIFICATION
☐ CLOMR/LOMR
☐ TRAFFIC CIRCULATION LAYOUT (TCL)
☐ OTHER

CHECK TYPE OF APPROVAL SOUGHT:

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

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ☐ YES
☒ NO
☐ COPY PROVIDED



DATE SUBMITTED: 26-Oct-01 BY: Sara Lavy

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

1. **Conceptual Grading and Drainage Plans:** Required for approval of Site Development Plans greater than five (5) acres 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.

TIERRA WEST, LLC

8509 Jefferson NE
Albuquerque, NM 87113

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

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

October 26, 2001

Mr. Carlos A. Montoya
City Floodplain Administrator
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

Re: Desert Pine Phase II (L9/D24A)

Dear Mr. Montoya:

Tierra West, LLC, on behalf of the owner, is resubmitting the Drainage Report and Grading and Drainage Plan for your review. We have addressed the comments from your September 21, 2000, letter in the following manner:

1. ✓ Please discuss a time line for drainage for the following projects. These projects affect the referenced downstream capacity or the roads adjacent to the site. The projects would be SAD 222, Desert Pine Phase I, Frank Wilson's project south of Eucariz Street. Also, when will the adjacent roads with storm drainage be built **The storm drain and paving are completed for Desert Pine Phase I. The 54" storm drain exists to the south property line of Phase I. Frank Wilson's project is going through the DRC process currently, and Eucariz will be under construction before our project. SAD 222 is currently under construction. The schedule for the SAD shows the storm drain will be complete in February. The infrastructure for Desert Pine II will not be complete until May or June. Therefore, although we show a temporary retention pond on our plans, we do not anticipate constructing the pond.**
2. ✓ Please show the proposed grades on the drainage plan for Eucariz Street, 94th Street, and 98th Street. **The grades from SAD 222 and Frank Wilson's design of Eucariz are shown on the grading plan. We also show the proposed grades of 94th Street**
3. ✓ Please submit a covenant and easement for the retention pond. **We will submit a drainage covenant for the retention pond for the work order approval. We do not want to do this earlier as SAD 222 may complete the downstream improvements before this project is ready for construction. If that occurs, the covenant will not be required.**
4. Will there be an inlet constructed on 94th Street and Eucariz with your project? **We are not proposing an inlet at 94th and Eucariz. Frank Wilson has agreed to allow the drainage from the half section of 94th Street to continue east in Eucariz. It will be captured in the desilting pond Mr. Wilson is constructing at the end of Eucariz Street. When Frank Wilson starts his new project located on the northeast corner of Eucariz and 94th Street that flow will be incorporated**

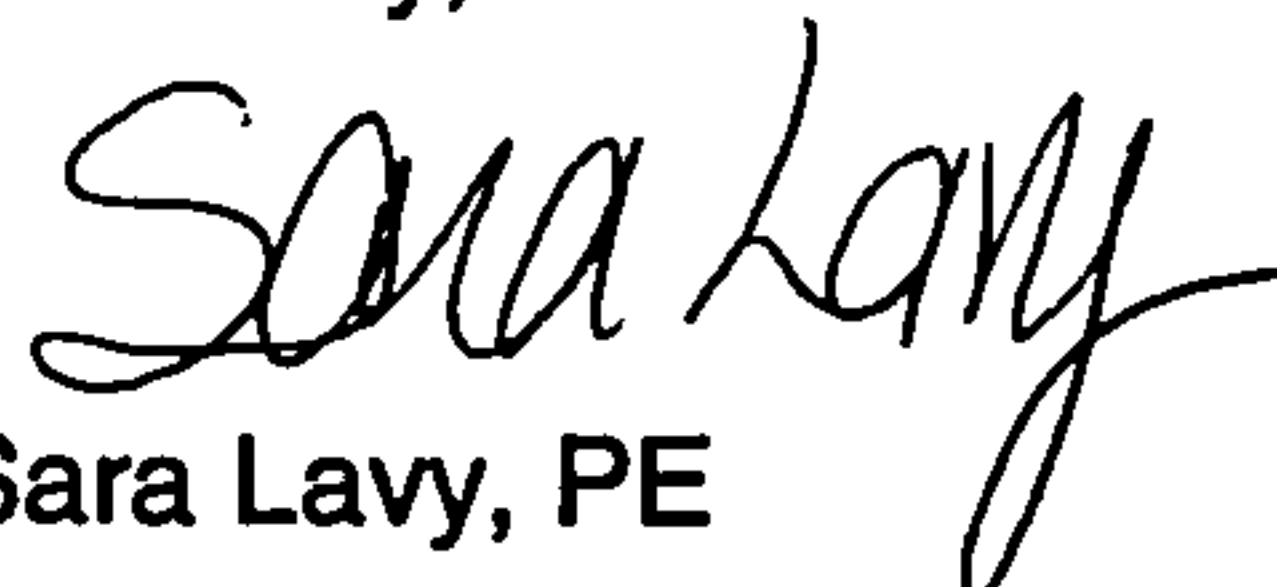
inlet on Eucariz

into his drainage design.

5. ✓ The report indicated that a letter from Mr. Wilson would be submitted for drainage. Please submit in your next submittal.
The agreement letter with signatures has been included with this submittal.
6. ✓ Sheet 3 has a similar line symbol for retaining walls and for screening wall. The retaining walls are an important infrastructure that needs to be highlighted.
We have revised Sheet 3 to dimension the retaining walls with lengths and heights.
7. ✓ The calculations for the double 'C' inlet should not use the throat area as a part of the total area. This should be calculated as a weir.
The calculation have been revised and a double 'C' inlet will have capacity.
8. ✓ Please submit a few DPM street capacity sheets to show that you Street Calculations are correct.
All streets on the site are 28' F-F, and there are no Street Capacity charts for a 28' street section. The smallest street section with a DPM chart is for 32' F-F. In the past, we have checked our calculations against the charts and they give approximately the same answer. I have included a cross-section of the street for clarification.
9. Sheet 3 indicates two double 'A' will be constructed, but sheet 4 indicates on single 'A'.
Both sheets have been revised to show the correct inlet type as a double 'C'.
10. The Typical lot Grading and Section A-A indicate different types of retaining walls.
We have revised Section A-A t to reflect the railroad tie retaining wall shown in the Typical Lot Grading detail.

If you have any questions or need additional information, please contact me.

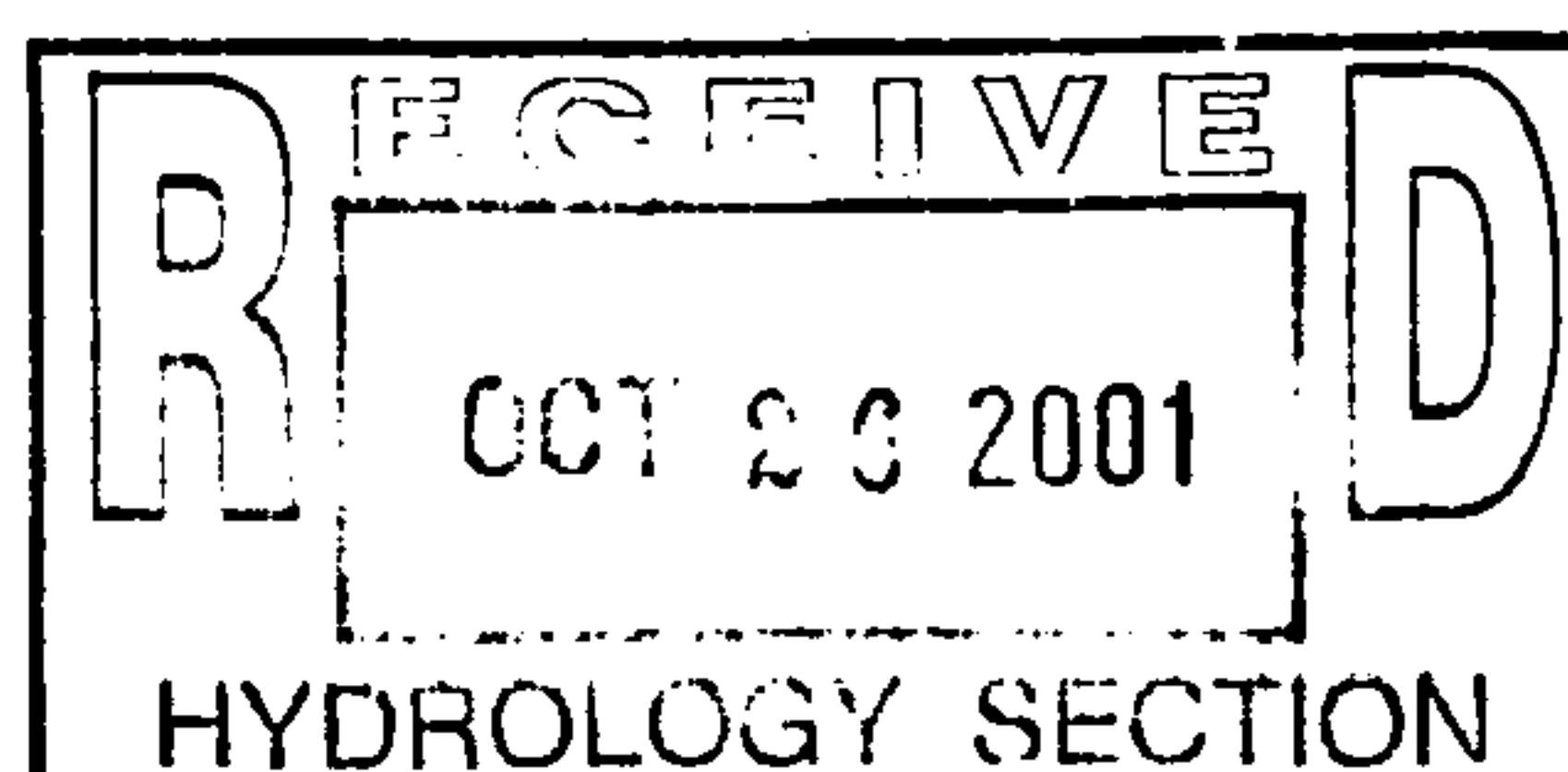
Sincerely,


Sara Lavy, PE

Enclosures

cc: Jeff Dorwart

JN: 21034
scl



21034: 2134 hyd resubmittal.ltr.doc



TIERRA WEST, LLC

8509 Jefferson NE
Albuquerque, NM 87113

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

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

October 1, 2001

Mr. Jeff Dorwart
KB Home
4921 Alexander Blvd NE, Suite B
Albuquerque, NM 87107

Mr. Frank Wilson
Tower West Ltd.
333 Lomas Boulevard, NE
Albuquerque, NM 87102

Re: Desert Pine Phase II Subdivision

Dear Sirs:

This is a letter to clarify the costs associated with each development. Jeff Dorwart is developing a single family subdivision north of Eucariz Road between 94th and 98th Streets called Desert Pine II. Frank Wilson is developing two projects in the vicinity of Desert Pine Phase II. One project is in the process of obtaining DRC approval. This project is located south of Eucariz adjacent to Desert Pine II and called Eldorado Park Unit 4. The other project Mr. Wilson is developing is located east of 94th Street adjacent to Desert Pine II and named Eldorado North.

Mr. Wilson will construct the south half of Eucariz Road and all utilities in the road with Eldorado Park. This includes a storm drain that will drain to a temporary retention pond located within Eldorado Park. The north half of Eucariz Road will be constructed with Desert Pine Phase II. A storm drain drop inlet to collect the drainage from the north half of Eucariz Road will also be constructed by Desert Pine II. Mr. Wilson agreed to allow the drainage from the north half of Eucariz to connect to the storm drain system he is constructing in Eucariz and drain to his temporary retention pond. This would be a total of 2.23 cfs (0.077 ac-ft) from the north half of Eucariz Road.

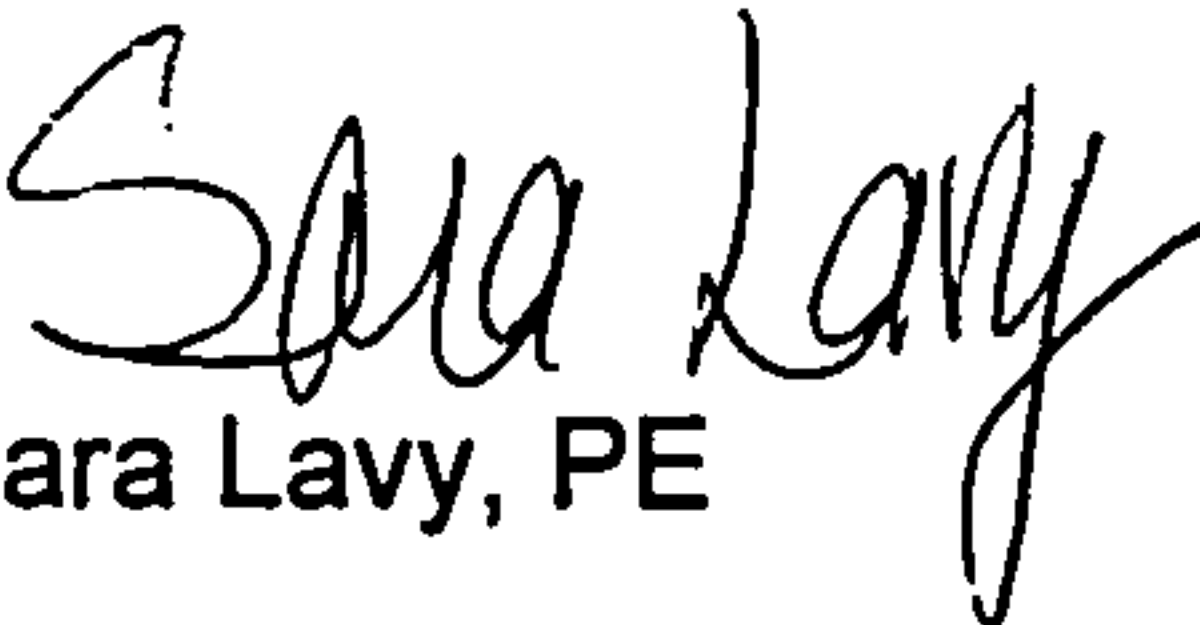
Desert Pine II will also construct the west half of 94th Street adjacent to the project. This drainage will have to be captured and detained until the permanent drainage improvements are constructed by SAD 222. Mr. Wilson agreed the drainage from the west half of the street can drain to Eucariz Road. At Eucariz the drainage will turn and flow east. Eucariz Road will be constructed to the east property line of Eldorado Park. The road will end at that point and a temporary desilting pond constructed to detain any water from Eucariz Road. Mr. Wilson agreed to allow the drainage from the west half of 94th Street to be captured in the new pond at the east end of Eucariz Road. This will prevent Desert Pine II from constructing drop inlets in 94th Street. The total amount of flow draining from 94th Street to the new pond will be 0.96 cfs. This flow will be incorporated into the permanent drainage solution for Eldorado North (located east of 94th Street).

Please sign below and return to Tierra West, indicating your understanding and approval

Mr. Jeff Dorwart
Mr. Frank Wilson
October 1, 2001
Page 2

of the above stated improvements. If you have any questions or need further information regarding this matter, please do not hesitate to call me.

Sincerely,


Sara Lavy, PE


Jeff Dorwart, KB Home Date


Frank Wilson, Tower West Ltd. Date 10/10/01

JN: 21034
scl

21034: 2134 dorwart-wilson cost.ltr.doc

DRAINAGE INFORMATION SHEET

L-9/D24A

PROJECT TITLE: Desert Pine Phase II
 DRB #: _____ EPC #: _____

ZONE ATLAS/DRNG. FILE #: L-9/D24A
 WORK ORDER #: _____

LEGAL DESCRIPTION Lots 33, 34, 35 Town of Atrisco Grant Unit 2
 CITY ADDRESS: North of Eucariz, between 98th Street and 94 Street

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

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

OWNER: _____
 ADDRESS: _____
 CITY, STATE: _____

CONTACT: _____
 PHONE: _____
 ZIP CODE: _____

ARCHITECT: _____
 ADDRESS: _____
 CITY, STATE: _____

CONTACT: _____
 PHONE: _____
 ZIP CODE: _____

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

CONTACT: LARRY MEDRANO
 PHONE: (505) 856-5700
 ZIP CODE: 87113

CONTRACTOR: _____
 ADDRESS: _____
 CITY, STATE: _____

CONTACT: _____
 PHONE: _____
 ZIP CODE: _____

CHECK TYPE OF SUBMITTAL:

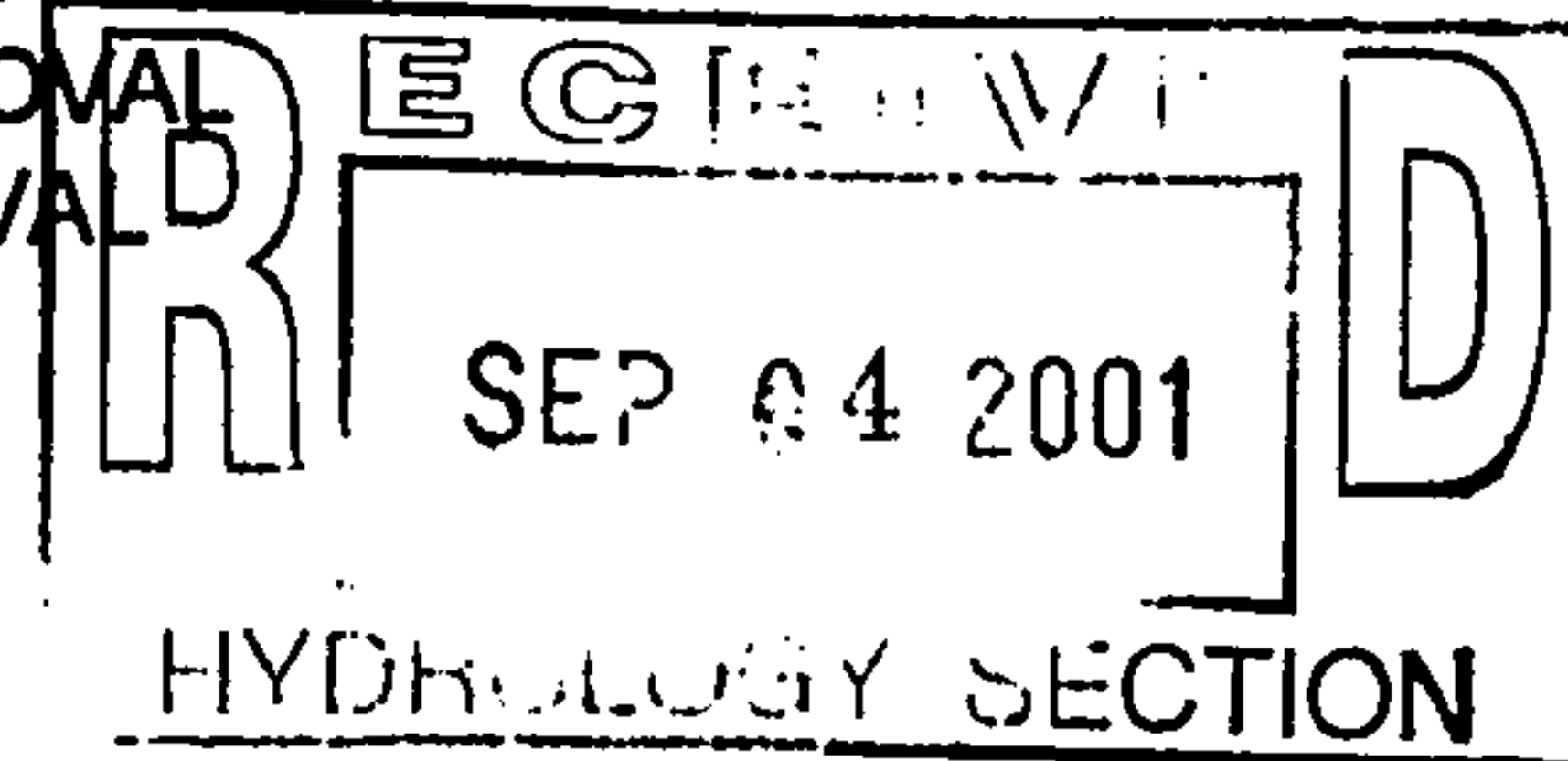
- ☒ DRAINAGE REPORT
- ☐ DRAINAGE PLAN
- ☐ CONCEPTUAL GRADING & DRAINAGE PLAN
- ☒ GRADING PLAN
- ☐ EROSION CONTROL PLAN
- ☐ ENGINEER'S CERTIFICATION
- ☐ CLOMR/LOMR
- ☐ TRAFFIC CIRCULATION LAYOUT (TCL)
- ☐ OTHER

CHECK TYPE OF APPROVAL SOUGHT:

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

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ☐ YES
- ☒ NO
- ☐ COPY PROVIDED



DATE SUBMITTED: 31-Aug-01 BY: Sara Lavy

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

1. **Conceptual Grading and Drainage Plans:** Required for approval of Site Development Plans greater than five (5) acres 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

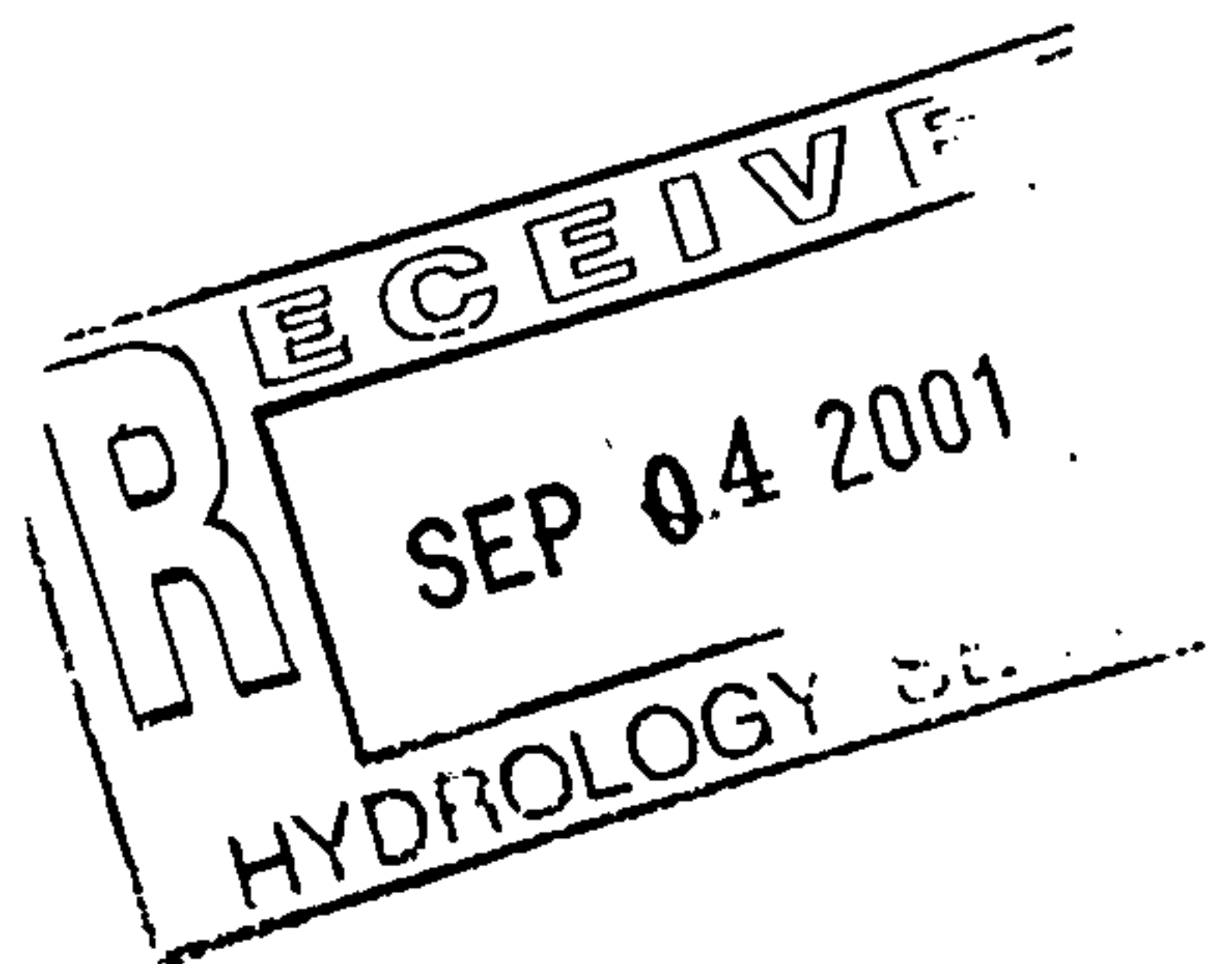
Desert Pine Subdivision Phase II

Prepared by

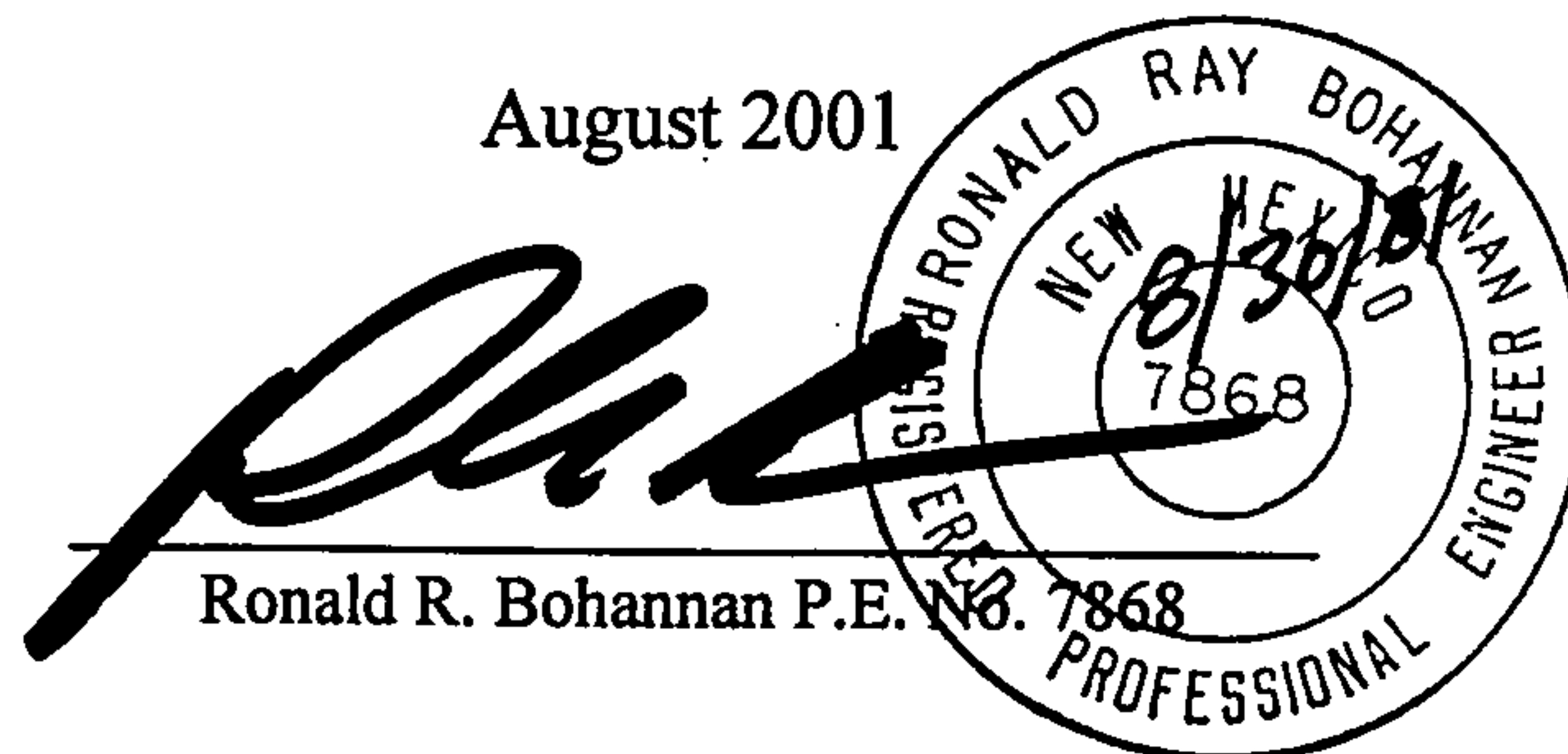
Tierra West, LLC
8509 Jefferson NE
Albuquerque, New Mexico 87113

Prepared for

Kaufman & Broad
4921 Alexander Blvd, NE Suite B
Albuquerque, New Mexico 87107



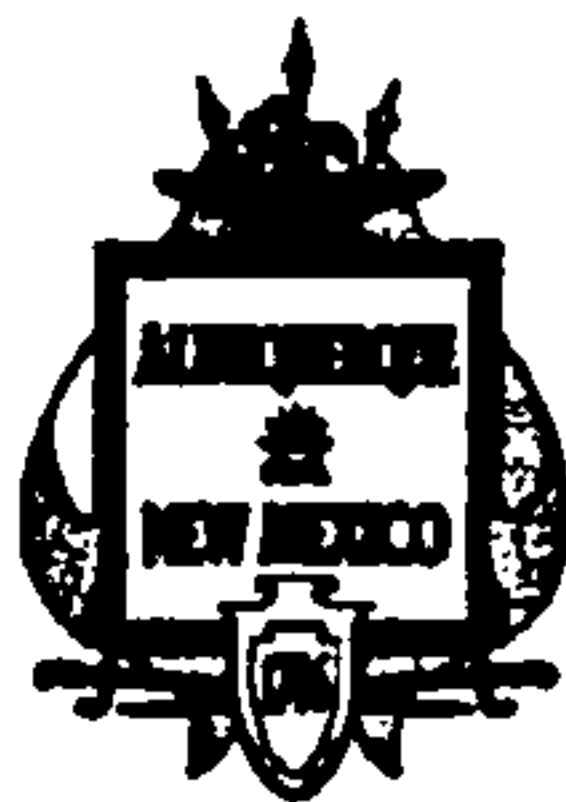
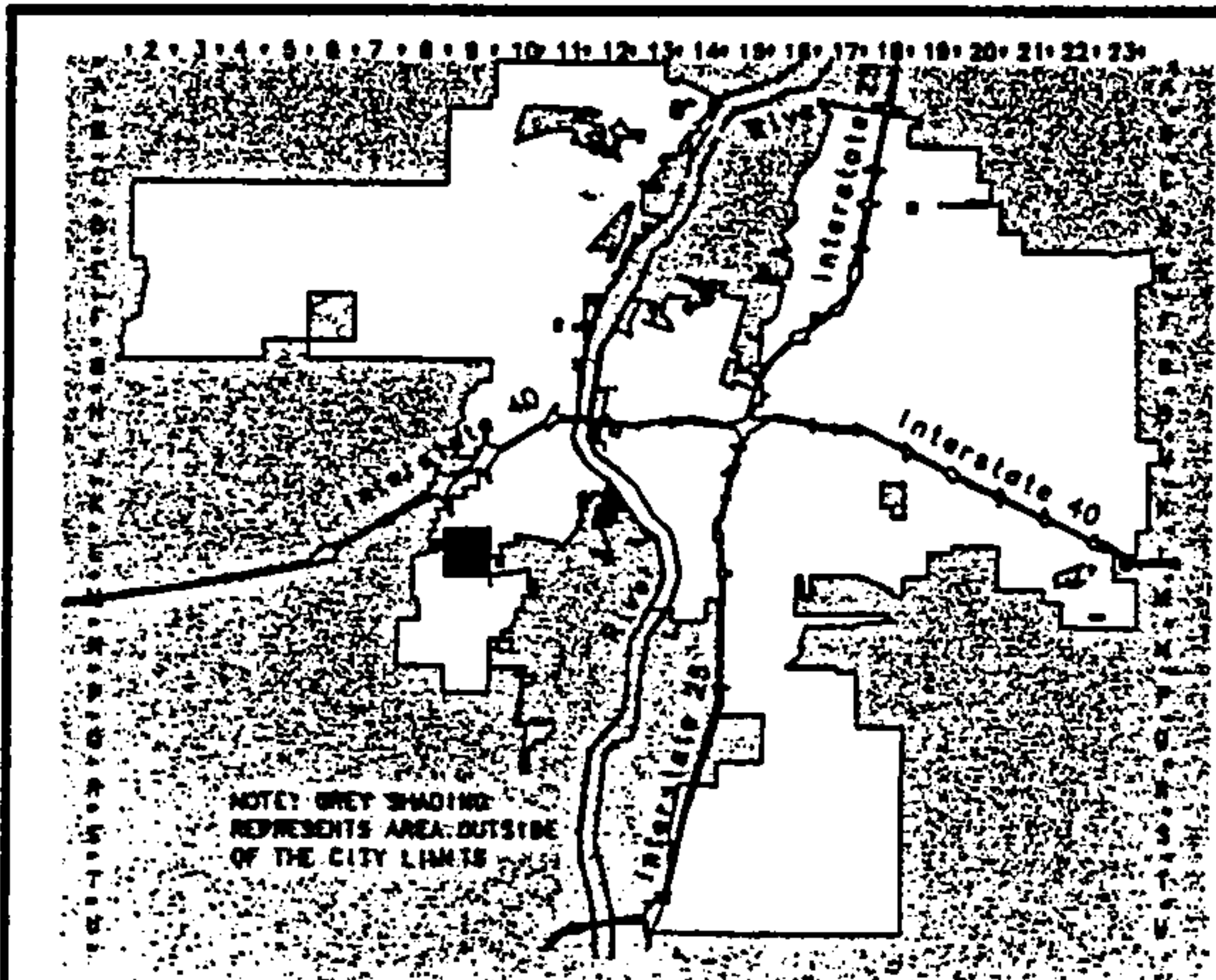
August 2001



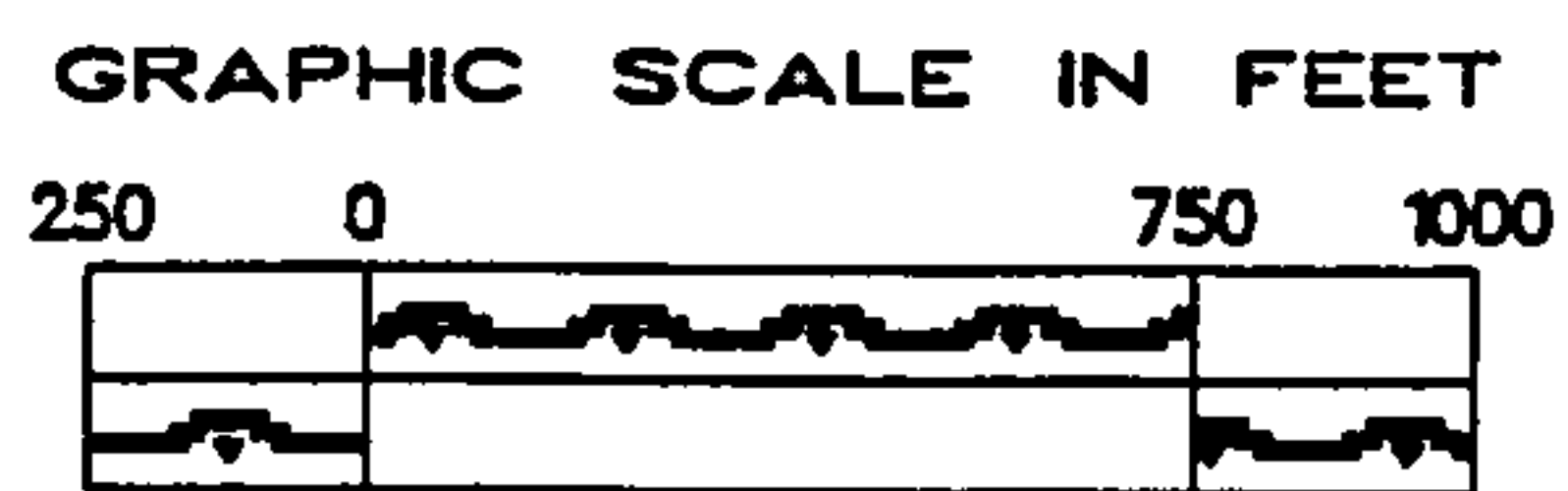
Ronald R. Bohannon P.E. No. 7868

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CITY OF Albuquerque
AGIS
 Albuquerque Geographic Information System
 PLANNING DEPARTMENT
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Zone Atlas Page
L-9-Z
 Map Amended through August 15, 2000

Location

Desert Pine Subdivision Phase II is a proposed 114 unit single family subdivision. It is located north of Eucariz Road between 98th Street and 94 Street. The site is shown on the attached Zone Atlas Map L-9 and contains approximately 15.2 acres. The purpose of this report is to provide the drainage analysis and management plan for the subdivision.

Existing Drainage Conditions

The site is currently undeveloped. The natural slope of the site is from west to east at approximately 3%. There is one existing basin (Basin U1) on the site. Basin 1 sheet flows southeast with an undeveloped runoff of 33.19 cfs.

The adjacent streets (98th Street and Eucariz) prevent any runoff from entering the site from the west and south. The natural topography of the site cuts off any runoff from the east and north is Desert Pine Phase I.

FIRM Map and Soil Conditions

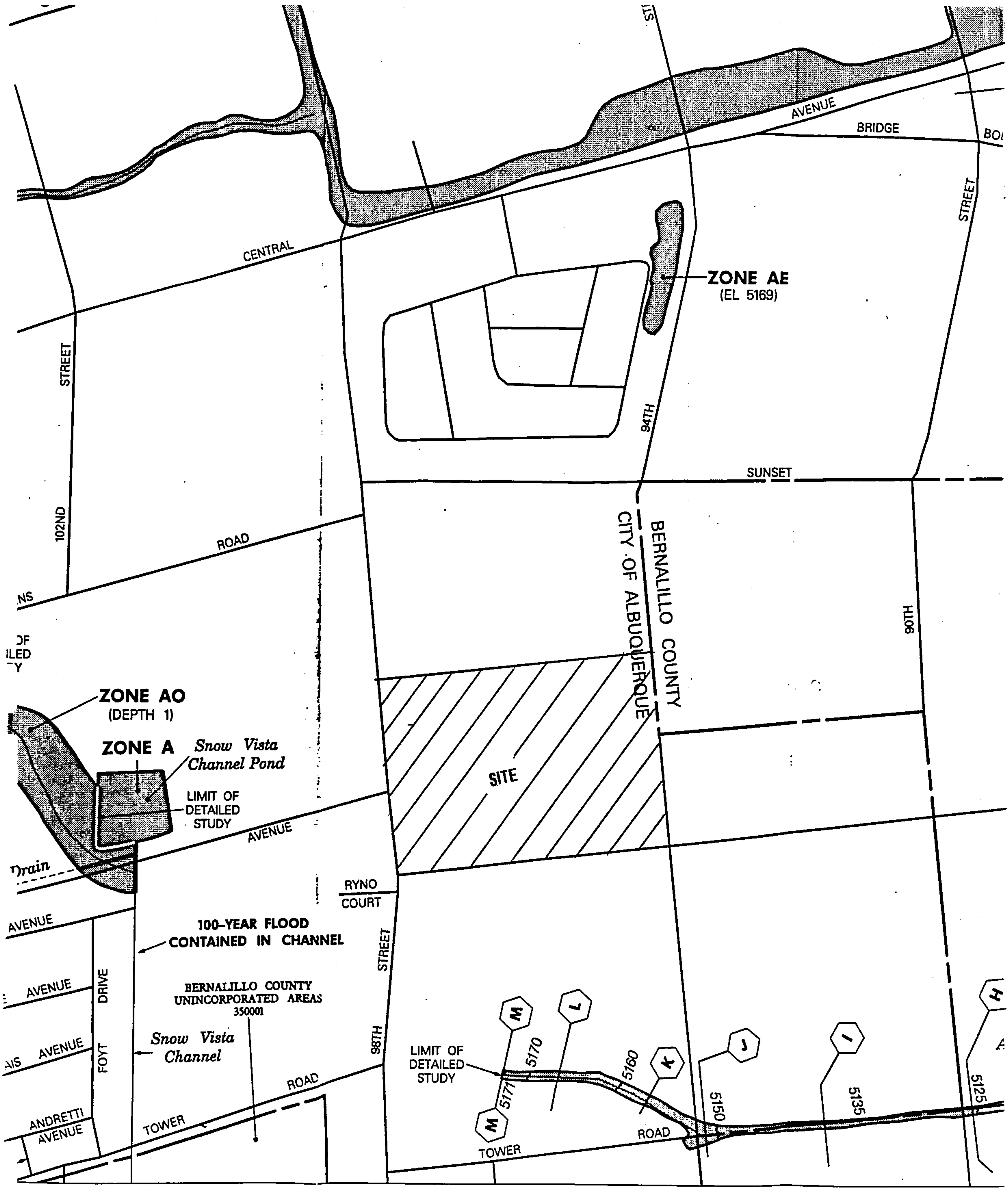
The site is located on FIRM Map section 35001C0328 D as shown on the attached excerpt. This map shows that the site does not lie within any 100 year flood plains.

The site contains one soil type from the Soil Conservation Service Soil Survey of Bernalillo County. The soil found on the site is a Pajarito loamy fine sand and has slow runoff, severe hazard of soil blowing and permeability is moderately rapid.

On-Site Drainage Management Plan

The proposed drainage management plan is to collect the developed flows in the adjacent streets. The flows will be conveyed via a new storm drain to a new temporary retention pond located in the SE corner near the 94th Street and Eucariz. In the future, when downstream ~~improvements~~ improvements are built, the retention pond will be removed.

The site is within the boundaries of SAD 222, which is in the process of being approved. The SAD will build downstream storm drain improvements. Until that time, a temporary retention pond



JOINS PANEL 0336

FIRM MAP 35001C0328 D

will be constructed to contain the developed flows from the site. When the improvements are in place, the pond will be removed and the area reclaimed for lots.

A new storm drain system will be constructed in Water Stone Road. This storm drain will convey the on-site drainage to the retention pond. This is a total of 48.66 cfs and a 100-year, 10-day volume of 2.85 ac-ft.

In the future, the retention pond will be removed and the seven lots under the pond will be reclaimed. The storm drain system has been designed for future and interim conditions. The future lines will be constructed at this time and will remain dry until the pond is removed. Plugs will be installed to ensure runoff does not enter the future lines. In the future, the plugs will be removed and relocated to the interim lines to block the lines that entered the pond. The future flow rate of 48.66 cfs includes all the on-site basins.

The half street basins of Eucariz (Basin 6) has a developed runoff flow of 2.23 cfs. A new single C storm drain inlet will be built in Eucariz west of 94th Street to capture this flow. The drop inlet will connect to a 18" stub provided by the development south of Eucariz and currently under review by DRC. Frank Wilson is the developer of the area south of Eucariz. Mr. Wilson indicated his temporary pond has capacity for the volume from Basin 6. Basin 7, the north half street basin of 94th Street will drain north towards Phase I. This basin will be captured in the storm drain built with Phase I. This storm drain was designed for this basin. Basin 8, the south half street basin of 94th Street will drain to Eucariz Street. This basin has a developed flow of 0.96 cfs. This basin will flow east in Eucariz Street to a small desilting pond built with Mr. Wilson's development. We will obtain a letter from Mr. Wilson verifying his concurrence with this solution.

If Pond 1 overflows the runoff will enter 94th Street. We do not anticipate this occurring unless there is a storm event greater than a 100-year storm. An emergency overflow has been installed to allow events greater than the 100-year storm to exit the pond and enter 94th Street.

OUT PARCEL (NOT A PART)

FU
AND
SEE GRADING AND AGE P

BASIN 7
Q=0.98 CFS

BASIN 1
Q=11.05 CFS

BASIN 2
Q=9.29 CFS

BASIN 3
Q=8.43 CFS

BASIN 4
Q=10.72 CFS

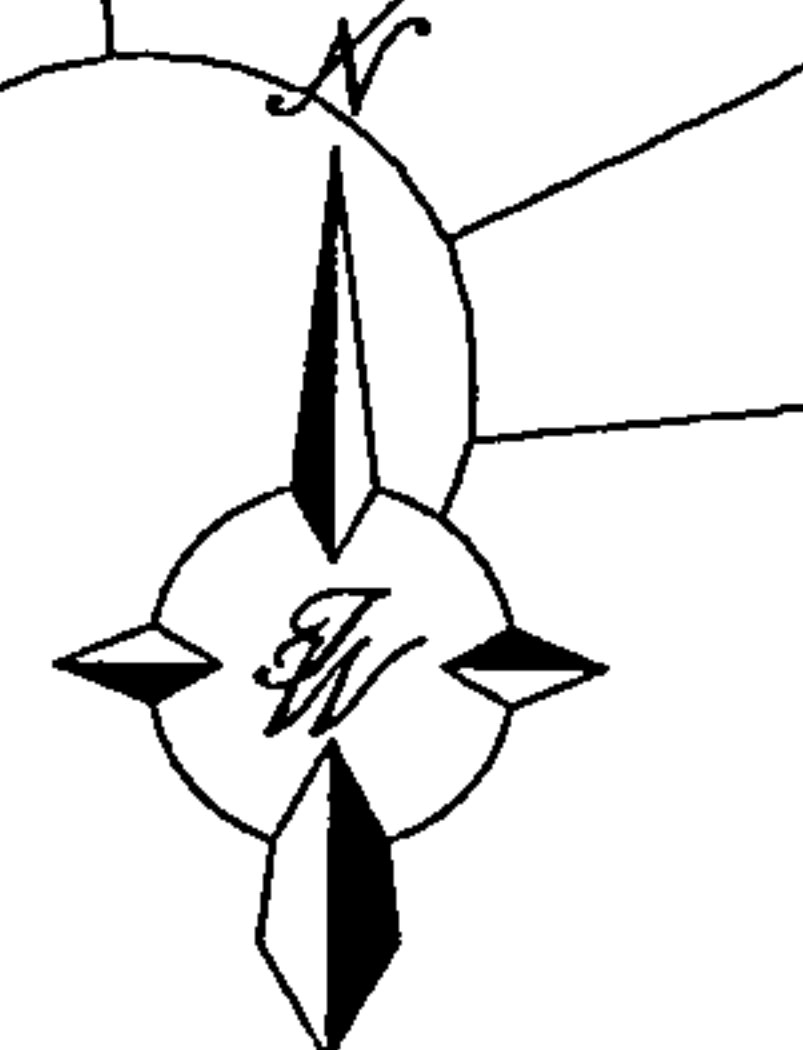
BASIN 8
Q=0.96 CFS

BASIN 5
Q=9.17 CFS

BASIN 6
Q=2.23 CFS

RETENTION POND

DEVELOPED BASIN LAYOUT



Calculations

The Weighted E method from the "City of Albuquerque Development Process Manual Volume 11 – Design Criteria, 1997 Revision" was used to calculate the runoff and volume for the site.

Summary

The site consists of five on-site basins and three off-site basins. The five on-site basins were included in the storm drain and pond capacity calculations. A retention pond will be located in the at the southwest corner of the site. The pond was designed for the 100-year-10-day volume. This pond will be removed in the future when the SAD 222 downstream improvements are constructed. Basins 6, 7, and 8 consist of the adjacent developed streets. Basin 6 will be captured in a storm drain and conveyed south through Mr. Wilson's development to a temporary retention pond. Basin 7 will drain north to Phase I and be captured in the existing storm drain in 94th Street. Basin 8 will drain south to Eucariz Road and then east to a temporary desilting pond. The required infrastructure list for this project has been included with this report and will be bonded with the project.

Runoff Calculations

Weighted E Method

Developed On-Site Basins

Basin	Area (sf)	Area (acres)	Treatment A		Treatment B		Treatment C		Treatment D		100-Year, 6-Hr			10-Year, 6-Hr			100-Year, 10-Day		
			%	(acres)	%	(acres)	%	(acres)	%	(acres)	Weighted E	Volume (ac-ft)	Flow cfs	Weighted E	Volume (ac-ft)	Flow cfs	Weighted E	Volume (ac-ft)	Flow cfs
1	150,473	3.45	0%	0	50%	1.73	0%	0	50%	1.73	1.320	0.380	11.05	0.730	0.210	6.30	1.320	0.592	11.05
2	126,488	2.90	0%	0	50%	1.45	0%	0	50%	1.45	1.320	0.319	9.29	0.730	0.177	5.30	1.320	0.497	9.29
3	114,733	2.63	0%	0	50%	1.32	0%	0	50%	1.32	1.320	0.290	8.43	0.730	0.160	4.81	1.320	0.451	8.43
4	145,946	3.35	0%	0	50%	1.68	0%	0	50%	1.68	1.320	0.369	10.72	0.730	0.204	6.11	1.320	0.574	10.72
5	124,854	2.87	0%	0	50%	1.43	0%	0	50%	1.43	1.320	0.315	9.17	0.730	0.174	5.23	1.320	0.491	9.17
6	30,390	0.70	0%	0	50%	0.35	0%	0	50%	0.35	1.320	0.077	2.23	0.730	0.042	1.27	1.320	0.119	2.23
7	9,759	0.22	0%	0	0%	0.00	0%	0	100%	0.22	1.970	0.037	0.98	1.240	0.023	0.65	1.970	0.064	0.98
8	9,595	0.22	0%	0	0%	0.00	0%	0	100%	0.22	1.970	0.036	0.96	1.240	0.023	0.64	1.970	0.063	0.96
Total	712,237	16.35		0		7.95				8.40		1.823	52.84		1.014	30.31		2.851	52.84

Undeveloped On-Site Basins

Basin	Area (sf)	Area (acres)	Treatment A		Treatment B		Treatment C		Treatment D		100-Year, 6-Hr			10-Year, 6-Hr			100-Year, 10-Day		
			%	(acres)	%	(acres)	%	(acres)	%	(acres)	Weighted E	Volume (ac-ft)	Flow cfs	Weighted E	Volume (ac-ft)	Flow cfs	Weighted E	Volume (ac-ft)	Flow cfs
U-1	712,237	16.35	0%	0	100%	16.35	0%	0	0%	0.00	0.670	0.913	33.19	0.220	0.300	12.43	0.670	0.913	33.19

Equations for Weighted E Method:

$$\text{Weighted E} = \frac{E_a \cdot A_a + E_b \cdot A_b + E_c \cdot A_c + E_d \cdot A_d}{\text{Total Area}}$$

$$\text{Volume} = \text{Weighted D} \cdot \text{Total Area}$$

$$\text{Flow} = Q_a \cdot A_a + Q_b \cdot A_b + Q_c \cdot A_c + Q_d \cdot A_d$$

$$\text{Volume (10-day)} = V_{360} + A_d \cdot (P_{10\text{days}} - P_{360}) / 12 \text{ in/ft}$$

Excess Precipitation, E (inches)		
Zone 1	100-Year	10 - Year
E _a	0.44	0.08
E _b	0.67	0.22
E _c	0.99	0.44
E _d	1.97	1.24

Peak Discharge (cfs/acre)		
Zone 1	100-Year	10 - Year
Q _a	1.29	0.24
Q _b	2.03	0.76
Q _c	2.87	1.49
Q _d	4.37	2.89

Depth (in) at 100-Year Storm	
	Zone 1
P ₃₆₀	2.2
P ₁₄₄₀	2.66
P _{4days}	3.12
P _{10days}	3.67

Pond Calculations

POND SUMMARY

	POND 1
Area of Pond Top (SF)	22566.5
Area of Pond Bottom (SF)	4963.19
Depth of Pond (FT)	10.00
Volume (CF)	137,648.45
Volume (AC-FT)	3.1600
Volume Required (CF)	124,189.56
Volume Required (AC-FT)	2.8510
Volume Provided (CF)	137,648.45
Volume Provided (AC-FT)	3.1600

Pond 1 includes developed basins 1-8

VOLUME OF POND

$$V = (A_t + A_b) / 2 * D$$

A_t = Area of Top

A_b = Area of Bottom

D = Depth

Storm Drain Calculations

Pipe Capacity

Pipe	D	Slope	Area	R	Q Provided	Q Required	Velocity
	(in)	(%)	(ft ²)		(cfs)	(cfs)	(ft/s)
L1	30	1	4.91	0.625	41.13	24.33	4.96
L2	36	1	7.07	0.75	66.88	48.66	6.88
L3	54	0.212	15.90	1.125	90.79	72.31	4.55
L4	54	0.212	15.90	1.125	90.79	120.97	7.61
L5	18	1	1.77	0.375	10.53	2.23	1.26
L6	36	1	7.07	0.75	66.88	48.66	6.88

L3 = Phase 1 including 94th Street and Sunset Gardens

L4 = 72.31 + 48.66 = 120.97

L6 = Basins 1-5 = 48.66 cfs

* Pipe flowing under pressure, see Phase 1 for calculations.

Manning's Equation:

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

A = Area

R = D/4

S = Slope

n = 0.013

DROP INLET CALCULATIONS

Analysis Point	Type of Inlet	Area (SF)	Q (CFS)	H (FT)	Allowable H (FT)
7	Double 'C'	8.06	24.33	0.3930	0.67
7	Double 'C'	8.06	24.33	0.3930	0.67

*sump
clogging*

AP-7 = Basins 1-5 = 48.66 cfs

STORM DRAIN CALCULATIONS

Analysis Point	Pipe Size (in)	Area (SF)	Q (CFS)	H (FT)	Allowable H (FT)
CB-1	30	4.91	24.33	1.0596	4
CB-2	36	7.07	48.6	2.0390	4
CB-3	18	1.77	2.23	0.0687	4

ORIFICE EQUATION

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

$$C = 0.6$$

$$g = 32.2$$

STORM DROP INLET-EFFECTIVE AREA Double 'C'

Area at the grate:

$$\begin{aligned} L &= 88.75'' - 2(6'' \text{ ends}) - 6'' \text{ center piece} - 14(1/2'' \text{ middle bars}) \\ &= 63.75'' \\ &= 5.3125' \end{aligned}$$

$$\begin{aligned} W &= 25.5'' - 13(1/2'' \text{ middle bars}) \\ &= 19'' \\ &= 1.583' \end{aligned}$$

$$\begin{aligned} \text{Area} &= 1.583' \times 5.3125' \\ &= 8.41 \text{ ft}^2 \end{aligned}$$

$$\begin{aligned} \text{Effective Area} &= \cancel{8.41} - 8.41 (0.5 \text{ clogging factor}) \\ &= 4.21 \text{ ft}^2 \text{ at the grate} \end{aligned}$$

50%

Area at the throat:

$$\begin{aligned} L &= 88-3/4'' \\ &= 7.3958' \end{aligned}$$

$$\begin{aligned} H &= 10-3/4'' - 4-1/2'' \\ &= 6-1/4'' \\ &= 0.5208' \end{aligned}$$

$$\begin{aligned} \text{Area} &= 7.3958' \times 0.5208' \\ &= 3.85 \text{ ft}^2 \text{ at the throat} \end{aligned}$$

Total Area:

$$\begin{aligned} \text{Area} &= 4.21_{\text{grate}} + 3.85_{\text{throat}} \\ &= 8.06 \text{ ft}^2 \end{aligned}$$

Street Capacity Calculations



ANALYSIS POINT EXHIBIT

Street Capacity Calculations

AP-1 with Q=11.05
Sandstone Drive
28' F-F Street Section with 4" curb
Slope= 0.83%

For water depths less than 0.0625 feet

Y= Water depth
Area = $16 \cdot Y^2$
P= $\text{SQRT}(1025 \cdot Y^2) + Y$
n= 0.017

.0083

Depth (ft)	Area (ft ²)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.010	0.002	0.33	0.00	0.00	0.00	0.23	0.00	0.40	0.0026
0.020	0.006	0.66	0.01	0.00	0.00	0.36	0.01	0.45	0.0062
0.025	0.010	0.83	0.01	0.00	0.01	0.42	0.01	0.47	0.0082
0.035	0.020	1.16	0.02	0.01	0.02	0.53	0.02	0.50	0.0126
0.045	0.032	1.49	0.02	0.02	0.04	0.62	0.03	0.52	0.0173
0.052	0.043	1.72	0.03	0.03	0.06	0.68	0.04	0.53	0.0208
0.060	0.058	1.98	0.03	0.04	0.09	0.75	0.05	0.54	0.0249
0.063	0.063	2.06	0.03	0.05	0.10	0.77	0.05	0.55	0.0262

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

Y1= Y-0.0625
A2= $A1 + 2 \cdot Y1 + 25 \cdot Y1^2$
P2= $P1 + \text{SQRT}(2501 \cdot Y1^2) + Y1$

Depth (ft)	Area (ft ²)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.063	0.064	2.09	0.03	0.05	0.10	0.78	0.05	0.54	0.0264
0.100	0.173	3.98	0.04	0.17	0.34	0.98	0.10	0.55	0.0423
0.130	0.311	5.51	0.06	0.37	0.73	1.17	0.15	0.57	0.0589
0.160	0.495	7.04	0.07	0.67	1.34	1.36	0.22	0.60	0.0772
0.200	0.810	9.08	0.09	1.29	2.58	1.59	0.32	0.63	0.1035
0.255	1.374	11.88	0.12	2.60	5.19	1.89	0.48	0.66	0.1424
0.280	1.680	13.16	0.13	3.39	6.79	2.02	0.57	0.67	0.1609
0.303	1.983	14.31	0.14	4.23	8.46	2.13	0.65	0.68	0.1779

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

Y2= Y - 0.3025
A3= $A2 + Y2 \cdot 14$
P3= $P2 + Y2$

Depth (ft)	Area (ft ²)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.303	1.990	14.31	0.14	4.25	8.51	2.14	0.65	0.68	0.1786
0.304	2.002	14.31	0.14	4.30	8.59	2.15	0.65	0.69	0.1798
0.305	2.022	14.31	0.14	4.37	8.74	2.16	0.66	0.69	0.1817
0.308	2.054	14.31	0.14	4.48	8.97	2.18	0.67	0.69	0.1849
0.313	2.123	14.32	0.15	4.73	9.47	2.23	0.70	0.70	0.1916
0.318	2.204	14.32	0.15	5.04	10.08	2.29	0.73	0.71	0.1996
0.327	2.330	14.33	0.16	5.53	11.05	2.37	0.78	0.73	0.2121
0.333	2.410	14.34	0.17	5.84	11.69	2.43	0.81	0.74	0.2200

Street Capacity Calculations

AP-2 with Q=9.29
Ridge Stone Drive
28' F-F Street Section with 4" curb
Slope= 1.06%

For water depths less than 0.0625 feet

Y= Water depth
Area = $16 \cdot Y^2$
P= $\text{SQRT}(1025 \cdot Y^2) + Y$
n= 0.017

Depth (ft)	Area (ft ²)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.010	0.002	0.33	0.00	0.00	0.00	0.26	0.00	0.45	0.0031
0.020	0.006	0.66	0.01	0.00	0.01	0.41	0.01	0.51	0.0075
0.025	0.010	0.83	0.01	0.00	0.01	0.47	0.01	0.53	0.0100
0.035	0.020	1.16	0.02	0.01	0.02	0.59	0.02	0.56	0.0153
0.045	0.032	1.49	0.02	0.02	0.05	0.70	0.03	0.58	0.0209
0.052	0.043	1.72	0.03	0.03	0.07	0.77	0.04	0.60	0.0251
0.060	0.058	1.98	0.03	0.05	0.10	0.85	0.05	0.61	0.0300
0.063	0.063	2.06	0.03	0.05	0.11	0.87	0.05	0.62	0.0316

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

Y1= Y-0.0625
A2= $A1 + 2 \cdot Y1 + 25 \cdot Y1^2$
P2= $P1 + \text{SQRT}(2501 \cdot Y1^2) + Y1$

Depth (ft)	Area (ft ²)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.063	0.064	2.09	0.03	0.06	0.11	0.88	0.06	0.62	0.0317
0.100	0.173	3.98	0.04	0.19	0.38	1.11	0.11	0.62	0.0509
0.130	0.311	5.51	0.06	0.41	0.83	1.33	0.17	0.65	0.0707
0.160	0.495	7.04	0.07	0.76	1.52	1.53	0.25	0.68	0.0926
0.200	0.810	9.08	0.09	1.46	2.91	1.80	0.36	0.71	0.1239
0.255	1.374	11.88	0.12	2.93	5.87	2.14	0.54	0.75	0.1700
0.300	1.941	14.15	0.14	4.64	9.29	2.39	0.72	0.77	0.2094
0.303	1.983	14.31	0.14	4.78	9.56	2.41	0.73	0.77	0.2121

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

Y2= Y - 0.3025
A3= $A2 + Y2 \cdot 14$
P3= $P2 + Y2$

Depth (ft)	Area (ft ²)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.303	1.990	14.31	0.14	4.81	9.61	2.42	0.73	0.77	0.2129
0.304	2.002	14.31	0.14	4.86	9.71	2.43	0.74	0.78	0.2143
0.305	2.022	14.31	0.14	4.94	9.87	2.44	0.75	0.78	0.2166
0.310	2.088	14.31	0.15	5.21	10.41	2.49	0.77	0.79	0.2241
0.313	2.123	14.32	0.15	5.35	10.70	2.52	0.79	0.79	0.2282
0.320	2.228	14.32	0.16	5.80	11.59	2.60	0.83	0.81	0.2403
0.324	2.282	14.33	0.16	6.03	12.07	2.64	0.86	0.82	0.2466
0.333	2.410	14.34	0.17	6.60	13.21	2.74	0.91	0.84	0.2614

Street Capacity Calculations

AP-3 with Q=8.43
River Stone Drive
28' F-F Street Section with 4" curb
Slope= 1.31%

For water depths less than 0.0625 feet

Y= Water depth
 Area = $16 \cdot Y^2$
 P= $\text{SQRT}(1025 \cdot Y^2) + Y$
 n= 0.017

Depth (ft)	Area (ft ²)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.010	0.002	0.33	0.00	0.00	0.00	0.29	0.00	0.50	0.0037
0.020	0.006	0.66	0.01	0.00	0.01	0.45	0.01	0.57	0.0089
0.025	0.010	0.83	0.01	0.01	0.01	0.53	0.01	0.59	0.0118
0.035	0.020	1.16	0.02	0.01	0.03	0.66	0.02	0.62	0.0179
0.045	0.032	1.49	0.02	0.03	0.05	0.78	0.04	0.65	0.0245
0.052	0.043	1.72	0.03	0.04	0.07	0.86	0.04	0.66	0.0294
0.060	0.058	1.98	0.03	0.05	0.11	0.95	0.06	0.68	0.0351
0.063	0.063	2.06	0.03	0.06	0.12	0.97	0.06	0.69	0.0369

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

Y1= Y-0.0625
 A2= $A1 + 2 \cdot Y1 + 25 \cdot Y1^2$
 P2= $P1 + \text{SQRT}(2501 \cdot Y1^2) + Y1$

Depth (ft)	Area (ft ²)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.063	0.064	2.09	0.03	0.06	0.12	0.97	0.06	0.68	0.0371
0.100	0.173	3.98	0.04	0.21	0.43	1.24	0.12	0.69	0.0595
0.130	0.311	5.51	0.06	0.46	0.92	1.47	0.19	0.72	0.0825
0.160	0.495	7.04	0.07	0.84	1.69	1.71	0.27	0.75	0.1079
0.200	0.810	9.08	0.09	1.62	3.24	2.00	0.40	0.79	0.1441
0.255	1.374	11.88	0.12	3.26	6.52	2.37	0.61	0.83	0.1974
0.279	1.666	13.10	0.13	4.21	8.43	2.53	0.71	0.84	0.2215
0.303	1.983	14.31	0.14	5.31	10.62	2.68	0.81	0.86	0.2459

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

Y2= Y - 0.3025
 A3= $A2 + Y2 \cdot 14$
 P3= $P2 + Y2$

Depth (ft)	Area (ft ²)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.303	1.990	14.31	0.14	5.34	10.69	2.69	0.81	0.86	0.2468
0.304	2.002	14.31	0.14	5.40	10.80	2.70	0.82	0.86	0.2485
0.305	2.022	14.31	0.14	5.49	10.97	2.71	0.83	0.87	0.2511
0.310	2.088	14.31	0.15	5.79	11.57	2.77	0.86	0.88	0.2597
0.313	2.123	14.32	0.15	5.95	11.90	2.80	0.88	0.88	0.2643
0.320	2.228	14.32	0.16	6.44	12.89	2.89	0.93	0.90	0.2782
0.324	2.282	14.33	0.16	6.71	13.42	2.94	0.95	0.91	0.2854

Street Capacity Calculations

AP-4 with Q=10.72
Treasure Stone Drive
28' F-F Street Section with 4" curb
Slope= 0.60%

For water depths less than 0.0625 feet

Y= Water depth
 Area = $16 \cdot Y^2$
 P= $\text{SQRT}(1025 \cdot Y^2) + Y$
 n= 0.017

Depth (ft)	Area (ft ²)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.010	0.002	0.33	0.00	0.00	0.00	0.19	0.00	0.34	0.0020
0.020	0.006	0.66	0.01	0.00	0.00	0.31	0.01	0.38	0.0048
0.025	0.010	0.83	0.01	0.00	0.01	0.36	0.01	0.40	0.0063
0.035	0.020	1.16	0.02	0.01	0.02	0.45	0.02	0.42	0.0097
0.045	0.032	1.49	0.02	0.02	0.03	0.53	0.02	0.44	0.0134
0.052	0.043	1.72	0.03	0.03	0.05	0.58	0.03	0.45	0.0161
0.060	0.058	1.98	0.03	0.04	0.07	0.64	0.04	0.46	0.0193
0.063	0.063	2.06	0.03	0.04	0.08	0.66	0.04	0.46	0.0203

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

Y1= Y-0.0625
 A2= $A1 + 2 \cdot Y1 + 25 \cdot Y1^2$
 P2= $P1 + \text{SQRT}(2501 \cdot Y1^2) + Y1$

Depth (ft)	Area (ft ²)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.063	0.064	2.09	0.03	0.04	0.08	0.66	0.04	0.46	0.0204
0.100	0.173	3.98	0.04	0.14	0.29	0.84	0.08	0.47	0.0327
0.130	0.311	5.51	0.06	0.31	0.62	1.00	0.13	0.49	0.0457
0.160	0.495	7.04	0.07	0.57	1.14	1.15	0.18	0.51	0.0601
0.200	0.810	9.08	0.09	1.10	2.19	1.35	0.27	0.53	0.0809
0.255	1.374	11.88	0.12	2.21	4.42	1.61	0.41	0.56	0.1116
0.279	1.666	13.10	0.13	2.85	5.70	1.71	0.48	0.57	0.1256
0.303	1.983	14.31	0.14	3.59	7.19	1.81	0.55	0.58	0.1397

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

Y2= Y - 0.3025
 A3= $A2 + Y2 \cdot 14$
 P3= $P2 + Y2$

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.303	1.990	14.31	0.14	3.62	7.23	1.82	0.55	0.58	0.1402
0.304	2.002	14.31	0.14	3.65	7.31	1.83	0.55	0.58	0.1412
0.305	2.022	14.31	0.14	3.71	7.43	1.84	0.56	0.59	0.1428
0.310	2.088	14.31	0.15	3.92	7.83	1.88	0.58	0.59	0.1480
0.313	2.123	14.32	0.15	4.03	8.05	1.90	0.59	0.60	0.1507
0.320	2.228	14.32	0.16	4.36	8.72	1.96	0.63	0.61	0.1591
0.324	2.282	14.33	0.16	4.54	9.08	1.99	0.64	0.62	0.1634
0.333	2.410	14.34	0.17	4.97	9.94	2.06	0.69	0.63	0.1736

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

Y3= Y - 0.333

A4= A3 + 14 * Y3 + 25 * Y3^2

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

Depth (ft)	Area (ft^2)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.335	2.438	14.44	0.17	5.04	10.08	2.07	0.69	0.63	0.1747
0.343	2.558	14.86	0.17	5.36	10.72	2.10	0.72	0.63	0.1792
0.380	3.123	16.69	0.19	6.92	13.84	2.22	0.84	0.63	0.1998
0.420	3.809	18.67	0.20	8.94	17.88	2.35	0.98	0.64	0.2233
0.460	4.597	20.70	0.22	11.41	22.83	2.48	1.14	0.64	0.2486
0.504	5.535	22.89	0.24	14.54	29.09	2.63	1.32	0.65	0.2769
0.513	5.740	23.34	0.25	15.25	30.51	2.66	1.36	0.65	0.2828

Street Capacity Calculations

AP-5 with Q=23.55 cfs
Water Stone Road
28' F-F Street Section with 8" curb
Slope= 4.25%

For water depths less than 0.125 feet

Y= Water depth

Area = $8 \cdot Y^2$

P= $\text{SQRT}(257 \cdot Y^2) + Y$

n= 0.017

Depth (ft)	Area (ft ²)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.00	0.17	0.00	0.00	0.00	0.51	0.01	0.89	0.009
0.02	0.00	0.34	0.01	0.00	0.01	0.80	0.02	1.00	0.020
0.04	0.01	0.68	0.02	0.02	0.03	1.27	0.05	1.12	0.047
0.06	0.03	1.02	0.03	0.05	0.10	1.67	0.10	1.20	0.076
0.08	0.05	1.36	0.04	0.10	0.21	2.02	0.16	1.26	0.108
0.1	0.08	1.70	0.05	0.19	0.38	2.35	0.23	1.31	0.142
0.12	0.12	2.04	0.06	0.31	0.61	2.65	0.32	1.35	0.176
0.125	0.13	2.13	0.06	0.34	0.68	2.72	0.34	1.36	0.185

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

Y1= Y-0.125

A2= $A1 + 2 \cdot Y1 + 25 \cdot Y1^2$

P2= $P1 + \text{SQRT}(2501 \cdot Y1^2) + Y1$

Depth (ft)	Area (ft ²)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.13	0.14	2.38	0.06	0.36	0.72	2.67	0.35	1.30	0.183
0.16	0.23	3.91	0.06	0.61	1.21	2.69	0.43	1.18	0.200
0.2	0.42	5.95	0.07	1.27	2.54	3.05	0.61	1.20	0.255
0.24	0.69	8.00	0.09	2.40	4.81	3.50	0.84	1.26	0.324
0.28	1.04	10.04	0.10	4.11	8.21	3.96	1.11	1.32	0.401
0.32	1.47	12.08	0.12	6.47	12.95	4.42	1.41	1.38	0.483
0.34	1.71	13.10	0.13	7.94	15.87	4.64	1.58	1.40	0.525
0.365	2.05	14.37	0.14	10.04	20.09	4.91	1.79	1.43	0.579

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

Y2= Y - 0.365

A3= $A2 + Y2 \cdot 14$

P3= $P2 + Y2$

Depth (ft)	Area (ft ²)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.37	2.12	14.38	0.15	10.62	21.24	5.02	1.86	1.45	0.598
0.380	2.25	14.39	0.16	11.78	23.55	5.23	1.99	1.50	0.636
0.46	3.32	14.46	0.23	22.45	44.89	6.76	3.08	1.76	0.932
0.50	3.94	14.51	0.27	29.71	59.43	7.55	3.78	1.88	1.104
0.54	4.50	14.55	0.31	37.02	74.05	8.24	4.45	1.98	1.262
0.58	5.06	14.59	0.35	44.94	89.89	8.89	5.16	2.06	1.422
0.63	5.76	14.64	0.39	55.66	111.32	9.67	6.09	2.15	1.624
0.667	6.27	14.67	0.43	64.15	128.30	10.23	6.82	2.21	1.775

Street Capacity Calculations

AP-6 with Q=37.94 cfs
 Water Stone Road
 28' F-F Street Section with 8" curb
 Slope= 2.93%

For water depths less than 0.125 feet

Y= Water depth
 Area = $8 \cdot Y^2$
 P= $\text{SQRT}(257 \cdot Y^2) + Y$
 n= 0.017

0.283

Depth (ft)	Area (ft ²)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.01	0.00	0.17	0.00	0.00	0.00	0.42	0.00	0.74	0.007
0.02	0.00	0.34	0.01	0.00	0.00	0.67	0.01	0.83	0.016
0.04	0.01	0.68	0.02	0.01	0.03	1.06	0.04	0.93	0.036
0.06	0.03	1.02	0.03	0.04	0.08	1.39	0.08	1.00	0.060
0.08	0.05	1.36	0.04	0.09	0.17	1.68	0.13	1.05	0.085
0.1	0.08	1.70	0.05	0.16	0.31	1.95	0.19	1.09	0.111
0.12	0.12	2.04	0.06	0.25	0.51	2.20	0.26	1.12	0.139
0.125	0.13	2.13	0.06	0.28	0.57	2.26	0.28	1.13	0.146

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

Y1= Y-0.125
 A2= $A1 + 2 \cdot Y1 + 25 \cdot Y1^2$
 P2= $P1 + \text{SQRT}(2501 \cdot Y1^2) + Y1$

Depth (ft)	Area (ft ²)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.13	0.14	2.38	0.06	0.30	0.60	2.21	0.29	1.08	0.144
0.16	0.23	3.91	0.06	0.50	1.01	2.23	0.36	0.98	0.157
0.2	0.42	5.95	0.07	1.05	2.11	2.54	0.51	1.00	0.200
0.24	0.69	8.00	0.09	1.99	3.99	2.91	0.70	1.05	0.255
0.28	1.04	10.04	0.10	3.41	6.82	3.29	0.92	1.10	0.316
0.32	1.47	12.08	0.12	5.38	10.75	3.67	1.17	1.14	0.381
0.34	1.71	13.10	0.13	6.59	13.18	3.85	1.31	1.16	0.415
0.365	2.05	14.37	0.14	8.34	16.68	4.08	1.49	1.19	0.458

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

Y2= Y - 0.365
 A3= $A2 + Y2^2 \cdot 14$
 P3= $P2 + Y2$

Depth (ft)	Area (ft ²)	P (ft)	R (A/P)	Q (cfs)	2Q (cfs)	Vel (ft/s)	D*V	Fr	D2 (ft)
0.37	2.12	14.38	0.15	8.82	17.64	4.17	1.54	1.21	0.474
0.400	2.54	14.41	0.18	11.91	23.82	4.70	1.88	1.31	0.567
0.46	3.36	14.47	0.23	18.97	37.94	5.65	2.59	1.47	0.752
0.50	3.94	14.51	0.27	24.67	49.34	6.27	3.13	1.56	0.883
0.54	4.50	14.55	0.31	30.74	61.48	6.84	3.69	1.64	1.011
0.58	5.06	14.59	0.35	37.32	74.63	7.38	4.28	1.71	1.141
0.63	5.76	14.64	0.39	46.22	92.43	8.03	5.06	1.78	1.304
0.667	6.27	14.67	0.43	53.27	106.53	8.49	5.66	1.83	1.427

Infrastructure List

DRAINAGE INFORMATION SHEET

PROJECT TITLE: Desert Pine Phase II ZONE ATLAS/DRNG. FILE #: L-9
DRB #: _____ EPC #: _____ WORK ORDER #: _____

LEGAL DESCRIPTION Lots 33, 34, 35 Town of Atrisco Grant Unit 2
CITY ADDRESS: North of Eucariz, between 98th Street and 94 Street

ENGINEERING FIRM: TIERRA WEST, LLC CONTACT: RONALD R. BOHANNAN OR SARA LAVY
ADDRESS: 8509 JEFFERSON NE PHONE: (505) 858-3100
CITY, STATE: ALBUQUERQUE, NM ZIP CODE: 87113

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

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

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

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

CHECK TYPE OF SUBMITTAL:

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

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ☐ YES
- ☒ NO
- ☐ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

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

DATE SUBMITTED: 31-Aug-01 BY: Sara Lavy

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

1. **Conceptual Grading and Drainage Plans:** Required for approval of Site Development Plans greater than five (5) acres 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.

Current Date: _____
Project Number: _____

FIGURE 12

INFRASTRUCTURE LIST

EXHIBIT "A"
TO SUBDIVISION IMPROVEMENTS AGREEMENT
DEVELOPMENT REVIEW BOARD (D.R.B.) REQUIRED INFRASTRUCTURE LIST

Date Submitted: _____
Date Site Plan Approved: _____
Date Preliminary Plat Approved: _____
Date Preliminary Plat Expires: _____
DRB Project No.: _____
DRB Application No.: _____

Desert Pine Subdivision Phase II
PROPOSED NAME OF PLAT AND/OR SITE DEVELOPMENT PLAN

Tracts 33, 34 and 35 Town of Atrisco Grant, Unit 2
EXISTING LEGAL DESCRIPTION PRIOR TO PLATTING ACTION

Following is a summary of PUBLIC/PRIVATE infrastructure required to be constructed or financially guaranteed for the above development. This Listing is not necessarily a complete listing. During the SIA process and/or in the review of the construction drawings, if the DRC Chair determines that appurtenant items and/or unforeseen items have not been included in the infrastructure listing, the DRC Chair may include those items in the listing and related financial guarantee. Likewise, if the DRC Chair determines that appurtenant or non-essential items can be deleted from the listing, those items may be deleted as well as the related portions of the financial guarantees. All such revisions require approval by the DRC Chair, the User Department and agent/owner. If such approvals are obtained, these revisions to the listing will be incorporated administratively. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility will be required as a condition of project acceptance and close out by the City.

SIA Sequence #	COA DRC Project #	Size	Type of Improvement	Location	From	To	Private Inspector	City Inspector	City Cnst Engineer
		28' F-F	Residential Paving, Curb and Gutter, 4' Sidewalks (Both Sides)	Sandstone Drive	Gemstone Road	Eucariz Road	/	/	/
		28' F-F	Residential Paving, Curb and Gutter, 4' Sidewalks (Both Sides)	Ridge Stone Drive	Gemstone Road	Water Stone Road	/	/	/
		28' F-F	Residential Paving, Curb and Gutter, 4' Sidewalks (Both Sides)	River Stone Drive	North Property Line	Water Stone Road	/	/	/
		28' F-F	Residential Paving, Curb and Gutter, 4' Sidewalks (Both Sides)	Treasure Stone Drive	River Stone Drive	Water Stone Road	/	/	/
		24' F-E	Residential Paving, Curb and Gutter, 4' Sidewalks (South Side Only)	Gemstone Road	West Property Line	River Stone Drive	/	/	/
		28' F-F	Residential Paving, Curb and Gutter, 4' Sidewalks (Both Sides)	Water Stone Road	Sandstone Drive	94th Street	/	/	/
		16' F-E	Arterial Paving, Curb and Gutter, 6' Sidewalk (North Side Only)	Eucariz Road	98th Street	94th Street	/	/	/
		24' F-E	Arterial Paving, Curb and Gutter, 6' Sidewalk (West Side Only)	94th Street	North Property Line	Eucariz Road	/	/	/

SIA Sequence #	COA DRC Project #	Size	Type of Improvement	Location	From	To	Private Inspector	City Inspector	City Cnst Engineer
		8"	SAS Gravity Line	Sandstone Drive	Eucariz Road	Gemstone Road	/	/	/
		8"	SAS Gravity Line	Ridge Stone Drive	Water Stone Road	Gemstone Road	/	/	/
		8"	SAS Gravity Line	River Stone Drive	Water Stone Road	Gemstone Road	/	/	/
		8"	SAS Gravity Line	Treasure Stone Drive	River Stone Drive	Water Stone Road	/	/	/
		8"	SAS Gravity Line	Gemstone Road	West Property Line	River Stone Drive	/	/	/
		8"	SAS Gravity Line	Water Stone Road	Sandstone Drive	94th Street	/	/	/
		8"	Water PVC Line	Sandstone Drive	Eucariz Road	Gemstone Road	/	/	/
		6"	Water PVC Line	Ridge Stone Drive	Water Stone Road	Gemstone Road	/	/	/
		8"	Water PVC Line	River Stone Drive	Gemstone Road	Treasure Stone Drive	/	/	/
		6"	Water PVC Line	River Stone Drive	Treasure Stone Drive	Water Stone Road	/	/	/
		8"	Water PVC Line	Treasure Stone Drive	River Stone Drive	Water Stone Road	/	/	/
		8"	Water PVC Line	Gemstone Road	Sandstone Drive	River Stone Drive	/	/	/
		6"	Water PVC Line	Water Stone Drive	Sandstone Drive	Treasure Stone Drive	/	/	/
		6"	Water PVC Line	Water Stone Drive	Treasure Stone Drive	94th Street	/	/	/
		36"	RCP Storm Sewer	Water Stone Drive	Treasure Stone Drive	94th Street	/	/	/

SIA Sequence #	COA DRC Project #	Size	Type of Improvement	Location	From	To	Private Inspector	City Inspector	City Cnst Engineer
		54"	RCP Storm Sewer	94th Street	North Property Line	Eucariz Road	/	/	/
			Water Infrastructure to include Valves, Fittings, Valve Boxes and Fire Hydrants as required.						
			Sanitary Sewer to include Manholes and Service Connections as required.						
			Catch Basins and RCP connections included with Storm Sewer						
			Temporary Retention Pond						
			Residential Street Lights per DPM.						
			Certified Grading and Drainage with Private Walls and Private Drainage (Non- work order item) Required for SIA/Financial Guarantee Release.						

PAGE 2 OF 3

NOTES

1 _____

2 _____

3 _____

AGENT / OWNER	DEVELOPMENT REVIEW BOARD MEMBER APPROVALS		
<u>Ronald R. Bohannon</u> NAME (print)			
<u>Tierra West LLC</u> FIRM			
<u>[Signature]</u> 8/3/01 SIGNATURE - date	DRB CHAIR - date	PAR 8 & GENERAL SERVICES - date	
	TRANSPORTATION DEVELOPMENT - date	AMAFCA - date	
	UTILITY DEVELOPMENT - date	_____ - date	
	CITY ENGINEER - date	_____ - date	
MAXIMUM TIME ALLOWED TO CONSTRUCT THE IMPROVEMENTS WITHOUT A DRB EXTENSION: _____			
DESIGN REVIEW COMMITTEE REVISIONS			

REVISION	DATE	DRC CHAIR	USER DEPARTMENT	AGENT / OWNER

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