

File

Walmart / Rio Bravo

FEASIBILITY DESIGN

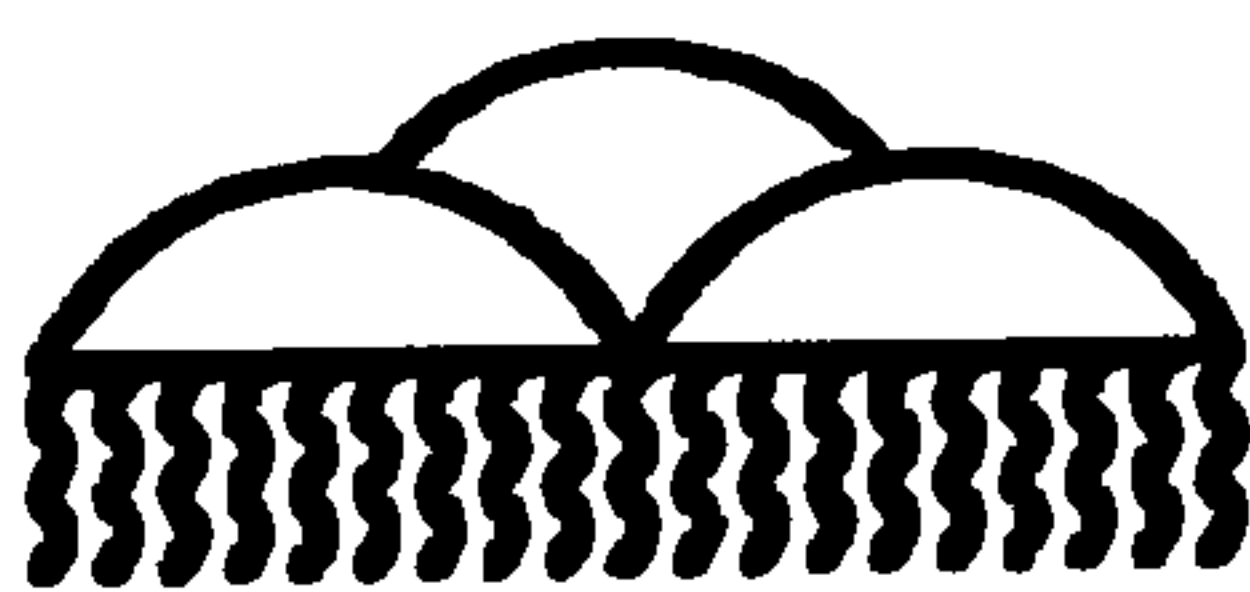
P-16/D004A

FOR

REPLACEMENT CULVERTS

**ARENAL MAIN CANAL/RIO BRAVO BOULEVARD
CROSSING AT ISLETA DRAIN**

Prepared For:



Albuquerque Metropolitan Arroyo
Flood Control Authority
2600 Prospect, NE
Albuquerque, NM 87107

Tierra West, LLC

505-858-3100

Left message w/ Ron

1-14-2016 ccc

Prepared By:



5501 Jefferson Blvd., NE, Suite 200 Albuquerque, NM 87109
Phone: (505) 243-7300 Fax: (505) 243-7400 E-mail: rti@nm.net

February 2004

INTRODUCTION

This report describes a feasibility design for the proposed replacement culverts which pass under the Arenal Main Canal and Rio Bravo Boulevard (linking drain segments Isleta 15 to Isleta 16) initiated by the Walmart proposal to cover approximately 300 feet of the Isleta Drain downstream (south) of Rio Bravo. See Figure 1. This proposal has significantly altered the recommended improvements for this location in the Southwest Valley Feasibility Study, which were two 6'x10' box culverts approximately 400 feet in length.

HYDRAULIC DESIGN

The recommended improvement to pass the design flow of 560 cfs was based upon the results of K-ROUTE modeling. A number of iterations were performed to determine the water surface elevations within the Isleta Drain and the optimum culverts to pass the required flow without overtopping the drain. The K-ROUTE model input includes a culvert outflow rating curve derived from the New Mexico State Highway and Transportation Department (NMSHTD) nomographs contained within "Drainage Manual-Volume II, Hydraulics, Sedimentation and Erosion." Initial iterations showed that the 6' high culvert outlet would be submerged. Therefore, Chart 15, page A-21 of Volume II, for concrete box culverts flowing full along with a submerged outlet was selected. Using 1-foot of differential head, based upon previous assumptions from the Southwest Valley study, Chart 15 indicated that a minimum of two 6'x10' box culverts would be required, and they will discharge 320 cfs per box, or a total of 640 cfs. See Figure 2.

The Walmart proposal of covering approximately 300 additional feet of the Isleta Drain will extend the required length of the culverts by this same amount. By extending the length of the culverts, the head losses are increased and the recommended improvement of two 6'x10' box culverts is no longer adequate to pass the design flow of 560 cfs.

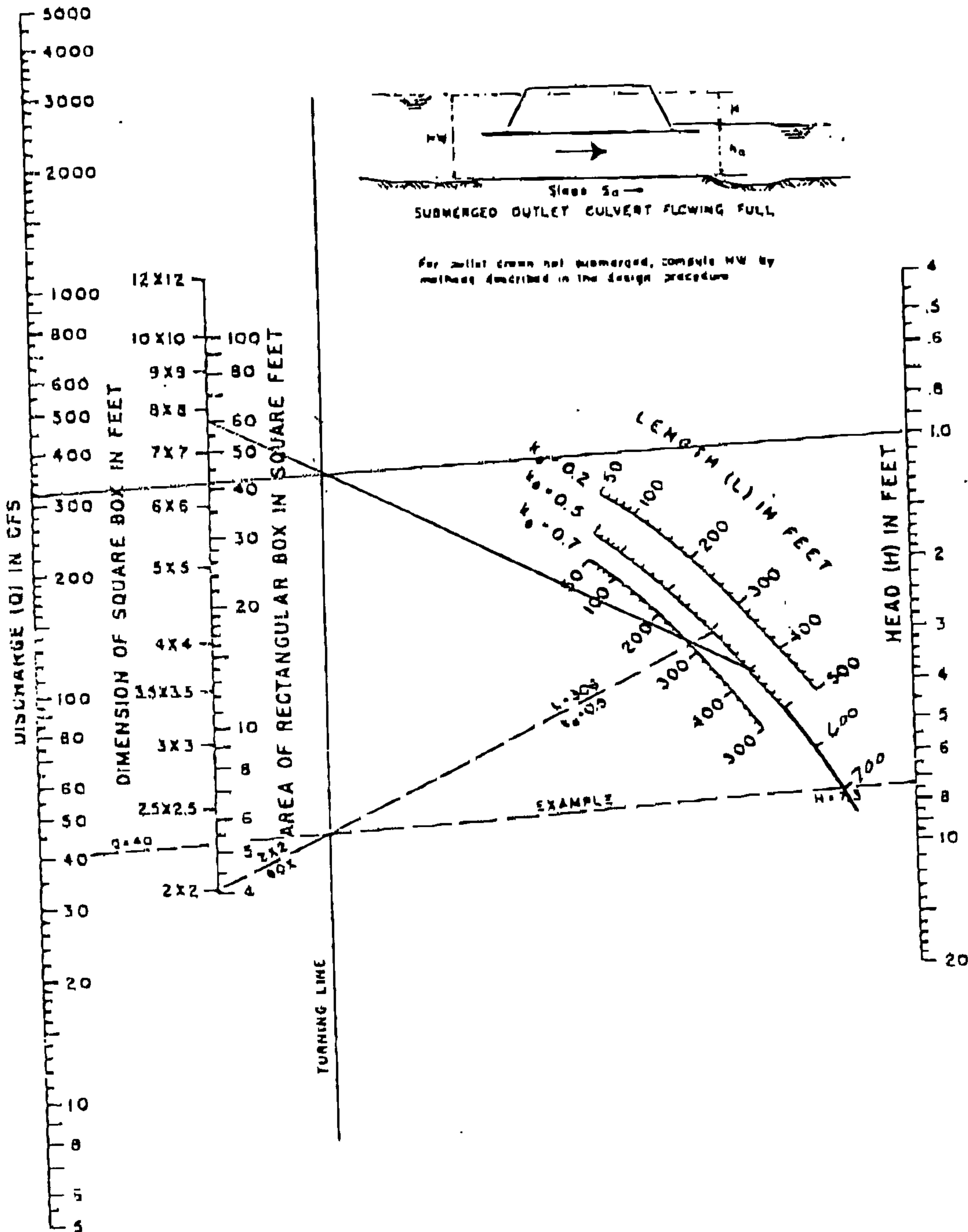
An initial review indicated that increasing the size of the culverts would prove to be very complex and cost prohibitive; therefore, an alternative design was investigated. It was determined that lowering the outlet and thereby increasing the differential head would reduce the size of the culverts. Although this would increase the amount of earthwork needed, a cost savings will be realized by reducing the required amount of concrete.

The Walmart site will replace the existing farm land with their buildings and parking facilities. This will eliminate the need for the lateral crossing that is currently serving this farming operation. Therefore, this portion of the Isleta Drain can be lowered from 4920 feet to 4916 feet, the existing drain bottom elevation downstream of the lateral crossing. This will increase the available differential head to 4 feet. Using 4 feet of differential head, Chart 15 indicated that two 6'x 6' box culverts would be sufficient, and they will discharge 300 cfs each, or a total of 600 cfs. See Figure 3.

COST ESTIMATE

The City of Albuquerque 1998 unit costs were used to determine the total projected cost of the improvements. The amount of concrete required by the box culverts was determined from NMSHTD Serial CB-32. See Table 1 for the item numbers and associated cost. Please note that the unit costs are 6 years old now and should be updated as necessary.

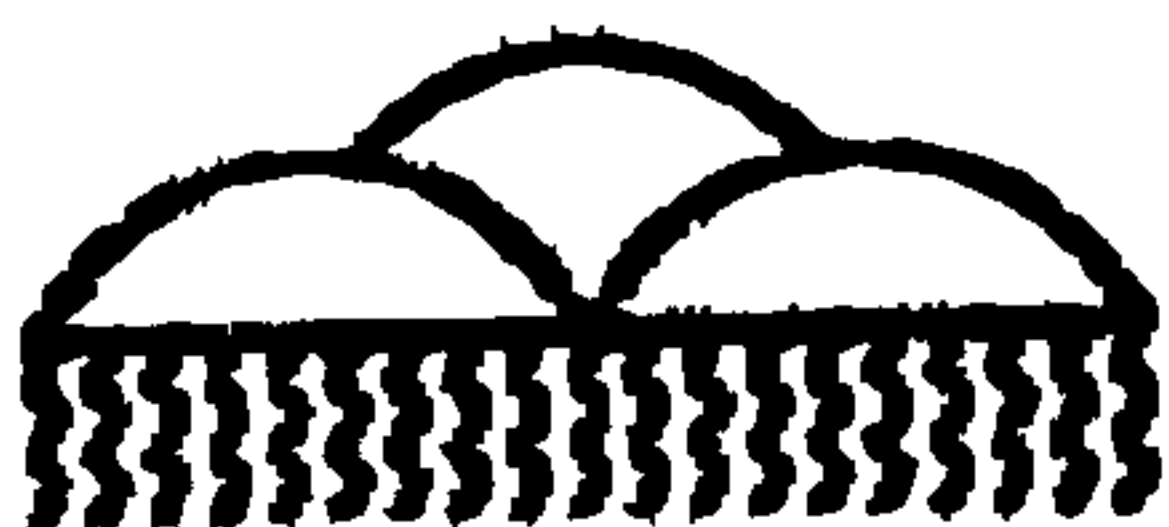
CHART 15



HEAD FOR
CONCRETE BOX CULVERTS
FLOWING FULL
 $n = 0.012$

FIGURE 2

U.S. DEPT. OF PUBLIC ROADS JAN 1963

**AMAFCA**

2600 Prospect Av. NE
Albuquerque, NM 87107
Ph: (505) 884-2215
Fax: (505) 884-0214

FA

Post-it [®] Fax Note	7671	Date	3-9	# of pages	9
To	BRAD BINGHAM		From	LYNN MAZUR	
Co./Dept.	HYDROLOGY		Co.	AMAFCA	
Phone #			Phone #		
Fax #			Fax #		

To: Jon Niski**Of:** Tierra West, LLC**Fax #:** 858-1118**Pages:** 9, incl. cover sheet**From:** Lynn Mazur, P.E.**Date:** March 8, 2004

Development Review Engineer

Subject: Wal-Mart @ Rio Bravo/Coors**COMMENTS:**

Here is the report we had RTI prepare for the Rio Bravo crossing of Isleta Drain. You were copied on a letter from MRGCD that stated that they will not approve a double box culvert. Therefore, you need to put a single 12' x 6' CBC on the Infrastructure List. You may come up with an alternate design for final, but we will need to meet with MRGCD to coordinate.



March 8, 2004

Mr. Elvidio Diniz
Resource Technology, Inc.
5501 Jefferson Blvd. NE, Suite 200
Albuquerque, NM 87109

REF.: RIO BRAVO ROAD CULVERT REPLACEMENT ACROSS THE ISLETA
DRAIN RIGHT-OF-WAY

Dear Mr. Diniz:

The District has reviewed your feasibility design for the above referenced. The District recommends the existing road culvert pipe be replaced with a single barrel concrete box culvert or a trapezoidal concrete box culvert.

If you have any questions please feel free to contact Mr. Ray Gomez for more information at (505) 247-0234.

Sincerely,

Subhas K. Shah
Chief Executive Officer

cc: Leonard Utter, Assistant Engineer
Ray Gomez, Engineer I
Lynn Mazur, AMAFCA
Jonathan Niski, Tierra West, LLC
File

P.O. Box 581

87103-0581

1931 Second St. SW

Albuquerque, NM

87102-4515

505-247-0234

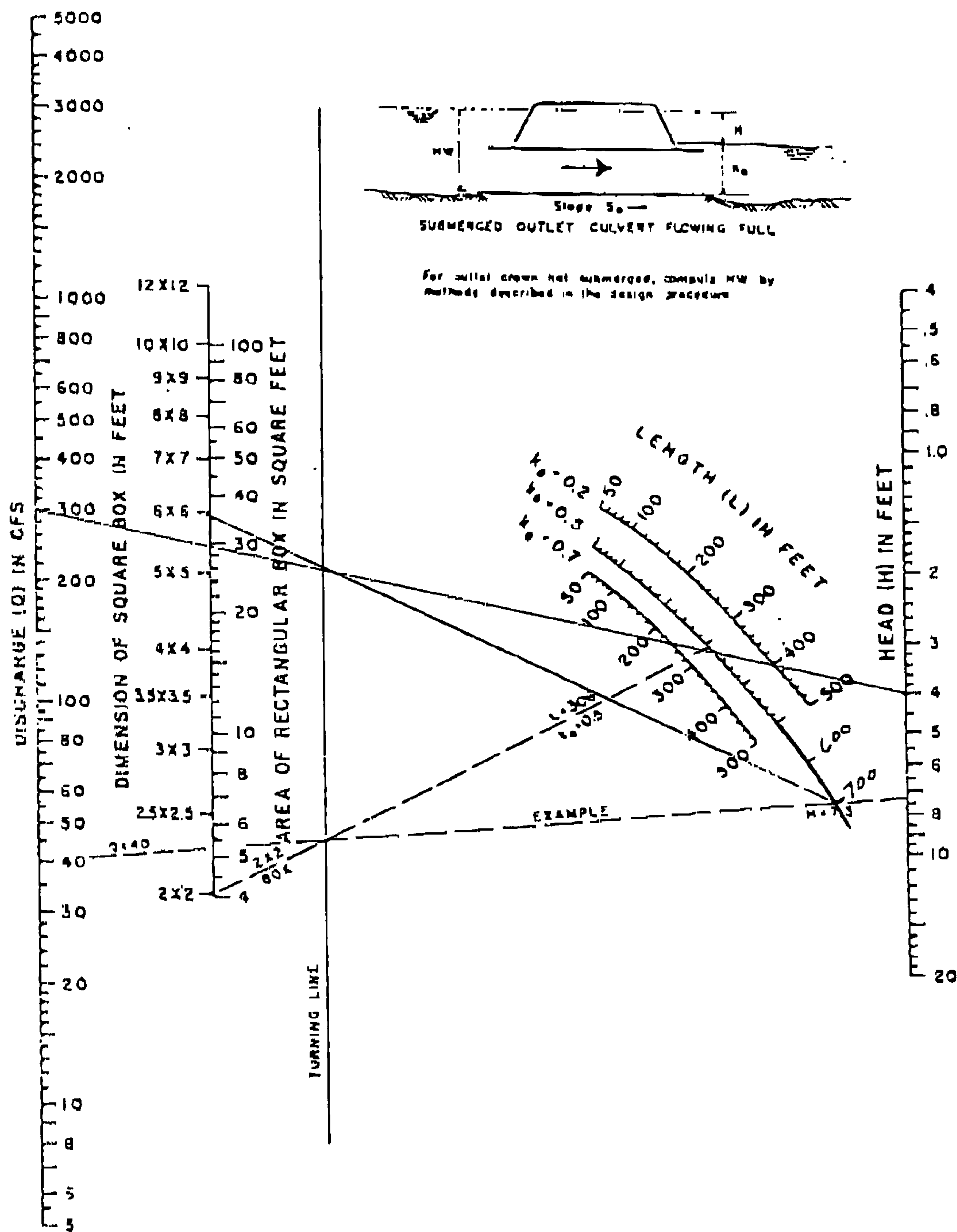
Fax # 505-243-7308

*Drain needs to be dredged 2' to Lakeview.
1-12' x 6' C.B.C. - or - equivalent*

*** DOC. MEMORY LIST ***

TX/RX NO	MODE	CONNECTION TEL/ID	PGS.	SET TIME	ST. TIME	SENDER NAME
8750	MEMORY RX		3	03/09 08:37	-----	

CHART 15



HEAD FOR
CONCRETE BOX CULVERTS
FLOWING FULL
 $n = 0.012$

FIGURE 3

MD OF PUBLIC ROADS, JAN 1963

PROJECT COST ESTIMATE

February 20, 2004

PROJECT NAME:

Rio Bravo Culverts

RTI Project # 03-260-1

PAY ESTIMATE NO:

BID ITEM NO.	COA SPEC ITEM NO.	SHORT DESCRIPTION	UNIT	QTY.	RTI* UNIT COST	RTI COST ESTIMATE
1	204.010	Fill: Excav., Backfill, Compact	CY	2734	4.50	12,303.00
2	202.011	Excav. And Disp Unsuitable Material	CY	7900	2.00	15,800.00
5	510.110	Structural Concrete Retaining Wall, 4000psi, form	CY	676	450.00	304,200.00
6	915.110	MED DP INLET, DBL	EA	1	1,831.02	1,831.02
7	920.070	MH, 4' DIA, C or E	EA	4	1,403.59	5,614.36
	Subtotal					339,748.38
		10% Contingency				33,974.84
	Subtotal					373,723.22
		6% Testing & Engineering				22,423.39
	Subtotal					396,146.61
		GRT				23,026.02
	TOTAL					\$ 419,172.63

CUBIC YDS OF CONCRETE/LINEAR FT OF CBC
WAS CALCULATED PER NMSHTD SERIAL CB-32

TABLE 1



Current DRC
Project Number _____

FIGURE 12

FYI

INFRASTRUCTURE LIST

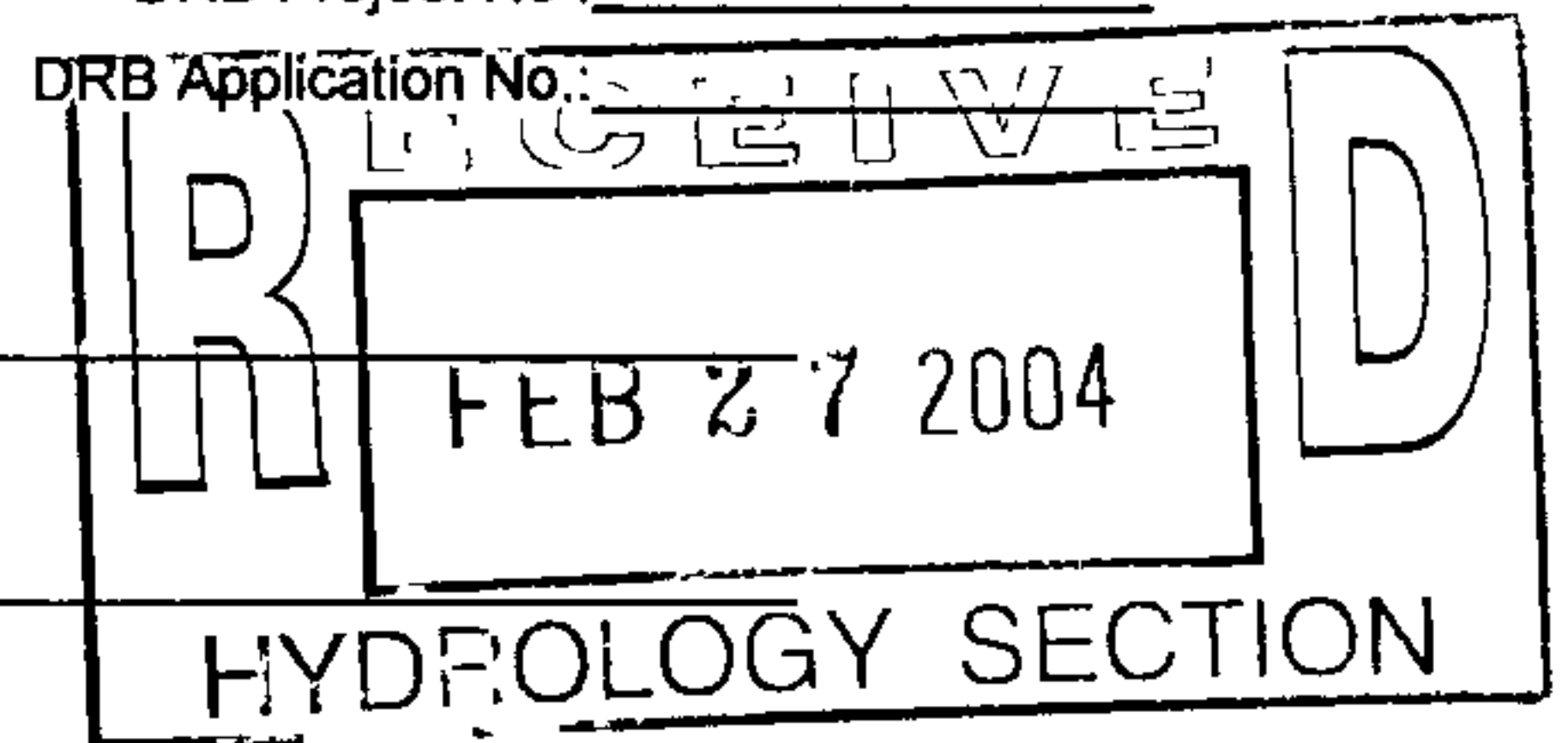
EXHIBIT "A"
TO SUBDIVISION IMPROVEMENTS AGREEMENT
DEVELOPMENT REVIEW BOARD (D.R.B.) REQUIRED INFRASTRUCTURE LIST

Wal-Mart #5430-00 (Coors Blvd. & Rio Bravo Blvd.)
PROPOSED NAME OF PLAT AND/OR SITE DEVELOPMENT PLAN

Tract 1-A-1, Lamonica and Wenk
EXISTING LEGAL DESCRIPTION PRIOR TO PLATTING ACTION

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

DRB Application No. _____



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
		48' F-F	Arterial Paving Curb and Gutter 6' Sidewalk (North Side)	Lamonica Road	Coors Blvd	Loris Drive	/	/	/
		48' F-F	Arterial Paving Curb and Gutter 6' Sidewalk (West Side)	Loris Drive	Lamonica Road	Rio Bravo Blvd.	/	/	/
		12'	Right Turn Lane Curb and Gutter	Rio Bravo Blvd and Lons Dr. Intersection	Eastbound Rio Bravo Blvd.	Loris Drive	/	/	/
		12'	Dual Left Turn Lanes* Curb and Gutter	Rio Bravo Blvd and Lons Dr. Intersection	Westbound Rio Bravo Blvd	Loris Drive	/	/	/
		12'	Acceleration Lane Curb and Gutter	Rio Bravo Blvd	Lons Drive	680' East of Loris Dr	/	/	/
			Median Improvements for Intersection	Rio Bravo Blvd and Lons Dr. Intersection	200' West of Lons Dr	200' East of Lons Dr	/	/	/
		12'	Right Turn Lane Curb and Gutter	Coors Blvd and Lamonica Road	Northbound Coors Blvd	Lamonica Road	/	/	/
		12'	Dual Left Turn Lanes* Curb and Gutter	Coors Blvd and Lamonica Road	Southbound Coors Blvd	Lamonica Road	/	/	/
		12'	Right Turn Lane Curb and Gutter	Coors Blvd	Lamonica Road	Private Entrance	/	/	/
		12'	Right/Thru Lane Curb and Gutter	Rio Bravo Blvd and Coors Blvd Intersection	Eastbound Rio Bravo Blvd	Coors Blvd	/	/	/
		12'	Restripe Additional Left Turn Lane	Rio Bravo Blvd and Coors Blvd Intersection	Westbound Rio Bravo Blvd	Coors Blvd	/	/	/

		12'	Restripe Additional Left Turn Lane	Rio Bravo Blvd and Coors Blvd Intersection	Southbound Coors Blvd	Rio Bravo Blvd	/	/	/
			Bus Bay w/ Shelter	Coors Blvd			/	/	/
			Traffic Signal	Lamonica Road and Coors Blvd Intersection			/	/	/
			Traffic Signal	Lons Drive and Rio Bravo Blvd Intersection			/	/	/
		6'	Sidewalk	Rio Bravo Blvd	Coors Blvd	Lons Drive	/	/	/
		6'	Sidewalk	Coors Blvd	Rio Bravo Blvd.	Lamonica Road	/	/	/
		8"	SAS Gravity Line	Lamonica Road	Coors Blvd.	800' West of Coors	/	/	/
		10"	Water PVC Line	Lamonica Road	Coors Blvd.	Loris Drive	/	/	/
		10"	Water PVC Line	Lons Drive	Lamonica Road	350' North of Lamonica	/	/	/
		2	Sidewalk Culverts	Loris Drive			/	/	/
		24"	RCP Storm Sewer	Lamonica Road			/	/	/
		8"	PVC Storm Sewer	Loris Drive	Loris Drive	Isleta Drain	/	/	/
			Drainage Crossing Structure	Rio Bravo Blvd. and Isleta Drain	North side of Rio Bravo Blvd	South side of Rio Bravo Blvd	/	/	/
			Water Infrastructure to include Valves, Fittings, Valve Boxes, and Fire Hydrants as required.				/	/	/
			Sanitary Sewer to include Manholes, and Service Connections as required				/	/	/
			*One Left Turn Lane will be blocked out with striping until needed				/	/	/
			Catch Basins and RCP connections included with Storm Sewer				/	/	/
			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
---------------	---

NAME (print)	DRB CHAIR - date	PARKS & GENERAL SERVICES - date
FIRM	TRANSPORTATION DEVELOPMENT - date	AMAFCA - date
SIGNATURE - date	UTILITY DEVELOPMENT - date	- date
MAXIMUM TIME ALLOWED TO CONSTRUCT THE IMPROVEMENTS WITHOUT A DRB EXTENSION: _____	CITY ENGINEER - date	- date

DESIGN REVIEW COMMITTEE REVISIONS

REVISION	DATE	DRC CHAIR	USER DEPARTMENT	AGENT /OWNER

P10/D004A

June 14, 2004



Mr. Jonathan Niski
Tierra West, LLC
8509 Jefferson NE
Albuquerque, NM 87113

REF.: DRAINAGE REPORT FOR THE WAL-MART SITE AT
COORS & RIO BRAVO BOULEVARD

Dear Mr. Niski:

The District has reviewed the grading and drainage plan for the above referenced. The following comments must be addressed prior to construction:

1. The District may consider a license to discharge storm water at a rate not to exceed 5 cfs if the Isleta Drain is improved per specifications by AMAFCA & MRGCD under the new drainage study to be completed by AMAFCA & Bernalillo County. Construction plans are required for review and comment.
2. A water quality improvement structure is proposed on the Wal-Mart site prior to discharging into the Isleta Drain. Provide the manufactures information for maintenance of the structure and information for sizing.
3. Who will be responsible for maintaining the water quality structure?
4. A license to replace the existing Rio Bravo Boulevard road culvert crossing is required. Construction plans are required for review and comment.
5. Your plans show the encroachment of a portion of Loris Drive within the Isleta Drain Right-of-Way. A license will be required to allow the encroachment.

If you have any questions please feel free to contact Mr. Ray Gomez for more information at (505) 247-0234.

Sincerely,

P.O. Box 581

87103-0581

1931 Second St SW

Albuquerque, NM

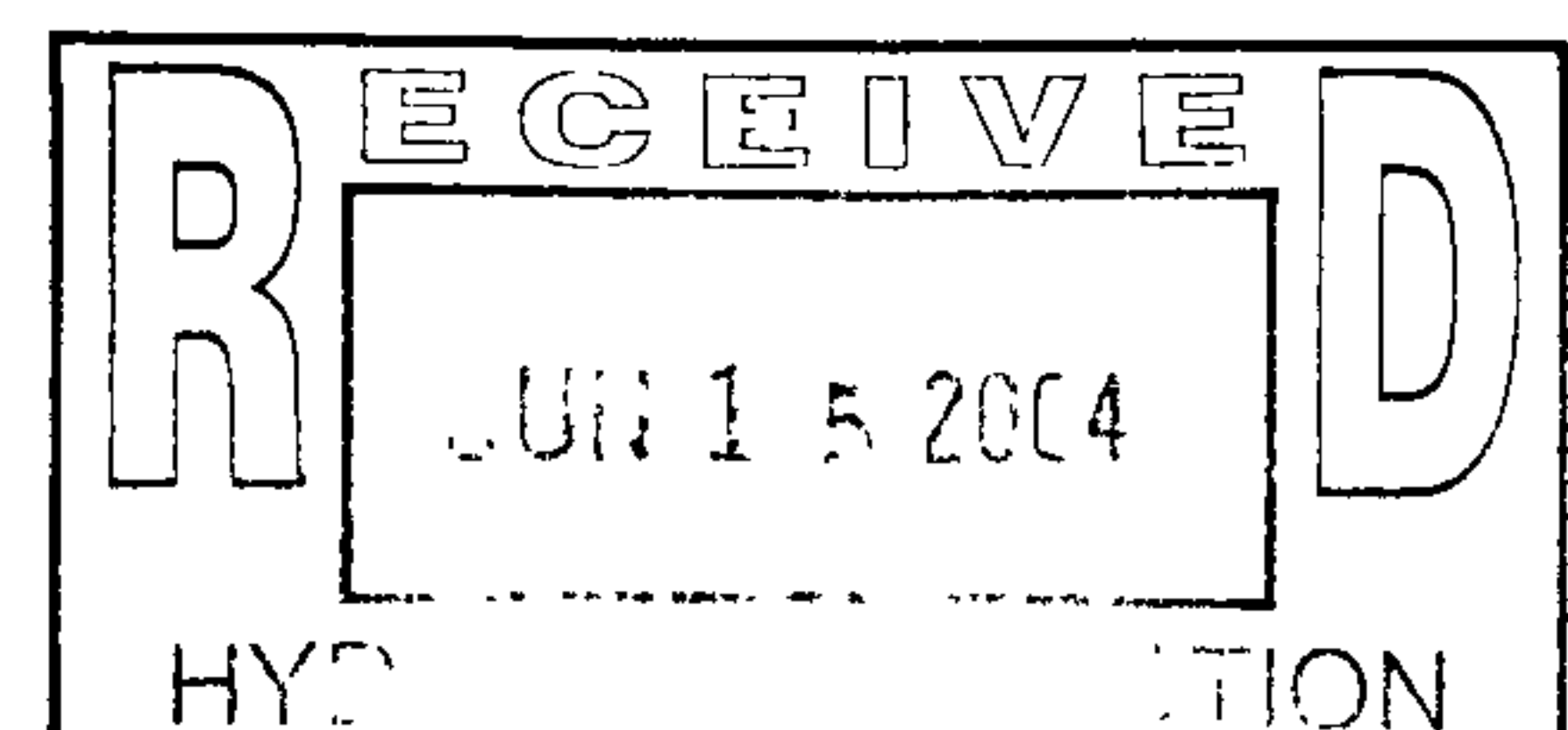
87102-4515

505-247-0234

Fax # 505-243-7308

Subhas K. Shah
Chief Executive Officer

xc: Leonard Utter, Assistant Engineer
Ray Gomez, Engineer I
Lynn Mazur, AMAFCA
File





City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

April 30, 2004

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

Re: Wal-Mart South Drainage Report
Engineer Stamp date 2-25-04 (P10/D4)

Dear Mr. Bohannon,

Based on information provided in your submittal dated 2-27-04, the above referenced report cannot be approved for Building Permit until the following comments are addressed.

- Please provide written concurrence from MRGCD for the connection to the Isleta Drain. The plan should show the improvements for the channel even though it will be built by Work Order.
- A 0.25" diameter orifice will be incredibly hard to keep from getting clogged. I think these particular inlets should have a detail for removing debris away from the orifice.
- Since the plat is already filed and some of your ponds are accepting public water from the streets, public easements must be provided and an agreement and covenant will be necessary. Since your client is an out-of-town corporation, I would be willing to make this a condition of Certificate of Occupancy but please begin this process as soon as possible.
- Ponds 9, 15 and 19 must have a standpipe outlet with an overflow weir.

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

Sincerely,

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

C: file

(REV. 1/28/2003rd)

ZONE MAP/DRG. FILE #: P-10
WORK ORDER #: _____

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

CONTACT: _____
PHONE: _____
ZIP CODE: _____

CONTACT: Ryan Wilbanks
PHONE: (918) 587-8600
ZIP CODE: 74119-3609

CONTACT: Larry Medrano
PHONE: 856-5700
ZIP CODE: 87113

CONTACT: _____
PHONE: _____
ZIP CODE: _____

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

RECEIVED
FEB 27 2004
HYDROLOGY SECTION

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

June 17, 2004

File P.10/D4A

Mr. Subhas K. Shah
Chief Executive Officer
Middle Rio Grande Conservancy District
P.O. Box 581
Albuquerque, NM 87103-0581

**RE: DRAINAGE REPORT FOR THE WAL-MART, (ALBUQUERQUE SOUTH),
COORS & RIO BRAVO BOULEVARD, STORE #5430-00**

Dear Mr. Shah:

The following responses are to your comments from your letter dated June 14, 2004.

1. The District may consider a license to discharge storm water at a rate not to exceed 5 cfs if the Isleta Drain is improved per specifications by AMAFCA & MRGCD under the new drainage study to be completed by AMAFCA & Bernalillo County. Construction plans are required for review and comment.

The channel will be designed and constructed based on comments received at the June 17, 2004 meeting with all agencies in attendance. Approval of the plans will be required by AMAFCA and MRGCD prior to the City of Albuquerque issuing a work order for the project.

2. A water quality improvement structure is proposed on the Wal-Mart site prior to discharging into the Isleta Drain. Provide the manufacturers information for maintenance of the structure and information for sizing.

The information you requested is enclosed for your review.

3. Who will be responsible for maintaining the water quality structure?

The Wal-Mart Supercenter will be responsible for the maintenance.

4. A license to replace the existing Rio Bravo Boulevard road culvert crossing is required. Construction plans are required for review and comment.

A license agreement will be submitted once the design of the crossing is agreed upon by AMAFCA and MRGCD.

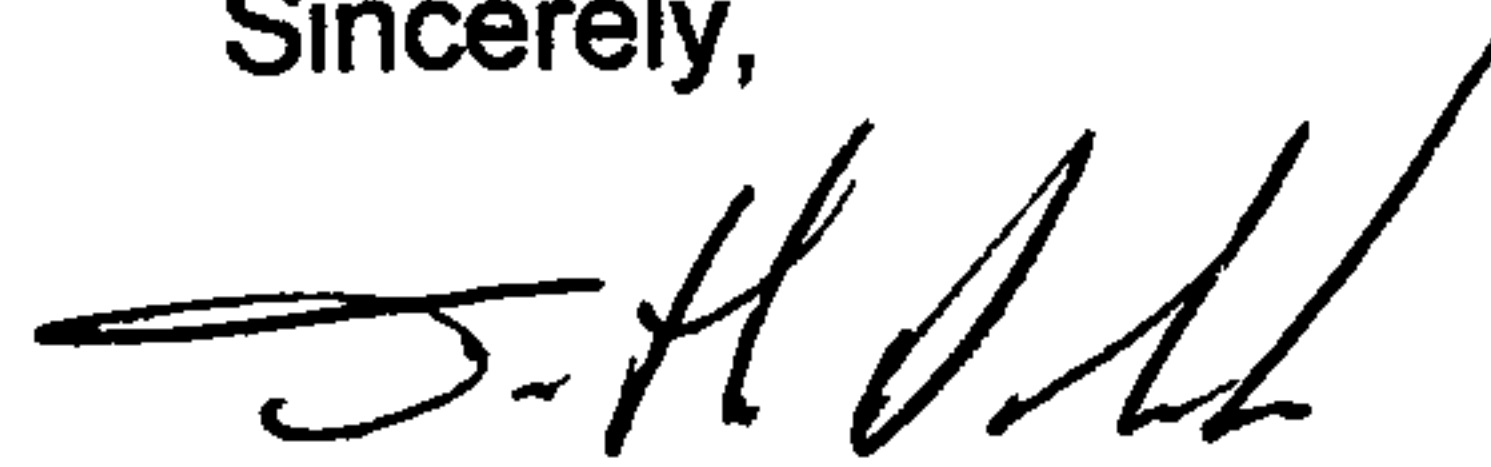
Mr. Subhas K. Shah
June 17, 2004
Page 2

5. Your plans show the encroachment of a portion of Loris Drive within the Isleta Drain Right-of-Way. A license will be required to allow the encroachment.

A license agreement for the roadway encroachment will be submitted within the next week.

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

Sincerely,



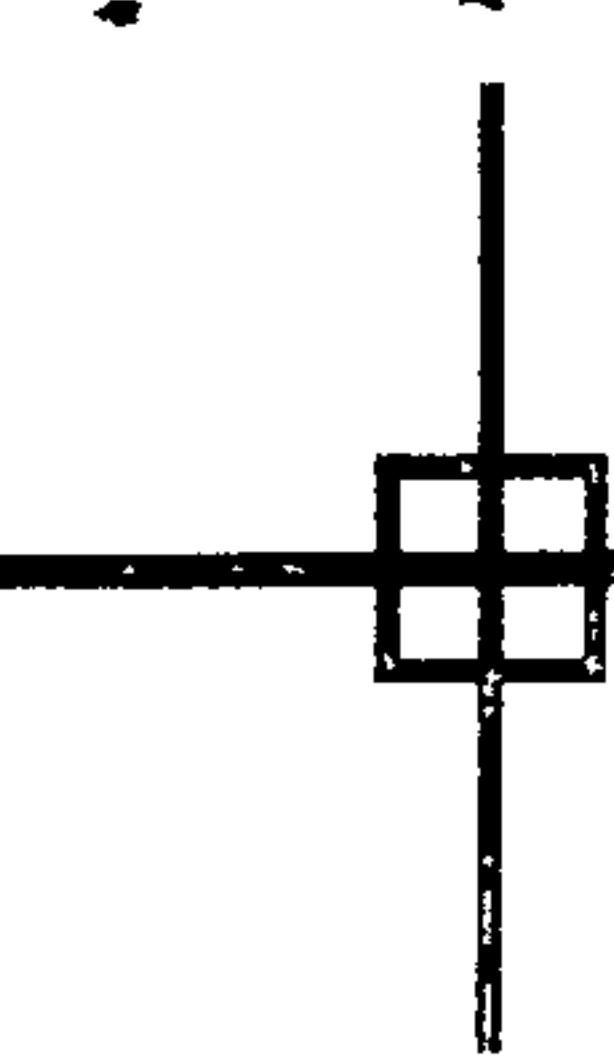
Jonathan D. Niski, E.I.

Enclosure/s

cc: (Brad Bingham)

JN: 220094
JDR/mjr

2002:220094SubhasShah06162004



TIERRA WEST, LLC

8509 Jefferson NE
Albuquerque, NM 87113

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

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

March 23, 2005

File P10/D4A

Mr. Ray Gomez
MRGCD
1931 Second Street, NW
Albuquerque, NM 87102

**RE: Wal-Mart #5430-00, Coors Boulevard and Rio Bravo Boulevard
Isleta Drain Improvements**

Dear Mr. Gomez:

We are in receipt of the letter from Mr. Shah dated March 16, 2005 informing our office of the request to build a 12'x6' box culvert in light of the recent information that has surfaced regarding the overall South Valley Flood Damage Control project and the discovery of a 16" VHP gas line that is in conflict with a box culvert of that size. We therefore request that the size of the box culvert be revisited by the design engineer for the overall South Valley project. The original design flows that generated the 12'X6' box culvert were 560 cfs. The 12'x6' box culvert had a capacity for 600 cfs. We looked at a couple of alternate sizes based on the new information provided by Resource Technology, Inc. (RTI). The revised design flow is now 429 cfs and we have analyzed a box culvert that is 242 feet in length at a slope of 0.60%. These new criteria allow for either a 10'X4' box culvert or a 6'x6' box culvert to be placed instead of the 12'x6' box culvert originally called for when this project first started. I have enclosed our calculations supporting these alternatives and ask that you have RTI review the information and confirm that these sizes are adequate to handle the design flows for the overall south valley project.

The 10'x4' box culvert allows us to squeeze between the existing 16" VHP gas line and the existing 36" sanitary sewer line. If your agency or AMAFCA require a six foot high box culvert be built we ask that your agency contact PNM and have them relocate the 16" VHP gas line prior to our construction beginning. The cost of this relocation should not be at the expense of Wal-Mart.

We would also like to reiterate that if we build this portion of the channel to the current design being presented by RTI that this stretch of channel will act as a four to five foot deep desilting pond. This portion of the channel will continue to act as a desilting pond until such time the channel down stream is graded to match the design grades for the South Valley project.

Mr. Ray Gomez
March 23, 2005
Page 2

Please review the information we have provided and consult with the South Valley project design engineer to see if one of these alternate box culvert sizes is acceptable. If you have any questions or need additional information regarding this matter, please do not hesitate to contact me

Sincerely,

A handwritten signature in black ink, appearing to read 'J. D. Niski', with a stylized flourish at the end.

Jonathan D. Niski, E.I.

Enclosure/s

cc: Lynn Mazur
-Brad Bingham
Steve Dyer

JN: 220094
JDN/bgd

2002.22094 Ray Gomez 032205

TIERRA WEST, LLC

8509 Jefferson NE
Albuquerque, NM 87113

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

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

March 2, 2005

File
P10 / D4A

Mr. Subhas K. Shah
Chief Executive Officer
Middle Rio Grande Conservancy District
PO Box 581
Albuquerque, NM 87103-0581
Attention: Ray Gomez

RE: ISLETA DRAIN IMPROVEMENTS

Dear Mr. Shah:

Over the past couple of weeks our office has been working on a redesign of the Rio Bravo Boulevard crossing for the Isleta Drain. This was due to an existing 16-inch, very high pressure, gas line along the north side of Rio Bravo that was previously not marked in the field. The position of the gas line makes it very difficult to construct a 12'x6' box culvert that was agreed to when our project first started. This design, as well as the channel design, was based on preliminary information from Resource Technology, Inc. (RTI) who is working on the South Valley Flood Damage Control project.

Since our initial design RTI has revised some of the design numbers. The design flow has dropped from 560 cfs to 429 cfs. This would allow us to place three 48-inch pipes at the existing 48-inch RCP Rio Bravo crossing to handle the design flows. We understand that MRGCD would like a box culvert placed at the Rio Bravo crossing, however the emergence of the 16-inch very high pressure gas line would prevent a box structure from being constructed in a cost effective and timely manner.

Not only does the 16" very high pressure gas line make it difficult to place a box culvert in the drain, RTI has determined that the channel (at this point) would need to be lowered to an elevation of 4913.30. This elevation is 4.2 feet lower than the existing channel bottom. If we were to construct our portion of the channel at this time the south end would essentially have a 4.2 foot grade break creating a desilting basin. For this portion of the channel to work MRGCD would have to dredge the channel from our southern property line to the outfall of the channel.

We feel this portion of the channel and the crossing should be constructed with the entire South Valley project. The improvements would not work as intended until the rest of the channel construction is complete. Thus, we would like to make a cash contribution in the amount of our portion of the channel improvements (\$661,100.50) toward the overall South Valley project. This would allow the channel to be built in a manner that all of the portions of the channel would operate as intended in the design.

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

Sincerely,



Ronald R. Bohannon, PE

cc: John Kelly
Brad Bingham
Steve Dyer

JN: 220094
JDN/db



March 16, 2005

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

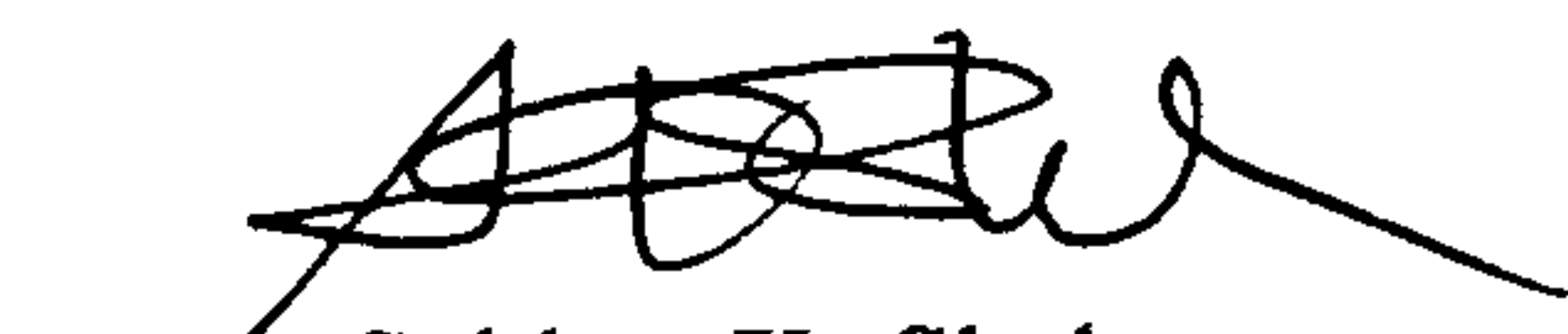
REF.: ISLETA DRAIN IMPROVEMENTS PER THE WAL-MART #5430-00
CONSTRUCTION PLANS

Dear Mr. Bohannon,

This is in response to your letter dated March 2, 2005 regarding the above referenced project. The District prefers that Wal-Mart be responsible for construction of 12' wide x 6' tall concrete box culvert and shotcrete lining. Per latest construction plan we see an existing 16" Ø gas line and 36" Ø sewer line have complicated the installation of the concrete box culvert. Coordination with AMAFCA and Bernalillo County is required to ensure that the concrete box culvert and shotcrete lining is installed correctly and does not interfere with existing utilities. We will review the plans you provided on Monday to us and advise you.

If you have any questions please feel free to contact Mr. Ray Gomez for more information at (505) 247-0234.

Sincerely,



Subhas K. Shah
Chief Executive Officer

xc: Leonard Utter, MRGCD Engineering
Ray Gomez, MRGCD Engineering
John Kelly, AMAFCA
Brad Bingham, City of Albuquerque
Roger Paul, Bernalillo County
File

P.O. Box 581

87103-0581

1931 Second St SW

Albuquerque, NM

87102-4515

505-247-0234

Fax # 505-243-7308

**DRAINAGE REPORT
FOR**

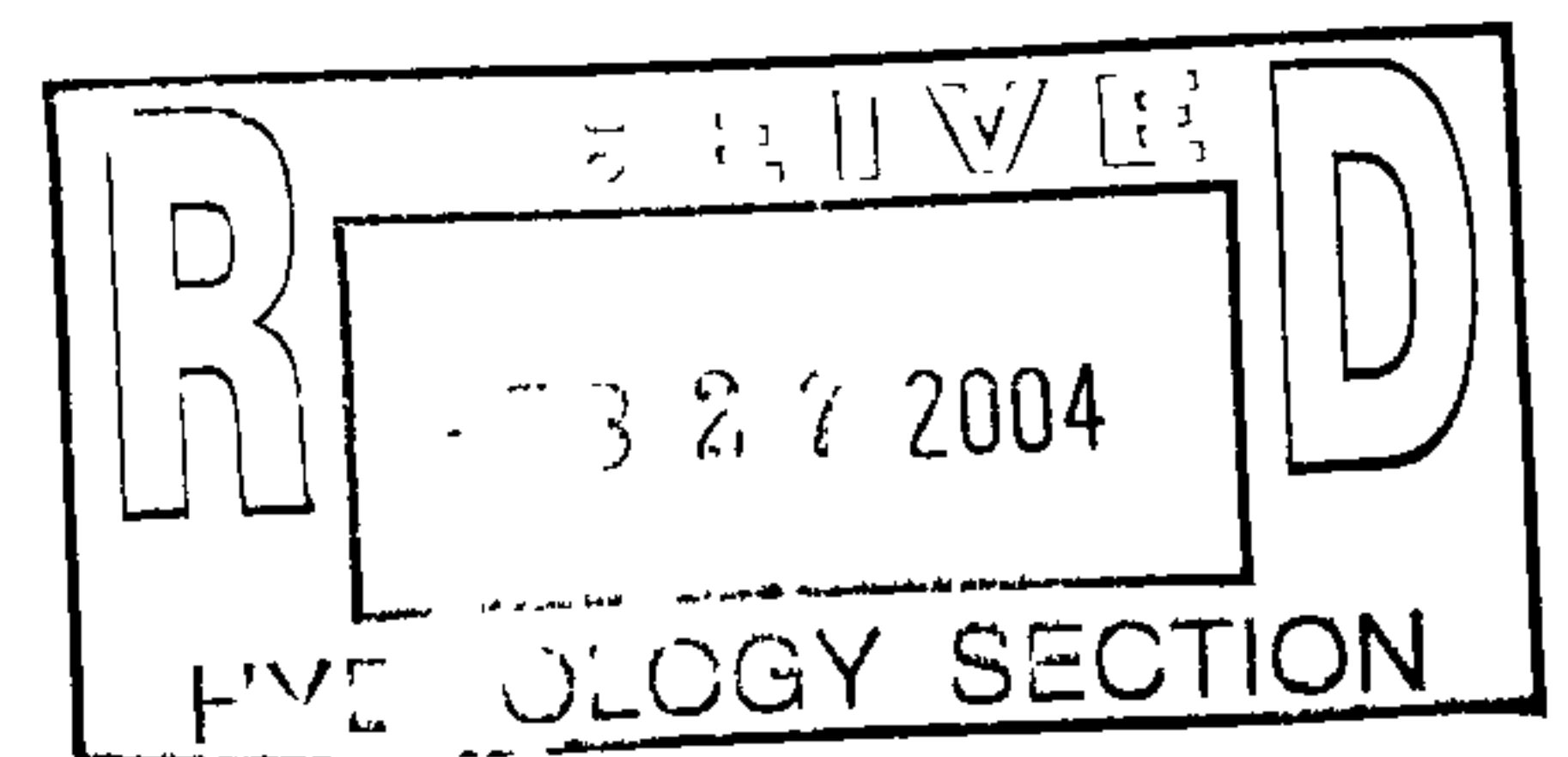
***Tract 1-A-1
Lands of Lamonica and Wenk
Albuquerque, NM***

Prepared by:

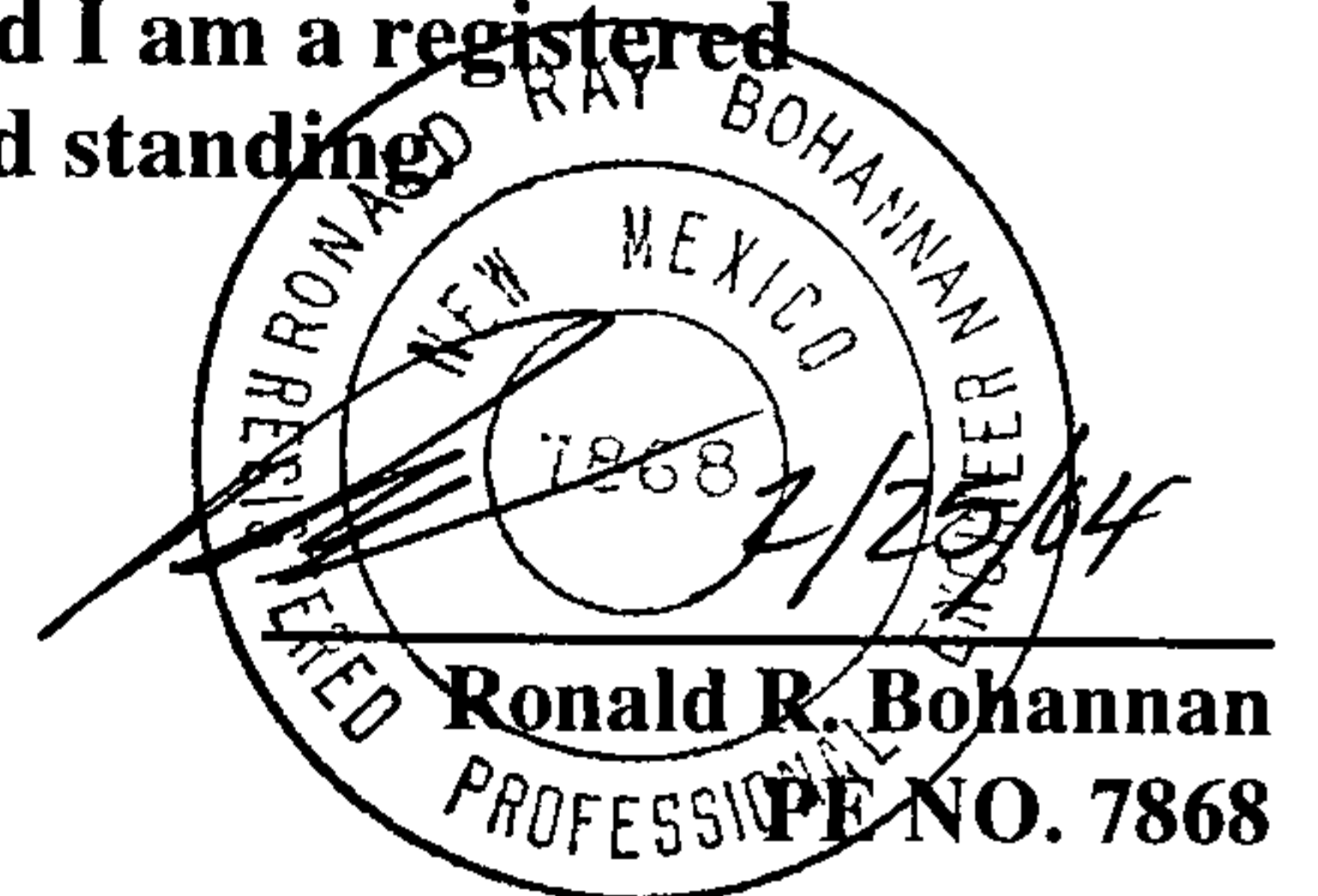
**Tierra West, LLC
8509 Jefferson NE
Albuquerque, New Mexico 87113**

**Prepared for:
Wal-Mart Stores, Inc.
2001 SE 10th Street
Bentonville, AR 72712**

February 2004



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



Job No 220094

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Pond Calculations 13
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MAP POCKET

Grading and Drainage Plan

Section I

Report

Prelude

This report is being prepared at the request of the current owner, Wal-Mart Stores, Inc., who proposes to develop a commercial center.

Location

The subject site is located on the southeast corner of Coors Boulevard and Rio Bravo Boulevard and consists of Tract 1-A-1, Lands of Lamonica and Wenk. The exact location of the site is shown highlighted on the enclosed Zone Atlas page number P-10. The site will be built in one phase and contains 27.7381 acres more or less.

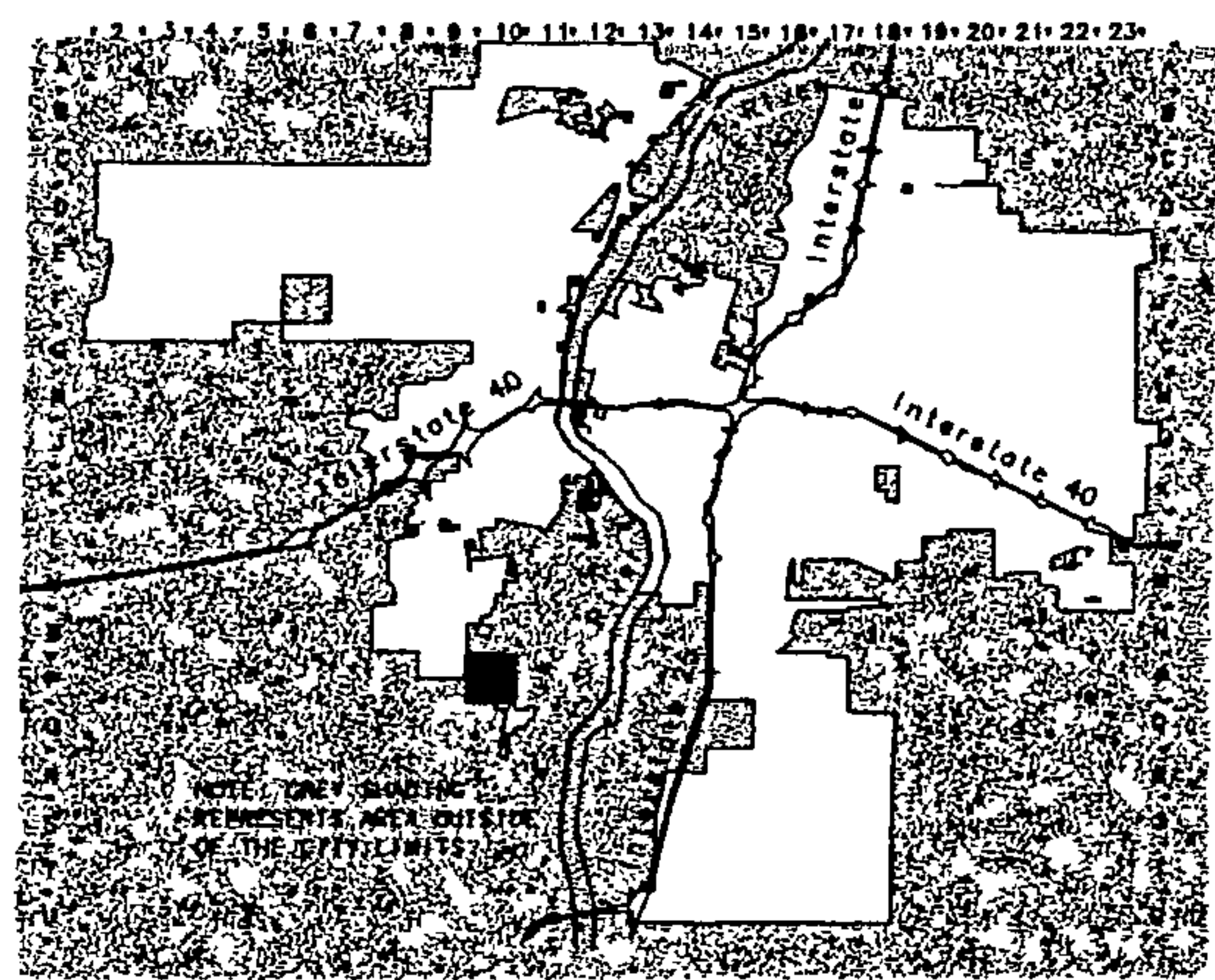
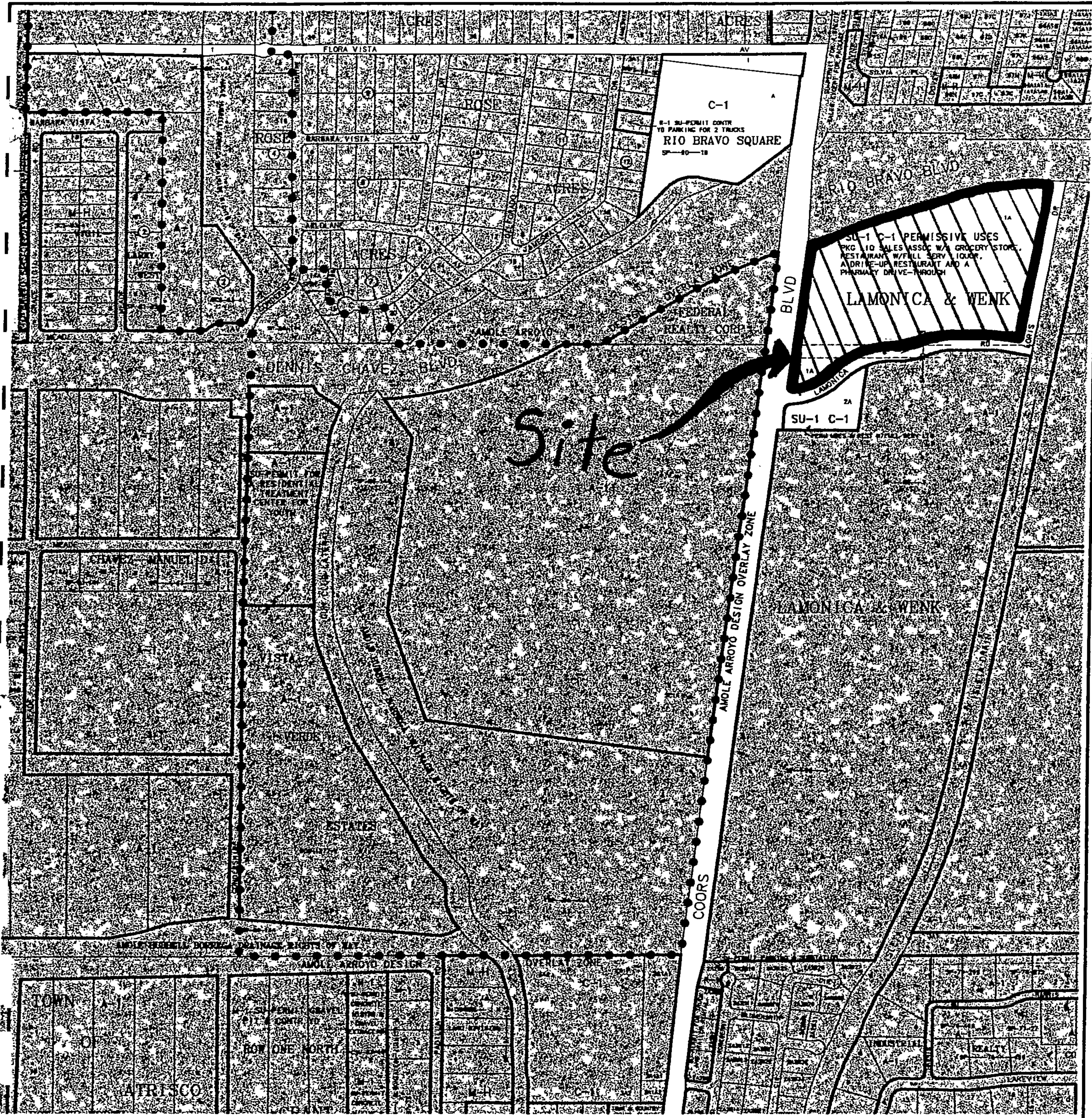
Existing Drainage Conditions

The site is currently undeveloped and is being used as an alfalfa field. It is bordered by Coors Boulevard on the west, Rio Bravo Boulevard on the north, the Isleta Drain on the east and a single residence and farm land on the south.

The site is laser leveled and is currently being irrigated to support the growth of alfalfa. The field is bordered on all sides by berms to facilitate the irrigation of the land. The irrigation is controlled by a culvert and gate under Rio Bravo Boulevard located at the northeast corner of the site. The overflow is controlled via a drain gate and culver located at the midpoint of the sites south property line. During a 100-yr, 6-hour storm event this site generates 33.91 cfs and 0.96 acre feet of potential runoff. Due to the laser leveling and berms surrounding the site, no flows leave the site during this storm event.

Flood Plain

The site is located on FIRM Map 35001C0339 D as shown on the attached excerpt. The map shows that the site lies within flood zone X.



**CITY OF
Albuquerque**

Albuquerque **G**eographic **I**nformation **S**ystem
PLANNING DEPARTMENT

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EXHIBIT A- VICINITY MAP

GRAPHIC SCALE IN FEET

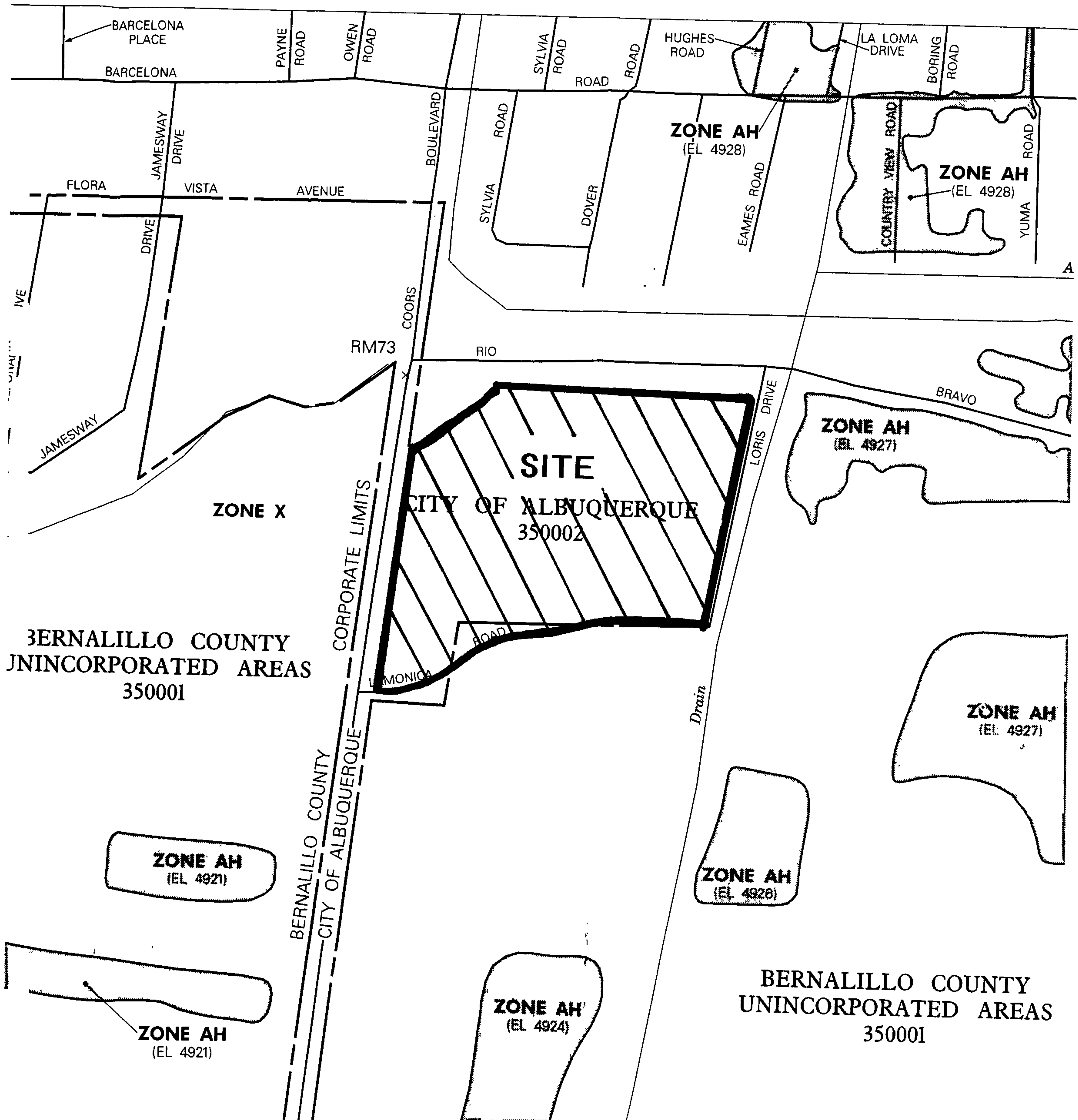


Zone Atlas Page

P-10-Z

Map Amended through July 18, 2001

67"



FIRM MAP 35001C0339 D



Proposed Drainage Management Plan

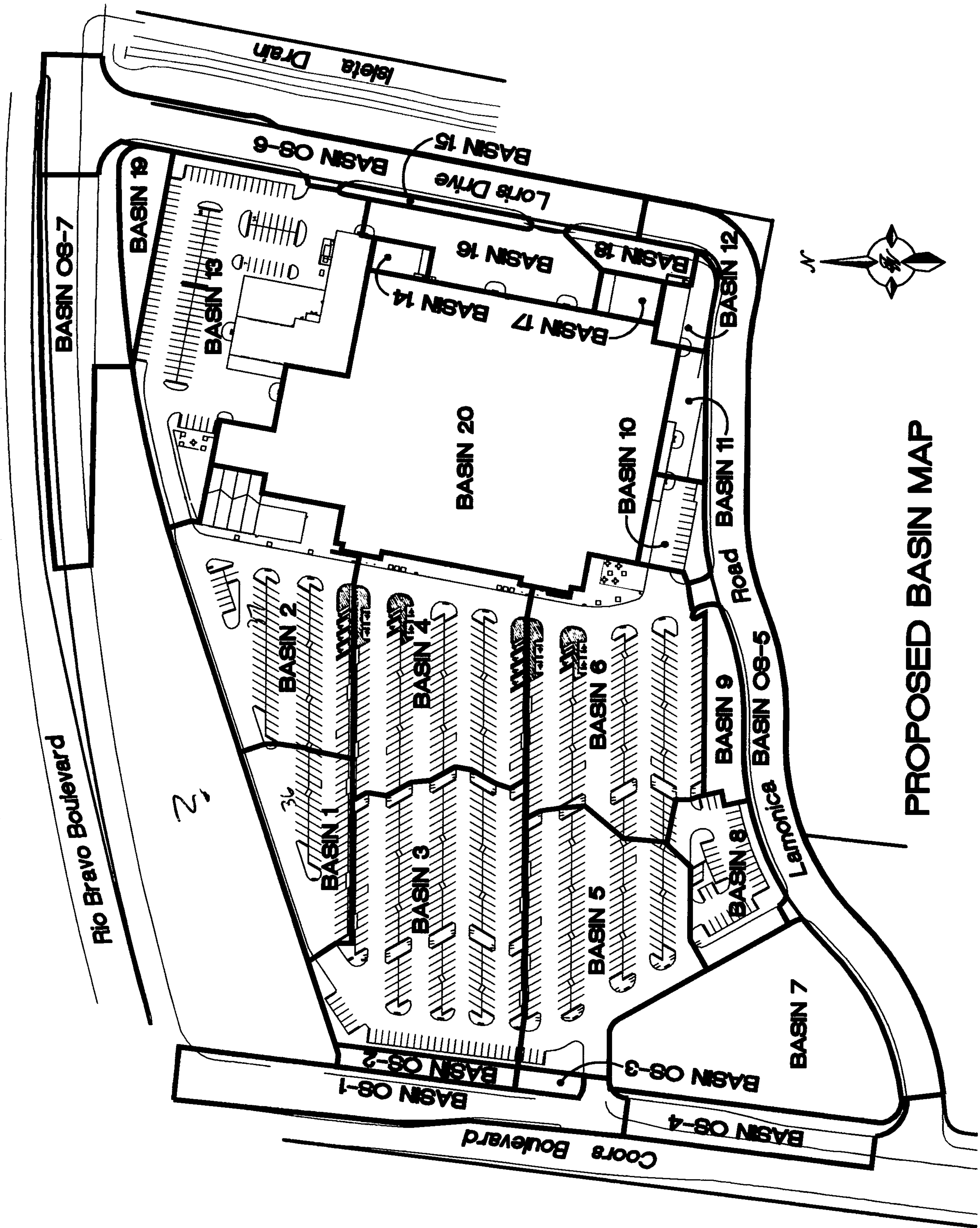
As shown on the attached exhibit, the proposed site is divided into 19 basins with the site draining to a number of retention ponds connected to a storm sewer system. The storm sewer system conveys the flows to the southeast corner of the site. At that point the water is discharged into the Isleta Drain via a water quality manhole with a discharge rate of 5.0 cfs.

As shown in Section II, the developed runoff flows for each basin was determined using the Weighted E Method. The site drainage will be controlled by creating 19 individual ponds located on the site. Each pond will drain to either an inlet or discharge pipe with an orifice plate located at each discharge point limiting the amount of flow from the ponds. The Grading and Drainage Plan includes a table of orifice plate sizes for each pond.

The on-site drainage system will accept public water from the adjoining streets and from the outlot located in the southwest corner of the site. The ponds are sized to contain these flows and discharge them at a limited rate.

The storm drain system was modeled using the routing command within AHYMO. The pond volumes and discharge rate calculations as well as the input and output AHYMO files are located in Section II. Based upon the model, the entire site will have a peak discharge of 4.95 cfs, which is below the 5.0 cfs restriction for the site. In the event of inlet clogging or a storm event greater than the predicted 100-year, 6-hour design storm, the site will continue to the pond the water overflowing to the adjacent ponding areas until such time the clog is cleared. At no time will the water pond to a point that it will enter the building.

AHYMO
REF.



PROPOSED BASIN MAP

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

This site will discharge 4.95 cfs into the Isleta Drain via a water quality manhole as required by AMAFCA. This discharge rate is lower than the 5.0 cfs rate dictated by AMAFCA. The site accepts the offsite flow generated by the surrounding streets and allows the flows to pond onsite and be discharged at a limited rate.

The development of this site is consistent with the DPM, Chapter 22, Hydrology section. Since this site encompasses more than 1 acre, a NPDES permit will be required in addition to a Top Soil Disturbance Permit, prior to any construction activity.

Section II

Runoff Calculations

Weighted E Method

Developed Basins

Basin	Area (sf)	Area (acres)	Area (sq. mi.)	Treatment A		Treatment B		Treatment C		Treatment D		100-Year			10-Year		
				%	(acres)	%	(acres)	%	(acres)	%	(acres)	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs
1	31,647	0.73	0.00114	0%	0	10%	0.07	0%	0.00	90%	0.65	1.840	0.111	3.00	1.138	0.069	1.94
2	76,028	1.75	0.00273	0%	0	6%	0.10	0%	0.00	94%	1.64	1.892	0.275	7.38	1.179	0.171	4.82
3	99,269	2.28	0.00356	0%	0	10%	0.23	0%	0.00	90%	2.05	1.840	0.349	9.43	1.138	0.216	6.10
4	74,550	1.71	0.00267	0%	0	2%	0.03	0%	0.00	98%	1.68	1.944	0.277	7.40	1.220	0.174	4.87
5	69,841	1.60	0.00251	0%	0	7%	0.11	0%	0.00	93%	1.49	1.879	0.251	6.74	1.169	0.156	4.39
6	84,285	1.93	0.00302	0%	0	4%	0.08	0%	0.00	96%	1.86	1.918	0.309	8.27	1.199	0.193	5.43
7	75,503	1.73	0.00271	0%	0	20%	0.35	0%	0.00	80%	1.39	1.710	0.247	6.76	1.036	0.150	4.27
8	26,205	0.60	0.00094	0%	0	25%	0.15	0%	0.00	75%	0.45	1.645	0.082	2.28	0.985	0.049	1.42
9	13,564	0.31	0.00049	0%	0	100%	0.31	0%	0.00	0%	0.00	0.670	0.017	0.63	0.220	0.006	0.24
10	11,176	0.26	0.00040	0%	0	22%	0.06	0%	0.00	78%	0.20	1.684	0.036	0.99	1.016	0.022	0.62
11	9,972	0.23	0.00036	0%	0	22%	0.05	0%	0.00	78%	0.18	1.684	0.032	0.88	1.016	0.019	0.55
12	7,479	0.17	0.00027	0%	0	5%	0.01	0%	0.00	95%	0.16	1.905	0.027	0.73	1.189	0.017	0.48
13	108,285	2.49	0.00388	0%	0	8%	0.20	0%	0.00	92%	2.29	1.866	0.387	10.40	1.158	0.240	6.76
14	3,785	0.09	0.00014	0%	0	0%	0.00	0%	0.00	100%	0.09	1.970	0.014	0.38	1.240	0.009	0.25
15	4,097	0.09	0.00015	0%	0	100%	0.09	0%	0.00	0%	0.00	0.670	0.005	0.19	0.220	0.002	0.07
16	27,524	0.63	0.00099	0%	0	0%	0.00	0%	0.00	100%	0.63	1.970	0.104	2.76	1.240	0.065	1.83
17	5,409	0.12	0.00019	0%	0	0%	0.00	0%	0.00	100%	0.12	1.970	0.020	0.54	1.240	0.013	0.36
18	8,467	0.19	0.00030	0%	0	32%	0.06	0%	0.00	68%	0.13	1.554	0.025	0.70	0.914	0.015	0.43
19	13,030	0.30	0.00047	0%	0	100%	0.30	0%	0.00	0%	0.00	0.670	0.017	0.61	0.220	0.005	0.23
20	189,985	4.36	0.00681	0%	0	0%	0.00	0%	0.00	100%	4.36	1.970	0.716	19.06	1.240	0.451	12.60
OS-1	37,304	0.86	0.00134	0%	0	0%	0.00	0%	0.00	100%	0.86	1.970	0.141	3.74	1.240	0.088	2.47
OS-2	7,896	0.18	0.00028	0%	0	90%	0.16	0%	0.00	10%	0.02	0.800	0.012	0.41	0.322	0.005	0.18
OS-3	2,990	0.07	0.00011	0%	0	90%	0.06	0%	0.00	10%	0.01	0.800	0.005	0.16	0.322	0.002	0.07
OS-4	23,374	0.54	0.00084	0%	0	16%	0.09	0%	0.00	84%	0.45	1.762	0.079	2.14	1.077	0.048	1.37
OS-5	84,933	1.95	0.00305	0%	0	0%	0.00	0%	0.00	100%	1.95	1.970	0.320	8.52	1.240	0.201	5.63
OS-6	63,832	1.47	0.00229	0%	0	0%	0.00	0%	0.00	100%	1.47	1.970	0.241	6.40	1.240	0.151	4.23
OS-7	49,830	1.14	0.00179	0%	0	22%	0.25	0%	0.00	78%	0.89	1.684	0.161	4.41	1.016	0.097	2.77
Totals	1,210,260	27.78											4.261	114.93		2.636	74.40

Equations:

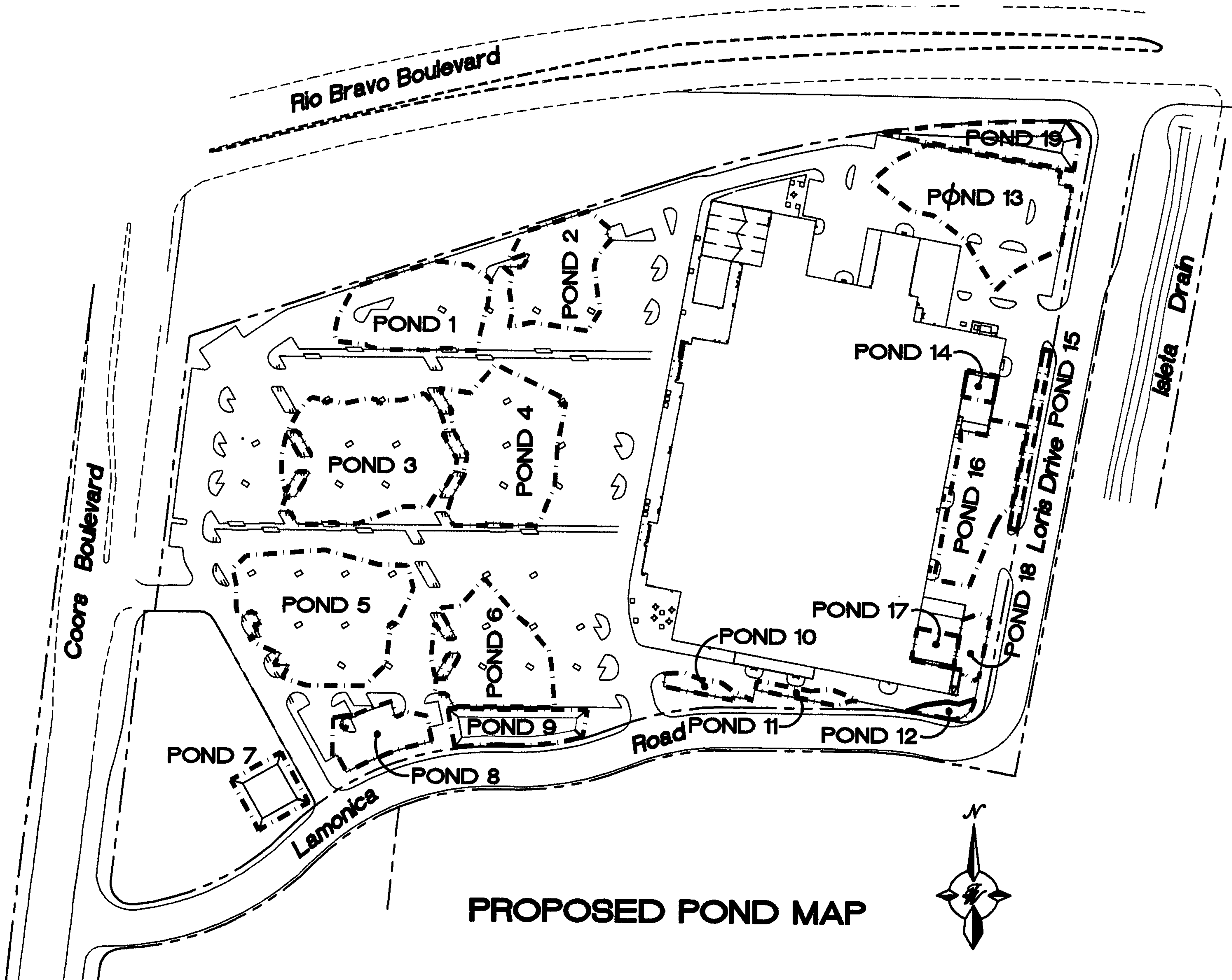
$$\text{Weighted E} = E_a \cdot A_a + E_b \cdot A_b + E_c \cdot A_c + E_d \cdot A_d / (\text{Total Area})$$

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

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

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



PROPOSED POND MAP

VOLUME CALCULATIONS

POND 1

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

$$\text{Volume} = \text{Ab} * \text{D} + 0.5 * \text{C} * \text{D}^2$$

$$\text{C} = (\text{At} - \text{Ab}) / \text{Dt}$$

$$\text{Ab} = 6.80$$

$$\text{At} = 21,297.00$$

$$\text{Dt} = 1.00$$

$$\text{C} = 21290.20$$

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
4925.79	0	0	0.0000
4927.96	2.17	0.0003	0.0024
4928.21	2.420	0.0157	0.0025
4928.46	2.670	0.0615	0.0027
4928.71	2.920	0.1379	0.0028
4928.96	3.170	0.2449	0.0029

Orifice Equation

$$Q = CA \text{ SQRT}(2gH)$$

$$C = 0.6$$

$$\text{Diameter (in)} = 0.25$$

$$\text{Area (ft}^2\text{)} = 0.000 \leftarrow$$

$$g = 32.2$$

$$H \text{ (Ft)} = \text{Depth of water above center of orifice}$$

$$Q \text{ (CFS)} = \text{Flow}$$

VOLUME CALCULATIONS

POND 2

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

$$\text{Volume} = \text{Ab} * \text{D} + 0.5 * \text{C} * \text{D}^2$$

$$\text{C} = (\text{At} - \text{Ab}) / \text{Dt}$$

$$\text{Ab} = 6.80$$

$$\text{At} = 17,427.00$$

$$\text{Dt} = 1.00$$

$$\text{C} = 17420.20$$

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
4925.24	0	0	0.0000
4927.41	2.17	0.0003	0.5241
4927.66	2.420	0.0129	0.5556
4927.91	2.670	0.0504	0.5855
4928.16	2.920	0.1129	0.6140
4928.41	3.170	0.2005	0.6411

Orifice Equation

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

$$\text{C} = 0.6$$

$$\text{Diameter (in)} = 3.75$$

$$\text{Area (ft}^2\text{)} = 0.077$$

$$g = 32.2$$

$$\text{H (Ft)} = \text{Depth of water above center of orifice}$$

$$\text{Q (CFS)} = \text{Flow}$$

VOLUME CALCULATIONS

POND 3

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

$$\text{Volume} = \text{Ab} * \text{D} + 0.5 * \text{C} * \text{D}^2$$

$$\text{C} = (\text{At} - \text{Ab}) / \text{Dt}$$

$$\text{Ab} = 6.80$$

$$\text{At} = 34,632.00$$

$$\text{Dt} = 1.00$$

$$\text{C} = 34625.20$$

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
4925.04	0	0	0.0000
4927.21	2.17	0.0003	0.0024
4927.46	2.42	0.0252	0.0025
4927.71	2.67	0.0998	0.0027
4927.96	2.92	0.2240	0.0028
4928.21	3.17	0.3979	0.0029

Orifice Equation

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

$$\text{C} = 0.6$$

$$\text{Diameter (in)} = 0.25$$

$$\text{Area (ft}^2\text{)} = 0.000$$

$$g = 32.2$$

$$\text{H (Ft)} = \text{Depth of water above center of orifice}$$

$$\text{Q (CFS)} = \text{Flow}$$

VOLUME CALCULATIONS

POND 4

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

$$\text{Volume} = \text{Ab} * \text{D} + 0.5 * \text{C} * \text{D}^2$$

$$\text{C} = (\text{At} - \text{Ab}) / \text{Dt}$$

$$\text{Ab} = 6.80$$

$$\text{At} = 28,040.00$$

$$\text{Dt} = 1.00$$

$$\text{C} = 28033.20$$

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
4923.83	0	0	0.0000
4927.65	3.82	0.0006	0.0032
4927.90	4.070	0.0207	0.0033
4928.15	4.320	0.0811	0.0034
4928.40	4.570	0.1817	0.0035
4928.65	4.820	0.3225	0.0036

Orifice Equation

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

$$\text{C} = 0.6$$

$$\text{Diameter (in)} = 0.25$$

$$\text{Area (ft}^2\text{)} = 0.000$$

$$g = 32.2$$

$$\text{H (Ft)} = \text{Depth of water above center of orifice}$$

$$\text{Q (CFS)} = \text{Flow}$$

VOLUME CALCULATIONS

POND 5

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

$$\text{Volume} = \text{Ab} * \text{D} + 0.5 * \text{C} * \text{D}^2$$

$$\text{C} = (\text{At} - \text{Ab}) / \text{Dt}$$

$$\text{Ab} = 6.80$$

$$\text{At} = 35,736.00$$

$$\text{Dt} = 1.00$$

$$\text{C} = 35729.20$$

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
4924.20	0	0	0.0000
4926.37	2.17	0.0003	0.0216
4926.62	2.420	0.0260	0.0228
4926.87	2.670	0.1029	0.0240
4927.12	2.920	0.2311	0.0251
4927.37	3.170	0.4106	0.0262

Orifice Equation

$$Q = \text{CA} \text{ SQRT}(2gH)$$

$$\text{C} = 0.6$$

$$\text{Diameter (in)} = 0.75$$

$$\text{Area (ft}^2\text{)} = 0.003$$

$$g = 32.2$$

$$\text{H (Ft)} = \text{Depth of water above center of orifice}$$

$$\text{Q (CFS)} = \text{Flow}$$

VOLUME CALCULATIONS

POND 6

Ab - Bottom Of The Pond Surface Area

At - Top Of The Pond Surface Area

D - Water Depth

Dt - Total Pond Depth

C - Change In Surface Area / Water Depth

$$\text{Volume} = \text{Ab} * \text{D} + 0.5 * \text{C} * \text{D}^2$$

$$\text{C} = (\text{At} - \text{Ab}) / \text{Dt}$$

$$\text{Ab} = 6.80$$

$$\text{At} = 20,894.00$$

$$\text{Dt} = 1.00$$

$$\text{C} = 20887.20$$

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
4922.22	0	0	0.0000
4925.67	3.45	0.0005	0.5050
4925.92	3.700	0.0156	0.5237
4926.17	3.950	0.0606	0.5418
4926.42	4.200	0.1355	0.5592
4926.67	4.450	0.2404	0.5762

Orifice Equation

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

$$\text{C} = 0.6$$

$$\text{Diameter (in)} = 3.25$$

$$\text{Area (ft}^2\text{)} = 0.058$$

$$g = 32.2$$

$$\text{H (Ft)} = \text{Depth of water above center of orifice}$$

$$\text{Q (CFS)} = \text{Flow}$$

VOLUME CALCULATIONS

POND 7

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

$$\text{Volume} = \text{Ab} * \text{D} + 0.5 * \text{C} * \text{D}^2$$

$$\text{C} = (\text{At} - \text{Ab}) / \text{Dt}$$

Ab = 3,136.00
 At = 6,400.00
 Dt = 3.00
 C = 1088.00

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
4923.00	0	0	0.0000
4923.60	0.60	0.0432	0.1156
4924.20	1.20	0.0909	0.1718
4924.80	1.80	0.1476	0.2137
4925.40	2.40	0.2132	0.2487
4926.00	3.00	0.2879	0.2793

Orifice Equation

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

C = 0.6
 Diameter (in) = 2.5
 Area (ft²) = 0.034
 g = 32.2
 H (Ft) = Depth of water above center of orifice
 Q (CFS) = Flow

VOLUME CALCULATIONS

POND 8

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

$$\text{Volume} = \text{Ab} * \text{D} + 0.5 * \text{C} * \text{D}^2$$

$$\text{C} = (\text{At} - \text{Ab}) / \text{Dt}$$

Ab = 6.80
 At = 8,098.00
 Dt = 1.00
 C = 8091.20

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
4922.28	0	0	0.0000
4925.67	3.39	0.0005	0.0030
4925.92	3.64	0.0064	0.0031
4926.17	3.89	0.0238	0.0032
4926.42	4.14	0.0529	0.0033
4926.67	4.39	0.0936	0.0034

Orifice Equation

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

C = 0.6
 Diameter (in) = 0.25
 Area (ft^2)= 0.000
 g = 32.2
 H (Ft) = Depth of water above center of orifice
 Q (CFS)= Flow

VOLUME CALCULATIONS

POND 9

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

$$\text{Volume} = \text{Ab} * \text{D} + 0.5 * \text{C} * \text{D}^2$$

$$\text{C} = (\text{At} - \text{Ab}) / \text{Dt}$$

$$\text{Ab} = 4,001.00$$

$$\text{At} = 9,031.00$$

$$\text{Dt} = 3.41$$

$$\text{C} = 1475.07$$

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
4921.52	0	0	0.0000
4921.93	0.41	0.0377	0.0041
4922.68	1.16	0.1161	0.0070
4923.43	1.91	0.2135	0.0090
4924.18	2.66	0.3300	0.0107
4924.93	3.41	0.4656	0.0121

Orifice Equation

$$Q = \text{CA SQRT}(2gH)$$

$$\text{C} = 0.6$$

$$\text{Diameter (in)} = 0.5$$

$$\text{Area (ft}^2\text{)} = 0.001$$

$$g = 32.2$$

$$\text{H (Ft)} = \text{Depth of water above center of orifice}$$

$$\text{Q (CFS)} = \text{Flow}$$

VOLUME CALCULATIONS

POND 10

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

$$\text{Volume} = \text{Ab} * \text{D} + 0.5 * \text{C} * \text{D}^2$$

$$\text{C} = (\text{At} - \text{Ab}) / \text{Dt}$$

Ab = 6.80
 At = 2,082.00
 Dt = 0.67
 C = 3097.31

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
4925.14	0	0	0.0000
4929.14	4.00	0.0006	0.2628
4929.31	4.17	0.0016	0.2683
4929.48	4.34	0.0047	0.2738
4929.64	4.50	0.0097	0.2792
4929.81	4.67	0.0167	0.2844

Orifice Equation

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

C = 0.6
 Diameter (in) = 2.25
 Area (ft²) = 0.028
 g = 32.2
 H (Ft) = Depth of water above center of orifice
 Q (CFS) = Flow

VOLUME CALCULATIONS

POND 11

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

$$\text{Volume} = \text{Ab} * \text{D} + 0.5 * \text{C} * \text{D}^2$$

$$\text{C} = (\text{At} - \text{Ab}) / \text{Dt}$$

$$\text{Ab} = 6.80$$

$$\text{At} = 1,924.00$$

$$\text{Dt} = 0.62$$

$$\text{C} = 3092.26$$

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
4925.62	0	0	0.0000
4929.62	4.00	0.0006	0.2079
4929.78	4.16	0.0015	0.2120
4929.93	4.31	0.0041	0.2160
4930.09	4.47	0.0084	0.2199
4930.24	4.62	0.0144	0.2237

Orifice Equation

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

$$\text{C} = 0.6$$

$$\text{Diameter (in)} = 2$$

$$\text{Area (ft}^2\text{)} = 0.022$$

$$g = 32.2$$

$$\text{H (Ft)} = \text{Depth of water above center of orifice}$$

$$\text{Q (CFS)} = \text{Flow}$$

VOLUME CALCULATIONS

POND 12

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

$$\text{Volume} = \text{Ab} * \text{D} + 0.5 * \text{C} * \text{D}^2$$

$$\text{C} = (\text{At} - \text{Ab}) / \text{Dt}$$

$$\text{Ab} = 6.80$$

$$\text{At} = 1,444.00$$

$$\text{Dt} = 0.67$$

$$\text{C} = 2145.07$$

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
4926.00	0	0	0.0000
4930.00	4.00	0.0006	0.2079
4930.17	4.17	0.0013	0.2123
4930.34	4.34	0.0034	0.2166
4930.50	4.50	0.0069	0.2208
4930.67	4.67	0.0118	0.2250

Orifice Equation

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

$$\text{C} = 0.6$$

$$\text{Diameter (in)} = 2$$

$$\text{Area (ft}^2\text{)} = 0.022$$

$$g = 32.2$$

$$\text{H (Ft)} = \text{Depth of water above center of orifice}$$

$$\text{Q (CFS)} = \text{Flow}$$

VOLUME CALCULATIONS

POND 13

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

$$\text{Volume} = \text{Ab} * \text{D} + 0.5 * \text{C} * \text{D}^2$$

$$\text{C} = (\text{At} - \text{Ab}) / \text{Dt}$$

$$\text{Ab} = 6.80$$

$$\text{At} = 30,131.00$$

$$\text{Dt} = 1.00$$

$$\text{C} = 30124.20$$

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
4924.75	0	0	0.0000
4928.75	4.00	0.0006	0.2079
4929.00	4.25	0.0223	0.2144
4929.25	4.50	0.0871	0.2208
4929.50	4.75	0.1952	0.2269
4929.75	5.00	0.3466	0.2329

Orifice Equation

$$Q = \text{CA} \text{ SQRT}(2gH)$$

$$\text{C} = 0.6$$

$$\text{Diameter (in)} = 2$$

$$\text{Area (ft}^2\text{)} = 0.022$$

$$g = 32.2$$

$$\text{H (Ft)} = \text{Depth of water above center of orifice}$$

$$\text{Q (CFS)} = \text{Flow}$$

VOLUME CALCULATIONS

POND 14

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

$$\text{Volume} = \text{Ab} * \text{D} + 0.5 * \text{C} * \text{D}^2$$

$$\text{C} = (\text{At} - \text{Ab}) / \text{Dt}$$

$$\text{Ab} = 0.00$$

$$\text{At} = 1,617.00$$

$$\text{Dt} = 1.00$$

$$\text{C} = 1617.00$$

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
4926.85	0	0	0.0000
4927.05	0.20	0.0000	0.0028
4927.25	0.40	0.0007	0.0040
4927.45	0.60	0.0030	0.0050
4927.65	0.80	0.0067	0.0058
4927.85	1.00	0.0119	0.0065

Orifice Equation

$$Q = CA \text{ SQRT}(2gH)$$

$$C = 0.6$$

$$\text{Diameter (in)} = 0.5$$

$$\text{Area (ft}^2\text{)} = 0.001$$

$$g = 32.2$$

$$H \text{ (Ft)} = \text{Depth of water above center of orifice}$$

$$Q \text{ (CFS)} = \text{Flow}$$

VOLUME CALCULATIONS

POND 15

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

$$\text{Volume} = \text{Ab} * \text{D} + 0.5 * \text{C} * \text{D}^2$$

$$\text{C} = (\text{At} - \text{Ab}) / \text{Dt}$$

$$\text{Ab} = 2,625.00$$

$$\text{At} = 2,625.00$$

$$\text{Dt} = 3.00$$

$$\text{C} = 0.00$$

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
4926.75	0	0	0.0000
4927.35	0.60	0.0362	0.2766
4927.95	1.20	0.0723	0.4271
4928.55	1.80	0.1085	0.5370
4929.15	2.40	0.1446	0.6279
4929.75	3.00	0.1808	0.7073

Orifice Equation

$$Q = \text{CA} \text{ SQRT}(2gH)$$

$$\text{C} = 0.6$$

$$\text{Diameter (in)} = 4$$

$$\text{Area (ft}^2\text{)} = 0.087$$

$$g = 32.2$$

$$\text{H (Ft)} = \text{Depth of water above center of orifice}$$

$$\text{Q (CFS)} = \text{Flow}$$

VOLUME CALCULATIONS

POND 16

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

$$\text{Volume} = \text{Ab} * \text{D} + 0.5 * \text{C} * \text{D}^2$$

$$\text{C} = (\text{At} - \text{Ab}) / \text{Dt}$$

$$\text{Ab} = 6.80$$

$$\text{At} = 16,730.00$$

$$\text{Dt} = 1.00$$

$$\text{C} = 16723.20$$

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
4925.51	0	0	0.0000
4929.51	4.00	0.0006	0.0033
4929.76	4.25	0.0127	0.0034
4930.01	4.50	0.0487	0.0035
4930.26	4.75	0.1087	0.0036
4930.51	5.00	0.1927	0.0037

Orifice Equation

$$Q = \text{CA} \text{ SQRT}(2gH)$$

$$\text{C} = 0.6$$

$$\text{Diameter (in)} = 0.25$$

$$\text{Area (ft}^2\text{)} = 0.000$$

$$g = 32.2$$

$$\text{H (Ft)} = \text{Depth of water above center of orifice}$$

$$\text{Q (CFS)} = \text{Flow}$$

VOLUME CALCULATIONS

POND 17

Ab - Bottom Of The Pond Surface Area

At - Top Of The Pond Surface Area

D - Water Depth

Dt - Total Pond Depth

C - Change In Surface Area / Water Depth

$$\text{Volume} = \text{Ab} * \text{D} + 0.5 * \text{C} * \text{D}^2$$

$$\text{C} = (\text{At} - \text{Ab}) / \text{Dt}$$

$$\text{Ab} = 0.00$$

$$\text{At} = 2,702.00$$

$$\text{Dt} = 1.25$$

$$\text{C} = 2161.60$$

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
4926.85	0	0	0.0000
4927.10	0.25	0.0000	0.0120
4927.35	0.50	0.0016	0.0178
4927.60	0.75	0.0062	0.0221
4927.85	1.00	0.0140	0.0257
4928.10	1.25	0.0248	0.0289

Orifice Equation

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

$$\text{C} = 0.6$$

$$\text{Diameter (in)} = 1$$

$$\text{Area (ft}^2\text{)} = 0.005$$

$$g = 32.2$$

$$\text{H (Ft)} = \text{Depth of water above center of orifice}$$

$$\text{Q (CFS)} = \text{Flow}$$

VOLUME CALCULATIONS

POND 18

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

$$\text{Volume} = \text{Ab} * \text{D} + 0.5 * \text{C} * \text{D}^2$$

$$\text{C} = (\text{At} - \text{Ab}) / \text{Dt}$$

$$\text{Ab} = 6.80$$

$$\text{At} = 3,053.00$$

$$\text{Dt} = 0.84$$

$$\text{C} = 3626.43$$

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
4925.30	0	0	0.00000
4929.30	4.00	0.0006	0.00328
4929.51	4.21	0.0025	0.00336
4929.72	4.42	0.0080	0.00345
4929.93	4.63	0.0172	0.00353
4930.14	4.84	0.0301	0.00361

Orifice Equation

$$Q = \text{CA} \text{ SQRT}(2gH)$$

$$\text{C} = 0.6$$

$$\text{Diameter (in)} = 0.25$$

$$\text{Area (ft}^2\text{)} = 0.000$$

$$g = 32.2$$

$$\text{H (Ft)} = \text{Depth of water above center of orifice}$$

$$\text{Q (CFS)} = \text{Flow}$$

VOLUME CALCULATIONS

POND 19

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

$$\text{Volume} = \text{Ab} * \text{D} + 0.5 * \text{C} * \text{D}^2$$

$$\text{C} = (\text{At} - \text{Ab}) / \text{Dt}$$

$$\text{Ab} = 1,399.00$$

$$\text{At} = 10,577.00$$

$$\text{Dt} = 7.00$$

$$\text{C} = 1311.14$$

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
4923.00	0	0	0.0000
4924.40	1.40	0.0450	0.7167
4925.80	2.80	0.1194	1.0569
4927.20	4.20	0.2529	1.3117
4928.60	5.60	0.4453	1.5245
4930.00	7.00	0.6968	1.7110

Orifice Equation

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

$$\text{C} = 0.6$$

$$\text{Diameter (in)} = 5$$

$$\text{Area (ft}^2\text{)} = 0.136$$

$$g = 32.2$$

$$\text{H (Ft)} = \text{Depth of water above center of orifice}$$

$$\text{Q (CFS)} = \text{Flow}$$

```
VER      1      12d      RI      1E      DAY      =0      200
USER NO.= AHYMO-S-9702d1TierraW-AH
```

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										
RAINFALL TYPE= 1										TIME= .00 RAIN6= 2.200
*S BASIN 1										
COMPUTE NM HYD	101.00	-	①	.00114	3.03	.112	1.83567	1.500	4.156	PER IMP= 90.00
*S BASIN 2										
COMPUTE NM HYD	102.00	-	②	.00273	7.40	.275	1.88760	1.500	4.237	PER IMP= 94.00
*S BASIN 3										
COMPUTE NM HYD	103.00	-	③	.00356	9.43	.349	1.83567	1.500	4.140	PER IMP= 90.00
*S BASIN 4										
COMPUTE NM HYD	104.00	-	④	.00267	7.40	.276	1.93952	1.500	4.332	PER IMP= 98.00
*S BASIN 5										
COMPUTE NM HYD	105.00	-	⑤	.00251	6.77	.251	1.87462	1.500	4.215	PER IMP= 93.00
*S BASIN 6										
COMPUTE NM HYD	106.00	-	⑥	.00302	8.28	.308	1.91356	1.500	4.283	PER IMP= 96.00
*S BASIN 7										
COMPUTE NM HYD	107.00	-	⑦	.00271	6.78	.247	1.70586	1.500	3.908	PER IMP= 80.00
*S BASIN 8										
COMPUTE NM HYD	108.00	-	⑧	.00094	2.29	.082	1.64096	1.500	3.806	PER IMP= 75.00
*S BASIN 9										
COMPUTE NM HYD	109.00	-	⑨	.00049	.64	.017	.66738	1.533	2.049	PER IMP= .00
*S BASIN 10										
COMPUTE NM HYD	110.00	-	⑩	.00040	1.00	.036	1.67990	1.500	3.916	PER IMP= 78.00
*S BASIN 11										
COMPUTE NM HYD	111.00	-	⑪	.00036	.90	.032	1.67990	1.500	3.919	PER IMP= 78.00
*S BASIN 12										
COMPUTE NM HYD	112.00	-	⑫	.00027	.75	.027	1.90058	1.500	4.314	PER IMP= 95.00
*S BASIN 13										
COMPUTE NM HYD	113.00	-	⑬	.00388	10.40	.385	1.86163	1.500	4.187	PER IMP= 92.00
*S BASIN 14										
COMPUTE NM HYD	114.00	-	⑭	.00010	.29	.010	1.96548	1.500	4.496	PER IMP= 100.00
*S BASIN 15										
COMPUTE NM HYD	115.00	-	⑮	.00015	.20	.005	.66738	1.533	2.102	PER IMP= .00
*S BASIN 16										
COMPUTE NM HYD	116.00	-	⑯	.00099	2.78	.104	1.96548	1.500	4.381	PER IMP= 100.00
*S BASIN 17										
COMPUTE NM HYD	117.00	-	⑰	.00019	.54	.020	1.96548	1.500	4.437	PER IMP= 100.00
*S BASIN 18										
COMPUTE NM HYD	118.00	-	⑱	.00030	.71	.025	1.55009	1.500	3.697	PER IMP= 68.00
*S BASIN 19										
COMPUTE NM HYD	119.00	-	⑲	.00047	.62	.017	.66738	1.533	2.051	PER IMP= .00
*S BASIN 20										
COMPUTE NM HYD	120.00	-	⑳	.00681	19.05	.714</				

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 2 NOTATION
COMPUTE NM HYD *S BASIN OS-5	124.00	-	(24)	.00084	2.16	.079	1.75779	1.500	4.021	PER IMP= 84.00
COMPUTE NM HYD *S BASIN OS-6	125.00	-	(25)	.00305	8.54	.320	1.96548	1.500	4.373	PER IMP= 100.00
COMPUTE NM HYD *S BASIN OS-7	126.00	-	(26)	.00229	6.41	.240	1.96548	1.500	4.375	PER IMP= 100.00
COMPUTE NM HYD *S ADD BASINS 3 AND OS-2	127.00	-	(27)	.00179	4.43	.160	1.67990	1.500	3.865	PER IMP= 78.00
ADD HYD *S ADD BASINS 5, OS-1 AND OS-3	151.00	3&22	28	.00384	9.85	.360	1.75916	1.500	4.009	
ADD HYD	152.00	5&23	29	.00262	6.94	.256	1.82873	1.500	4.139	
ADD HYD	153.00	29&21	30	.00396	10.69	.396	1.87493	1.500	4.220	
*S ADD BASINS 7, AND OS-4										
ADD HYD	154.00	7&24	31	.00355	8.94	.325	1.71799	1.500	3.934	
*S ADD BASINS 9, AND OS-5										
ADD HYD	155.00	9&25	32	.00354	9.18	.337	1.78569	1.500	4.050	
*S ADD BASINS 15 AND OS-6										
ADD HYD	156.00	15&26	33	.00244	6.61	.245	1.88553	1.500	4.234	
*S ADD BASINS 19, 20 AND OS-7										
ADD HYD	157.00	19&20	34	.00728	19.66	.731	1.88163	1.500	4.221	
ADD HYD	158.00	34&27	35	.00907	24.09	.891	1.84179	1.500	4.150	
*S POND 1										
ROUTE RESERVOIR *S POND 2	201.00	(1)	36 -	.00114	.00	.004	.07031	6.299	.004	AC-FT= .110
ROUTE RESERVOIR *S POND 3	202.00	(2)	37 -	.00273	.64	.275	1.88900	2.200	.367	AC-FT= .198
ROUTE RESERVOIR *S POND 4	203.00	28	38 -	.00384	.00	.004	.02175	6.533	.001	AC-FT= .359
ROUTE RESERVOIR *S POND 5	204.00	4	39 -	.00267	.00	.006	.03877	6.433	.002	AC-FT= .275
ROUTE RESERVOIR *S POND 6	205.00	30	40 -	.00396	.03	.040	.19043	6.166	.010	AC-FT= .385
ROUTE RESERVOIR *S POND 7	206.00	6	41 -	.00302	.57	.308	1.91409	2.266	.297	AC-FT= .232
ROUTE RESERVOIR *S POND 8	207.00	31	42 -	.00355	.28	.299	1.58074	2.500	.122	AC-FT= .282
ROUTE RESERVOIR *S POND 9	208.00	8	43 -	.00094	.00	.005	.10381	6.233	.006	AC-FT= .081
ROUTE RESERVOIR *S POND 10	209.00	32	44 -	.00354	.01	.016	.08601	6.266	.005	AC-FT= .333
ROUTE RESERVOIR *S POND 11	210.00	10	45 -	.00040	.28	.036	1.67920	1.900	1.104	AC-FT= .014
ROUTE RESERVOIR *S POND 12	211.00	11	46 -	.00036	.22	.032	1.67920	1.966	.971	AC-FT= .014
ROUTE RESERVOIR *S POND 13	212.00	12	47 -	.00027	.22	.027	1.89975	1.900	1.294	AC-FT= .010
ROUTE RESERVOIR *S POND 14	213.00	13	48 -	.00388	.23	.351	1.69480	2.633	.094	AC-FT= .336
ROUTE RESERVOIR *S POND 15	214.00	14	49 -	.00010	.01	.009	1.60356	2.500	.096	AC-FT= .009
ROUTE RESERVOIR *S POND 16	215.00	33	50 -	.00244	.71	.245	1.88549	2.166	.453	AC-FT= .181

[illegible]

220094DRAIN.txt

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*****
*
*           WAL-MART SOUTH #5430-00 DRAINAGE ANALYSIS
*           COORS BLVD. AND RIO BRAVO BLVD. (220094)
*           PROPOSED CONDITIONS (100-YEAR, 6-HR STORM)
*
*****
*
START          TIME=0.0 HR
RAINFALL       TYPE=1 RAIN QUARTER=0.0 IN
               RAIN ONE=1.87 IN RAIN SIX=2.20 IN
               RAIN DAY=2.66 IN DT=0.03333 HR
*
*S BASIN 1
*
COMPUTE NM HYD   ID=1 HYD NO=101 AREA=0.00114 SQ MI
                  PER A=0 PER B=10.00 PER C=0.00 PER D=90.00
                  TP=0 HR MASS RAINFALL=-1
PRINT HYD        ID=1 CODE=1
*
*S BASIN 2
*
COMPUTE NM HYD   ID=2 HYD NO=102 AREA=0.00273 SQ MI
                  PER A=0 PER B=6.00 PER C=0.00 PER D=94.00
                  TP=0 HR MASS RAINFALL=-1
PRINT HYD        ID=2 CODE=1
*
*S BASIN 3
*
COMPUTE NM HYD   ID=3 HYD NO=103 AREA=0.00356 SQ MI
                  PER A=0 PER B=10.00 PER C=0.00 PER D=90.00
                  TP=0 HR MASS RAINFALL=-1
PRINT HYD        ID=3 CODE=1
*
*S BASIN 4
*
COMPUTE NM HYD   ID=4 HYD NO=104 AREA=0.00267 SQ MI
                  PER A=0 PER B=2.00 PER C=0.00 PER D=98.00
                  TP=0 HR MASS RAINFALL=-1
PRINT HYD        ID=4 CODE=1
*
*S BASIN 5
*
COMPUTE NM HYD   ID=5 HYD NO=105 AREA=0.00251 SQ MI
                  PER A=0 PER B=7.00 PER C=0.00 PER D=93.00
                  TP=0 HR MASS RAINFALL=-1
PRINT HYD        ID=5 CODE=1
*
*S BASIN 6
*
COMPUTE NM HYD   ID=6 HYD NO=106 AREA=0.00302 SQ MI
                  PER A=0 PER B=4.00 PER C=0.00 PER D=96.00
                  TP=0 HR MASS RAINFALL=-1
PRINT HYD        ID=6 CODE=1
*
*S BASIN 7
*

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                                220094DRAIN.txt
COMPUTE NM HYD      ID=7 HYD NO=107 AREA=0.00271 SQ MI
                    PER A=0 PER B=20.00 PER C=0.00 PER D=80.00
                    TP=0 HR MASS RAINFALL=-1
PRINT HYD           ID=7 CODE=1

*
*S BASIN 8
*
COMPUTE NM HYD      ID=8 HYD NO=108 AREA=0.00094 SQ MI
                    PER A=0 PER B=25.00 PER C=0.00 PER D=75.00
                    TP=0 HR MASS RAINFALL=-1
PRINT HYD           ID=8 CODE=1

*
*S BASIN 9
*
COMPUTE NM HYD      ID=9 HYD NO=109 AREA=0.00049 SQ MI
                    PER A=0 PER B=100.00 PER C=0.00 PER D=0.00
                    TP=0 HR MASS RAINFALL=-1
PRINT HYD           ID=9 CODE=1

*
*S BASIN 10
*
COMPUTE NM HYD      ID=10 HYD NO=110 AREA=0.00040 SQ MI
                    PER A=0 PER B=22.00 PER C=0.00 PER D=78.00
                    TP=0 HR MASS RAINFALL=-1
PRINT HYD           ID=10 CODE=1

*
*S BASIN 11
*
COMPUTE NM HYD      ID=11 HYD NO=111 AREA=0.00036 SQ MI
                    PER A=0 PER B=22.00 PER C=0.00 PER D=78.00
                    TP=0 HR MASS RAINFALL=-1
PRINT HYD           ID=11 CODE=1

*
*S BASIN 12
*
COMPUTE NM HYD      ID=12 HYD NO=112 AREA=0.00027 SQ MI
                    PER A=0 PER B=5.00 PER C=0.00 PER D=95.00
                    TP=0 HR MASS RAINFALL=-1
PRINT HYD           ID=12 CODE=1

*
*S BASIN 13
*
COMPUTE NM HYD      ID=13 HYD NO=113 AREA=0.00388 SQ MI
                    PER A=0 PER B=8.00 PER C=0.00 PER D=92.00
                    TP=0 HR MASS RAINFALL=-1
PRINT HYD           ID=13 CODE=1

*
*S BASIN 14
*
COMPUTE NM HYD      ID=14 HYD NO=114 AREA=0.00010 SQ MI
                    PER A=0 PER B=0.00 PER C=0.00 PER D=100.00
                    TP=0 HR MASS RAINFALL=-1
PRINT HYD           ID=14 CODE=1

*
*S BASIN 15

```

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```

*
COMPUTE NM HYD      ID=15 HYD NO=115 AREA=0.00015 SQ MI
                    PER A=0 PER B=100.00 PER C=0.00 PER D=0.00
                    TP=0 HR MASS RAINFALL=-1
PRINT HYD           ID=15 CODE=1

*
*S BASIN 16
*
COMPUTE NM HYD      ID=16 HYD NO=116 AREA=0.00099 SQ MI
                    PER A=0 PER B=0.00 PER C=0.00 PER D=100.00
                    TP=0 HR MASS RAINFALL=-1
PRINT HYD           ID=16 CODE=1

*
*S BASIN 17
*
COMPUTE NM HYD      ID=17 HYD NO=117 AREA=0.00019 SQ MI
                    PER A=0 PER B=0.00 PER C=0.00 PER D=100.00
                    TP=0 HR MASS RAINFALL=-1
PRINT HYD           ID=17 CODE=1

*
*S BASIN 18
*
COMPUTE NM HYD      ID=18 HYD NO=118 AREA=0.00030 SQ MI
                    PER A=0 PER B=32.00 PER C=0.00 PER D=68.00
                    TP=0 HR MASS RAINFALL=-1
PRINT HYD           ID=18 CODE=1

*
*S BASIN 19
*
COMPUTE NM HYD      ID=19 HYD NO=119 AREA=0.00047 SQ MI
                    PER A=0 PER B=100.00 PER C=0.00 PER D=0.00
                    TP=0 HR MASS RAINFALL=-1
PRINT HYD           ID=19 CODE=1

*
*S BASIN 20
*
COMPUTE NM HYD      ID=20 HYD NO=120 AREA=0.00681 SQ MI
                    PER A=0 PER B=0.00 PER C=0.00 PER D=100.00
                    TP=0 HR MASS RAINFALL=-1
PRINT HYD           ID=20 CODE=1

*
*S BASIN OS-1
*
COMPUTE NM HYD      ID=21 HYD NO=121 AREA=0.00134 SQ MI
                    PER A=0 PER B=0.00 PER C=0.00 PER D=100.00
                    TP=0 HR MASS RAINFALL=-1
PRINT HYD           ID=21 CODE=1

*
*S BASIN OS-2
*
COMPUTE NM HYD      ID=22 HYD NO=122 AREA=0.00028 SQ MI
                    PER A=0 PER B=90.00 PER C=0.00 PER D=10.00
                    TP=0 HR MASS RAINFALL=-1
PRINT HYD           ID=22 CODE=1

```

*

```

*S BASIN OS-3
*
COMPUTE NM HYD      ID=23 HYD NO=123 AREA=0.00011 SQ MI
                    PER A=0 PER B=90.00 PER C=0.00 PER D=10.00
                    TP=0 HR MASS RAINFALL=-1
PRINT HYD           ID=23 CODE=1

*
*S BASIN OS-4
*
COMPUTE NM HYD      ID=24 HYD NO=124 AREA=0.00084 SQ MI
                    PER A=0 PER B=16.00 PER C=0.00 PER D=84.00
                    TP=0 HR MASS RAINFALL=-1
PRINT HYD           ID=24 CODE=1

*
*S BASIN OS-5
*
COMPUTE NM HYD      ID=25 HYD NO=125 AREA=0.00305 SQ MI
                    PER A=0 PER B=0.00 PER C=0.00 PER D=100.00
                    TP=0 HR MASS RAINFALL=-1
PRINT HYD           ID=25 CODE=1

*
*S BASIN OS-6
*
COMPUTE NM HYD      ID=26 HYD NO=126 AREA=0.00229 SQ MI
                    PER A=0 PER B=0.00 PER C=0.00 PER D=100.00
                    TP=0 HR MASS RAINFALL=-1
PRINT HYD           ID=26 CODE=1

*
*S BASIN OS-7
*
COMPUTE NM HYD      ID=27 HYD NO=127 AREA=0.00179 SQ MI
                    PER A=0 PER B=22.00 PER C=0.00 PER D=78.00
                    TP=0 HR MASS RAINFALL=-1
PRINT HYD           ID=27 CODE=1

*
*S ADD BASINS 3 AND OS-2
*
ADD HYD             ID=28 HYD NO=151.00 ID=3  ID=22
PRINT HYD           ID=28 CODE=1

*
*S ADD BASINS 5, OS-1 AND OS-3
*
ADD HYD             ID=29 HYD NO=152.00 ID=5  ID=23
ADD HYD             ID=30 HYD NO=153.00 ID=29 ID=21
PRINT HYD           ID=30 CODE=1

*
*S ADD BASINS 7, AND OS-4
*
ADD HYD             ID=31 HYD NO=154.00 ID=7  ID=24
PRINT HYD           ID=31 CODE=1

*
*S ADD BASINS 9, AND OS-5
*
ADD HYD             ID=32 HYD NO=155.00 ID=9  ID=25
PRINT HYD           ID=32 CODE=1

```

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*

*S ADD BASINS 15 AND OS-6

*

ADD HYD ID=33 HYD NO=156.00 ID=15 ID=26
PRINT HYD ID=33 CODE=1

*

*S ADD BASINS 19, 20 AND OS-7

*

ADD HYD ID=34 HYD NO=157.00 ID=19 ID=20
ADD HYD ID=35 HYD NO=158.00 ID=34 ID=27
PRINT HYD ID=35 CODE=1

*

*S POND 1

*

ROUTE RESERVOIR	ID=36 HYD NO=201.00 INFLOW ID=1 CODE=24	OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
		0.0000	0.0000	4925.79
		0.0024	0.0003	4927.96
		0.0025	0.0157	4928.21
		0.0027	0.0615	4928.46
		0.0028	0.1379	4928.71
		0.0029	0.2449	4928.96

PRINT HYD ID=36 CODE=1

*

*S POND 2

*

ROUTE RESERVOIR	ID=37 HYD NO=202.00 INFLOW ID=2 CODE=25	OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
		0.0000	0.0000	4925.24
		0.5242	0.0003	4927.41
		0.5556	0.0129	4927.66
		0.5855	0.0504	4927.91
		0.6140	0.1129	4928.16
		0.6411	0.2005	4928.41

PRINT HYD ID=37 CODE=1

*

*S POND 3

*

ROUTE RESERVOIR	ID=38 HYD NO=203.00 INFLOW ID=28 CODE=24	OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
		0.0000	0.0000	4925.04
		0.0024	0.0003	4927.21
		0.0025	0.0252	4927.46
		0.0027	0.0998	4927.71
		0.0028	0.2240	4927.96
		0.0029	0.3979	4928.21

PRINT HYD ID=38 CODE=1

*

*S POND 4

*

ROUTE RESERVOIR	ID=39 HYD NO=204.00 INFLOW ID=4 CODE=24	OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
		0.0000	0.0000	4923.83
		0.0032	0.0006	4927.65
		0.0033	0.0207	4927.90

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0.0034	0.0811	4928.15
0.0035	0.1817	4928.40
0.0036	0.3225	4928.65

PRINT HYD ID=39 CODE=1
*

*S POND 5
*

ROUTE RESERVOIR	ID=40 HYD NO=205.00 INFLOW ID=30 CODE=24	OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
		0.0000	0.0000	4924.20
		0.0216	0.0003	4926.37
		0.0228	0.0260	4926.62
		0.0240	0.1029	4926.87
		0.0251	0.2311	4927.12
		0.0262	0.4106	4927.37

PRINT HYD ID=40 CODE=1
*

*S POND 6
*

ROUTE RESERVOIR	ID=41 HYD NO=206.00 INFLOW ID=6 CODE=24	OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
		0.0000	0.0000	4922.22
		0.5050	0.0005	4925.67
		0.5237	0.0156	4925.92
		0.5418	0.0606	4926.17
		0.5592	0.1355	4926.42
		0.5762	0.2404	4926.67

PRINT HYD ID=41 CODE=1
*

*S POND 7
*

ROUTE RESERVOIR	ID=42 HYD NO=207.00 INFLOW ID=31 CODE=24	OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
		0.0000	0.0000	4923.00
		0.1156	0.0432	4923.60
		0.1718	0.0909	4924.20
		0.2137	0.1476	4924.80
		0.2487	0.2132	4925.40
		0.2793	0.2879	4926.00

PRINT HYD ID=42 CODE=1
*

*S POND 8
*

ROUTE RESERVOIR	ID=43 HYD NO=208.00 INFLOW ID=8 CODE=24	OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
		0.0000	0.0000	4922.28
		0.0030	0.0005	4925.67
		0.0031	0.0064	4925.92
		0.0032	0.0238	4926.17
		0.0033	0.0529	4926.42
		0.0034	0.0936	4926.67

PRINT HYD ID=43 CODE=1
*

*S POND 9

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*

ROUTE RESERVOIR	ID=44	HYD NO=209.00	INFLOW ID=32	CODE=24
	OUTFLOW(CFS)		STORAGE(AC-FT)	ELEVATION(FT)
	0.0000		0.0000	4921.52
	0.0041		0.0377	4921.93
	0.0070		0.1161	4922.68
	0.0090		0.2135	4923.43
	0.0107		0.3300	4924.18
	0.0121		0.4656	4924.93

PRINT HYD ID=44 CODE=1
*

*S POND 10
*

ROUTE RESERVOIR	ID=45	HYD NO=210.00	INFLOW ID=10	CODE=24
	OUTFLOW(CFS)		STORAGE(AC-FT)	ELEVATION(FT)
	0.0000		0.0000	4925.14
	0.2628		0.0006	4929.14
	0.2683		0.0016	4929.31
	0.2738		0.0047	4929.48
	0.2792		0.0097	4929.64
	0.2844		0.0167	4929.81

PRINT HYD ID=45 CODE=1
*

*S POND 11
*

ROUTE RESERVOIR	ID=46	HYD NO=211.00	INFLOW ID=11	CODE=24
	OUTFLOW(CFS)		STORAGE(AC-FT)	ELEVATION(FT)
	0.0000		0.0000	4925.62
	0.2079		0.0006	4929.62
	0.2120		0.0015	4929.78
	0.2160		0.0041	4929.93
	0.2199		0.0084	4930.09
	0.2237		0.0144	4930.24

PRINT HYD ID=46 CODE=1
*

*S POND 12
*

ROUTE RESERVOIR	ID=47	HYD NO=212.00	INFLOW ID=12	CODE=24
	OUTFLOW(CFS)		STORAGE(AC-FT)	ELEVATION(FT)
	0.0000		0.0000	4926.00
	0.2079		0.0006	4930.00
	0.2123		0.0013	4930.17
	0.2166		0.0034	4930.34
	0.2208		0.0069	4930.50
	0.2250		0.0118	4930.67

PRINT HYD ID=47 CODE=1
*

*S POND 13
*

ROUTE RESERVOIR	ID=48	HYD NO=213.00	INFLOW ID=13	CODE=24
	OUTFLOW(CFS)		STORAGE(AC-FT)	ELEVATION(FT)
	0.0000		0.0000	4924.75
	0.2079		0.0006	4928.75
	0.2144		0.0223	4929.00
	0.2208		0.0871	4929.25

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0.2269	0.1952	4929.50
0.2329	0.3466	4929.75

PRINT HYD ID=48 CODE=1
*

*S POND 14
*

ROUTE RESERVOIR	ID=49 HYD NO=214.00 INFLOW ID=14 CODE=24	OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
		0.0000	0.0000	4926.85
		0.0028	0.0000	4927.05
		0.0040	0.0007	4927.25
		0.0050	0.0030	4927.45
		0.0058	0.0067	4927.65
		0.0065	0.0119	4927.85

PRINT HYD ID=49 CODE=1
*

*S POND 15
*

ROUTE RESERVOIR	ID=50 HYD NO=215.00 INFLOW ID=33 CODE=24	OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
		0.0000	0.0000	4926.75
		0.2766	0.0362	4927.35
		0.4271	0.0723	4927.95
		0.5370	0.1085	4928.55
		0.6279	0.1446	4929.15
		0.7073	0.1808	4929.75

PRINT HYD ID=50 CODE=1
*

*S POND 16
*

ROUTE RESERVOIR	ID=51 HYD NO=216.00 INFLOW ID=16 CODE=24	OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
		0.0000	0.0000	4925.51
		0.0033	0.0006	4929.51
		0.0034	0.0127	4929.76
		0.0035	0.0487	4930.01
		0.0036	0.1087	4930.26
		0.0037	0.1927	4930.51

PRINT HYD ID=51 CODE=1
*

*S POND 17
*

ROUTE RESERVOIR	ID=52 HYD NO=217.00 INFLOW ID=17 CODE=24	OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
		0.0000	0.0000	4926.85
		0.0120	0.0000	4927.10
		0.0178	0.0016	4927.35
		0.0221	0.0062	4927.60
		0.0259	0.0140	4927.85
		0.0289	0.0248	4928.10

PRINT HYD ID=52 CODE=1
*

*S POND 18
*

ROUTE RESERVOIR	ID=53 HYD NO=218.00 INFLOW ID=18 CODE=24	OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
-----------------	--	--------------	----------------	---------------

220094DRAIN.txt

0.00000	0.0000	4925.30
0.00328	0.0006	4929.30
0.00336	0.0025	4929.51
0.00345	0.0080	4929.72
0.00353	0.0172	4929.93
0.00361	0.0301	4930.14

PRINT HYD ID=53 CODE=1

*

*S POND 19

*

ROUTE RESERVOIR	ID=54 HYD NO=219.00 OUTFLOW(CFS)	INFLOW ID=35 STORAGE(AC-FT)	CODE=24 ELEVATION(FT)
	0.0000	0.0000	4923.00
	0.7167	0.0450	4924.40
	1.0569	0.1194	4925.80
	1.3117	0.2529	4927.20
	1.5245	0.4453	4928.60
	1.7110	0.6968	4930.00

PRINT HYD ID=54 CODE=1

*

*ADD PONDS 1 THRU 19

*

ADD HYD	ID=55 HYD NO=301.00	ID=36 ID=37
ADD HYD	ID=56 HYD NO=302.00	ID=55 ID=38
ADD HYD	ID=57 HYD NO=303.00	ID=56 ID=39
ADD HYD	ID=58 HYD NO=304.00	ID=57 ID=40
ADD HYD	ID=59 HYD NO=305.00	ID=58 ID=41
ADD HYD	ID=60 HYD NO=306.00	ID=42 ID=43
ADD HYD	ID=61 HYD NO=307.00	ID=60 ID=44
ADD HYD	ID=62 HYD NO=308.00	ID=59 ID=61
ADD HYD	ID=63 HYD NO=309.00	ID=62 ID=45
ADD HYD	ID=64 HYD NO=310.00	ID=63 ID=46
ADD HYD	ID=65 HYD NO=311.00	ID=64 ID=47
ADD HYD	ID=66 HYD NO=312.00	ID=54 ID=48
ADD HYD	ID=67 HYD NO=313.00	ID=66 ID=49
ADD HYD	ID=68 HYD NO=314.00	ID=67 ID=50
ADD HYD	ID=69 HYD NO=315.00	ID=68 ID=51
ADD HYD	ID=70 HYD NO=316.00	ID=69 ID=52
ADD HYD	ID=71 HYD NO=317.00	ID=70 ID=53
ADD HYD	ID=72 HYD NO=317.00	ID=71 ID=65

PRINT HYD ID=72 CODE=1

*

FINISH

AHYMO PROGRAM (AHYMO_97) - - Version: 1997.02d
 RUN DATE (MON/DAY/YR) = 02/12/2004
 START TIME (HR:MIN:SEC) = 16:22:03 USER NO.= AHYMO-S-
 9702d1TierraW-AH
 INPUT FILE = C:\AHYMOW~1\220094~1.TXT

 *
 * WAL-MART SOUTH #5430-00 DRAINAGE ANALYSIS *
 * COORS BLVD. AND RIO BRAVO BLVD. (220094) *
 * PROPOSED CONDITIONS (100-YEAR, 6-HR STORM) *
 *

START TIME=0.0 HR
 RAINFALL TYPE=1 RAIN QUARTER=0.0 IN
 RAIN ONE=1.87 IN RAIN SIX=2.20 IN
 RAIN DAY=2.66 IN DT=0.03333 HR

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2
 - PEAK AT 1.40 HR.

DT = .033330 HOURS			END TIME = 5.999400 HOURS			
.0000	.0016	.0033	.0050	.0067	.0085	.0103
.0122	.0141	.0160	.0180	.0201	.0222	.0243
.0266	.0289	.0312	.0337	.0362	.0388	.0415
.0443	.0472	.0502	.0534	.0567	.0601	.0637
.0675	.0715	.0758	.0809	.0865	.0924	.1050
.1334	.1771	.2398	.3254	.4379	.5814	.7600
.9780	1.1804	1.2649	1.3363	1.3997	1.4575	1.5106
1.5600	1.6061	1.6493	1.6900	1.7284	1.7646	1.7989
1.8314	1.8623	1.8915	1.9193	1.9456	1.9518	1.9576
1.9630	1.9682	1.9732	1.9780	1.9825	1.9869	1.9912
1.9953	1.9993	2.0031	2.0068	2.0104	2.0140	2.0174
2.0207	2.0240	2.0272	2.0303	2.0333	2.0363	2.0392
2.0420	2.0448	2.0475	2.0502	2.0528	2.0554	2.0580
2.0605	2.0629	2.0653	2.0677	2.0700	2.0723	2.0746
2.0768	2.0790	2.0812	2.0833	2.0855	2.0875	2.0896
2.0916	2.0936	2.0956	2.0976	2.0995	2.1014	2.1033
2.1051	2.1070	2.1088	2.1106	2.1124	2.1141	2.1159
2.1176	2.1193	2.1210	2.1227	2.1244	2.1260	2.1276
2.1292	2.1308	2.1324	2.1340	2.1355	2.1371	2.1386
2.1401	2.1416	2.1431	2.1446	2.1460	2.1475	2.1489
2.1504	2.1518	2.1532	2.1546	2.1560	2.1573	2.1587
2.1600	2.1614	2.1627	2.1640	2.1654	2.1667	2.1680
2.1692	2.1705	2.1718	2.1731	2.1743	2.1756	2.1768
2.1780	2.1792	2.1804	2.1817	2.1829	2.1840	2.1852
2.1864	2.1876	2.1887	2.1899	2.1910	2.1922	2.1933
2.1944	2.1956	2.1967	2.1978	2.1989	2.2000	

*
 *S BASIN 1
 *

COMPUTE NM HYD ID=1 HYD NO=101 AREA=0.00114 SQ MI
 PER A=0 PER B=10.00 PER C=0.00 PER D=90.00
 TP=0 HR MASS RAINFALL=-1

*****Warning*****A value for the Time to Peak was not previously
computed; use Tp=0.133333 hrs.

TIME TO PEAK (hrs)= .1333

K = .072666HR TP = .133333HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 4.0497 CFS UNIT VOLUME = .9965 B =
526.28 P60 = 1.8700
AREA = .001026 SQ MI IA = .10000 INCHES INF = .04000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

K = .131024HR TP = .133333HR K/TP RATIO = .982685
SHAPE CONSTANT, N = 3.593454
UNIT PEAK = .27966 CFS UNIT VOLUME = .9499 B =
327.09 P60 = 1.8700
AREA = .000114 SQ MI IA = .50000 INCHES INF = 1.25000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 101.00

RUNOFF VOLUME = 1.83567 INCHES = .1116 ACRE-FEET
PEAK DISCHARGE RATE = 3.03 CFS AT 1.500 HOURS BASIN AREA =
.0011 SQ. MI.

*

*S BASIN 2

*

COMPUTE NM HYD ID=2 HYD NO=102 AREA=0.00273 SQ MI
PER A=0 PER B=6.00 PER C=0.00 PER D=94.00
TP=0 HR MASS RAINFALL=-1

TIME TO PEAK (hrs)= .1333

*****Warning*****This Tp value was used for a previously computed
hydrograph.

A new Tp value should be computed.

K = .072666HR TP = .133333HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 10.129 CFS UNIT VOLUME = .9982 B =
526.28 P60 = 1.8700
AREA = .002566 SQ MI IA = .10000 INCHES INF = .04000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

K = .131024HR TP = .133333HR K/TP RATIO = .982685
 SHAPE CONSTANT, N = 3.593454
 UNIT PEAK = .40183 CFS UNIT VOLUME = .9673 B =
 327.09 P60 = 1.8700
 AREA = .000164 SQ MI IA = .50000 INCHES INF = 1.25000
 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
 = .033330

PRINT HYD ID=2 CODE=1

PARTIAL HYDROGRAPH 102.00

RUNOFF VOLUME = 1.88760 INCHES = .2748 ACRE-FEET
 PEAK DISCHARGE RATE = 7.40 CFS AT 1.500 HOURS BASIN AREA =
 .0027 SQ. MI.

*

*S BASIN 3

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COMPUTE NM HYD ID=3 HYD NO=103 AREA=0.00356 SQ MI
 PER A=0 PER B=10.00 PER C=0.00 PER D=90.00
 TP=0 HR MASS RAINFALL=-1

TIME TO PEAK (hrs)= .1333

*****Warning*****This Tp value was used for a previously computed hydrograph.

A new Tp value should be computed.

K = .072666HR TP = .133333HR K/TP RATIO = .545000
 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 12.646 CFS UNIT VOLUME = .9985 B =
 526.28 P60 = 1.8700
 AREA = .003204 SQ MI IA = .10000 INCHES INF = .04000
 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
 = .033330

K = .131024HR TP = .133333HR K/TP RATIO = .982685
 SHAPE CONSTANT, N = 3.593454
 UNIT PEAK = .87333 CFS UNIT VOLUME = .9849 B =
 327.09 P60 = 1.8700
 AREA = .000356 SQ MI IA = .50000 INCHES INF = 1.25000
 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
 = .033330

PRINT HYD ID=3 CODE=1

PARTIAL HYDROGRAPH 103.00

RUNOFF VOLUME = 1.83567 INCHES = .3485 ACRE-FEET
PEAK DISCHARGE RATE = 9.43 CFS AT 1.500 HOURS BASIN AREA =
.0036 SQ. MI.

*

*S BASIN 4

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COMPUTE NM HYD ID=4 HYD NO=104 AREA=0.00267 SQ MI
PER A=0 PER B=2.00 PER C=0.00 PER D=98.00
TP=0 HR MASS RAINFALL=-1

TIME TO PEAK (hrs)= .1333

*****Warning*****This Tp value was used for a previously computed
hydrograph.

A new Tp value should be computed.

K = .072666HR TP = .133333HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 10.328 CFS UNIT VOLUME = .9982 B =
526.28 P60 = 1.8700
AREA = .002617 SQ MI IA = .10000 INCHES INF = .04000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

K = .131024HR TP = .133333HR K/TP RATIO = .982685
SHAPE CONSTANT, N = 3.593454
UNIT PEAK = .13100 CFS UNIT VOLUME = .8921 B =
327.09 P60 = 1.8700
AREA = .000053 SQ MI IA = .50000 INCHES INF = 1.25000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD ID=4 CODE=1

PARTIAL HYDROGRAPH 104.00

RUNOFF VOLUME = 1.93952 INCHES = .2762 ACRE-FEET
PEAK DISCHARGE RATE = 7.40 CFS AT 1.500 HOURS BASIN AREA =
.0027 SQ. MI.

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*S BASIN 5

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COMPUTE NM HYD ID=5 HYD NO=105 AREA=0.00251 SQ MI
PER A=0 PER B=7.00 PER C=0.00 PER D=93.00
TP=0 HR MASS RAINFALL=-1

TIME TO PEAK (hrs)= .1333

*****Warning*****This Tp value was used for a previously computed hydrograph.

A new Tp value should be computed.

K = .072666HR TP = .133333HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 9.2137 CFS UNIT VOLUME = .9980 B =
526.28 P60 = 1.8700
AREA = .002334 SQ MI IA = .10000 INCHES INF = .04000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

K = .131024HR TP = .133333HR K/TP RATIO = .982685
SHAPE CONSTANT, N = 3.593454
UNIT PEAK = .43102 CFS UNIT VOLUME = .9673 B =
327.09 P60 = 1.8700
AREA = .000176 SQ MI IA = .50000 INCHES INF = 1.25000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD ID=5 CODE=1

PARTIAL HYDROGRAPH 105.00

RUNOFF VOLUME = 1.87462 INCHES = .2509 ACRE-FEET
PEAK DISCHARGE RATE = 6.77 CFS AT 1.500 HOURS BASIN AREA =
.0025 SQ. MI.

*

*S BASIN 6

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COMPUTE NM HYD ID=6 HYD NO=106 AREA=0.00302 SQ MI
PER A=0 PER B=4.00 PER C=0.00 PER D=96.00
TP=0 HR MASS RAINFALL=-1

TIME TO PEAK (hrs)= .1333

*****Warning*****This Tp value was used for a previously computed hydrograph.

A new Tp value should be computed.

K = .072666HR TP = .133333HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 11.443 CFS UNIT VOLUME = .9984 B =
526.28 P60 = 1.8700
AREA = .002899 SQ MI IA = .10000 INCHES INF = .04000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

K = .131024HR TP = .133333HR K/TP RATIO = .982685
 SHAPE CONSTANT, N = 3.593454
 UNIT PEAK = .29634 CFS UNIT VOLUME = .9540 B =
 327.09 P60 = 1.8700
 AREA = .000121 SQ MI IA = .50000 INCHES INF = 1.25000
 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
 = .033330

PRINT HYD ID=6 CODE=1

PARTIAL HYDROGRAPH 106.00

RUNOFF VOLUME = 1.91356 INCHES = .3082 ACRE-FEET
 PEAK DISCHARGE RATE = 8.28 CFS AT 1.500 HOURS BASIN AREA =
 .0030 SQ. MI.

*

*S BASIN 7

*

COMPUTE NM HYD ID=7 HYD NO=107 AREA=0.00271 SQ MI
 PER A=0 PER B=20.00 PER C=0.00 PER D=80.00
 TP=0 HR MASS RAINFALL=-1

TIME TO PEAK (hrs)= .1333

*****Warning*****This Tp value was used for a previously computed hydrograph.

A new Tp value should be computed.

K = .072666HR TP = .133333HR K/TP RATIO = .545000
 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 8.5573 CFS UNIT VOLUME = .9980 B =
 526.28 P60 = 1.8700
 AREA = .002168 SQ MI IA = .10000 INCHES INF = .04000
 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
 = .033330

K = .131024HR TP = .133333HR K/TP RATIO = .982685
 SHAPE CONSTANT, N = 3.593454
 UNIT PEAK = 1.3296 CFS UNIT VOLUME = .9903 B =
 327.09 P60 = 1.8700
 AREA = .000542 SQ MI IA = .50000 INCHES INF = 1.25000
 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
 = .033330

PRINT HYD ID=7 CODE=1

PARTIAL HYDROGRAPH 107.00

RUNOFF VOLUME = 1.70586 INCHES = .2466 ACRE-FEET
PEAK DISCHARGE RATE = 6.78 CFS AT 1.500 HOURS BASIN AREA =
.0027 SQ. MI.

*

*S BASIN 8

*

COMPUTE NM HYD ID=8 HYD NO=108 AREA=0.00094 SQ MI
PER A=0 PER B=25.00 PER C=0.00 PER D=75.00
TP=0 HR MASS RAINFALL=-1

TIME TO PEAK (hrs)= .1333

*****Warning*****This Tp value was used for a previously computed
hydrograph.

A new Tp value should be computed.

K = .072666HR TP = .133333HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 2.7827 CFS UNIT VOLUME = .9955 B =
526.28 P60 = 1.8700
AREA = .000705 SQ MI IA = .10000 INCHES INF = .04000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

K = .131024HR TP = .133333HR K/TP RATIO = .982685
SHAPE CONSTANT, N = 3.593454
UNIT PEAK = .57649 CFS UNIT VOLUME = .9768 B =
327.09 P60 = 1.8700
AREA = .000235 SQ MI IA = .50000 INCHES INF = 1.25000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD ID=8 CODE=1

PARTIAL HYDROGRAPH 108.00

RUNOFF VOLUME = 1.64096 INCHES = .0823 ACRE-FEET
PEAK DISCHARGE RATE = 2.29 CFS AT 1.500 HOURS BASIN AREA =
.0009 SQ. MI.

*

*S BASIN 9

*

COMPUTE NM HYD ID=9 HYD NO=109 AREA=0.00049 SQ MI
PER A=0 PER B=100.00 PER C=0.00 PER D=0.00

TP=0 HR MASS RAINFALL=-1
TIME TO PEAK (hrs)= .1333
*****Warning*****This Tp value was used for a previously computed hydrograph.

A new Tp value should be computed.

K = .131024HR TP = .133333HR K/TP RATIO = .982685
SHAPE CONSTANT, N = 3.593454
UNIT PEAK = 1.2020 CFS UNIT VOLUME = .9894 B =
327.09 P60 = 1.8700
AREA = .000490 SQ MI IA = .50000 INCHES INF = 1.25000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD ID=9 CODE=1

PARTIAL HYDROGRAPH 109.00

RUNOFF VOLUME = .66738 INCHES = .0174 ACRE-FEET
PEAK DISCHARGE RATE = .64 CFS AT 1.533 HOURS BASIN AREA =
.0005 SQ. MI.

*

*S BASIN 10

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COMPUTE NM HYD ID=10 HYD NO=110 AREA=0.00040 SQ MI
PER A=0 PER B=22.00 PER C=0.00 PER D=78.00
TP=0 HR MASS RAINFALL=-1

TIME TO PEAK (hrs)= .1333

*****Warning*****This Tp value was used for a previously computed hydrograph.

A new Tp value should be computed.

K = .072666HR TP = .133333HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 1.2315 CFS UNIT VOLUME = .9897 B =
526.28 P60 = 1.8700
AREA = .000312 SQ MI IA = .10000 INCHES INF = .04000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

K = .131024HR TP = .133333HR K/TP RATIO = .982685
SHAPE CONSTANT, N = 3.593454
UNIT PEAK = .21588 CFS UNIT VOLUME = .9353 B =
327.09 P60 = 1.8700
AREA = .000088 SQ MI IA = .50000 INCHES INF = 1.25000
INCHES PER HOUR

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

PRINT HYD ID=10 CODE=1

PARTIAL HYDROGRAPH 110.00

RUNOFF VOLUME = 1.67990 INCHES = .0358 ACRE-FEET
PEAK DISCHARGE RATE = 1.00 CFS AT 1.500 HOURS BASIN AREA =
.0004 SQ. MI.

*

*S BASIN 11

*

COMPUTE NM HYD ID=11 HYD NO=111 AREA=0.00036 SQ MI
PER A=0 PER B=22.00 PER C=0.00 PER D=78.00
TP=0 HR MASS RAINFALL=-1

TIME TO PEAK (hrs)= .1333

*****Warning*****This Tp value was used for a previously computed
hydrograph.

A new Tp value should be computed.

K = .072666HR TP = .133333HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 1.1083 CFS UNIT VOLUME = .9897 B =
526.28 P60 = 1.8700
AREA = .000281 SQ MI IA = .10000 INCHES INF = .04000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

K = .131024HR TP = .133333HR K/TP RATIO = .982685
SHAPE CONSTANT, N = 3.593454
UNIT PEAK = .19429 CFS UNIT VOLUME = .9295 B =
327.09 P60 = 1.8700
AREA = .000079 SQ MI IA = .50000 INCHES INF = 1.25000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD ID=11 CODE=1

PARTIAL HYDROGRAPH 111.00

RUNOFF VOLUME = 1.67990 INCHES = .0323 ACRE-FEET
PEAK DISCHARGE RATE = .90 CFS AT 1.500 HOURS BASIN AREA =
.0004 SQ. MI.

*
*S BASIN 12
*

COMPUTE NM HYD ID=12 HYD NO=112 AREA=0.00027 SQ MI
PER A=0 PER B=5.00 PER C=0.00 PER D=95.00
TP=0 HR MASS RAINFALL=-1

TIME TO PEAK (hrs)= .1333

*****Warning*****This Tp value was used for a previously computed hydrograph.

A new Tp value should be computed.

K = .072666HR TP = .133333HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 1.0124 CFS UNIT VOLUME = .9881 B =
526.28 P60 = 1.8700
AREA = .000257 SQ MI IA = .10000 INCHES INF = .04000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

K = .131024HR TP = .133333HR K/TP RATIO = .982685
SHAPE CONSTANT, N = 3.593454
UNIT PEAK = .33118E-01CFS UNIT VOLUME = .8721 B =
327.09 P60 = 1.8700
AREA = .000014 SQ MI IA = .50000 INCHES INF = 1.25000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD ID=12 CODE=1

PARTIAL HYDROGRAPH 112.00

RUNOFF VOLUME = 1.90058 INCHES = .0274 ACRE-FEET
PEAK DISCHARGE RATE = .75 CFS AT 1.500 HOURS BASIN AREA =
.0003 SQ. MI.

*
*S BASIN 13
*

COMPUTE NM HYD ID=13 HYD NO=113 AREA=0.00388 SQ MI
PER A=0 PER B=8.00 PER C=0.00 PER D=92.00
TP=0 HR MASS RAINFALL=-1

TIME TO PEAK (hrs)= .1333

*****Warning*****This Tp value was used for a previously computed hydrograph.

A new Tp value should be computed.

K = .072666HR TP = .133333HR K/TP RATIO = .545000
 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = 14.089 CFS UNIT VOLUME = .9985 B =
 526.28 P60 = 1.8700
 AREA = .003570 SQ MI IA = .10000 INCHES INF = .04000
 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
 = .033330

K = .131024HR TP = .133333HR K/TP RATIO = .982685
 SHAPE CONSTANT, N = 3.593454
 UNIT PEAK = .76146 CFS UNIT VOLUME = .9821 B =
 327.09 P60 = 1.8700
 AREA = .000310 SQ MI IA = .50000 INCHES INF = 1.25000
 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
 = .033330

PRINT HYD ID=13 CODE=1

PARTIAL HYDROGRAPH 113.00

RUNOFF VOLUME = 1.86163 INCHES = .3852 ACRE-FEET
 PEAK DISCHARGE RATE = 10.40 CFS AT 1.500 HOURS BASIN AREA =
 .0039 SQ. MI.

*

*S BASIN 14

*

COMPUTE NM HYD ID=14 HYD NO=114 AREA=0.00010 SQ MI
 PER A=0 PER B=0.00 PER C=0.00 PER D=100.00
 TP=0 HR MASS RAINFALL=-1

TIME TO PEAK (hrs)= .1333

*****Warning*****This Tp value was used for a previously computed hydrograph.

A new Tp value should be computed.

K = .072666HR TP = .133333HR K/TP RATIO = .545000
 SHAPE CONSTANT, N = 7.106420
 UNIT PEAK = .39471 CFS UNIT VOLUME = .9711 B =
 526.28 P60 = 1.8700
 AREA = .000100 SQ MI IA = .10000 INCHES INF = .04000
 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
 = .033330

PRINT HYD ID=14 CODE=1

PARTIAL HYDROGRAPH 114.00

RUNOFF VOLUME = 1.96548 INCHES = .0105 ACRE-FEET
PEAK DISCHARGE RATE = .29 CFS AT 1.500 HOURS BASIN AREA =
.0001 SQ. MI.

*
*S BASIN 15
*

COMPUTE NM HYD ID=15 HYD NO=115 AREA=0.00015 SQ MI
PER A=0 PER B=100.00 PER C=0.00 PER D=0.00
TP=0 HR MASS RAINFALL=-1

TIME TO PEAK (hrs)= .1333

*****Warning*****This Tp value was used for a previously computed
hydrograph.

A new Tp value should be computed.

K = .131024HR TP = .133333HR K/TP RATIO = .982685
SHAPE CONSTANT, N = 3.593454
UNIT PEAK = .36797 CFS UNIT VOLUME = .9644 B =
327.09 P60 = 1.8700
AREA = .000150 SQ MI IA = .50000 INCHES INF = 1.25000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD ID=15 CODE=1

PARTIAL HYDROGRAPH 115.00

RUNOFF VOLUME = .66738 INCHES = .0053 ACRE-FEET
PEAK DISCHARGE RATE = .20 CFS AT 1.533 HOURS BASIN AREA =
.0002 SQ. MI.

*
*S BASIN 16
*

COMPUTE NM HYD ID=16 HYD NO=116 AREA=0.00099 SQ MI
PER A=0 PER B=0.00 PER C=0.00 PER D=100.00
TP=0 HR MASS RAINFALL=-1

TIME TO PEAK (hrs)= .1333

*****Warning*****This Tp value was used for a previously computed
hydrograph.

A new Tp value should be computed.

K = .072666HR TP = .133333HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 3.9076 CFS UNIT VOLUME = .9965 B =
526.28 P60 = 1.8700

AREA = .000990 SQ MI IA = .10000 INCHES INF = .04000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD ID=16 CODE=1

PARTIAL HYDROGRAPH 116.00

RUNOFF VOLUME = 1.96548 INCHES = .1038 ACRE-FEET
PEAK DISCHARGE RATE = 2.78 CFS AT 1.500 HOURS BASIN AREA =
.0010 SQ. MI.

*

*S BASIN 17

*

COMPUTE NM HYD ID=17 HYD NO=117 AREA=0.00019 SQ MI
PER A=0 PER B=0.00 PER C=0.00 PER D=100.00
TP=0 HR MASS RAINFALL=-1

TIME TO PEAK (hrs)= .1333

*****Warning*****This Tp value was used for a previously computed
hydrograph.

A new Tp value should be computed.

K = .072666HR TP = .133333HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = .74994 CFS UNIT VOLUME = .9840 B =
526.28 P60 = 1.8700
AREA = .000190 SQ MI IA = .10000 INCHES INF = .04000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD ID=17 CODE=1

PARTIAL HYDROGRAPH 117.00

RUNOFF VOLUME = 1.96548 INCHES = .0199 ACRE-FEET
PEAK DISCHARGE RATE = .54 CFS AT 1.500 HOURS BASIN AREA =
.0002 SQ. MI.

*

*S BASIN 18

*

COMPUTE NM HYD ID=18 HYD NO=118 AREA=0.00030 SQ MI
PER A=0 PER B=32.00 PER C=0.00 PER D=68.00
TP=0 HR MASS RAINFALL=-1

TIME TO PEAK (hrs)= .1333

*****Warning*****This Tp value was used for a previously computed hydrograph.

A new Tp value should be computed.

K = .072666HR TP = .133333HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = .80520 CFS UNIT VOLUME = .9862 B =
526.28 P60 = 1.8700
AREA = .000204 SQ MI IA = .10000 INCHES INF = .04000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

K = .131024HR TP = .133333HR K/TP RATIO = .982685
SHAPE CONSTANT, N = 3.593454
UNIT PEAK = .23550 CFS UNIT VOLUME = .9406 B =
327.09 P60 = 1.8700
AREA = .000096 SQ MI IA = .50000 INCHES INF = 1.25000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD ID=18 CODE=1

PARTIAL HYDROGRAPH 118.00

RUNOFF VOLUME = 1.55009 INCHES = .0248 ACRE-FEET
PEAK DISCHARGE RATE = .71 CFS AT 1.500 HOURS BASIN AREA =
.0003 SQ. MI.

*

*S BASIN 19

*

COMPUTE NM HYD ID=19 HYD NO=119 AREA=0.00047 SQ MI
PER A=0 PER B=100.00 PER C=0.00 PER D=0.00
TP=0 HR MASS RAINFALL=-1

TIME TO PEAK (hrs)= .1333

*****Warning*****This Tp value was used for a previously computed hydrograph.

A new Tp value should be computed.

K = .131024HR TP = .133333HR K/TP RATIO = .982685
SHAPE CONSTANT, N = 3.593454
UNIT PEAK = 1.1530 CFS UNIT VOLUME = .9884 B =
327.09 P60 = 1.8700
AREA = .000470 SQ MI IA = .50000 INCHES INF = 1.25000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD

ID=19 CODE=1

PARTIAL HYDROGRAPH 119.00

RUNOFF VOLUME = .66738 INCHES = .0167 ACRE-FEET
PEAK DISCHARGE RATE = .62 CFS AT 1.533 HOURS BASIN AREA =
.0005 SQ. MI.

*

*S BASIN 20

*

COMPUTE NM HYD ID=20 HYD NO=120 AREA=0.00681 SQ MI
PER A=0 PER B=0.00 PER C=0.00 PER D=100.00
TP=0 HR MASS RAINFALL=-1

TIME TO PEAK (hrs)= .1333

*****Warning*****This Tp value was used for a previously computed
hydrograph.

A new Tp value should be computed.

K = .072666HR TP = .133333HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 26.880 CFS UNIT VOLUME = .9989 B =
526.28 P60 = 1.8700
AREA = .006810 SQ MI IA = .10000 INCHES INF = .04000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD

ID=20 CODE=1

PARTIAL HYDROGRAPH 120.00

RUNOFF VOLUME = 1.96548 INCHES = .7139 ACRE-FEET
PEAK DISCHARGE RATE = 19.05 CFS AT 1.500 HOURS BASIN AREA =
.0068 SQ. MI.

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*S BASIN OS-1

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COMPUTE NM HYD ID=21 HYD NO=121 AREA=0.00134 SQ MI
PER A=0 PER B=0.00 PER C=0.00 PER D=100.00
TP=0 HR MASS RAINFALL=-1

TIME TO PEAK (hrs)= .1333

*****Warning*****This Tp value was used for a previously computed
hydrograph.

A new Tp value should be computed.

K = .072666HR TP = .133333HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 5.2891 CFS UNIT VOLUME = .9973 B =
526.28 P60 = 1.8700
AREA = .001340 SQ MI IA = .10000 INCHES INF = .04000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD ID=21 CODE=1

PARTIAL HYDROGRAPH 121.00

RUNOFF VOLUME = 1.96548 INCHES = .1405 ACRE-FEET
PEAK DISCHARGE RATE = 3.75 CFS AT 1.500 HOURS BASIN AREA =
.0013 SQ. MI.

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*S BASIN OS-2

*

COMPUTE NM HYD ID=22 HYD NO=122 AREA=0.00028 SQ MI
PER A=0 PER B=90.00 PER C=0.00 PER D=10.00
TP=0 HR MASS RAINFALL=-1

TIME TO PEAK (hrs)= .1333

*****Warning*****This Tp value was used for a previously computed
hydrograph.

A new Tp value should be computed.

K = .072666HR TP = .133333HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = .11052 CFS UNIT VOLUME = .9032 B =
526.28 P60 = 1.8700
AREA = .000028 SQ MI IA = .10000 INCHES INF = .04000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

K = .131024HR TP = .133333HR K/TP RATIO = .982685
SHAPE CONSTANT, N = 3.593454
UNIT PEAK = .61820 CFS UNIT VOLUME = .9787 B =
327.09 P60 = 1.8700
AREA = .000252 SQ MI IA = .50000 INCHES INF = 1.25000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD ID=22 CODE=1

PARTIAL HYDROGRAPH 122.00

RUNOFF VOLUME = .79719 INCHES = .0119 ACRE-FEET
PEAK DISCHARGE RATE = .42 CFS AT 1.500 HOURS BASIN AREA =
.0003 SQ. MI.

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*S BASIN OS-3

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COMPUTE NM HYD ID=23 HYD NO=123 AREA=0.00011 SQ MI
PER A=0 PER B=90.00 PER C=0.00 PER D=10.00
TP=0 HR MASS RAINFALL=-1

TIME TO PEAK (hrs)= .1333

*****Warning*****This Tp value was used for a previously computed
hydrograph.

A new Tp value should be computed.

K = .072666HR TP = .133333HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = .43418E-01CFS UNIT VOLUME = .8873 B =
526.28 P60 = 1.8700
AREA = .000011 SQ MI IA = .10000 INCHES INF = .04000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

K = .131024HR TP = .133333HR K/TP RATIO = .982685
SHAPE CONSTANT, N = 3.593454
UNIT PEAK = .24286 CFS UNIT VOLUME = .9454 B =
327.09 P60 = 1.8700
AREA = .000099 SQ MI IA = .50000 INCHES INF = 1.25000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD ID=23 CODE=1

PARTIAL HYDROGRAPH 123.00

RUNOFF VOLUME = .79719 INCHES = .0047 ACRE-FEET
PEAK DISCHARGE RATE = .17 CFS AT 1.500 HOURS BASIN AREA =
.0001 SQ. MI.

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*S BASIN OS-4

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COMPUTE NM HYD ID=24 HYD NO=124 AREA=0.00084 SQ MI
PER A=0 PER B=16.00 PER C=0.00 PER D=84.00
TP=0 HR MASS RAINFALL=-1

TIME TO PEAK (hrs)= .1333

*****Warning*****This Tp value was used for a previously computed hydrograph.

A new Tp value should be computed.

K = .072666HR TP = .133333HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 2.7851 CFS UNIT VOLUME = .9955 B =
526.28 P60 = 1.8700
AREA = .000706 SQ MI IA = .10000 INCHES INF = .04000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

K = .131024HR TP = .133333HR K/TP RATIO = .982685
SHAPE CONSTANT, N = 3.593454
UNIT PEAK = .32971 CFS UNIT VOLUME = .9578 B =
327.09 P60 = 1.8700
AREA = .000134 SQ MI IA = .50000 INCHES INF = 1.25000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD ID=24 CODE=1

PARTIAL HYDROGRAPH 124.00

RUNOFF VOLUME = 1.75779 INCHES = .0787 ACRE-FEET
PEAK DISCHARGE RATE = 2.16 CFS AT 1.500 HOURS BASIN AREA =
.0008 SQ. MI.

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*S BASIN OS-5

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COMPUTE NM HYD ID=25 HYD NO=125 AREA=0.00305 SQ MI
PER A=0 PER B=0.00 PER C=0.00 PER D=100.00
TP=0 HR MASS RAINFALL=-1

TIME TO PEAK (hrs)= .1333

*****Warning*****This Tp value was used for a previously computed hydrograph.

A new Tp value should be computed.

K = .072666HR TP = .133333HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 12.039 CFS UNIT VOLUME = .9984 B =
526.28 P60 = 1.8700
AREA = .003050 SQ MI IA = .10000 INCHES INF = .04000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD

ID=25 CODE=1

PARTIAL HYDROGRAPH 125.00

RUNOFF VOLUME = 1.96548 INCHES = .3197 ACRE-FEET
PEAK DISCHARGE RATE = 8.54 CFS AT 1.500 HOURS BASIN AREA =
.0031 SQ. MI.

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*S BASIN OS-6

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COMPUTE NM HYD ID=26 HYD NO=126 AREA=0.00229 SQ MI
PER A=0 PER B=0.00 PER C=0.00 PER D=100.00
TP=0 HR MASS RAINFALL=-1

TIME TO PEAK (hrs)= .1333

*****Warning*****This Tp value was used for a previously computed
hydrograph.

A new Tp value should be computed.

K = .072666HR TP = .133333HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 9.0388 CFS UNIT VOLUME = .9980 B =
526.28 P60 = 1.8700
AREA = .002290 SQ MI IA = .10000 INCHES INF = .04000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD

ID=26 CODE=1

PARTIAL HYDROGRAPH 126.00

RUNOFF VOLUME = 1.96548 INCHES = .2400 ACRE-FEET
PEAK DISCHARGE RATE = 6.41 CFS AT 1.500 HOURS BASIN AREA =
.0023 SQ. MI.

*S BASIN OS-7

*

COMPUTE NM HYD ID=27 HYD NO=127 AREA=0.00179 SQ MI
PER A=0 PER B=22.00 PER C=0.00 PER D=78.00
TP=0 HR MASS RAINFALL=-1

TIME TO PEAK (hrs)= .1333

*****Warning*****This Tp value was used for a previously computed
hydrograph.

A new Tp value should be computed.

K = .072666HR TP = .133333HR K/TP RATIO = .545000
SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 5.5109 CFS UNIT VOLUME = .9973 B =
526.28 P60 = 1.8700
AREA = .001396 SQ MI IA = .10000 INCHES INF = .04000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

K = .131024HR TP = .133333HR K/TP RATIO = .982685
SHAPE CONSTANT, N = 3.593454
UNIT PEAK = .96606 CFS UNIT VOLUME = .9862 B =
327.09 P60 = 1.8700
AREA = .000394 SQ MI IA = .50000 INCHES INF = 1.25000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
= .033330

PRINT HYD ID=27 CODE=1

PARTIAL HYDROGRAPH 127.00

RUNOFF VOLUME = 1.67990 INCHES = .1604 ACRE-FEET
PEAK DISCHARGE RATE = 4.43 CFS AT 1.500 HOURS BASIN AREA =
.0018 SQ. MI.

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*S ADD BASINS 3 AND OS-2

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ADD HYD ID=28 HYD NO=151.00 ID=3 ID=22
PRINT HYD ID=28 CODE=1

PARTIAL HYDROGRAPH 151.00

RUNOFF VOLUME = 1.75916 INCHES = .3603 ACRE-FEET
PEAK DISCHARGE RATE = 9.85 CFS AT 1.500 HOURS BASIN AREA =
.0038 SQ. MI.

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*S ADD BASINS 5, OS-1 AND OS-3

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ADD HYD ID=29 HYD NO=152.00 ID=5 ID=23
ADD HYD ID=30 HYD NO=153.00 ID=29 ID=21
PRINT HYD ID=30 CODE=1

PARTIAL HYDROGRAPH 153.00

RUNOFF VOLUME = 1.87493 INCHES = .3960 ACRE-FEET
PEAK DISCHARGE RATE = 10.69 CFS AT 1.500 HOURS BASIN AREA =
.0040 SQ. MI.

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*S ADD BASINS 7, AND OS-4

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ADD HYD ID=31 HYD NO=154.00 ID=7 ID=24
PRINT HYD ID=31 CODE=1

PARTIAL HYDROGRAPH 154.00

RUNOFF VOLUME = 1.71799 INCHES = .3253 ACRE-FEET
PEAK DISCHARGE RATE = 8.94 CFS AT 1.500 HOURS BASIN AREA =
.0036 SQ. MI.

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*S ADD BASINS 9, AND OS-5

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ADD HYD ID=32 HYD NO=155.00 ID=9 ID=25
PRINT HYD ID=32 CODE=1

PARTIAL HYDROGRAPH 155.00

RUNOFF VOLUME = 1.78569 INCHES = .3371 ACRE-FEET
PEAK DISCHARGE RATE = 9.18 CFS AT 1.500 HOURS BASIN AREA =
.0035 SQ. MI.

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*S ADD BASINS 15 AND OS-6

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ADD HYD ID=33 HYD NO=156.00 ID=15 ID=26
PRINT HYD ID=33 CODE=1

PARTIAL HYDROGRAPH 156.00

RUNOFF VOLUME = 1.88553 INCHES = .2454 ACRE-FEET
PEAK DISCHARGE RATE = 6.61 CFS AT 1.500 HOURS BASIN AREA =
.0024 SQ. MI.

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*S ADD BASINS 19, 20 AND OS-7

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ADD HYD ID=34 HYD NO=157.00 ID=19 ID=20
ADD HYD ID=35 HYD NO=158.00 ID=34 ID=27
PRINT HYD ID=35 CODE=1

PARTIAL HYDROGRAPH 158.00

RUNOFF VOLUME = 1.84179 INCHES = .8909 ACRE-FEET
PEAK DISCHARGE RATE = 24.09 CFS AT 1.500 HOURS BASIN AREA =
.0091 SQ. MI.

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*S POND 1

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ROUTE RESERVOIR ID=36 HYD NO=201.00 INFLOW ID=1 CODE=24

OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
0.0000	0.0000	4925.79
0.0024	0.0003	4927.96
0.0025	0.0157	4928.21
0.0027	0.0615	4928.46
0.0028	0.1379	4928.71
0.0029	0.2449	4928.96

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	4925.79	.000	.00
.80	.00	4925.79	.000	.00
1.60	2.09	4928.42	.054	.00
2.40	.12	4928.60	.103	.00
3.20	.02	4928.61	.107	.00
4.00	.02	4928.61	.108	.00
4.80	.02	4928.61	.109	.00
5.60	.02	4928.62	.110	.00

PEAK DISCHARGE = .003 CFS - PEAK OCCURS AT HOUR 6.30

MAXIMUM WATER SURFACE ELEVATION = 4928.620

MAXIMUM STORAGE = .1104 AC-FT INCREMENTAL TIME=
.033330HRS

PRINT HYD ID=36 CODE=1

PARTIAL HYDROGRAPH 201.00

RUNOFF VOLUME = .07031 INCHES = .0043 ACRE-FEET
PEAK DISCHARGE RATE = .00 CFS AT 6.299 HOURS BASIN AREA =
.0011 SQ. MI.

*

*S POND 2

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ROUTE RESERVOIR	ID=37	HYD NO=202.00	INFLOW ID=2	CODE=25
	OUTFLOW(CFS)		STORAGE(AC-FT)	ELEVATION(FT)
	0.0000		0.0000	4925.24
	0.5242		0.0003	4927.41
	0.5556		0.0129	4927.66
	0.5855		0.0504	4927.91
	0.6140		0.1129	4928.16
	0.6411		0.2005	4928.41

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	4925.24	.000	.00
.80	.00	4925.24	.000	.00
1.60	5.09	4928.16	.114	.61
2.40	.31	4928.39	.195	.64
3.20	.06	4928.30	.162	.63
4.00	.04	4928.19	.124	.62
4.80	.04	4928.05	.086	.60
5.60	.05	4927.91	.050	.59
6.40	.00	4927.67	.015	.56

PEAK DISCHARGE = .640 CFS - PEAK OCCURS AT HOUR 2.20
MAXIMUM WATER SURFACE ELEVATION = 4928.403
MAXIMUM STORAGE = .1981 AC-FT INCREMENTAL TIME=
.033330HRS

PRINT HYD ID=37 CODE=1

PARTIAL HYDROGRAPH 202.00

RUNOFF VOLUME = 1.88900 INCHES = .2750 ACRE-FEET
PEAK DISCHARGE RATE = .64 CFS AT 2.200 HOURS BASIN AREA =
.0027 SQ. MI.

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*S POND 3

*

ROUTE RESERVOIR	ID=38	HYD NO=203.00	INFLOW ID=28	CODE=24
	OUTFLOW(CFS)		STORAGE(AC-FT)	ELEVATION(FT)
	0.0000		0.0000	4925.04
	0.0024		0.0003	4927.21
	0.0025		0.0252	4927.46
	0.0027		0.0998	4927.71
	0.0028		0.2240	4927.96
	0.0029		0.3979	4928.21

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
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.00	.00	4925.04	.000	.00
.80	.00	4925.04	.000	.00
1.60	6.83	4927.86	.174	.00
2.40	.41	4928.12	.334	.00
3.20	.08	4928.13	.346	.00
4.00	.05	4928.14	.350	.00
4.80	.05	4928.15	.353	.00
5.60	.06	4928.15	.356	.00
6.40	.01	4928.15	.359	.00

PEAK DISCHARGE = .003 CFS - PEAK OCCURS AT HOUR 6.53

MAXIMUM WATER SURFACE ELEVATION = 4928.154

MAXIMUM STORAGE = .3590 AC-FT INCREMENTAL TIME = .033330HRS

PRINT HYD ID=38 CODE=1

PARTIAL HYDROGRAPH 203.00

RUNOFF VOLUME = .02175 INCHES = .0045 ACRE-FEET

PEAK DISCHARGE RATE = .00 CFS AT 6.533 HOURS BASIN AREA = .0038 SQ. MI.

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*S POND 4

*

ROUTE RESERVOIR	ID=39 HYD NO=204.00 INFLOW ID=4 CODE=24	OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
		0.0000	0.0000	4923.83
		0.0032	0.0006	4927.65
		0.0033	0.0207	4927.90
		0.0034	0.0811	4928.15
		0.0035	0.1817	4928.40
		0.0036	0.3225	4928.65

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TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
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.00	.00	4923.83	.000	.00
.80	.00	4923.83	.000	.00
1.60	5.07	4928.28	.132	.00
2.40	.31	4928.53	.255	.00
3.20	.06	4928.55	.264	.00
4.00	.04	4928.55	.267	.00
4.80	.04	4928.56	.270	.00

5.60 .05 4928.56 .272 .00
 6.40 .00 4928.56 .275 .00
 PEAK DISCHARGE = .004 CFS - PEAK OCCURS AT HOUR 6.43
 MAXIMUM WATER SURFACE ELEVATION = 4928.565
 MAXIMUM STORAGE = .2746 AC-FT INCREMENTAL TIME=
 .033330HRS

PRINT HYD ID=39 CODE=1

PARTIAL HYDROGRAPH 204.00

RUNOFF VOLUME = .03877 INCHES = .0055 ACRE-FEET
 PEAK DISCHARGE RATE = .00 CFS AT 6.433 HOURS BASIN AREA =
 .0027 SQ. MI.

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*S POND 5

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ROUTE RESERVOIR	ID=40 HYD NO=205.00 INFLOW ID=30 CODE=24	OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
		0.0000	0.0000	4924.20
		0.0216	0.0003	4926.37
		0.0228	0.0260	4926.62
		0.0240	0.1029	4926.87
		0.0251	0.2311	4927.12
		0.0262	0.4106	4927.37

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TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	4924.20	.000	.00
.80	.00	4924.20	.000	.00
1.60	7.36	4927.04	.190	.02
2.40	.44	4927.31	.365	.03
3.20	.09	4927.32	.376	.03
4.00	.06	4927.33	.378	.03
4.80	.06	4927.33	.381	.03
5.60	.07	4927.33	.383	.03
6.40	.01	4927.33	.385	.03
7.20	.00	4927.33	.383	.03
8.00	.00	4927.33	.381	.03
8.80	.00	4927.33	.380	.03
9.60	.00	4927.32	.378	.03
10.40	.00	4927.32	.376	.03
11.20	.00	4927.32	.375	.03
12.00	.00	4927.32	.373	.03
12.80	.00	4927.31	.371	.03
13.60	.00	4927.31	.369	.03
14.40	.00	4927.31	.368	.03
15.20	.00	4927.31	.366	.03
16.00	.00	4927.31	.364	.03

16.80	.00	4927.30	.363	.03
17.60	.00	4927.30	.361	.03
18.40	.00	4927.30	.359	.03
19.20	.00	4927.30	.357	.03

PEAK DISCHARGE = .026 CFS - PEAK OCCURS AT HOUR 6.17
 MAXIMUM WATER SURFACE ELEVATION = 4927.334
 MAXIMUM STORAGE = .3851 AC-FT INCREMENTAL TIME=
 .033330HRS

PRINT HYD ID=40 CODE=1

PARTIAL HYDROGRAPH 205.00

RUNOFF VOLUME = .19043 INCHES = .0402 ACRE-FEET
 PEAK DISCHARGE RATE = .03 CFS AT 6.166 HOURS BASIN AREA =
 .0040 SQ. MI.

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*S POND 6

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ROUTE RESERVOIR ID=41 HYD NO=206.00 INFLOW ID=6 CODE=24

OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
0.0000	0.0000	4922.22
0.5050	0.0005	4925.67
0.5237	0.0156	4925.92
0.5418	0.0606	4926.17
0.5592	0.1355	4926.42
0.5762	0.2404	4926.67

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TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	4922.22	.000	.00
.80	.00	4922.22	.000	.00
1.60	5.68	4926.41	.131	.56
2.40	.35	4926.65	.231	.57
3.20	.07	4926.58	.203	.57
4.00	.05	4926.50	.169	.56
4.80	.05	4926.42	.135	.56
5.60	.05	4926.31	.102	.55
6.40	.00	4926.20	.068	.54
7.20	.00	4926.02	.033	.53

PEAK DISCHARGE = .575 CFS - PEAK OCCURS AT HOUR 2.27
 MAXIMUM WATER SURFACE ELEVATION = 4926.651
 MAXIMUM STORAGE = .2325 AC-FT INCREMENTAL TIME=
 .033330HRS

PRINT HYD ID=41 CODE=1

PARTIAL HYDROGRAPH 206.00

RUNOFF VOLUME = 1.91409 INCHES = .3083 ACRE-FEET
 PEAK DISCHARGE RATE = .57 CFS AT 2.266 HOURS BASIN AREA =
 .0030 SQ. MI.

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*S POND 7

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ROUTE RESERVOIR	ID=42	HYD NO=207.00	INFLOW ID=31	CODE=24
	OUTFLOW(CFS)		STORAGE(AC-FT)	ELEVATION(FT)
	0.0000		0.0000	4923.00
	0.1156		0.0432	4923.60
	0.1718		0.0909	4924.20
	0.2137		0.1476	4924.80
	0.2487		0.2132	4925.40
	0.2793		0.2879	4926.00

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	4923.00	.000	.00
.80	.00	4923.00	.000	.00
1.60	6.22	4924.86	.154	.22
2.40	.36	4925.95	.282	.28
3.20	.07	4925.89	.274	.27
4.00	.05	4925.77	.260	.27
4.80	.05	4925.66	.245	.26
5.60	.05	4925.55	.231	.26
6.40	.00	4925.43	.217	.25
7.20	.00	4925.29	.201	.24
8.00	.00	4925.15	.185	.23
8.80	.00	4925.01	.170	.23
9.60	.00	4924.87	.155	.22
10.40	.00	4924.73	.141	.21
11.20	.00	4924.59	.128	.20
12.00	.00	4924.46	.115	.19
12.80	.00	4924.33	.103	.18
13.60	.00	4924.20	.091	.17
14.40	.00	4924.07	.080	.16
15.20	.00	4923.94	.070	.15
16.00	.00	4923.82	.061	.14
16.80	.00	4923.71	.052	.13
17.60	.00	4923.61	.044	.12
18.40	.00	4923.51	.037	.10
19.20	.00	4923.43	.031	.08

PEAK DISCHARGE = .277 CFS - PEAK OCCURS AT HOUR 2.50
 MAXIMUM WATER SURFACE ELEVATION = 4925.954
 MAXIMUM STORAGE = .2821 AC-FT INCREMENTAL TIME=
 .033330HRS

PRINT HYD

ID=42 CODE=1

PARTIAL HYDROGRAPH 207.00

RUNOFF VOLUME = 1.58074 INCHES = .2993 ACRE-FEET
PEAK DISCHARGE RATE = .28 CFS AT 2.500 HOURS BASIN AREA =
.0036 SQ. MI.

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*S POND 8

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ROUTE RESERVOIR ID=43 HYD NO=208.00 INFLOW ID=8 CODE=24

OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
0.0000	0.0000	4922.28
0.0030	0.0005	4925.67
0.0031	0.0064	4925.92
0.0032	0.0238	4926.17
0.0033	0.0529	4926.42
0.0034	0.0936	4926.67

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	4922.28	.000	.00
.80	.00	4922.28	.000	.00
1.60	1.60	4926.31	.040	.00
2.40	.09	4926.56	.076	.00
3.20	.02	4926.58	.079	.00
4.00	.01	4926.58	.079	.00
4.80	.01	4926.58	.080	.00
5.60	.01	4926.59	.080	.00

PEAK DISCHARGE = .003 CFS - PEAK OCCURS AT HOUR 6.23

MAXIMUM WATER SURFACE ELEVATION = 4926.592

MAXIMUM STORAGE = .0808 AC-FT INCREMENTAL TIME=
.033330HRS

PRINT HYD

ID=43 CODE=1

PARTIAL HYDROGRAPH 208.00

RUNOFF VOLUME = .10381 INCHES = .0052 ACRE-FEET
PEAK DISCHARGE RATE = .00 CFS AT 6.233 HOURS BASIN AREA =
.0009 SQ. MI.

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*S POND 9

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ROUTE RESERVOIR ID=44 HYD NO=209.00 INFLOW ID=32 CODE=24
OUTFLOW(CFS) STORAGE(AC-FT) ELEVATION(FT)
0.0000 0.0000 4921.52
0.0041 0.0377 4921.93
0.0070 0.1161 4922.68
0.0090 0.2135 4923.43
0.0107 0.3300 4924.18
0.0121 0.4656 4924.93

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	4921.52	.000	.00
.80	.00	4921.52	.000	.00
1.60	6.35	4923.03	.162	.01
2.40	.38	4924.06	.312	.01
3.20	.07	4924.13	.322	.01
4.00	.05	4924.15	.325	.01
4.80	.05	4924.17	.328	.01
5.60	.06	4924.18	.331	.01
6.40	.01	4924.20	.333	.01
7.20	.00	4924.19	.332	.01
8.00	.00	4924.19	.331	.01
8.80	.00	4924.18	.331	.01
9.60	.00	4924.18	.330	.01
10.40	.00	4924.18	.329	.01
11.20	.00	4924.17	.329	.01
12.00	.00	4924.17	.328	.01
12.80	.00	4924.16	.327	.01
13.60	.00	4924.16	.326	.01
14.40	.00	4924.15	.326	.01
15.20	.00	4924.15	.325	.01
16.00	.00	4924.14	.324	.01
16.80	.00	4924.14	.324	.01
17.60	.00	4924.13	.323	.01
18.40	.00	4924.13	.322	.01
19.20	.00	4924.13	.322	.01

PEAK DISCHARGE = .011 CFS - PEAK OCCURS AT HOUR 6.27
MAXIMUM WATER SURFACE ELEVATION = 4924.196
MAXIMUM STORAGE = .3328 AC-FT INCREMENTAL TIME=
.033330HRS

PRINT HYD ID=44 CODE=1

PARTIAL HYDROGRAPH 209.00

RUNOFF VOLUME = .08601 INCHES = .0162 ACRE-FEET
PEAK DISCHARGE RATE = .01 CFS AT 6.266 HOURS BASIN AREA =
.0035 SQ. MI.

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*S POND 10

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ROUTE RESERVOIR	ID=45	HYD NO=210.00	INFLOW ID=10	CODE=24
	OUTFLOW(CFS)		STORAGE(AC-FT)	ELEVATION(FT)
	0.0000		0.0000	4925.14
	0.2628		0.0006	4929.14
	0.2683		0.0016	4929.31
	0.2738		0.0047	4929.48
	0.2792		0.0097	4929.64
	0.2844		0.0167	4929.81

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TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
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.00	.00	4925.14	.000	.00
.80	.00	4925.14	.000	.00
1.60	.70	4929.67	.011	.28
2.40	.03	4929.59	.008	.28
3.20	.01	4925.25	.000	.01
4.00	.01	4925.22	.000	.01
4.80	.01	4925.22	.000	.01
5.60	.01	4925.23	.000	.01

PEAK DISCHARGE = .283 CFS - PEAK OCCURS AT HOUR 1.90

MAXIMUM WATER SURFACE ELEVATION = 4929.749

MAXIMUM STORAGE = .0142 AC-FT INCREMENTAL TIME=
.033330HRS

PRINT HYD ID=45 CODE=1

PARTIAL HYDROGRAPH 210.00

RUNOFF VOLUME = 1.67920 INCHES = .0358 ACRE-FEET

PEAK DISCHARGE RATE = .28 CFS AT 1.900 HOURS BASIN AREA =
.0004 SQ. MI.

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*S POND 11

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ROUTE RESERVOIR	ID=46	HYD NO=211.00	INFLOW ID=11	CODE=24
	OUTFLOW(CFS)		STORAGE(AC-FT)	ELEVATION(FT)
	0.0000		0.0000	4925.62
	0.2079		0.0006	4929.62
	0.2120		0.0015	4929.78
	0.2160		0.0041	4929.93
	0.2199		0.0084	4930.09
	0.2237		0.0144	4930.24

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TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	4925.62	.000	.00
.80	.00	4925.62	.000	.00
1.60	.63	4930.14	.010	.22
2.40	.03	4930.13	.010	.22
3.20	.01	4925.75	.000	.01
4.00	.00	4925.71	.000	.00

PEAK DISCHARGE = .224 CFS - PEAK OCCURS AT HOUR 1.97
MAXIMUM WATER SURFACE ELEVATION = 4930.238
MAXIMUM STORAGE = .0143 AC-FT INCREMENTAL TIME=
.033330HRS

PRINT HYD ID=46 CODE=1

PARTIAL HYDROGRAPH 211.00

RUNOFF VOLUME = 1.67920 INCHES = .0322 ACRE-FEET
PEAK DISCHARGE RATE = .22 CFS AT 1.966 HOURS BASIN AREA =
.0004 SQ. MI.

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*S POND 12

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ROUTE RESERVOIR	ID=47 HYD NO=212.00 INFLOW ID=12 CODE=24	OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
		0.0000	0.0000	4926.00
		0.2079	0.0006	4930.00
		0.2123	0.0013	4930.17
		0.2166	0.0034	4930.34
		0.2208	0.0069	4930.50
		0.2250	0.0118	4930.67

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TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	4926.00	.000	.00
.80	.00	4926.00	.000	.00
1.60	.51	4930.54	.008	.22
2.40	.03	4930.43	.005	.22
3.20	.01	4926.12	.000	.01
4.00	.00	4926.08	.000	.00

PEAK DISCHARGE = .224 CFS - PEAK OCCURS AT HOUR 1.90
MAXIMUM WATER SURFACE ELEVATION = 4930.616
MAXIMUM STORAGE = .0103 AC-FT INCREMENTAL TIME=
.033330HRS

PRINT HYD

ID=47 CODE=1

PARTIAL HYDROGRAPH 212.00

RUNOFF VOLUME = 1.89975 INCHES = .0274 ACRE-FEET
PEAK DISCHARGE RATE = .22 CFS AT 1.900 HOURS BASIN AREA =
.0003 SQ. MI.

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*S POND 13

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ROUTE RESERVOIR ID=48 HYD NO=213.00 INFLOW ID=13 CODE=24
OUTFLOW(CFS) STORAGE(AC-FT) ELEVATION(FT)
0.0000 0.0000 4924.75
0.2079 0.0006 4928.75
0.2144 0.0223 4929.00
0.2208 0.0871 4929.25
0.2269 0.1952 4929.50
0.2329 0.3466 4929.75

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TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	4924.75	.000	.00
.80	.00	4924.75	.000	.00
1.60	7.16	4929.46	.178	.23
2.40	.44	4929.73	.334	.23
3.20	.09	4929.73	.332	.23
4.00	.06	4929.71	.321	.23
4.80	.06	4929.69	.309	.23
5.60	.07	4929.67	.298	.23
6.40	.01	4929.65	.286	.23
7.20	.00	4929.63	.271	.23
8.00	.00	4929.60	.256	.23
8.80	.00	4929.58	.241	.23
9.60	.00	4929.55	.226	.23
10.40	.00	4929.53	.211	.23
11.20	.00	4929.50	.196	.23
12.00	.00	4929.47	.181	.23
12.80	.00	4929.43	.166	.23
13.60	.00	4929.40	.151	.22
14.40	.00	4929.36	.136	.22
15.20	.00	4929.33	.121	.22
16.00	.00	4929.29	.107	.22
16.80	.00	4929.26	.092	.22
17.60	.00	4929.21	.077	.22
18.40	.00	4929.16	.063	.22
19.20	.00	4929.10	.049	.22

PEAK DISCHARGE = .232 CFS - PEAK OCCURS AT HOUR 2.63
MAXIMUM WATER SURFACE ELEVATION = 4929.733

MAXIMUM STORAGE = .3361 AC-FT INCREMENTAL TIME=
.033330HRS

PRINT HYD ID=48 CODE=1

PARTIAL HYDROGRAPH 213.00

RUNOFF VOLUME = 1.69480 INCHES = .3507 ACRE-FEET
PEAK DISCHARGE RATE = .23 CFS AT 2.633 HOURS BASIN AREA =
.0039 SQ. MI.

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*S POND 14

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ROUTE RESERVOIR	ID=49 HYD NO=214.00 INFLOW ID=14 CODE=24
	OUTFLOW(CFS) STORAGE(AC-FT) ELEVATION(FT)
	0.0000 0.0000 4926.85
	0.0028 0.0000 4927.05
	0.0040 0.0007 4927.25
	0.0050 0.0030 4927.45
	0.0058 0.0067 4927.65
	0.0065 0.0119 4927.85

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	4926.85	.000	.00
.80	.00	4926.85	.000	.00
1.60	.20	4927.56	.005	.01
2.40	.01	4927.75	.009	.01
3.20	.00	4927.74	.009	.01
4.00	.00	4927.73	.009	.01
4.80	.00	4927.72	.009	.01
5.60	.00	4927.71	.008	.01
6.40	.00	4927.70	.008	.01
7.20	.00	4927.68	.008	.01
8.00	.00	4927.67	.007	.01
8.80	.00	4927.65	.007	.01
9.60	.00	4927.63	.006	.01
10.40	.00	4927.61	.006	.01
11.20	.00	4927.59	.006	.01
12.00	.00	4927.57	.005	.01
12.80	.00	4927.55	.005	.01
13.60	.00	4927.53	.005	.01
14.40	.00	4927.52	.004	.01
15.20	.00	4927.50	.004	.01
16.00	.00	4927.48	.004	.01
16.80	.00	4927.46	.003	.01
17.60	.00	4927.44	.003	.00

PEAK DISCHARGE = .006 CFS - PEAK OCCURS AT HOUR 2.50

MAXIMUM WATER SURFACE ELEVATION = 4927.748
 MAXIMUM STORAGE = .0093 AC-FT INCREMENTAL TIME=
 .033330HRS

PRINT HYD ID=49 CODE=1

PARTIAL HYDROGRAPH 214.00

RUNOFF VOLUME = 1.60356 INCHES = .0086 ACRE-FEET
 PEAK DISCHARGE RATE = .01 CFS AT 2.500 HOURS BASIN AREA =
 .0001 SQ. MI.

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*S POND 15

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ROUTE RESERVOIR	ID=50 HYD NO=215.00 INFLOW ID=33 CODE=24	OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
		0.0000	0.0000	4926.75
		0.2766	0.0362	4927.35
		0.4271	0.0723	4927.95
		0.5370	0.1085	4928.55
		0.6279	0.1446	4929.15
		0.7073	0.1808	4929.75

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	4926.75	.000	.00
.80	.00	4926.75	.000	.00
1.60	4.55	4928.58	.110	.54
2.40	.28	4929.66	.176	.70
3.20	.05	4929.07	.140	.62
4.00	.04	4928.50	.105	.53
4.80	.04	4928.01	.076	.44
5.60	.04	4927.62	.053	.34
6.40	.00	4927.32	.034	.26
7.20	.00	4927.10	.021	.16
8.00	.00	4926.96	.013	.10
8.80	.00	4926.88	.008	.06
9.60	.00	4926.83	.005	.03
10.40	.00	4926.80	.003	.02
11.20	.00	4926.78	.002	.01
12.00	.00	4926.77	.001	.01
12.80	.00	4926.76	.001	.00

PEAK DISCHARGE = .707 CFS - PEAK OCCURS AT HOUR 2.17

MAXIMUM WATER SURFACE ELEVATION = 4929.750

MAXIMUM STORAGE = .1808 AC-FT INCREMENTAL TIME=
 .033330HRS

PRINT HYD ID=50 CODE=1

PARTIAL HYDROGRAPH 215.00

RUNOFF VOLUME = 1.88549 INCHES = .2454 ACRE-FEET
 PEAK DISCHARGE RATE = .71 CFS AT 2.166 HOURS BASIN AREA =
 .0024 SQ. MI.

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*S POND 16

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ROUTE RESERVOIR	ID=51 HYD NO=216.00 INFLOW ID=16 CODE=24	OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
		0.0000	0.0000	4925.51
		0.0033	0.0006	4929.51
		0.0034	0.0127	4929.76
		0.0035	0.0487	4930.01
		0.0036	0.1087	4930.26
		0.0037	0.1927	4930.51

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TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
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.00	.00	4925.51	.000	.00
.80	.00	4925.51	.000	.00
1.60	1.90	4930.01	.050	.00
2.40	.12	4930.21	.096	.00
3.20	.02	4930.22	.099	.00
4.00	.02	4930.22	.100	.00
4.80	.02	4930.23	.101	.00
5.60	.02	4930.23	.102	.00

PEAK DISCHARGE = .004 CFS - PEAK OCCURS AT HOUR 6.27

MAXIMUM WATER SURFACE ELEVATION = 4930.233

MAXIMUM STORAGE = .1022 AC-FT INCREMENTAL TIME=
 .033330HRS

PRINT HYD ID=51 CODE=1

PARTIAL HYDROGRAPH 216.00

RUNOFF VOLUME = .10513 INCHES = .0056 ACRE-FEET
 PEAK DISCHARGE RATE = .00 CFS AT 6.266 HOURS BASIN AREA =
 .0010 SQ. MI.

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*S POND 17

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ROUTE RESERVOIR	ID=52 HYD NO=217.00 INFLOW ID=17 CODE=24	OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
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0.0000	0.0000	4926.85
0.0120	0.0000	4927.10
0.0178	0.0016	4927.35
0.0221	0.0062	4927.60
0.0259	0.0140	4927.85
0.0289	0.0248	4928.10

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

.00	.00	4926.85	.000	.00
.80	.00	4926.85	.000	.00
1.60	.37	4927.69	.009	.02
2.40	.02	4927.90	.016	.03
3.20	.00	4927.87	.015	.03
4.00	.00	4927.84	.014	.03
4.80	.00	4927.79	.012	.02
5.60	.00	4927.74	.011	.02
6.40	.00	4927.70	.009	.02
7.20	.00	4927.65	.008	.02
8.00	.00	4927.60	.006	.02
8.80	.00	4927.52	.005	.02
9.60	.00	4927.45	.003	.02
10.40	.00	4927.38	.002	.02
11.20	.00	4927.27	.001	.02
12.00	.00	4927.12	.000	.01

PEAK DISCHARGE = .027 CFS - PEAK OCCURS AT HOUR 2.30

MAXIMUM WATER SURFACE ELEVATION = 4927.903

MAXIMUM STORAGE = .0163 AC-FT INCREMENTAL TIME = .033330HRS

PRINT HYD

ID=52 CODE=1

PARTIAL HYDROGRAPH 217.00

RUNOFF VOLUME = 1.96553 INCHES = .0199 ACRE-FEET

PEAK DISCHARGE RATE = .03 CFS AT 2.300 HOURS BASIN AREA = .0002 SQ. MI.

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*S POND 18

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ROUTE RESERVOIR

ID=53 HYD NO=218.00 INFLOW ID=18 CODE=24

OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
0.00000	0.0000	4925.30
0.00328	0.0006	4929.30
0.00336	0.0025	4929.51
0.00345	0.0080	4929.72
0.00353	0.0172	4929.93
0.00361	0.0301	4930.14

* * * * *

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

.00	.00	4925.30	.000	.00
.80	.00	4925.30	.000	.00
1.60	.50	4929.82	.012	.00
2.40	.02	4930.02	.023	.00
3.20	.00	4930.03	.023	.00

PEAK DISCHARGE = .004 CFS - PEAK OCCURS AT HOUR 3.73

MAXIMUM WATER SURFACE ELEVATION = 4930.031

MAXIMUM STORAGE = .0234 AC-FT INCREMENTAL TIME = .033330HRS

PRINT HYD ID=53 CODE=1

PARTIAL HYDROGRAPH 218.00

RUNOFF VOLUME = .34349 INCHES = .0055 ACRE-FEET

PEAK DISCHARGE RATE = .00 CFS AT 3.733 HOURS BASIN AREA = .0003 SQ. MI.

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*S POND 19

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ROUTE RESERVOIR	ID=54 HYD NO=219.00	INFLOW ID=35	CODE=24
	OUTFLOW(CFS)	STORAGE(AC-FT)	ELEVATION(FT)
	0.0000	0.0000	4923.00
	0.7167	0.0450	4924.40
	1.0569	0.1194	4925.80
	1.3117	0.2529	4927.20
	1.5245	0.4453	4928.60
	1.7110	0.6968	4930.00

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TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
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.00	.00	4923.00	.000	.00
.80	.00	4923.00	.000	.00
1.60	16.62	4928.28	.401	1.48
2.40	1.01	4929.96	.689	1.71
3.20	.20	4929.50	.608	1.64
4.00	.13	4928.97	.512	1.57
4.80	.13	4928.41	.419	1.50
5.60	.15	4927.78	.332	1.40
6.40	.01	4927.18	.251	1.31
7.20	.00	4926.33	.170	1.15
8.00	.00	4925.41	.099	.96
8.80	.00	4924.36	.044	.70

9.60	.00	4923.47	.015	.24
10.40	.00	4923.17	.005	.08
11.20	.00	4923.06	.002	.03
12.00	.00	4923.02	.001	.01
12.80	.00	4923.01	.000	.00

PEAK DISCHARGE = 1.709 CFS - PEAK OCCURS AT HOUR 2.23
 MAXIMUM WATER SURFACE ELEVATION = 4929.984
 MAXIMUM STORAGE = .6940 AC-FT INCREMENTAL TIME=
 .033330HRS

PRINT HYD ID=54 CODE=1

PARTIAL HYDROGRAPH 219.00

RUNOFF VOLUME = 1.84178 INCHES = .8909 ACRE-FEET
 PEAK DISCHARGE RATE = 1.71 CFS AT 2.233 HOURS BASIN AREA =
 .0091 SQ. MI.

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*ADD PONDS 1 THRU 19

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ADD HYD	ID=55	HYD NO=301.00	ID=36	ID=37
ADD HYD	ID=56	HYD NO=302.00	ID=55	ID=38
ADD HYD	ID=57	HYD NO=303.00	ID=56	ID=39
ADD HYD	ID=58	HYD NO=304.00	ID=57	ID=40
ADD HYD	ID=59	HYD NO=305.00	ID=58	ID=41
ADD HYD	ID=60	HYD NO=306.00	ID=42	ID=43
ADD HYD	ID=61	HYD NO=307.00	ID=60	ID=44
ADD HYD	ID=62	HYD NO=308.00	ID=59	ID=61
ADD HYD	ID=63	HYD NO=309.00	ID=62	ID=45
ADD HYD	ID=64	HYD NO=310.00	ID=63	ID=46
ADD HYD	ID=65	HYD NO=311.00	ID=64	ID=47
ADD HYD	ID=66	HYD NO=312.00	ID=54	ID=48
ADD HYD	ID=67	HYD NO=313.00	ID=66	ID=49
ADD HYD	ID=68	HYD NO=314.00	ID=67	ID=50
ADD HYD	ID=69	HYD NO=315.00	ID=68	ID=51
ADD HYD	ID=70	HYD NO=316.00	ID=69	ID=52
ADD HYD	ID=71	HYD NO=317.00	ID=70	ID=53
ADD HYD	ID=72	HYD NO=317.00	ID=71	ID=65

PRINT HYD ID=72 CODE=1

HYDROGRAPH FROM AREA 317.00

RUNOFF VOLUME = 1.11501 INCHES = 2.5803 ACRE-FEET
 PEAK DISCHARGE RATE = 4.95 CFS AT 2.200 HOURS BASIN AREA =
 .0434 SQ. MI.

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FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 16:22:03

Map Pocket

Grading and Drainage Plan

Tim Eichenberg, Chair
Linda Stover, Vice-Chair /
Asst. Secretary-Treasurer
Ronald D. Brown, Secretary-Treasurer
Donna Hernandez, Director
Daniel Lyon, Director

John P. Kelly, P.E.
Executive Engineer



**Albuquerque
Metropolitan
Arroyo
Flood
Control
Authority**

2000 PROSPECT N.E. • ALBUQUERQUE, NM 87107
TELEPHONE (505) 884-2215 FAX (505) 884-0214

Post-it® Fax Note	7671	Date	3-8-11	# of pages	2
To	BRAD BINGHAM		From	LYNN MAZUR	
Co./Dept.	HYDROLOGY		Co.	AMAFCA	
Phone #			Phone #		
Fax #			Fax #		

P-10 / D4A

March 11, 2004

Mr. Ron Bohannon, P.E.
Tierra West, LLC
8509 Jefferson St. NE
Albuquerque, NM 87113

Re: Drainage Report for Tract 1-A-1, Lands of Lamonica and Wenk, ZAP P-10
Wal-Mart Store, Engineer's Stamp Dated February 25, 2004

Dear Mr. Bohannon:

AMAFCA staff has reviewed the Drainage Report and approves the drainage concept. AMAFCA's interest in the project is as one of the local sponsors of the Corps of Engineers' Southwest Valley Drainage Management Plan. The proposed Wal-Mart site will discharge 5 cfs to the Isleta Drain, which is a major Middle Rio Grande Conservancy District (MRGCD) facility. A permit for construction will be required from MRGCD.

AMAFCA provided a preliminary design for the structure crossing for the Isleta Drain at Rio Bravo. I recommend that your office convene a meeting with all interested parties to discuss the final design requirements for this structure.

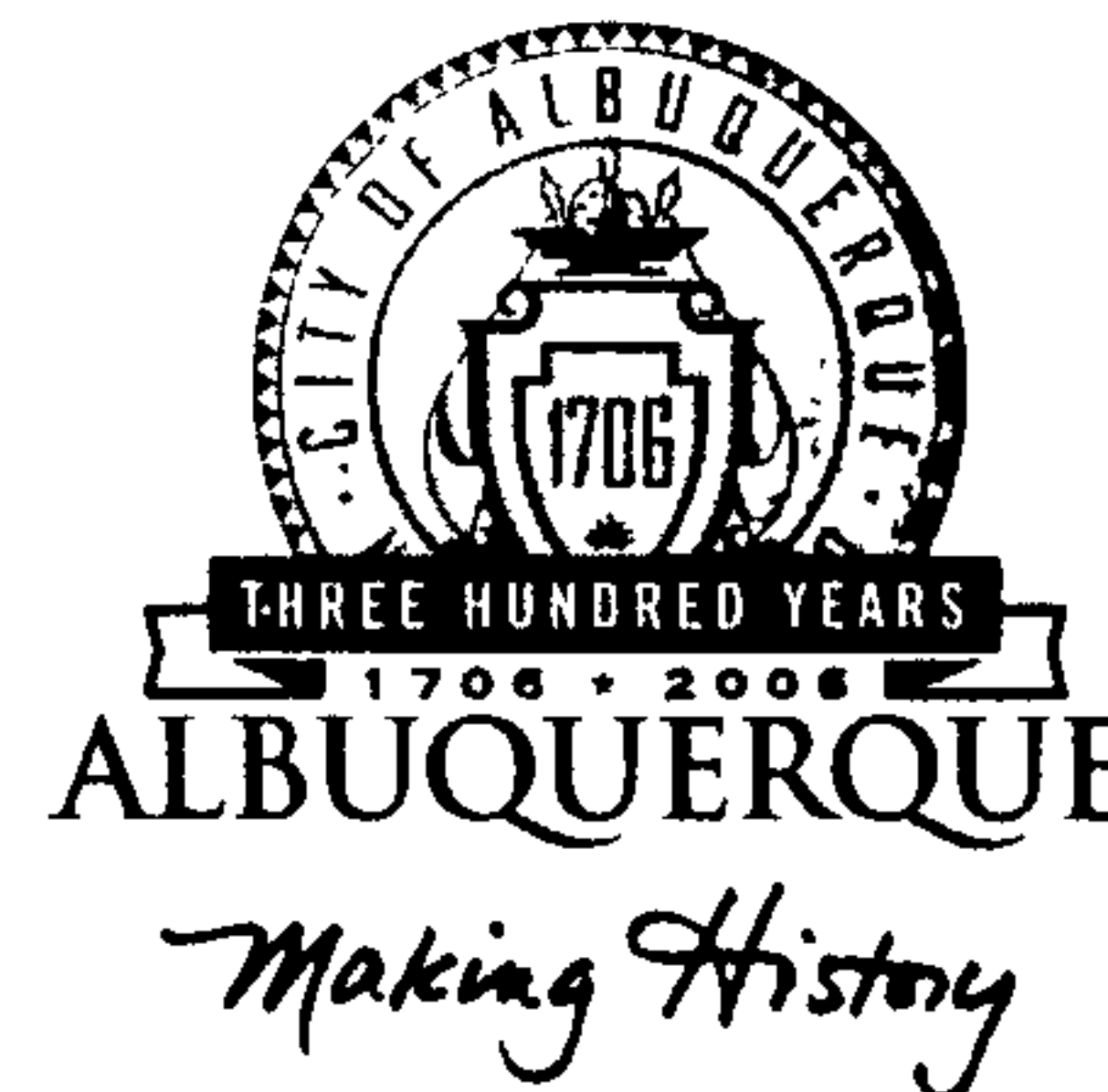
If you have any questions, please call me at 884-2215.

Sincerely,
AMAFCA

Lynn M. Mazur, P.E., C.F.M.
Development Review Engineer

Cc: Brad Bingham, City Hydrology
Ray Gomez, MRGCD

CITY OF ALBUQUERQUE



**Planning Department
Transportation Development Services Section**

June 16, 2005

Ronald Bohannon, P.E.,
Tierra West, LLC
8509 Jefferson NE
Albuquerque, NM 87113

Re: Approval of Temporary Certificate of Occupancy (C.O.) for
Wal-Mart South Store # 5430, [P107 D4A]
3500 Coors Blvd. SW

Dear Mr. Bohannon:

Based on the information provided on your submittal dated June 14, 2005, the above referenced project is approved for a 30-day Temporary C.O.

A Temporary C.O. has been issued allowing the outstanding offsite paving issues to be completed within this time period. When these remaining issues have been fully completed, are in substantial compliance, and a final Certification for Transportation has been resubmitted to the City's Hydrology office for approval, a Permanent C.O. will be issued.

The Certification package for Final C.O. must include an **exact** copy of the approved TCL, or signed off D.R.B. Site Plan, which is in each of the two City Permit Plan Sets—the contractor's City field set and the City's plan set in the basement of the Plaza Del Sol building. Package also must include a letter of certification on designer's letterhead-stamped with his seal, signed, and dated. Submit package along with fully completed Drainage Information Sheet to front counter personnel for log in and evaluation by Transportation.

If you have any questions, please call me at 924-3630.

Sincerely,

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

c: Engineer
Hydrology file
CO Clerk

P.O. Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

DRAINAGE AND TRANSPORTATION SHEET

(REV. 1/28/2003rd)

PROJECT TITLE: Wal-Mart South, Store # 5430-00
DRB: 1000650 EPC #: 03-EPC-01110

ZONE MAP/DRG. FILE #: P-10/D4.A
WORK ORDER #: 7365.81

LEGAL DESCRIPTION Tract 1-A-1, Lamonica and Wenk
CITY ADDRESS: 3500 Coors Blvd. SW

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

CONTACT: Jon Niski
PHONE: (505) 858-3100
ZIP CODE: 87113

OWNER: Wal-Mart Stores, Inc.
ADDRESS: 2001 SE 10th Street
CITY, STATE: Bentonville, AK

CONTACT: Bill Shortridge
PHONE: 501-204-0157
ZIP CODE: 72716

ARCHITECT: Taylor Scott Architects
ADDRESS: 1437 South Boulder, Suite 800
CITY, STATE: Tulsa, OK

CONTACT: Ryan Wilbanks
PHONE: 918-587-8600
ZIP CODE: 74119-3609

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

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

CONTRACTOR: Engineered Structures Inc. (ESI)
ADDRESS: 12400 West Overland Ave. #800
CITY, STATE: Boise, ID

CONTACT: Dominic Barresi
PHONE: 208-362-3040
ZIP CODE: 83709

CHECK TYPE OF SUBMITTAL:

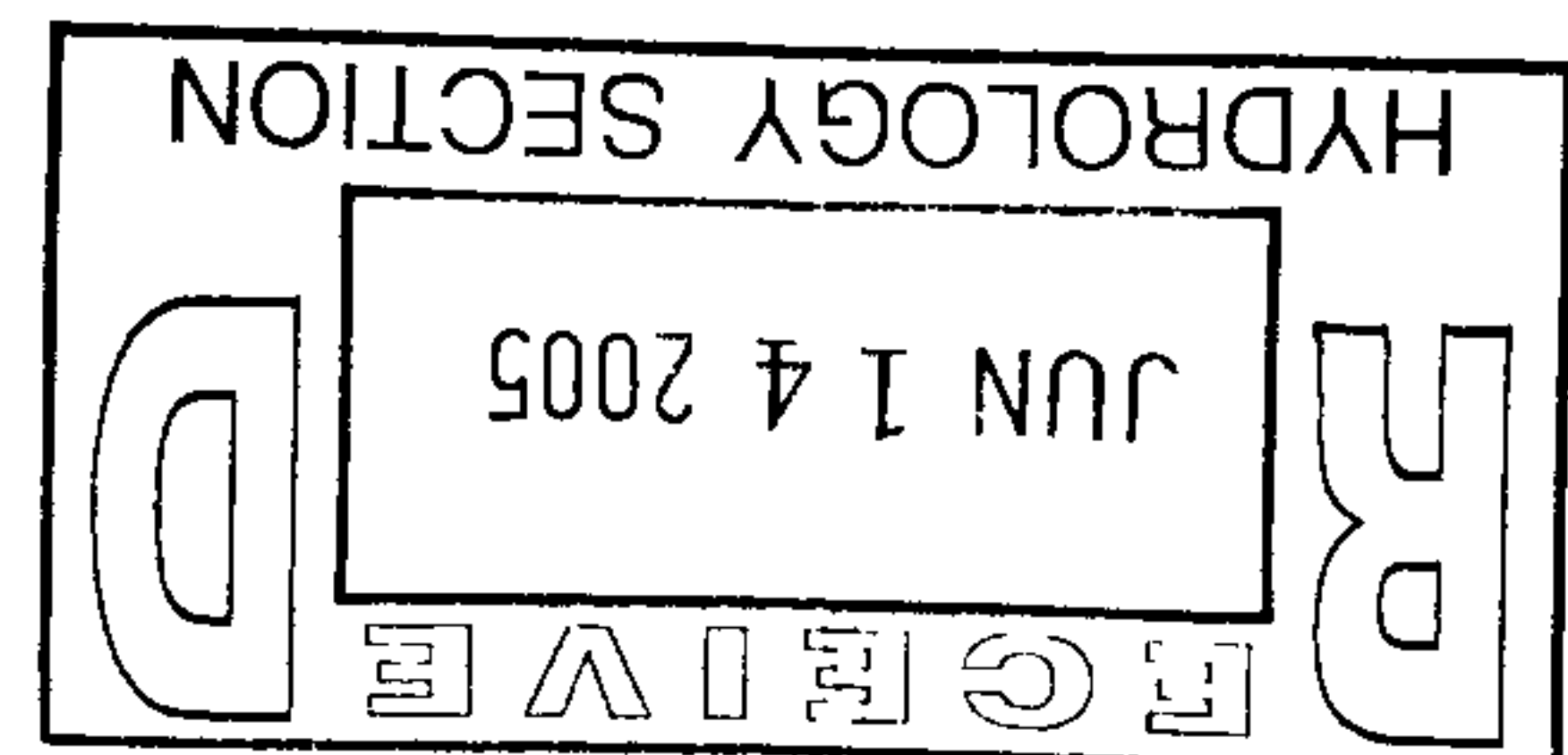
- ☐ DRAINAGE REPORT
- ☐ DRAINAGE PLAN 1st SUBMITTAL, **REQUIRES TCL or equal**
- ☐ DRAINAGE PLAN RESUBMITTAL
- ☐ CONCEPTUAL GRADING & DRAINAGE PLAN
- ☐ GRADING PLAN
- ☐ EROSION CONTROL PLAN
- ☐ ENGINEER'S CERTIFICATION (HYDROLOGY)
- ☐ CLOMR/LOMR
- ☐ TRAFFIC CIRCULATION LAYOUT (TCL)
- ☐ ENGINEERS CERTIFICATION (TCL)
- ☐ ENGINEERS CERTIFICATION (DRB APPR. SITE PLAN)
- ☒ OTHER - Request for 30 day extension of Temp. CO

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
- ☐ SO-19

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ☐ YES
- ☐ NO
- ☐ COPY PROVIDED



DATE SUBMITTED: 6/13/2005 BY: Ron 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 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

June 14, 2005

Mr. Nilo Salgado-Fernandez, P.E.
Senior Traffic Engineer
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

RE: Wal-Mart South, Store # 5430, P10/D4
DRB# 1000650

Dear Nilo:

At this time, we are requesting a 30 day extension for the Temporary Certificate of Occupancy for the above referenced project. There is off-site paving work that needs to be completed, and at that time, we will submit for the permanent Certificate of Occupancy.

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

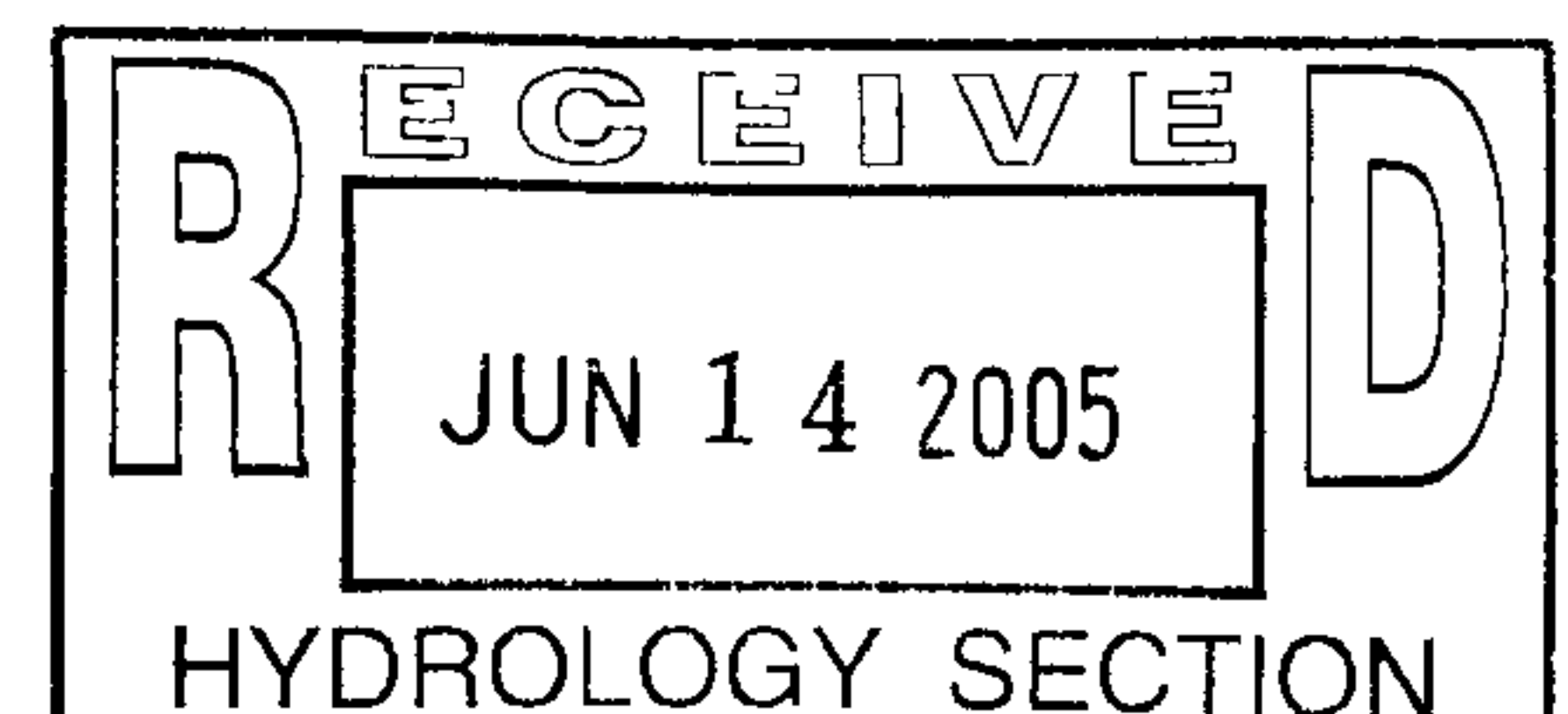
Sincerely,

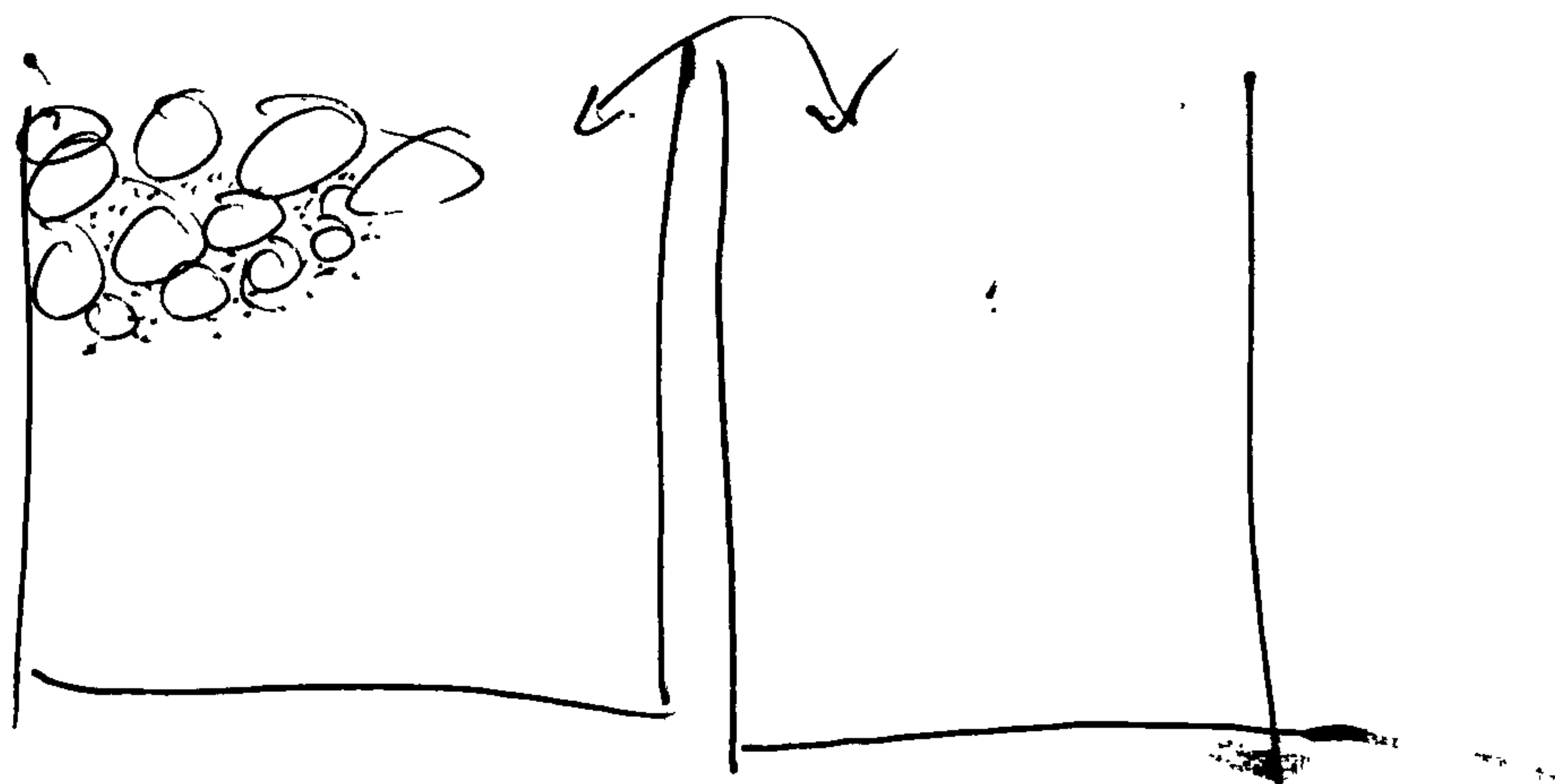


Ronald Bohannon, PE

JN: 22094

2002:22094coextension061405





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

P-10/D4A

PROJECT TITLE: Wal-Mart South, Store #5430-00
DRB #: 1000650 EPC #: 03-EPC-01110

ZONE MAP/DRG. FILE #: P-10/D4
WORK ORDER #: 7365.81

LEGAL DESCRIPTION: Tract 1-A-1, Lamonica and Wenk
CITY ADDRESS: 3500 Coors Boulevard, SW

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

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

OWNER: Wal-Mart Stores Inc.
ADDRESS: 2001 SE 10th Street
CITY, STATE: Bentonville, AR

CONTACT: (501) 204-0157
PHONE: Bill Shortridge
ZIP CODE: 72716

ARCHITECT: Taylor Scott Architects
ADDRESS: 1437 South Boulder, Suite 800
CITY, STATE: Tulsa, OK

CONTACT: Ryan Wilbanks
PHONE: (918) 587-8600
ZIP CODE: 74119-3609

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

CONTACT: Larry Medrano
PHONE: 856-5700
ZIP CODE: 87113

CONTRACTOR: Engineered Structures Inc. (ESI)
ADDRESS: 12400 West Overland Ave. # 800
CITY, STATE: Tulsa, OK

CONTACT: Dominic Barresi
PHONE: (208) 362-3040
ZIP CODE: 74119

CHECK TYPE OF SUBMITTAL:

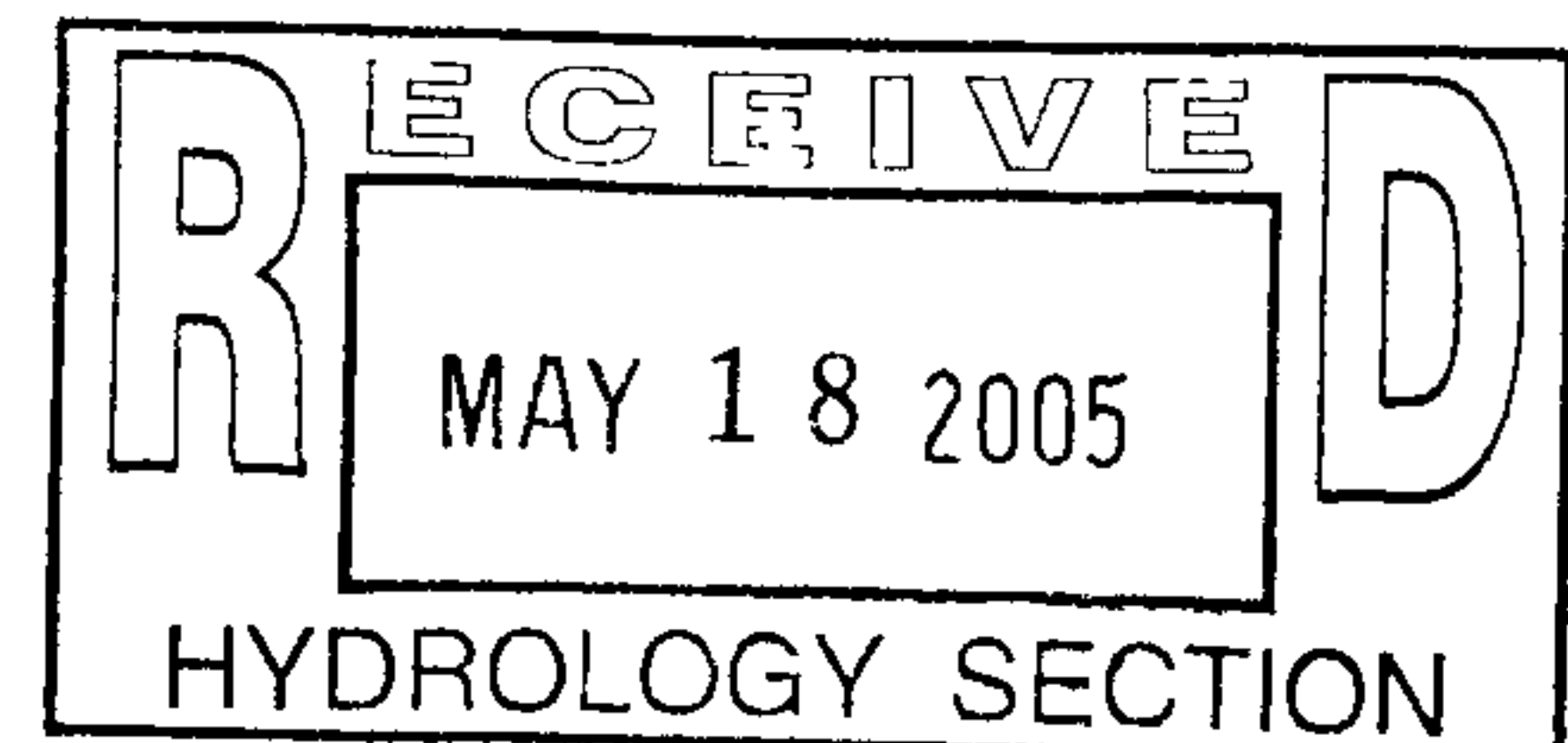
- ☐ DRAINAGE REPORT
☐ DRAINAGE PLAN 1st SUBMITTAL, **REQUIRES TCL or equal**
☐ DRAINAGE PLAN RESUBMITTAL
☐ CONCEPTUAL GRADING & DRAINAGE PLAN
☐ GRADING PLAN
☐ EROSION CONTROL PLAN
☐ ENGINEER'S CERTIFICATION (HYDROLOGY)
☐ CLOMR/LOMR
☐ TRAFFIC CIRCULATION LAYOUT (TCL)
☐ ENGINEERS CERTIFICATION (TCL)
☒ 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: 6/18/2005 BY: Ron 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 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

P10/D4A

8509 Jefferson NE
Albuquerque, NM 87113

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

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

May 18, 2005

Mr. Nilo Salgado-Fernandez, PE
Development and Building Services
Public Works Department
PO Box 1293
Albuquerque, NM 87103

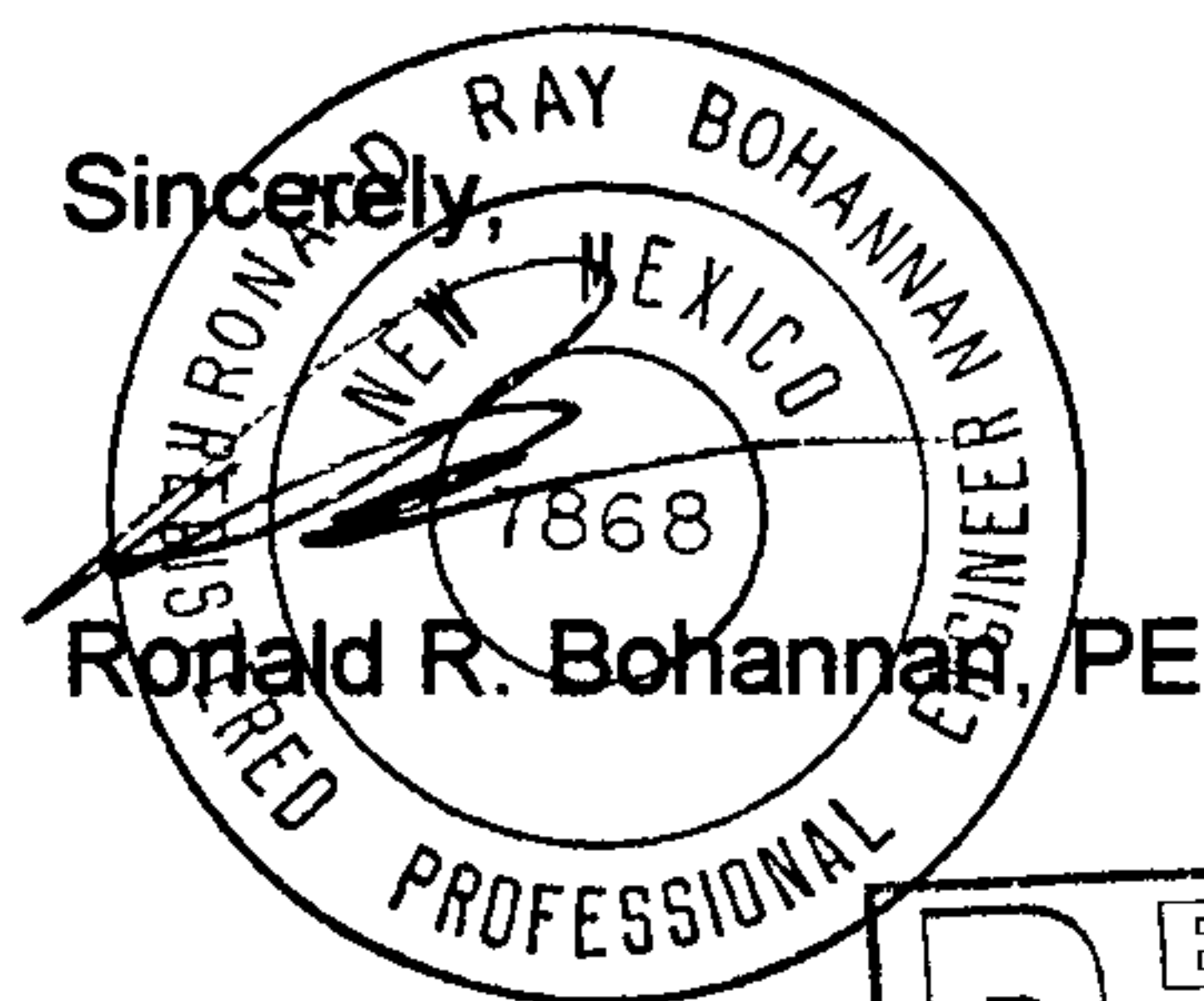
**RE: Site Plan Certification for 30-day Temporary Certificate of Occupancy
Wal-Mart Supercenter #5430-00
3500 Coors Boulevard, SW**

Dear Mr. Salgado-Fernandez:

Tierra West, LLC, requests a 30-day Temporary Certification of the Site Plan for Building Permit for the Wal-Mart Supercenter located at 3500 Coors Boulevard, SW. Enclosed please find the approved Site Plan for Subdivision and the as-built DRB approved Site Plan for Building Permit. Final Certification will be submitted when the Work Order final inspections and punch list are completed with the City, County and State.

Field verification of the site was completed by our office and is in substantial compliance with the approved plan. Therefore, we are requesting Certification of the Site Plan for Building Permit for a 30-day Temporary Certificate of Occupancy.

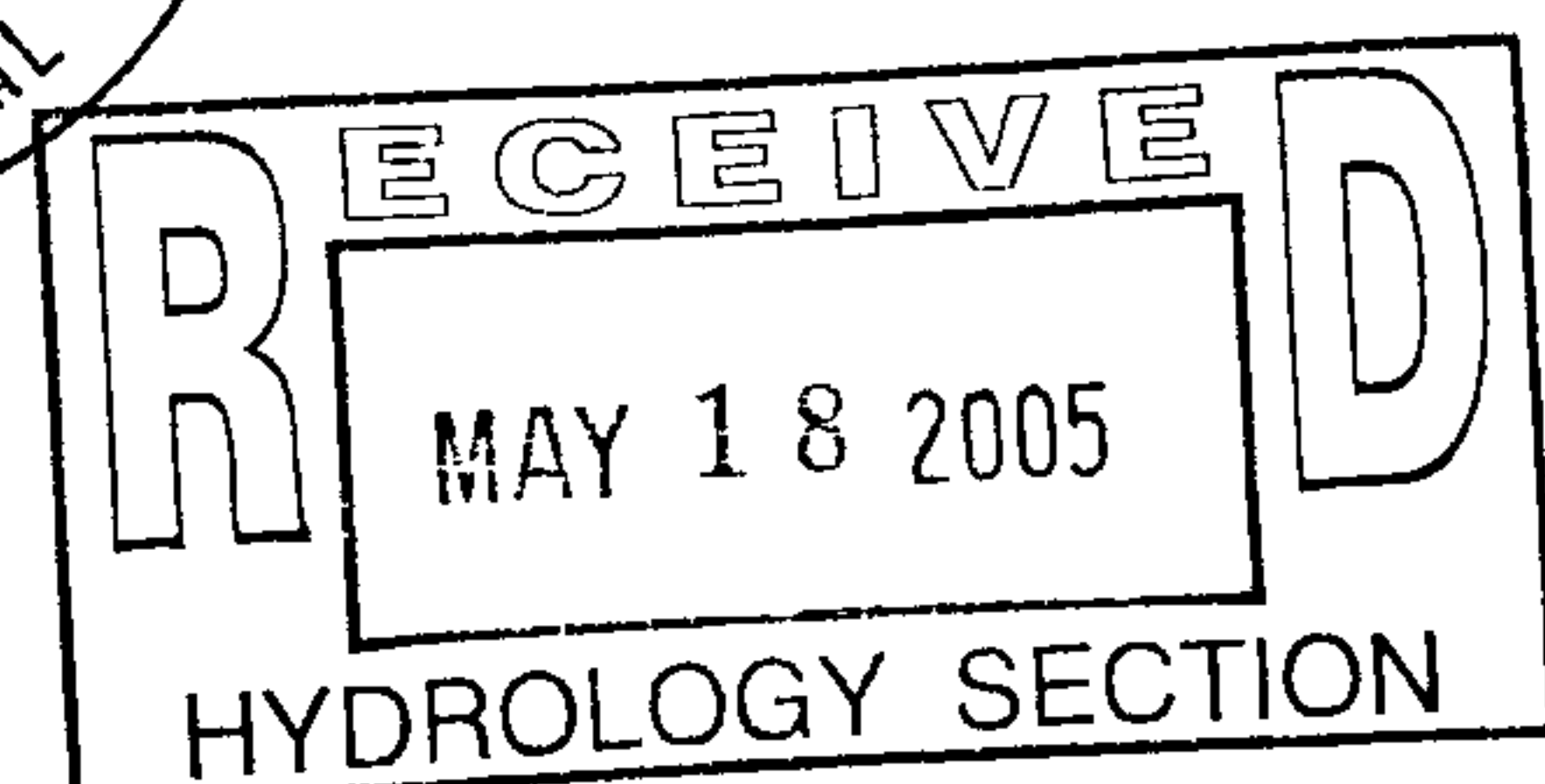
If you have any questions or need additional information regarding this matter, please do not hesitate to contact me.



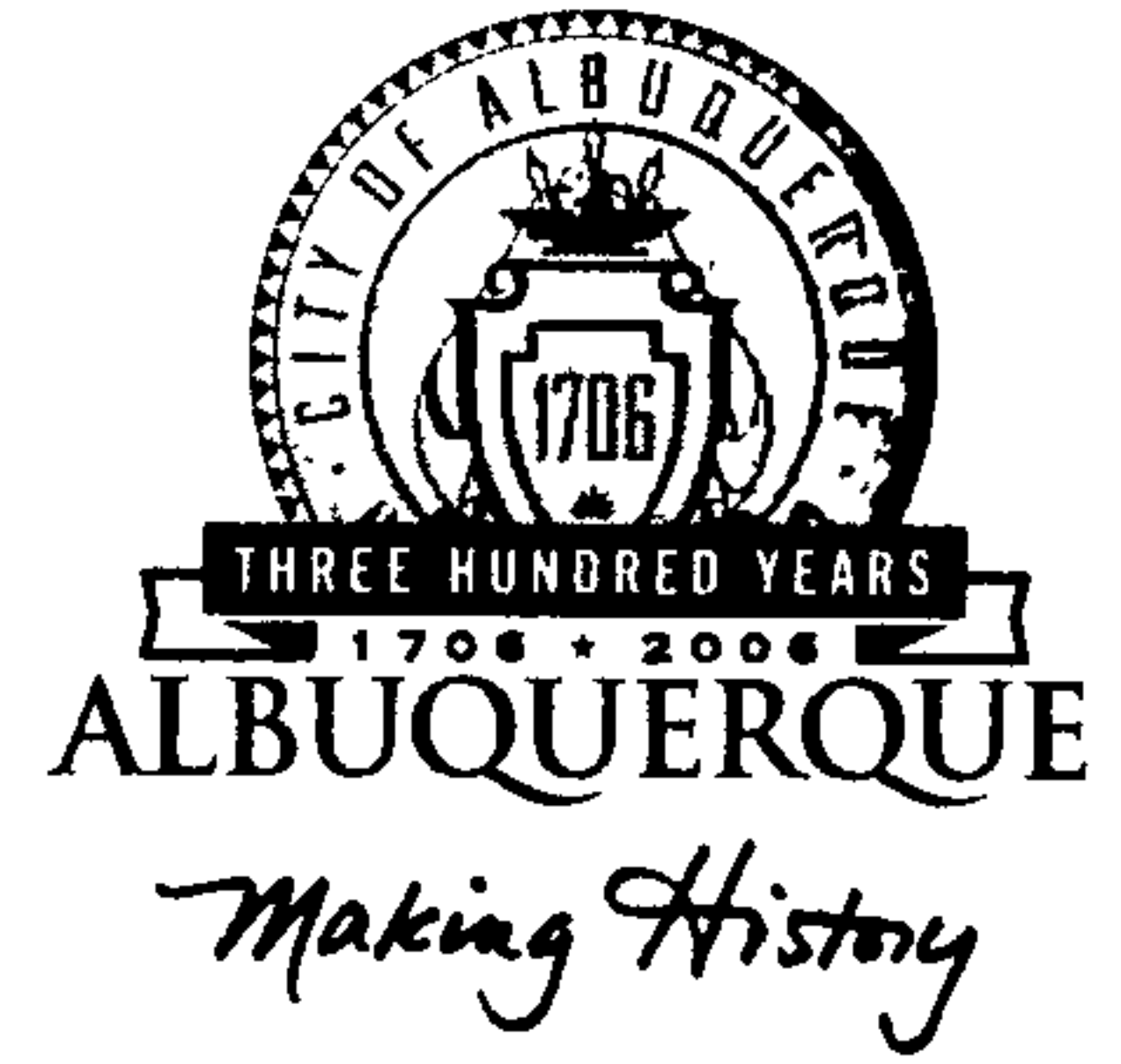
Enclosure/s

cc: Jamal Nelson

JN: 22094
RRB/rw



CITY OF ALBUQUERQUE



**Planning Department
Transportation Development Services Section**

January 11, 2005

Ronald R. Bohannon, P.E.
8509 Jefferson NE
Albuquerque, NM 87113

Re: Certification Submittal for Final Building Certificate of Occupancy for
Walmart Supercenter #5430, [P-10 / D4A]
3500 Coors Blvd SW
Engineer's Stamp Dated 01/09/06

Dear Mr. Bohannon:

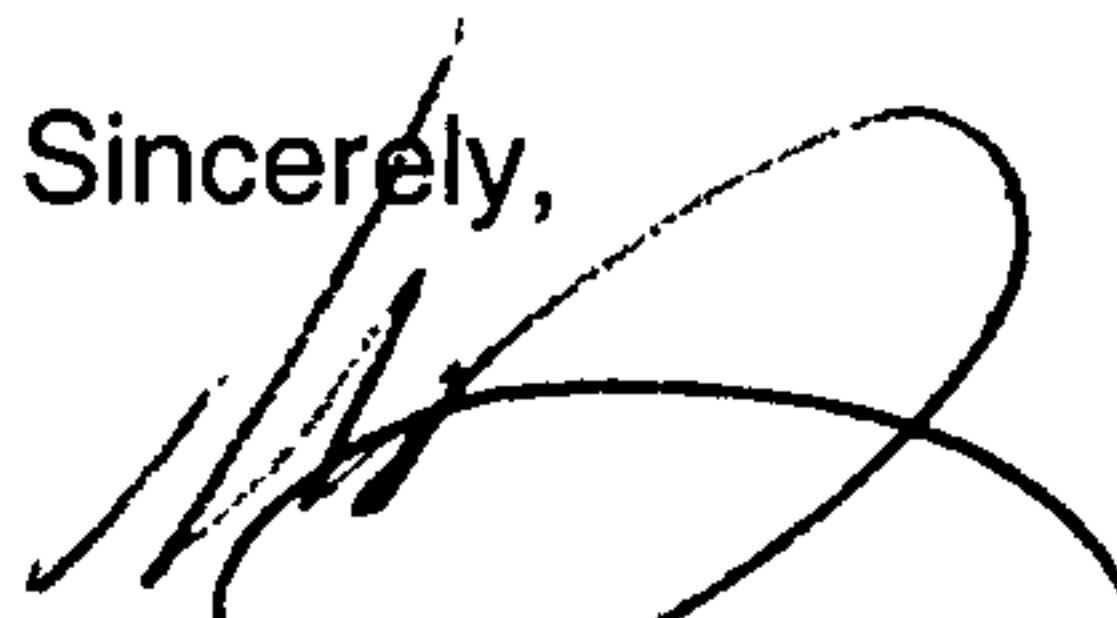
P.O. Box 1293

The TCL / Letter of Certification submitted on January 9, 2006 is sufficient for acceptance by this office for final Certificate of Occupancy (C.O.). Notification has been made to the Building and Safety Section.

Albuquerque

Sincerely,

New Mexico 87103


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

www.cabq.gov

c: Engineer
Hydrology file
CO Clerk

DRAINAGE AND TRANSPORTATION SHEET

(REV. 1/28/2003rd)

PROJECT TITLE: Wal-Mart Supercenter # 5430
DRB: 1000560 EPC #: _____

ZONE MAP/DRG. FILE #: P-10/D4 A
WORK ORDER #: 736581

LEGAL DESCRIPTION Tract 1-A-1, Lamonica & Wenk
CITY ADDRESS: 3500 Coors Boulevard SW

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

CONTACT: Ron Wright
PHONE: (505) 858-3100
ZIP CODE: 87113

OWNER: Wal-Mart Stores, Inc.
ADDRESS: 2001 SE 10th Street
CITY, STATE: Bentonville, AK

CONTACT: Bill Shortridge
PHONE: 501-204-0157
ZIP CODE: 72716

ARCHITECT: Taylor Scott Architects
ADDRESS: 1437 South Boulder, Suite 800
CITY, STATE: Tulsa, OK

CONTACT: Ryan Wilbanks
PHONE: 918-587-8600
ZIP CODE: 74119-3609

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

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

CONTRACTOR: Engineered Structures, Inc.
ADDRESS: 12400 West Overland Ave, # 800
CITY, STATE: Boise, Idaho

CONTACT: Dominic Barresi
PHONE: 208-362-3040
ZIP CODE: 83709

CHECK TYPE OF SUBMITTAL:

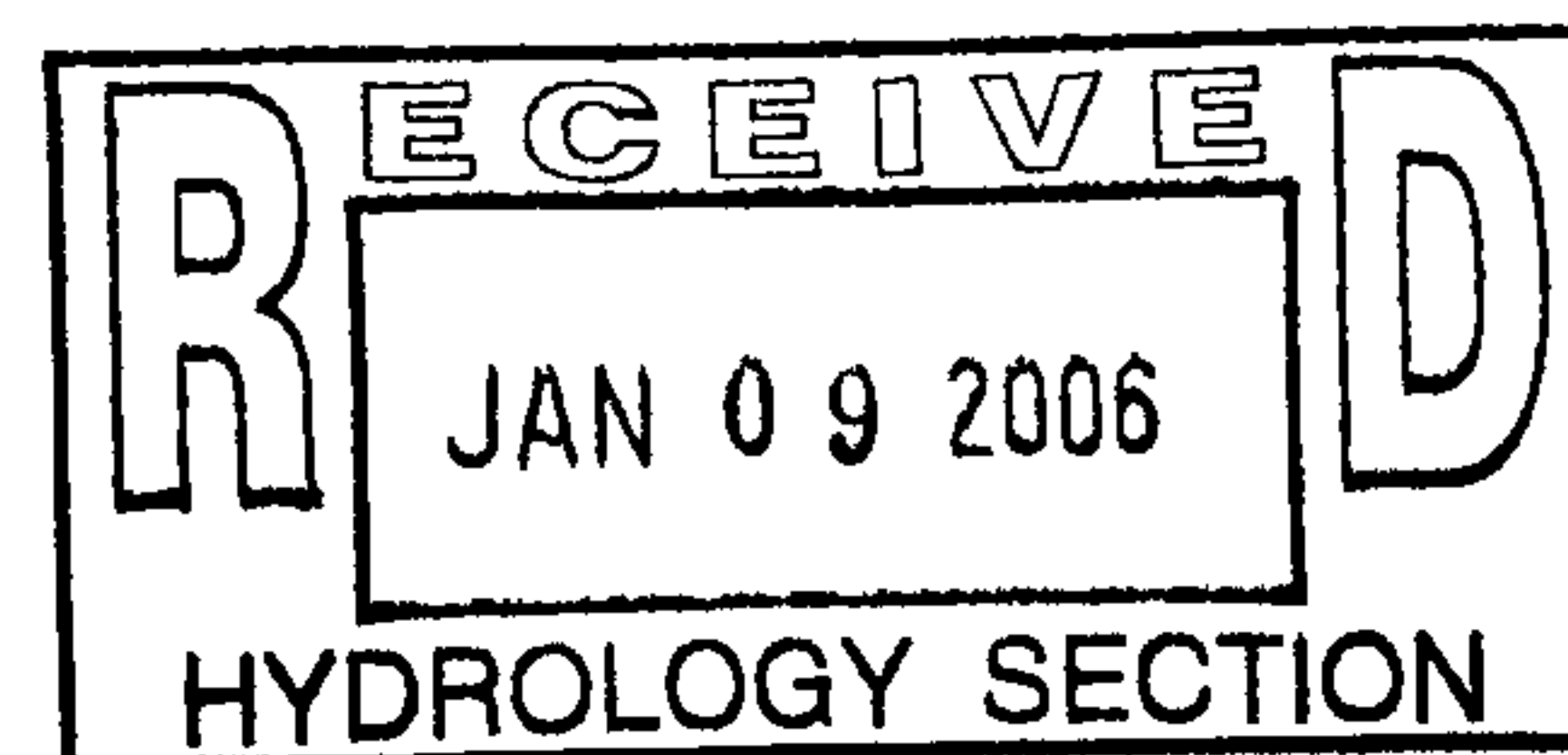
- ☐ DRAINAGE REPORT
- ☐ DRAINAGE PLAN 1st SUBMITTAL, **REQUIRES TCL or equal**
- ☐ DRAINAGE PLAN RESUBMITTAL
- ☐ CONCEPTUAL GRADING & DRAINAGE PLAN
- ☐ GRADING PLAN
- ☐ EROSION CONTROL PLAN
- ☐ ENGINEER'S CERTIFICATION (HYDROLOGY)
- ☐ CLOMR/LOMR
- ☐ TRAFFIC CIRCULATION LAYOUT (TCL)
- ☐ ENGINEERS CERTIFICATION (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
- ☐ SO-19

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ☐ YES
- ☐ NO
- ☐ COPY PROVIDED



DATE SUBMITTED: 1/9/2006 BY: Ron 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:

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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 AND TRANSPORTATION SHEET

(REV. 1/28/2003rd)

PROJECT TITLE: Wal-Mart ^{Coors & Rio Bravo} South, Store # ~~5430-00~~ ZONE MAP/DRG. FILE #: P-10/D4 ^A
DRB: 1000650 EPC #: 03-EPC-01110 WORK ORDER #: 7365.81

LEGAL DESCRIPTION Tract 1-A-1, Lamonica and Wenk
CITY ADDRESS: 3500 Coors Blvd. SW

ENGINEERING FIRM: Tierra West, LLC CONTACT: Jon Niski
ADDRESS: 8509 Jefferson NE PHONE: (505) 858-3100
CITY, STATE: Albuquerque, NM ZIP CODE: 87113

OWNER: Wal-Mart Stores, Inc. CONTACT: Bill Shortridge
ADDRESS: 2001 SE 10th Street PHONE: 501-204-0157
CITY, STATE: Bentonville, AK ZIP CODE: 72716

ARCHITECT: Taylor Scott Architects CONTACT: Ryan Wilbanks
ADDRESS: 1437 South Boulder, Suite 800 PHONE: 918-587-8600
CITY, STATE: Tulsa, OK ZIP CODE: 74119-3609

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

CONTRACTOR: Engineered Structures Inc. (ESI) CONTACT: Dominic Barresi
ADDRESS: 12400 West Overland Ave. #800 PHONE: 208-362-3040
CITY, STATE: Boise, ID ZIP CODE: 83709

CHECK TYPE OF SUBMITTAL:

- ☐ DRAINAGE REPORT
☐ DRAINAGE PLAN 1st SUBMITTAL, **REQUIRES TCL or equal**
☐ DRAINAGE PLAN RESUBMITTAL
☐ CONCEPTUAL GRADING & DRAINAGE PLAN
☐ GRADING PLAN
☐ EROSION CONTROL PLAN
☐ ENGINEER'S CERTIFICATION (HYDROLOGY)
☐ CLOMR/LOMR
☐ TRAFFIC CIRCULATION LAYOUT (TCL)
☐ ENGINEERS CERTIFICATION (TCL)
☐ ENGINEERS CERTIFICATION (DRB APPR. SITE PLAN)
☒ OTHER - Request for 60-day extension of Temp. C/O

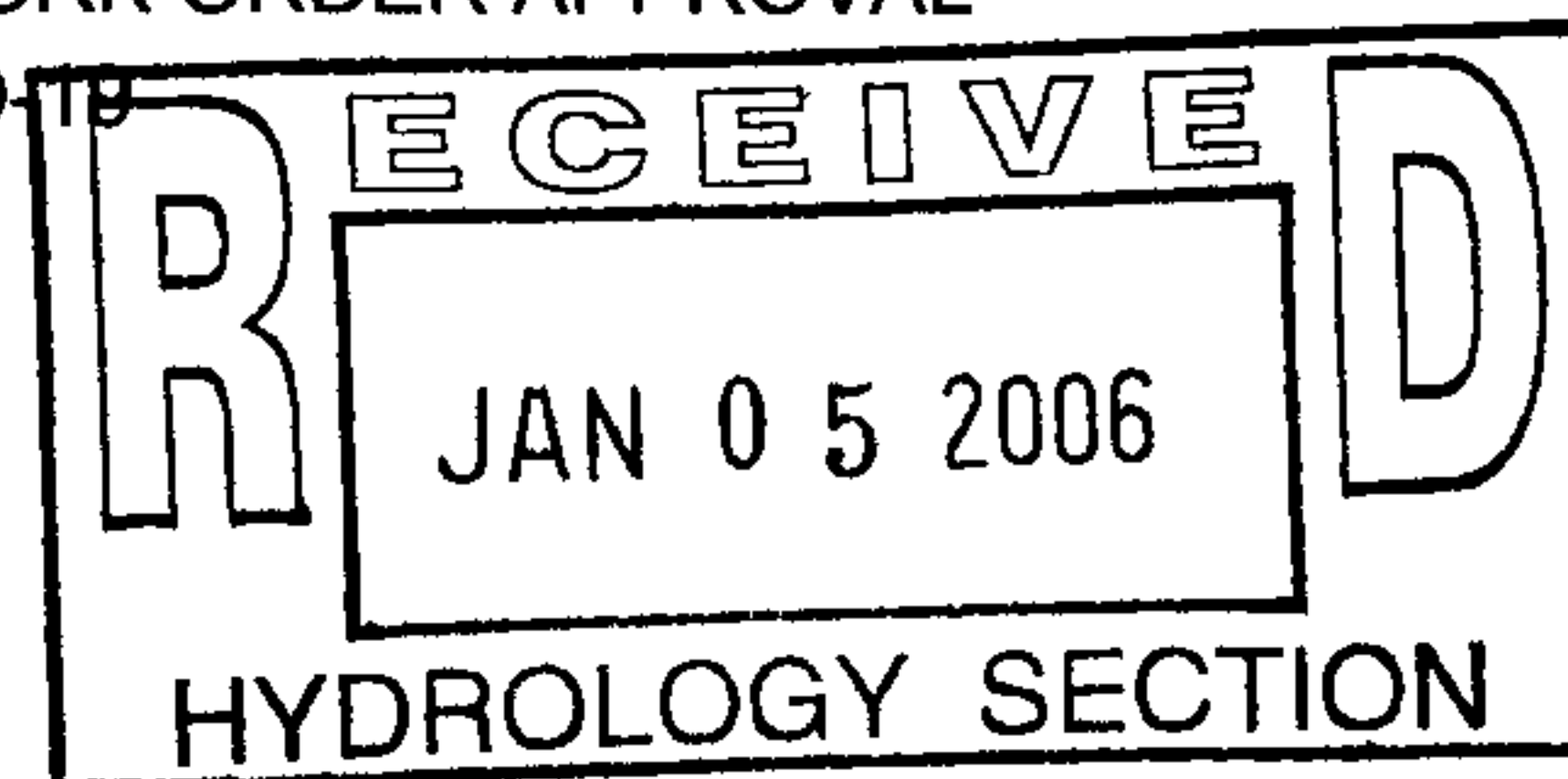
N- Need Req. for Perm-CO

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 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
☐ SO-18



DATE SUBMITTED: 1/4/2006+D16 BY: Ron 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:

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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.

Speak w/ John Niski
and he'll ~~request~~ submit
a formal package
for your C.O.
w/ in a few days
USF 3:15pm 1/5/05

Their last ext.
expired 9/14/05.
If you extend, ~~give~~
60 days, give them
to 3/3/06; that's a
Friday. Thanks.

TIERRA WEST, LLC

8509 Jefferson NE
Albuquerque, NM 87113

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

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

January 5, 2006

Mr. Nilo Salgado-Fernandez, P.E.
Senior Traffic Engineer
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

RE: Wal-Mart South, Store # 5430, P10/D4
DRB# 1000650

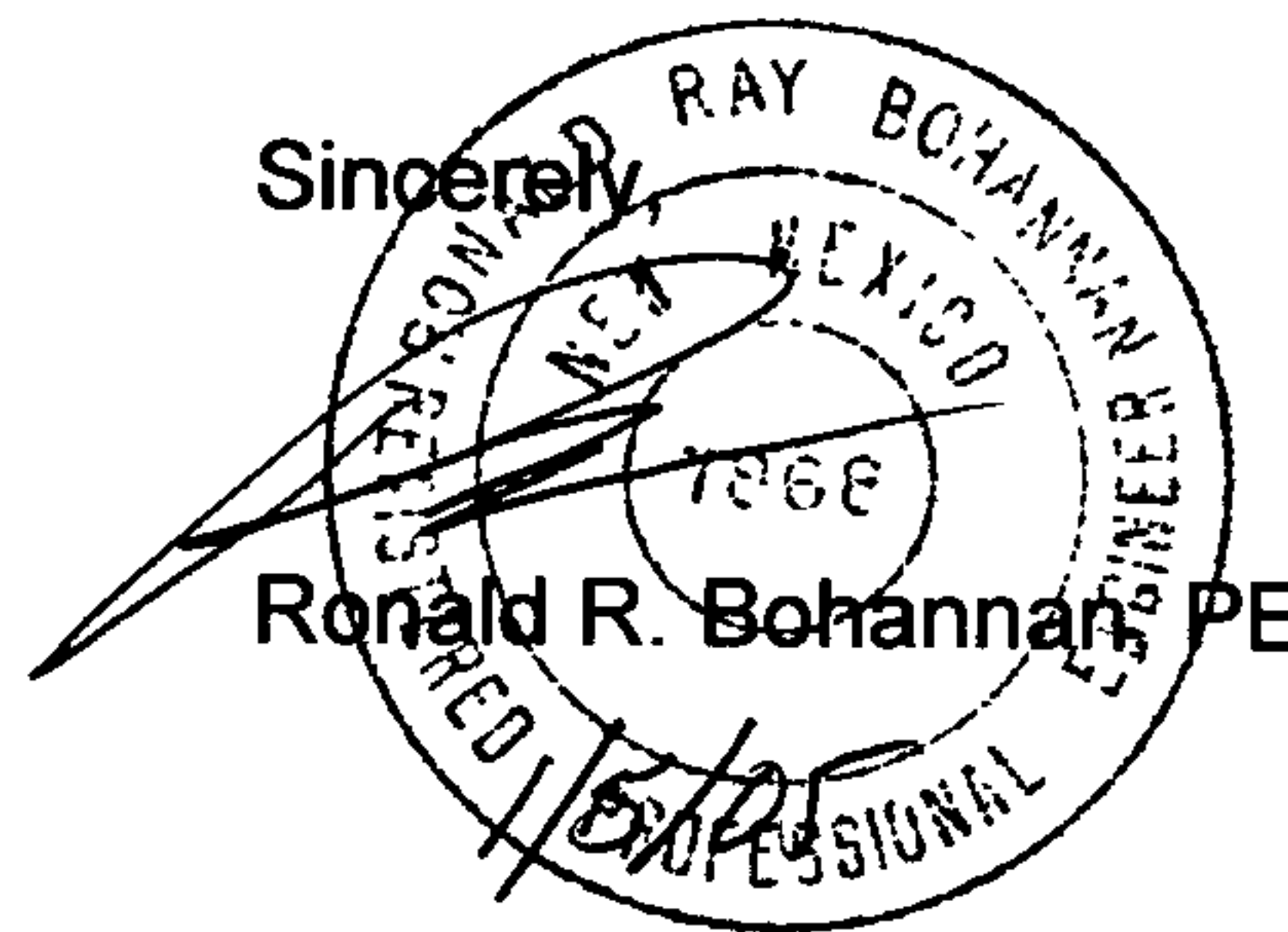
Dear Nilo:

At this time, we are requesting a 60-day extension for the Temporary Certificate of Occupancy for the above referenced project. There is off-site paving work that needs to be completed, and at that time, we will submit for the permanent Certificate of Occupancy. Engineered Structures Inc. is scheduled to be back in Albuquerque January 9, 2006 to complete this work.

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

Sincerely,

Ronald R. Bohannon, PE



cc: Jamal Nelson

JN: 22094
RRB/rw

TIERRA WEST, LLC

P-10/D4A

file

8509 Jefferson NE
Albuquerque, NM 87113

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

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

July 14, 2005

Mr. Nilo Salgado-Fernandez, P.E.
Senior Traffic Engineer
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

RE: Wal-Mart South, Store # 5430 ~~P-10/D4A~~
DRB# 1000650

Dear Nilo:

At this time, we are requesting a 60 day extension for the Temporary Certificate of Occupancy for the above referenced project. There is off-site paving work that needs to be completed, and at that time, we will submit for the permanent Certificate of Occupancy.

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

Sincerely,

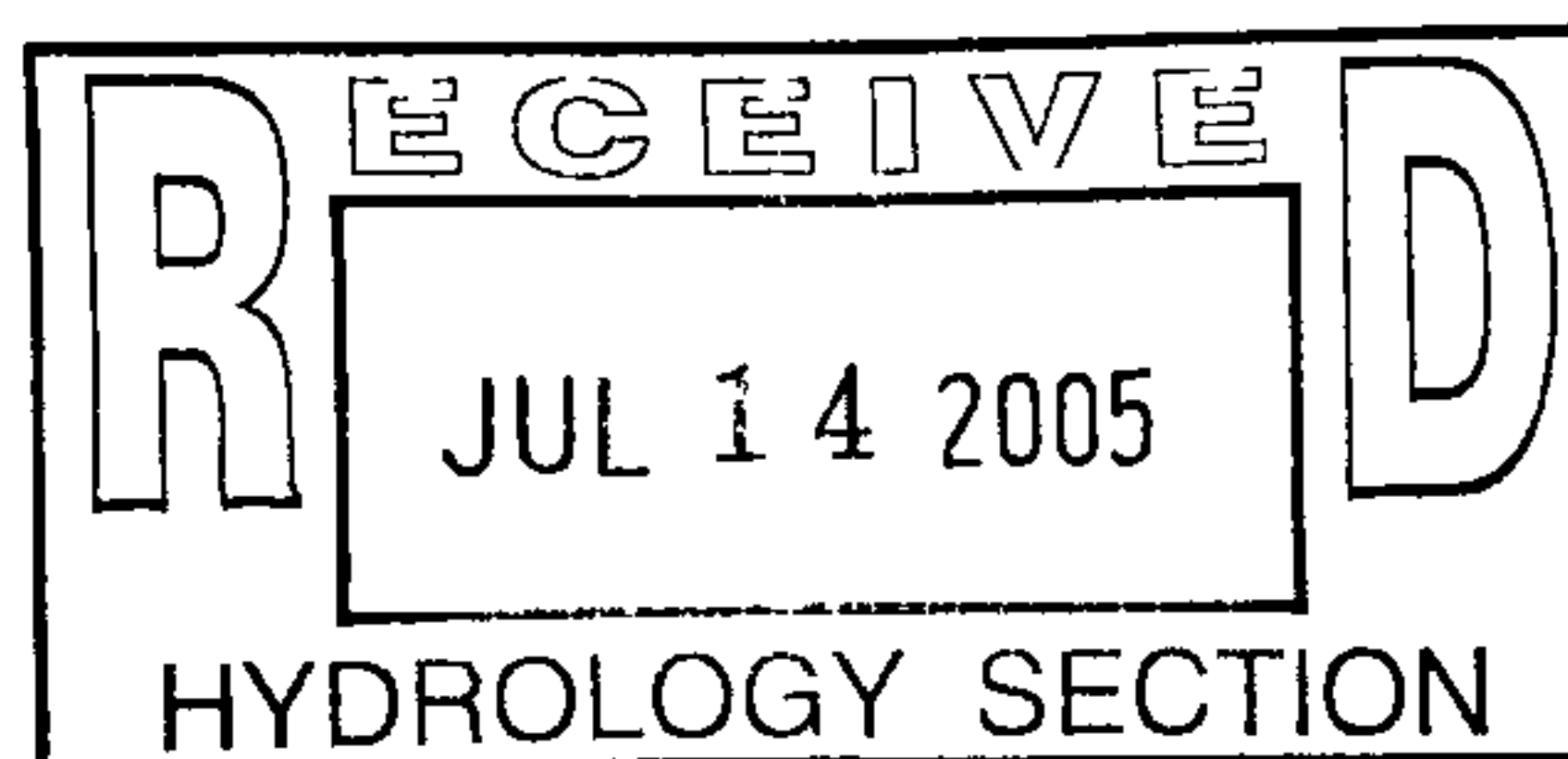


Ronald Bohannon, PE

cc: Jamal Nelson

JN: 22094
RRB/rw/kdk

2002 22094coextension061405



TRANSPORTATION
APPROVED

NST

to 9/14/05

TIERRA WEST, LLC

8509 Jefferson NE
Albuquerque, NM 87113

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

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

January 9, 2006

Mr. Nilo Salgado-Fernandez, PE
Development and Building Services
Public Works Department
PO Box 1293
Albuquerque, NM 87103

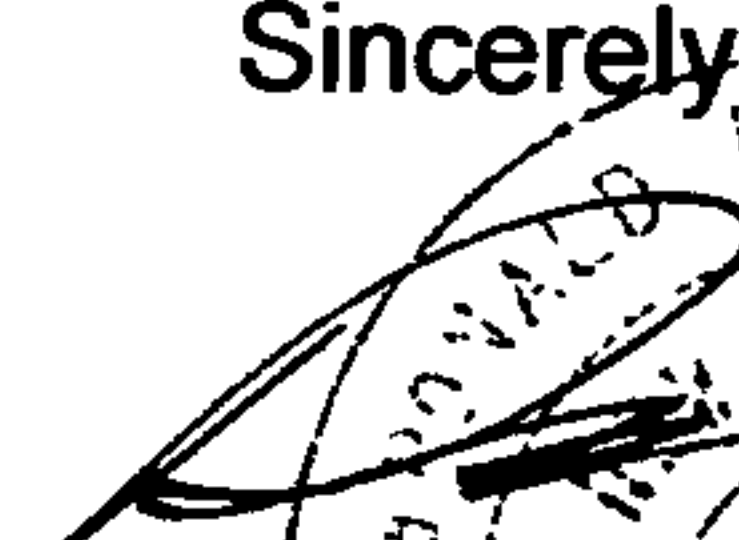
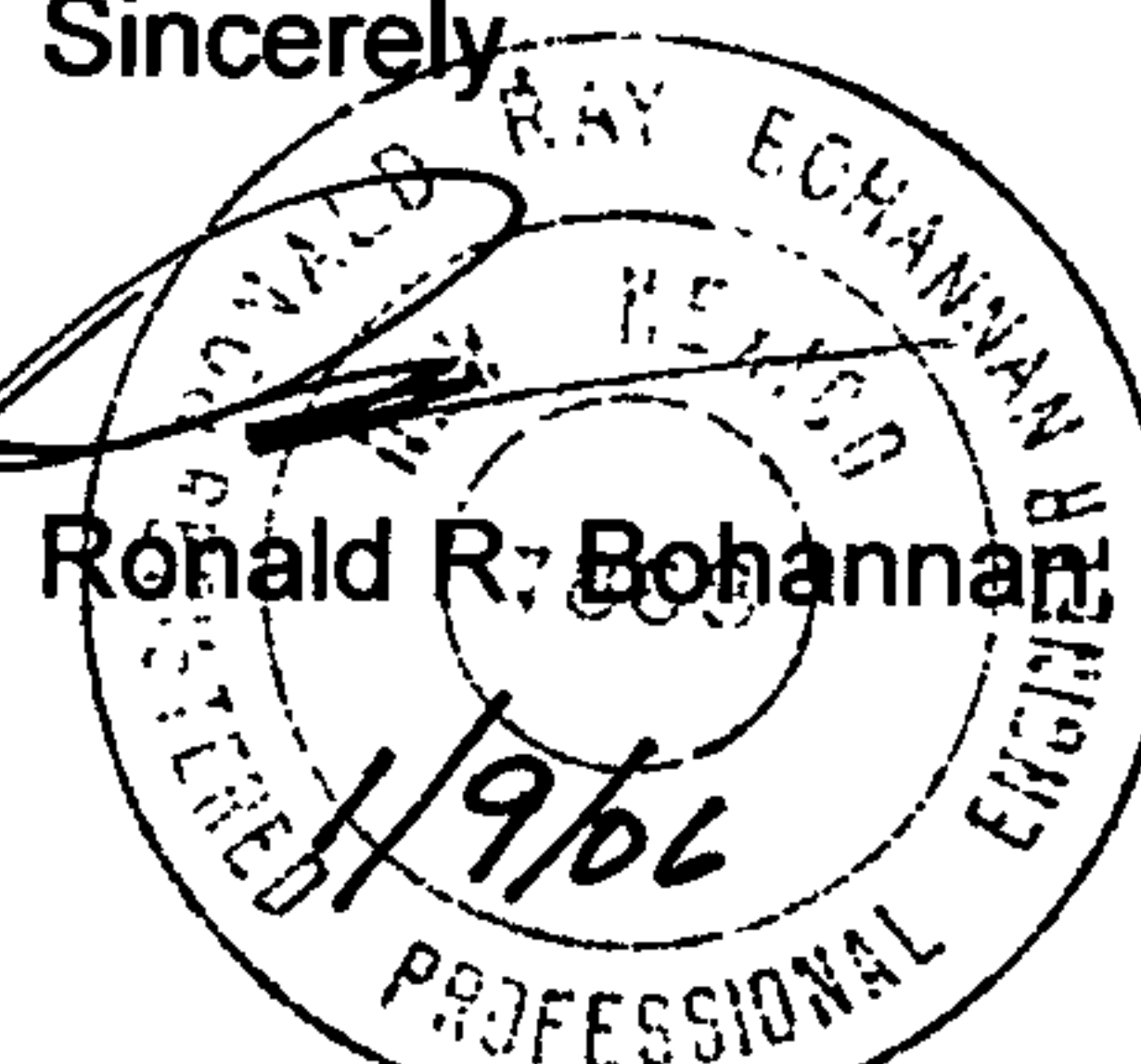
**RE: DRB Approved Site Plan Certification for Final Certificate of Occupancy
Wal-Mart Supercenter # 5430-00 (P-10/D4)
3500 Coors Boulevard, SE**

Dear Mr. Salgado-Fernandez:

Tierra West, LLC, requests final Certification of the DRB approved Site Plan for Building Permit for the Wal-Mart Supercenter located at 3500 Coors Boulevard, SE. Enclosed, please find the information sheet, As-Built Site Plan for Building Permit, and the Site Plan for Subdivision (for reference only). Field verification of the Site Plan was completed by our office and is in substantial compliance with the approved plan. Therefore, we are requesting Certification of the Site Plan for Building Permit for Permanent Certificate of Occupancy.

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

Sincerely,

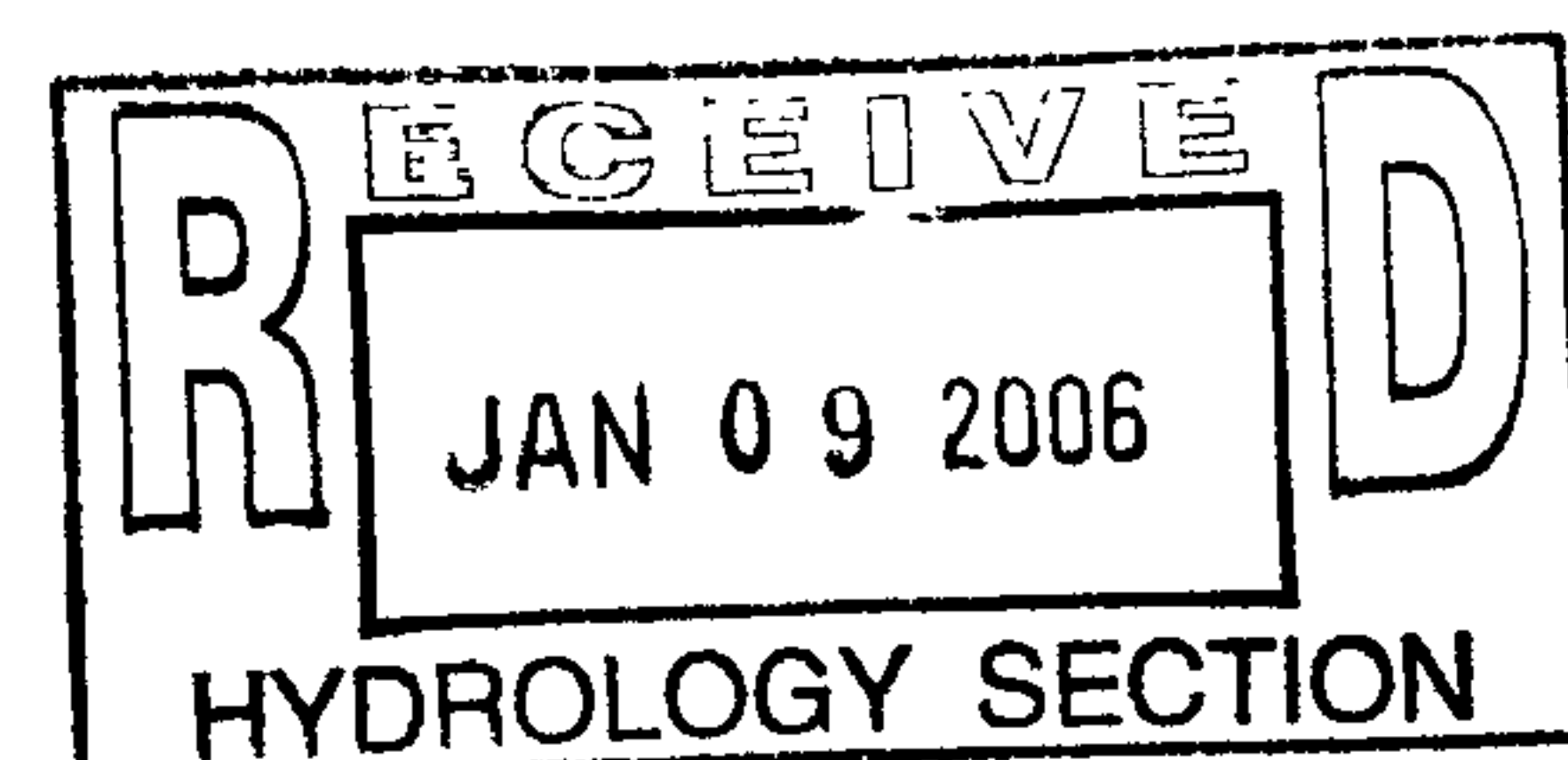

Ronald R. Bohannon, PE


Enclosure/s

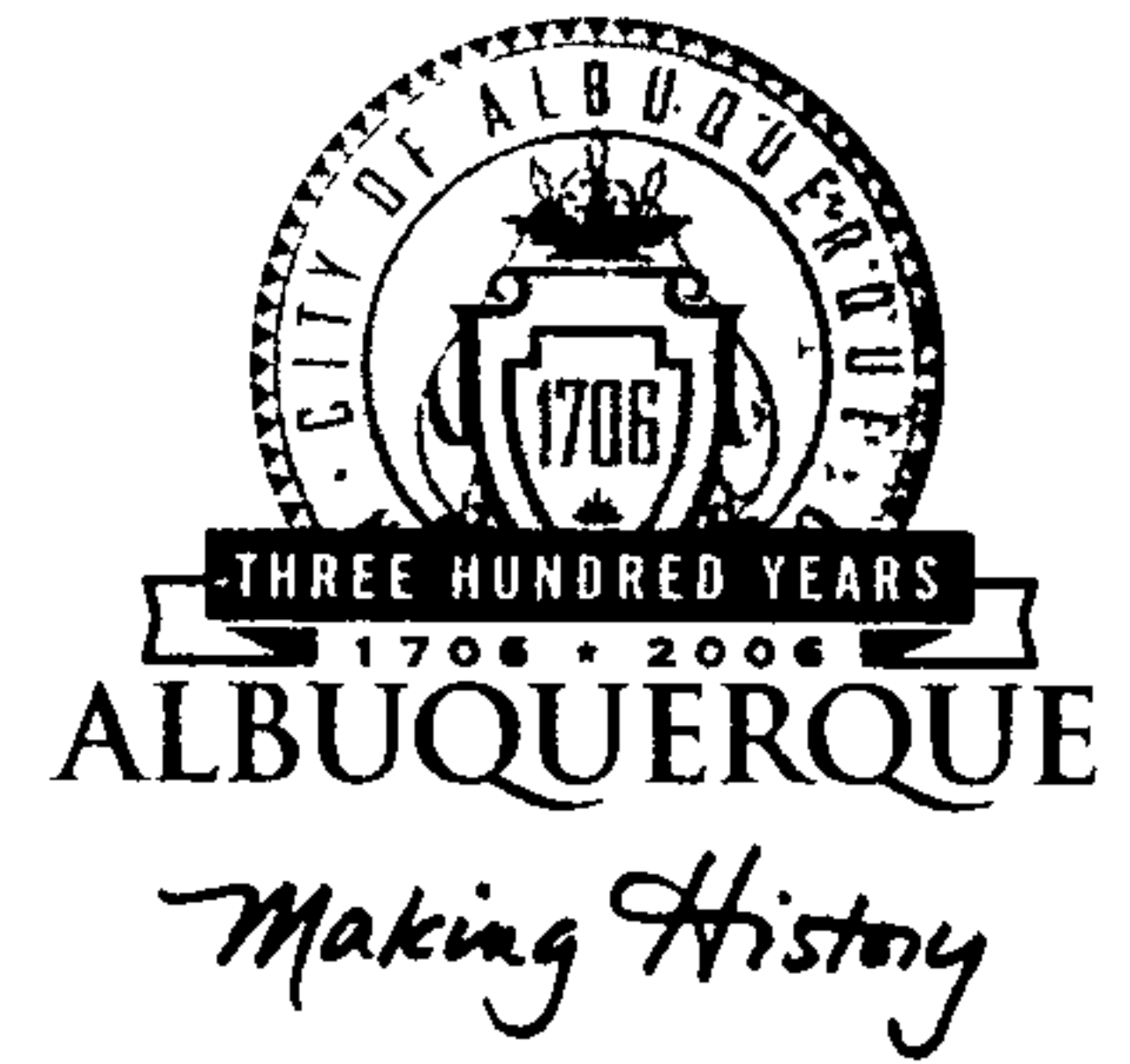
cc: Dominic Barresi

JN: 22094
RRB/rw

22094finaltldcert010906



CITY OF ALBUQUERQUE



June 15, 2005

Mr. Ron Bohannon, P.E.
TIERRA WEST, LLC
8509 Jefferson St. NE
Albuquerque, NM 87113

Re: WAL-MART SOUTH, STORE #5430-00
3500 Coors Blvd. SW
Approval of Permanent Certificate of Occupancy (C.O.)
Engineer's Stamp dated 06/15/2004 (P-10/D4A)
Certification dated 06/13/2005

P.O. Box 1293

Dear Ron:

Albuquerque

Based upon the information provided in your submittal received 06/14/2005, the above referenced certification is approved for release of Permanent Certificate of Occupancy by Hydrology.

New Mexico 87103

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

Sincerely,

Arlene V. Portillo

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

www.cabq.gov

C: Phyllis Villanueva
Jon Niski
File

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

PROJECT TITLE: Wal-Mart South, Store # 5430-00
DRB: 1000650 EPC #: 03-EPC-01110

ZONE MAP/DRG. FILE #: P-10/D4.A
WORK ORDER #: 7365.81

LEGAL DESCRIPTION Tract 1-A-1, Lamonica and Wenk
CITY ADDRESS: 3500 Coors Blvd. SW

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

CONTACT: Jon Niski
PHONE: (505) 858-3100
ZIP CODE: 87113

OWNER: Wal-Mart Stores, Inc.
ADDRESS: 2001 SE 10th Street
CITY, STATE: Bentonville, AK

CONTACT: Bill Shortridge
PHONE: 501-204-0157
ZIP CODE: 72716

ARCHITECT: Taylor Scott Architects
ADDRESS: 1437 South Boulder, Suite 800
CITY, STATE: Tulsa, OK

CONTACT: Ryan Wilbanks
PHONE: 918-587-8600
ZIP CODE: 74119-3609

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

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

CONTRACTOR: Engineered Structures Inc. (ESI)
ADDRESS: 12400 West Overland Ave. #800
CITY, STATE: Boise, ID

CONTACT: Dominic Barresi
PHONE: 208-362-3040
ZIP CODE: 83709

CHECK TYPE OF SUBMITTAL:

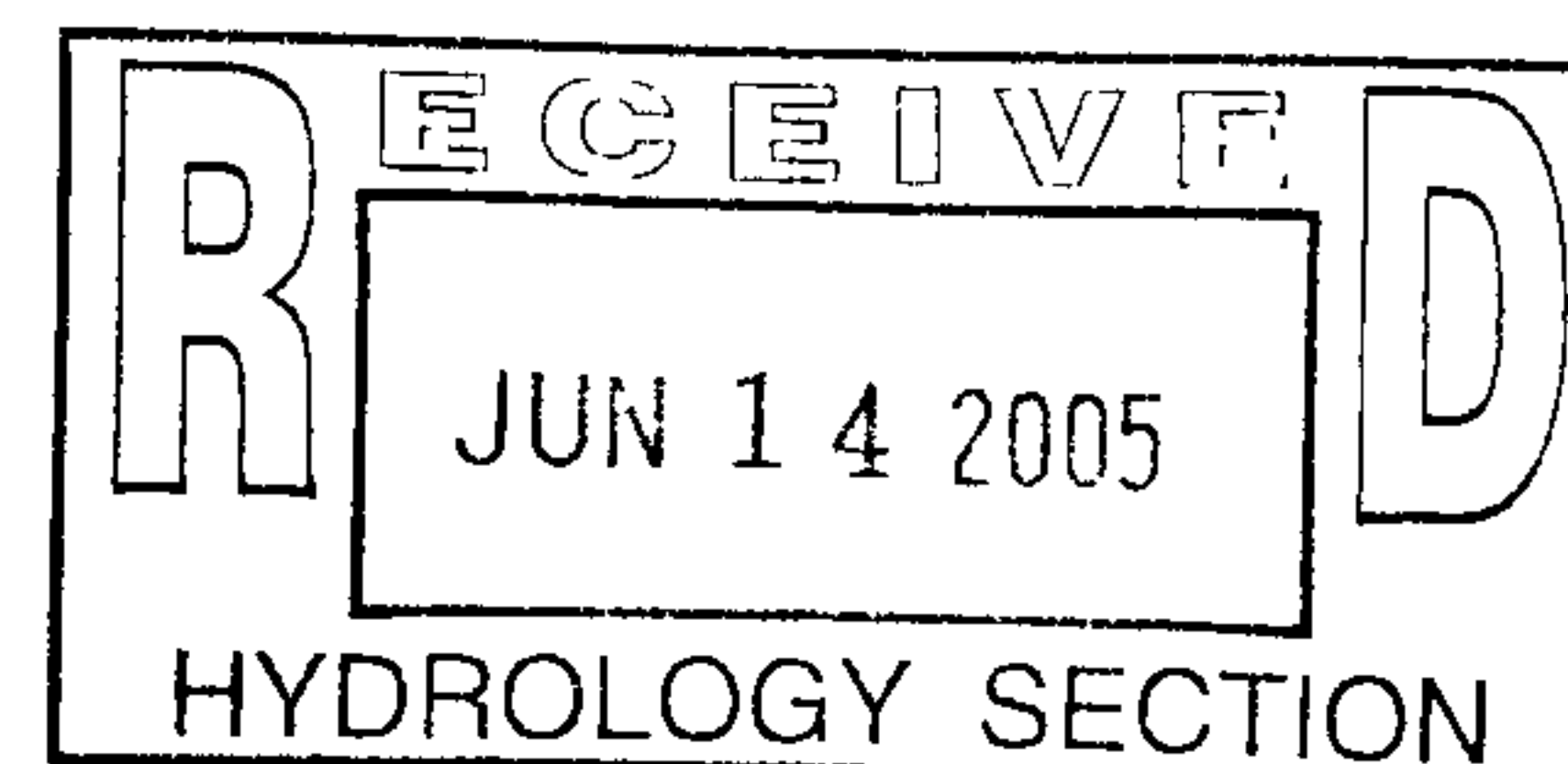
- ☐ DRAINAGE REPORT
☐ DRAINAGE PLAN 1st SUBMITTAL, *REQUIRES TCL or equal*
☐ DRAINAGE PLAN RESUBMITTAL
☐ CONCEPTUAL GRADING & DRAINAGE PLAN
☐ GRADING PLAN
☐ EROSION CONTROL PLAN
☒ ENGINEER'S CERTIFICATION (HYDROLOGY)
☐ CLOMR/LOMR
☐ TRAFFIC CIRCULATION LAYOUT (TCL)
☐ ENGINEERS CERTIFICATION (TCL)
☐ ENGINEERS 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
☐ SO-19

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ☐ YES
☐ NO
☐ COPY PROVIDED



DATE SUBMITTED: 6/13/2005 BY: Ron 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 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.



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

December 23, 2003

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

Re: Lands of Lamonica and Wenk Drainage Report
Engineer Stamp date 11-3-03 (P10/D4)

Dear Mr. Bohannon,

Based on information provided in your submittal dated 11-4-03, the above referenced report is approved for Site Development Plan for Subdivision and Preliminary/Final Plat (Bulk Plat) action by the DRB. A site-specific grading and drainage plan will be required for all future development.

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

Sincerely,

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

C: file

P-10/004A

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV. 01/28/2003rd)

PROJECT TITLE: Lands of Lamonica and Wenk
DRB #: _____ EPC #: _____

ZONE MAP/DRG. FILE #: P-10
WORK ORDER #: _____

LEGAL DESCRIPTION: Lot 1-A Lands of Lamonica and Wenk
CITY ADDRESS: SEQ of Rio Bravo and Coors

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

CONTACT: RONALD R. BOHANNAN, P.E
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 NE
CITY, STATE: Albuquerque, NM

CONTACT: Larry Medrano
PHONE: 856-5700
ZIP CODE: 87113

CONTRACTOR: _____
ADDRESS: _____
CITY, STATE: _____

CONTACT: _____
PHONE: _____
ZIP CODE: _____

CHECK TYPE OF SUBMITTAL:

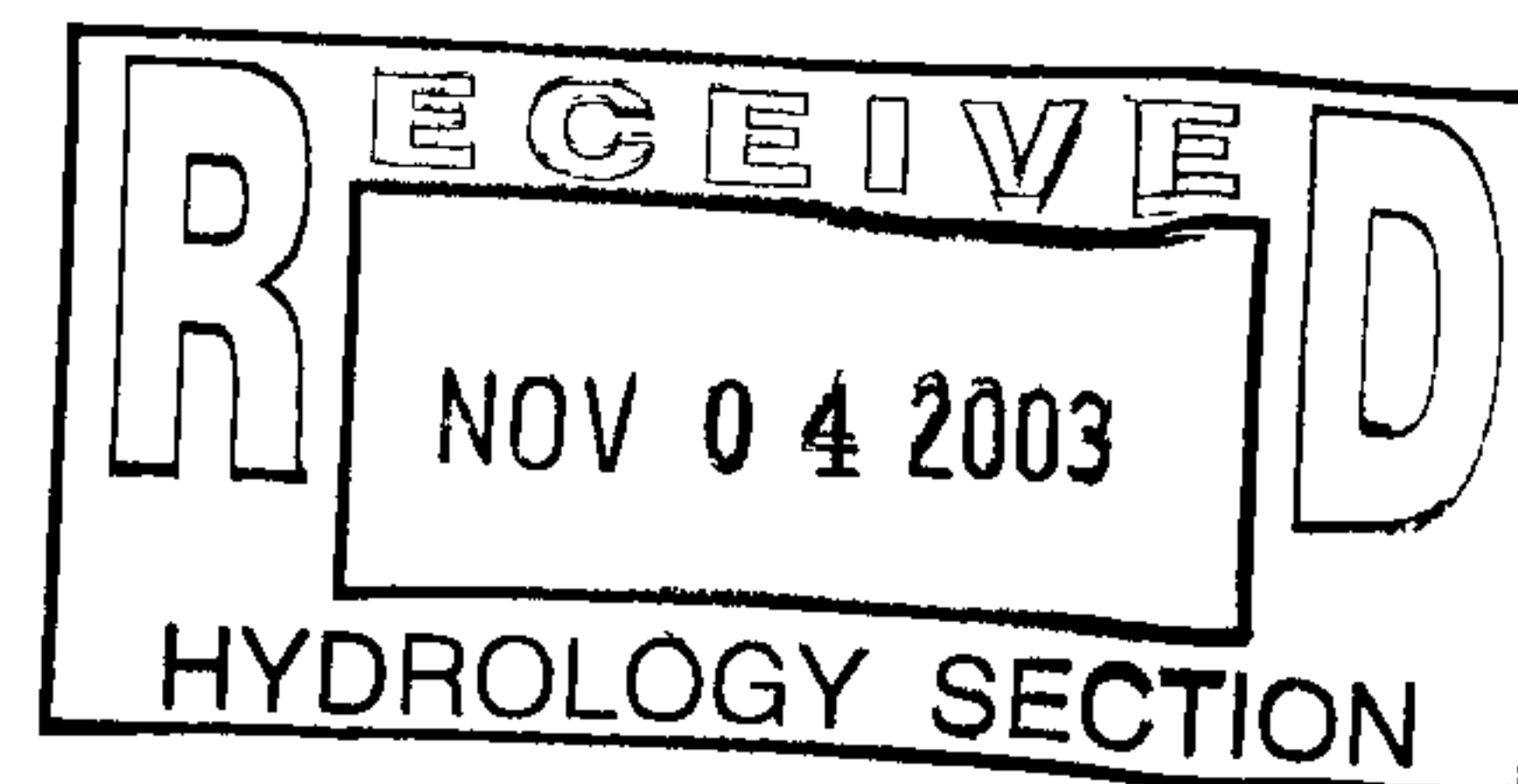
- ☒ DRAINAGE REPORT
☐ DRAINAGE PLAN 1st SUBMITTAL, **REQUIRES TCL or equal**
☐ DRAINAGE PLAN RESUBMITTAL
☐ CONCEPTUAL GRADING & DRAINAGE PLAN
☒ GRADING PLAN
☐ EROSION CONTROL PLAN
☐ ENGINEER'S CERTIFICATION (HYDROLOGY)
☐ CLOMR/LOMR
☐ TRAFFIC CIRCULATION LAYOUT (TCL)
☐ ENGINEERS CERTIFICATION (TCL)
☐ ENGINEERS CERTIFICATION (DRB APPR. SITE PLAN)
☐ OTHER

CHECK TYPE OF APPROVAL SOUGHT:

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

WAS A PRE-DESIGN CONFERENCE ATTENDED:

- ☐ YES
☒ NO
☐ COPY PROVIDED



DATE SUBMITTED: 11/4/2003 BY: David Soule, PE

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

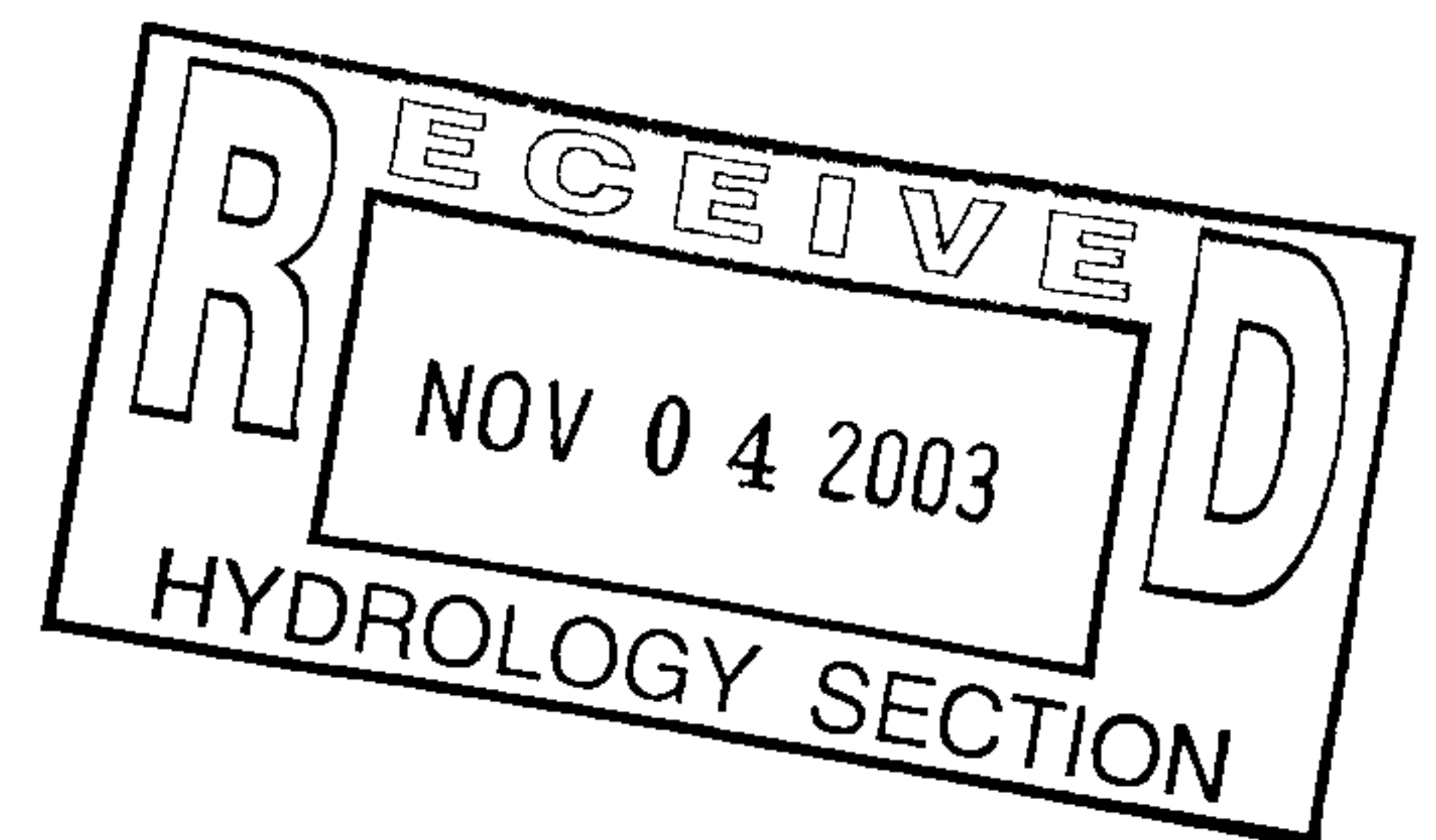
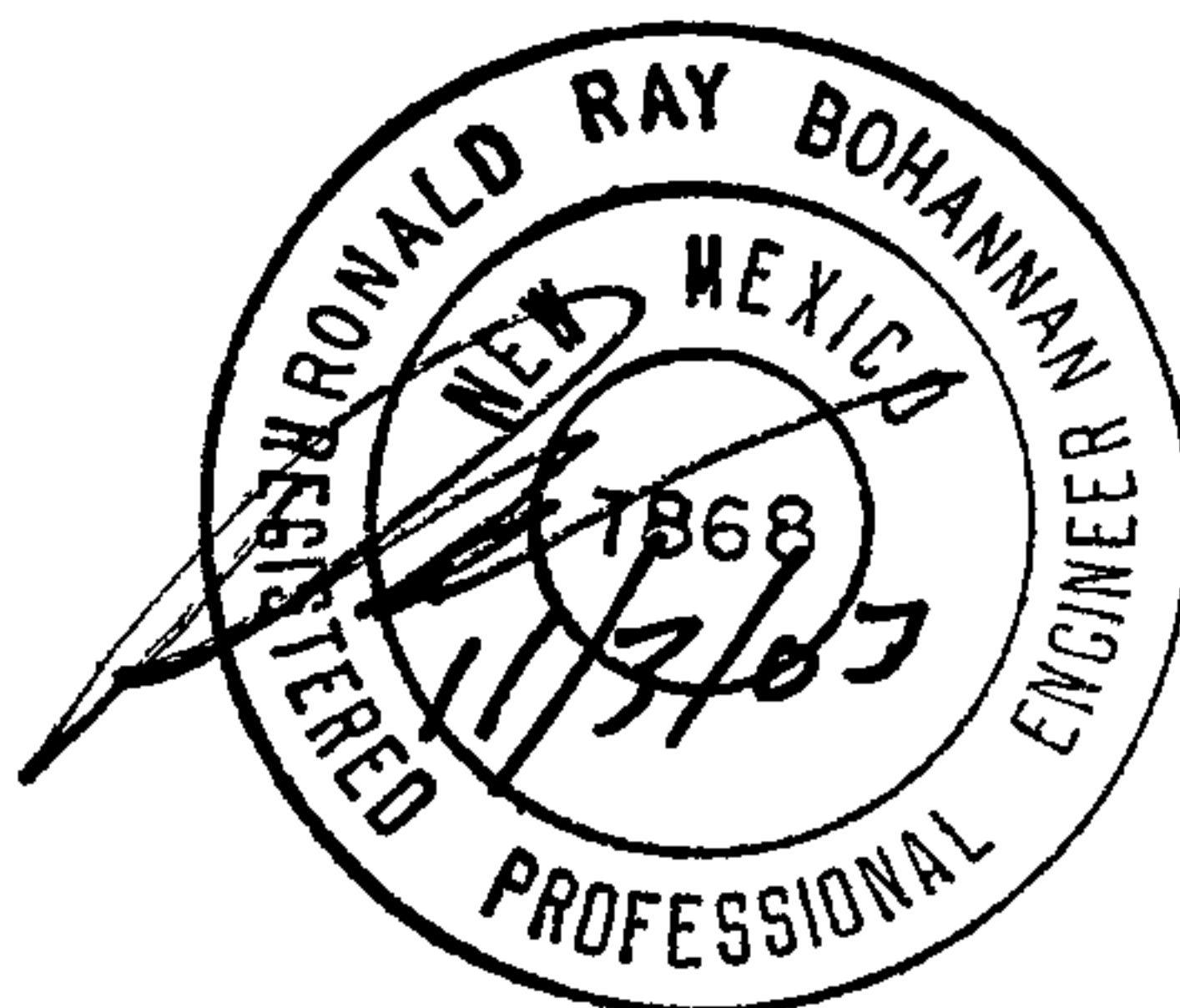
Tract 1-A Lands of Lamonica and Wenk Albuquerque, New Mexico

Prepared by

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

Prepared for
Wal-Mart Stores, Inc
2001 SE 10th Street
Bentonville, AR 72712

November 2003



Ronald R. Bohannon P.E. No. 7868

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Appendix

Hydraulic Calculations.....A

Map Pockets

Interim Site Grading and Drainage Plan A

Ultimate Grading and Drainage Plan B

PURPOSE

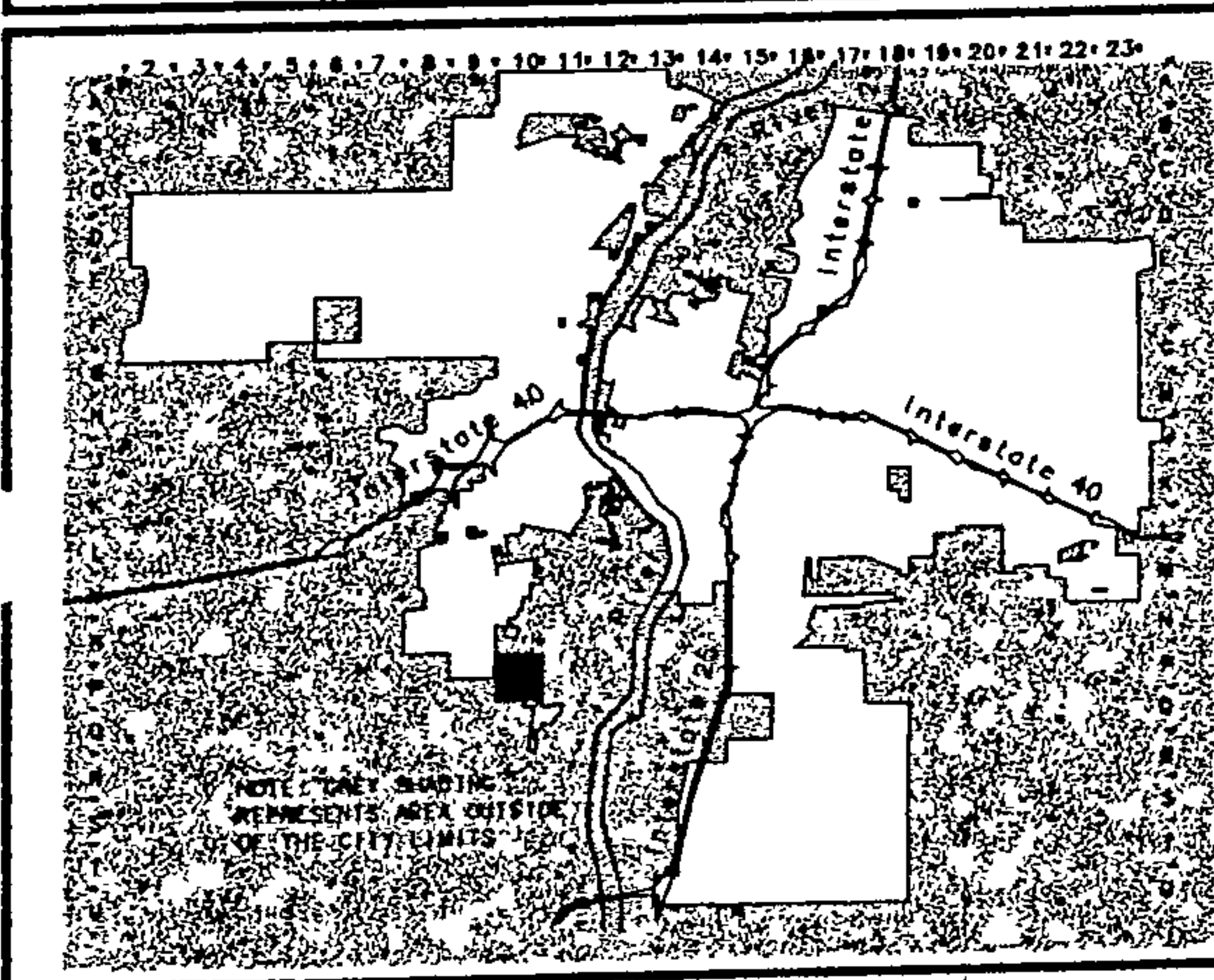
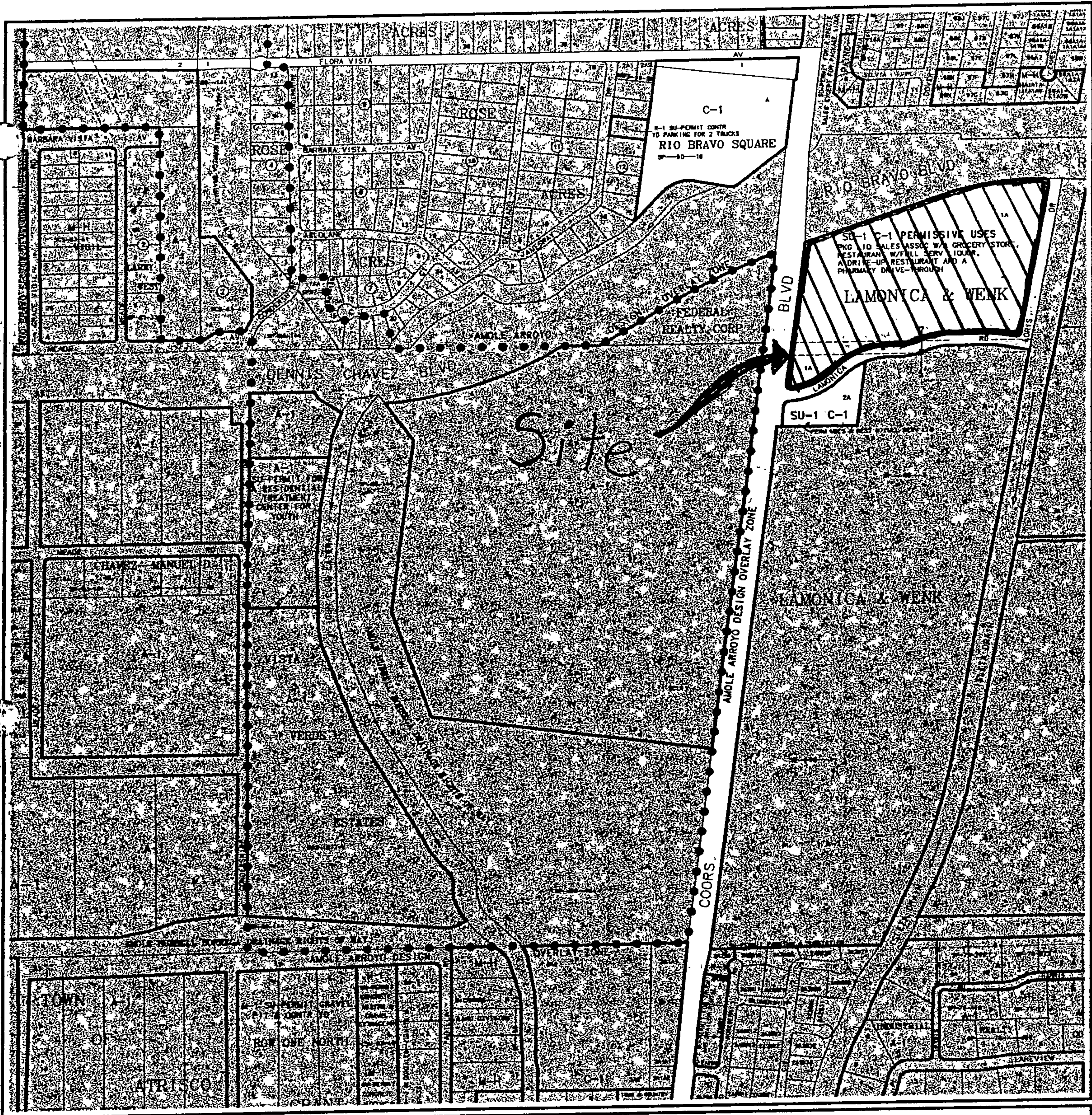
The purpose of this report is to provide the Interim Drainage Management Plan for the Subdivision of Tract 1-A, of The Lands of Lamonica and Wenk. This plan shall explain the existing drainage patterns and demonstrate that the proposed subdivision will not affect the existing drainage patterns. This report will demonstrate that the proposed improvements do not adversely effect the surrounding properties, nor the upstream or downstream facilities.

INTRODUCTION

The subject of this report, as shown on the Exhibit A vicinity map, is a 21.7381-acre parcel of land located on the southeast corner of Rio Bravo and Coors. The site is located in the City of Albuquerque. The site currently exists as an irrigated and farmed parcel. The legal description of the property is Tract 1-A, Lands of Lamonica and Wenk. As shown on FIRM map 35001C0339D, the site lies within flood zone X. The purpose of this report is to provide the city of Albuquerque Development Review Board with the drainage information to approve the site plan for subdivision and subsequent replat with a Bulk Land variance. No improvements are proposed with the Subdivision of this parcel. Once subdivided, each tract must provide a detailed drainage analysis and grading plan sufficient for the DRB to approve their respective site plan for Building permit.

EXISTING CONDITIONS

The site has been farmed for many years. The site continues to be utilized as farmland. This utilization will remain until further action is taken via an approved site plan for building permit. The site has been laser leveled. The site is directly adjacent to the Isleta drain. The site is

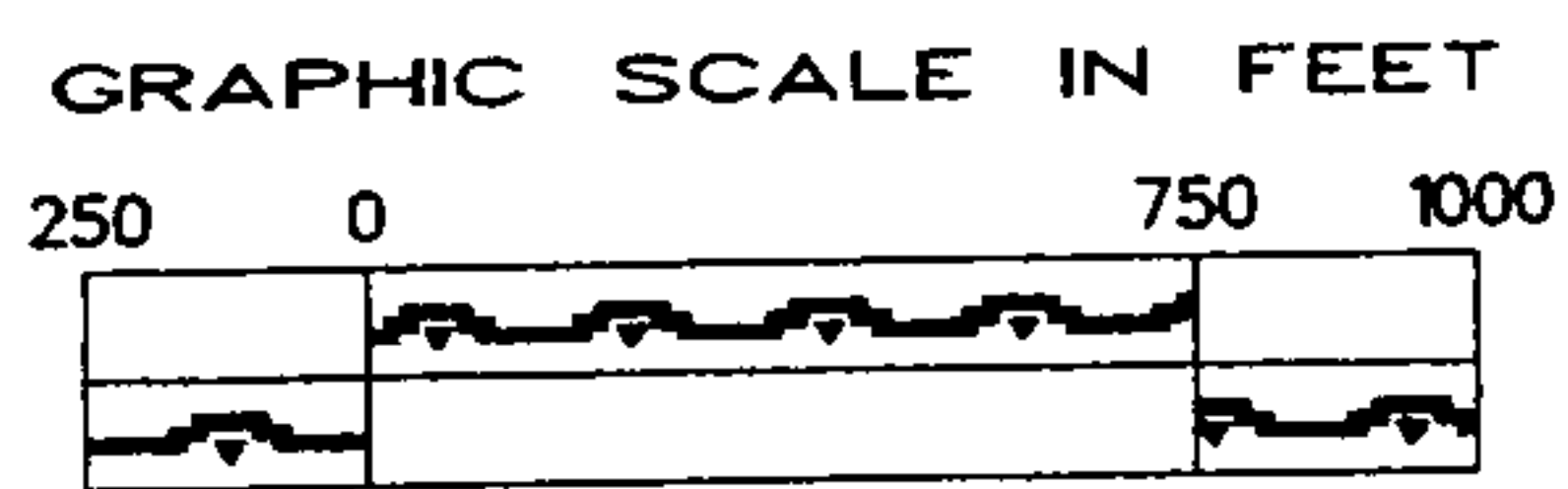


CITY OF
Albuquerque

Albuquerque Geographic Information System
PLANNING DEPARTMENT

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EXHIBIT A- VICINITY MAP



Zone Atlas Page

P-10-Z

Map Amended through July 18, 2001

surrounded by berms, which allows the flooding of the fields for the growing of crop. The irrigation water is controlled by a culvert and gate under Rio Bravo locate at the northeast corner of this site. The overflow is controlled via a drain gate and culvert located at the midpoint of the sites south property line. During a 100-year, 6-hour storm event this site generates 33.91cfs and .96 acre feet of potential runoff. Due to the laser leveling and berms surrounding the site, no flows leave the site during this storm event

PROPOSED CONDITIONS

The proposed condition will not change from the existing conditions. The site will not be regraded, a copy of the existing grading plan is included in Map Pocket A. The ultimate drainage management plan will be submitted with the site plan for building permit for the site. In the ultimate condition, the site will have multiple 'parking lot' ponds and a throttled discharge to the Isleta Drain. Prior to discharge, the runoff will be treated to meet water quality standards. This ultimate grading and drainage plan must be approved by the DRB and the MRGCD prior to approval of the site plan for subdivision. A reference copy of the ultimate drainage solution is included in Map Pocket B.

SUMMARY AND RECOMMENDATIONS

This site is an existing irrigated field. The site is not negatively impacted by any flood zones. The site generates 33.91 cfs and .96 ac.ft. of potential runoff during a 6-hour, 100-year storm event. The proposed condition is the same as the existing conditions. The sole purpose of this report is to allow for the DRB to approve the site plan for subdivision and replat with bulk land subdivision.

APPENDIX A

HYDRAULIC CALCULATIONS

Weighted E Method

Existing Basins

											100-Year			10-Year		
Basin	Area (sf)	Area (acres)	Treatment A		Treatment B		Treatment C		Treatment D		Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs
			%	(acres)	%	(acres)	%	(acres)	%	(acres)						
1	946911.60	21.738	100%	21.7381	0%	0.000	0%	0	0%	0.000	0.530	0.960	33.91	0.130	0.235	8.26

\

Developed Basins

											100-Year			10-Year		
Basin	Area (sf)	Area (acres)	Treatment A		Treatment B		Treatment C		Treatment D		Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs
			%	(acres)	%	(acres)	%	(acres)	%	(acres)						
1	946911.60	21.738	100%	21.7381	0%	0.000	0%	0	0%	0.000	0.530	0.960	33.91	0.130	0.235	8.26

Equations:

Weighted E = Ea*Aa + Eb*Ab + Ec*Ac + Ed*Ad / (Total Area)

Volume = Weighted D * Total Area

Flow = Qa * Aa + Qb * Ab + Qc * Ac + Qd * Ad

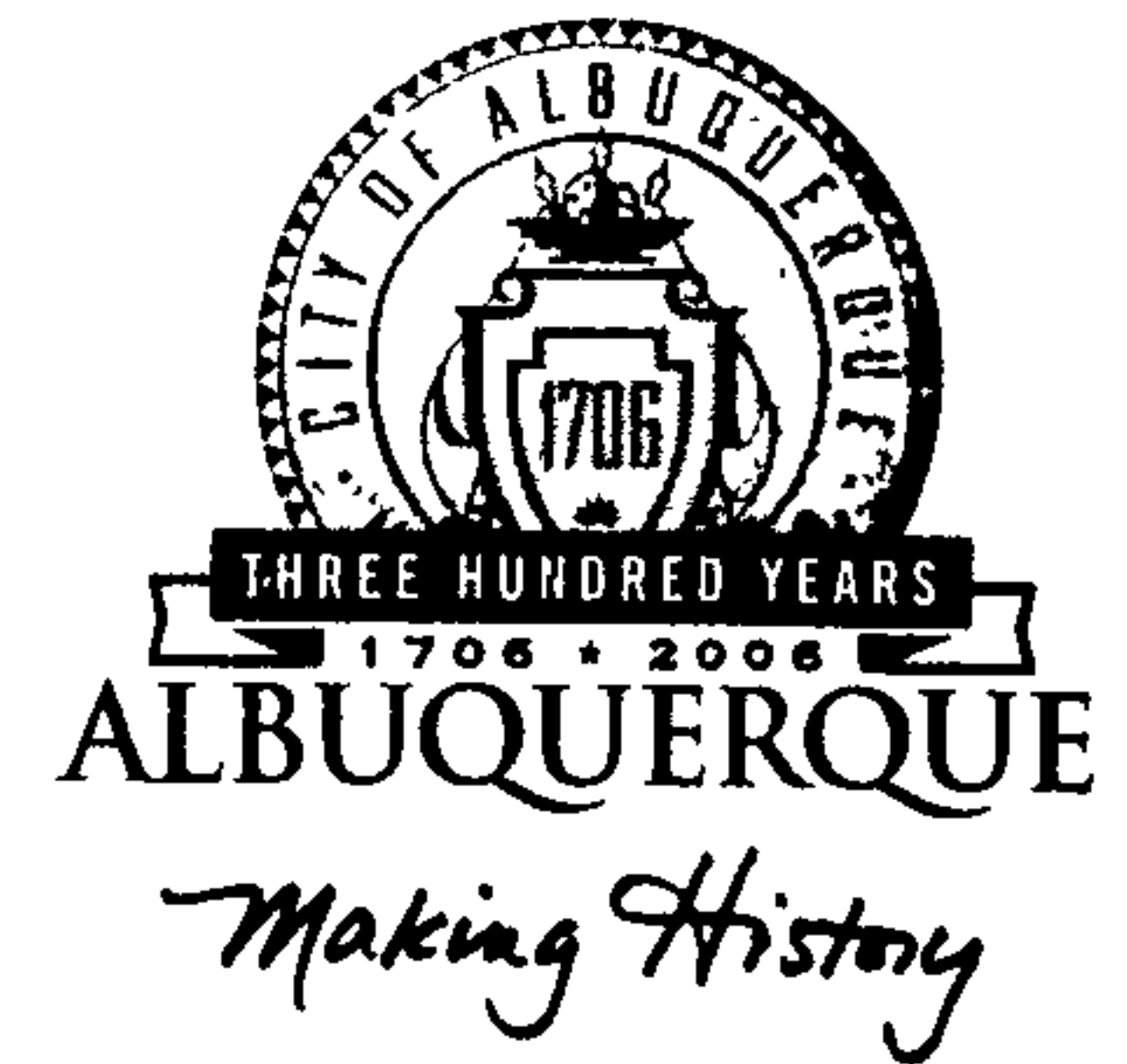
MAP POCKET A

INTERIM SITE GRADING PLAN

MAP POCKET B

ULTIMATE SITE GRADING PLAN

CITY OF ALBUQUERQUE



May 20, 2005

Ronald Bohannon, P.E.
Tierra West, LLC
8509 Jefferson NE
Albuquerque, NM 87113

**Re: WalMart South, 3500 Coors Blvd SW, Temporary Certificate of
Occupancy
Engineer's Stamp dated 6-15-04 (P10-D4A)
Certification dated 5-18-05**

Dear Mr. Bohannon,

P.O. Box 1293

Based upon the information provided in your submittal received 5-18-05, the
above referenced certification is approved for release of 30-day temporary Certificate
of Occupancy by Hydrology.

Albuquerque

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

New Mexico 87103

Sincerely,

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

www.cabq.gov

C: Phyllis Villanueva
file

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

P-10/D4A

PROJECT TITLE: Wal-Mart South, Store #5430-00
DRB #: 1000650 EPC #: 03-EPC-01110

ZONE MAP/DRG. FILE #: P-10/D4
WORK ORDER #: 7365.81

LEGAL DESCRIPTION: Tract 1-A-1, Lamonica and Wenk
CITY ADDRESS: 3500 Coors Boulevard, SW

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

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

OWNER: Wal-Mart Stores Inc.
ADDRESS: 2001 SE 10th Street
CITY, STATE: Bentonville, AR

CONTACT: (501) 204-0157
PHONE: Bill Shortridge
ZIP CODE: 72716

ARCHITECT: Taylor Scott Architects
ADDRESS: 1437 South Boulder, Suite 800
CITY, STATE: Tulsa, OK

CONTACT: Ryan Wilbanks
PHONE: (918) 587-8600
ZIP CODE: 74119-3609

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

CONTACT: Larry Medrano
PHONE: 856-5700
ZIP CODE: 87113

CONTRACTOR: Engineered Structures Inc. (ESI)
ADDRESS: 12400 West Overland Ave. # 800
CITY, STATE: Tulsa, OK

CONTACT: Dominic Barresi
PHONE: (208) 362-3040
ZIP CODE: 74119

CHECK TYPE OF SUBMITTAL:

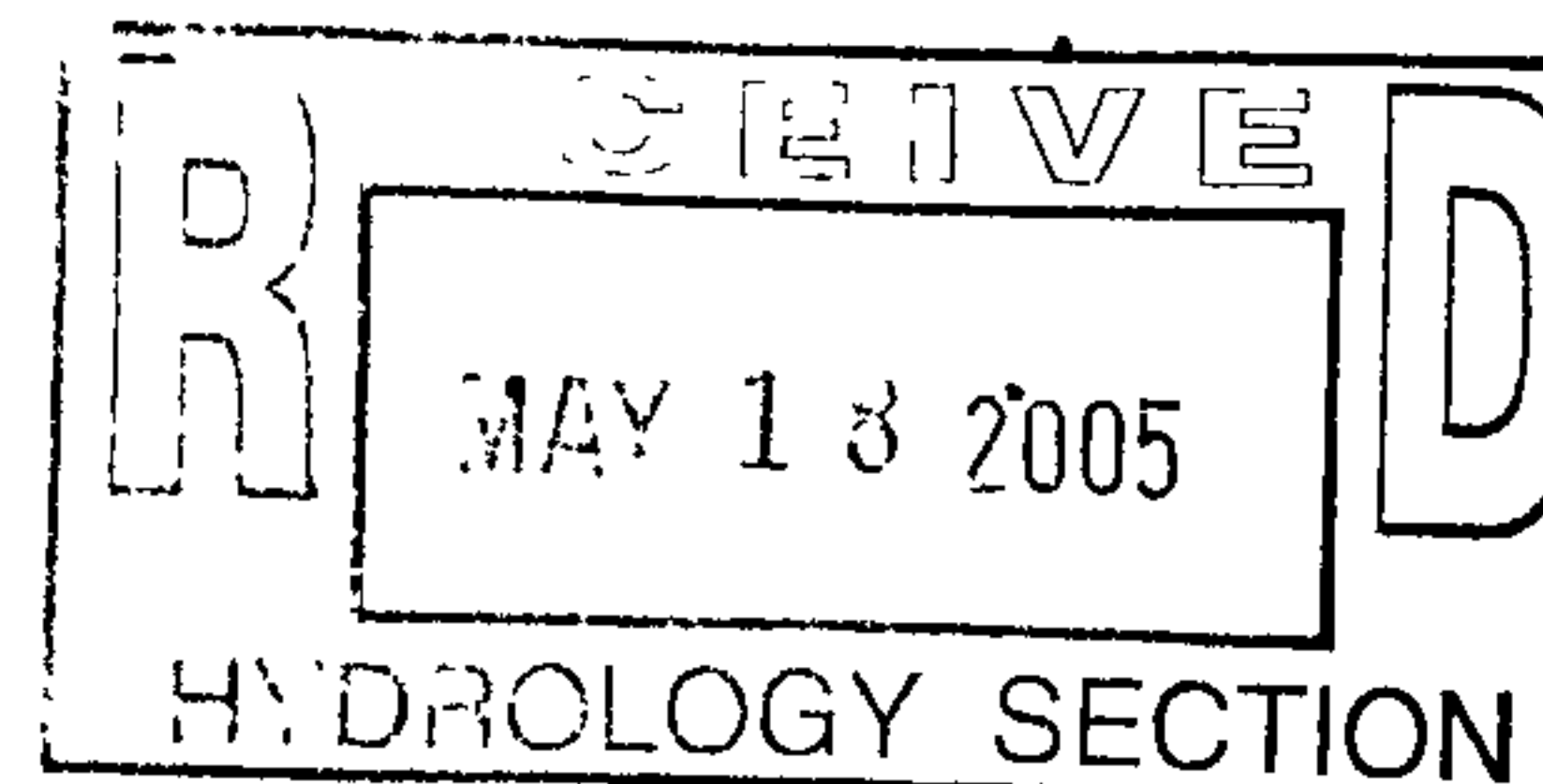
CHECK TYPE OF APPROVAL SOUGHT:

- ☐ DRAINAGE REPORT
☐ DRAINAGE PLAN 1st SUBMITTAL, **REQUIRES TCL or equal**
☐ DRAINAGE PLAN RESUBMITTAL
☐ CONCEPTUAL GRADING & DRAINAGE PLAN
☐ GRADING PLAN
☐ EROSION CONTROL PLAN
☒ ENGINEER'S CERTIFICATION (HYDROLOGY)
☐ CLOMR/LOMR
☐ TRAFFIC CIRCULATION LAYOUT (TCL)
☐ ENGINEERS CERTIFICATION (TCL)
☐ ENGINEERS CERTIFICATION (DRB APPR. SITE PLAN)
☐ OTHER

- ☐ 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: 6/18/2005 BY: Ron 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:

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