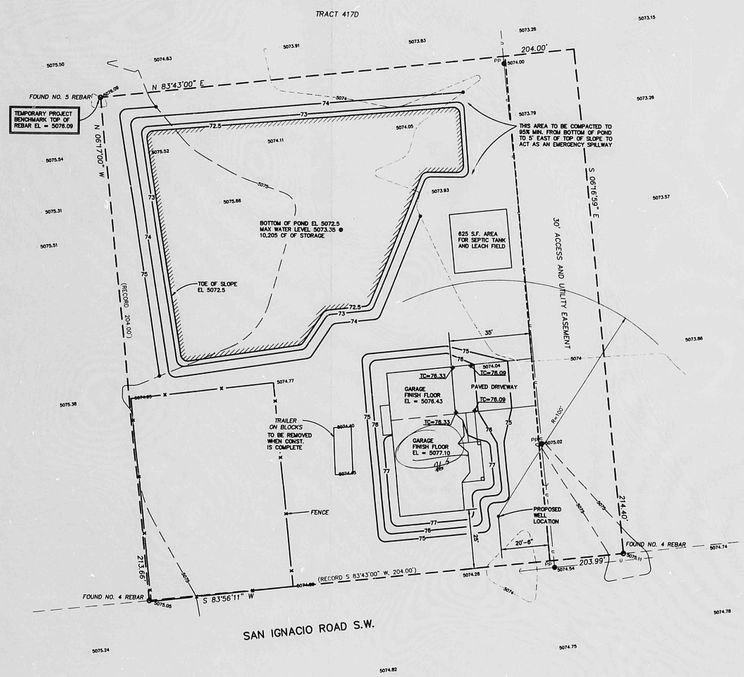
PUBLIC WORKS/HYDROLOGY

L10/D15



GRADING AND DRAINAGE PLAN

SCALE 1" = 20'

LEGEND

	EXISTING UTILITY POLE (WITH ANCHOR)
29	EXISTING CONTOUR
	EXISTING UTILITY LINE
29	PROPOSED CONTOUR
5073.32	EXISTING SPOT ELEVATION
TC=78.09	PROPOSED SPOT ELEVATION TOP OF CONCRETE

GRAPHIC SCALE

(IN FEET)
20 1 inch = ft.

DISCUSSION

DEVELOPED HYDROLOGY:

THE PROPOSED DEVELOPMENT INCLUDES 2539 S.F. OF IMPERVIOUS AREA (HOUSE, GARAGE, PATIOS, SIDEWALKS, AND PAVED DRIVEWAY AND 6420 S.F. OF GRAVELLED AREA FOR THE PRIVATE ACCESS, AND 625 S.F. FOR THE SEPTIC TANK AND LEACH FIELD. IT IS ASSUMED THAT 200 S.F. OF LAWN AND GARDEN WILL BE DEVELOPED. THE PONDING AND SMALE AREAS NORTH AND WEST OF THE PROPOSED STRUCTURES HAVE BEEN CONSIDERED AS TYPE 'B' LAND TREATMENT. ALTHOUGH THEY WILL HAVE BEEN GRADED, THERE WILL BE NO FINE GRADING OR COMPACTION IN THESE AREAS.

IN ACCORDANCE WITH DPM PROCEDURES, THE FOLLOWING TABLE GIVES THE MAXIMUM 100 YEAR DISCHARGE AND 100 YEAR VOLUME FOR THIS DEVELOPMENT IN ZONE 1 FOR A TIME OF CONCENTRATION OF 12 MIN.

TABLE 1

TREATMENT	AREA (AC)	MAX RUNOFF (CFS/AC)	MAX Q (CFS)
A	0.184	1.29	0.24
B	0.520	2.03	1.06
C	0.238	2.87	0.68
D	0.058	4.37	0.25

TOTAL AREA 1.004 AC. TOTAL 100 YR. Q = 2.23 CFS = 2.22 CFS/AC

TABLE 2

TREATMENT	AREA (AC)	VOL RUNOFF (IN/AC)	MAX VOL (CF)
A	0.184	0.44	294
B	0.520	0.67	1265
C	0.238	0.99	855
D	0.058	1.97	415

TOTAL AREA 1.004 AC. TOTAL 100 YR. VOL = 2829 CF

HISTORICAL 100 YEAR VOL = 1.00 AC X 0.44 IN/AC = 1597 CF

INCREASE VOLUME DUE TO DEVELOPMENT = 1232 CF

THE PROPOSED DEVELOPMENT DISPLACES PONDING VOLUME BELOW THE BASE FLOOD ELEVATION 5076 AS FOLLOWS:

HOUSE, GARAGE, WALKS, EMBANKMENT = 6462 CF
MAIN GRAVELED DRIVEWAY = 280 CF
TOTAL DISPLACED VOLUME BELOW 5076 BFE = 6973 CF

TOTAL REQUIRED PONDING VOLUME (6973+1232) = 10,205 CF

OFFSITE WATERSHED HYDROLOGY:

THIS AREA OF THE COUNTY IS CURRENTLY PLATTED AS 5 ACRE TRACTS, HOWEVER, THE TREND IS TO DIVIDE EACH TRACT INTO 1 ACRE (NET) TRACTS. THE TOTAL, INCLUDING HALF OF THE ROADWAY, IS 49,680 SF PER LOT. PER TABLE A-5, SECTION 22 OF THE CITY OF ALBUQ. DPM, A DENSITY OF 0.88 DU/ACRE GIVES AN IMPERVIOUS AREA (TYPE 'D') OF 15.9% OF THE TOTAL LAND AREA. THE ASSUMED PERCENTAGES OF SOIL TREATMENT IS: A = 41.5%, B = 20%, C = 20%. FOR HYDROLOGIC ZONE 1, THE RUNOFF PER WATERSHED ACRE IS (1.29)(0.415) + (2.03)(0.20) + (2.87)(0.20) + (4.37)(0.159) = 2.22 CFS/AC.

OFFSITE FLOWS:

DIRECT FLOWS TO THIS SITE ARE FROM A SMALL (0.78 AC) WATERSHED AT THE WEST PROPERTY LINE. CONTRIBUTING DIRECT FLOW FROM THIS WATERSHED IS 1.73 CFS THAT ENTERS THIS SITE AS SHALLOW FLOW ACROSS THE ENTIRE WEST PROPERTY LINE. THIS SITE IS NEAR THE LOW POINT IN A REGIONAL PONDING AREA AS SHOWN ON THE ATTACHED FLOODWAY MAP. THIS INDIRECT FLOW IS REPRESENTED ON THE FEMA MAP (PANEL 33) AS A 100 YEAR FLOOD PLAIN WITH A BASE FLOOD ELEVATION OF 5076. THEREFORE, THIS SITE HAS BEEN DESIGNED TO PROVIDE FINISHED FLOOR ELEVATIONS OF 5077.1 OR 1.1 FEET ABOVE THE BFE. SINCE THE SITE CONTRIBUTES TO THE FLOOD PLAIN, IT HAS BEEN DESIGNED TO RETAIN ALL INCREASES IN RUNOFF VOLUME PLUS THE VOLUME DISPLACED BY DEVELOPMENT ON-SITE.

FLOOD PLAIN STATUS

AS SHOWN ON THE ADJACENT FLOODWAY MAP AND THE CORRESPONDING FEMA MAP PANEL 350002-0033, THIS SITE IS WITHIN A FEMA 100 YEAR FLOOD PLAIN DESIGNATED ("AZ" (EL. 5076)). THERE ARE NO CONCENTRATED FLOW ARROYOS IN THE IMMEDIATE AREA OF THIS SITE.

LOT ACCESS:

THIS TRACT OF LAND IS ACCESSED FROM SAN IGNACIO ROAD S.W. WHICH IS IMPROVED AND IS MAINTAINED BY BERNALILLO COUNTY IN THIS SECTION. THE ROAD FROM SAN IGNACIO ACROSS THE SITE (WITHIN THE EASEMENT AT THE EAST PROPERTY LINE) IS NOT MAINTAINED BY BERNALILLO COUNTY.

FENCING

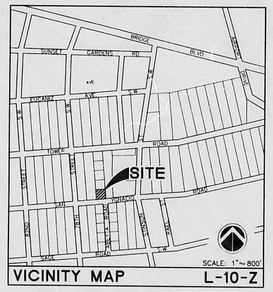
A SMALL STORAGE AREA IN THE SOUTHWEST CORNER OF THIS SITE IS CURRENTLY FENCED WITH FIELD WIRE. THE OWNER AGREES THAT ANY ADDITIONAL FENCING INSTALLED IN THE FUTURE WILL BE OF THE TYPES APPROVED BY THE COUNTY THAT DO NOT IMPEDE FLOW.

EROSION

THE CONTRACTOR IS ADVISED THAT HE SHALL UTILIZE EARTHEN BERMS, HAY BALES, OR SILT FENCE AT THE RUNOFF DISCHARGE POINTS FROM THE SITE TO ASSURE ANY ERODED SOIL IS RETAINED ON THE SITE DURING CONSTRUCTION. ANY LOOSENED SOIL SHALL BE WATERED OR COVERED SO IT DOES NOT BECOME AIRBORNE. ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE REVEGETATED IN ACCORDANCE WITH CITY OF ALBUQUERQUE STANDARD SPECIFICATIONS.

POND OPERATION

THE PROPOSED ON-SITE POND IS INTENDED TO PROVIDE RUNOFF STORAGE VOLUME IN EXCESS OF THE VOLUME BELOW THE BASE FLOOD ELEVATION UTILIZED TO BUILD EMBANKMENTS FOR THE HOUSE, GARAGE AND DRIVEWAY SO THAT THE ELEVATION OF THE FLOOD PLAIN IS NOT INCREASED BY THIS DEVELOPMENT. THE POND WILL PROVIDE IN EXCESS OF 16,500 CF OF STORAGE WHEN FILLED TO EXISTING GROUND LEVEL. NOTE THAT THE RUNOFF FROM A 100 YEAR, 6 HOUR STORM IS ONLY 2829 CF. THE LOW END OF THE POND HAS BEEN IDENTIFIED TO BE COMPACTED TO SERVE AS AN EMERGENCY SPILLWAY TO COMPLY WITH COUNTY ORDINANCES. HOWEVER, SINCE THIS POND IS ENTIRELY BELOW THE 100 YEAR FLOOD PLAIN ELEVATION AND IS A RETENTION POND, THERE WILL BE NO EROSIVE DISCHARGE VELOCITY OVER THE SPILLWAY.



VICINITY MAP L-10-Z

LEGAL DESCRIPTION: TRACT 417E, UNIT 3
TOWN OF ATRISCO GRANT
BERNALILLO COUNTY, NEW MEXICO

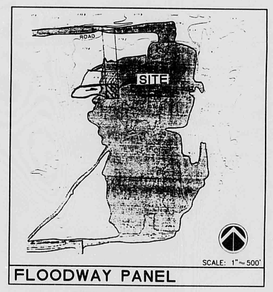
PROJECT BENCH MARK

THE PROJECT BENCH MARK IS THE CITY OF ALBUQ. MONUMENT "8-L9".

AFFIDAVIT

ON JUNE 11, 1996 I INSPECTED THE PROJECT SITE. AT THAT TIME IT APPEARED THAT NO GRADING, FILLING, EXCAVATION, NOR CONSTRUCTION HAS OCCURRED SINCE THIS CONTOUR MAP WAS PREPARED.

LARRY D. READ, N.M.P.E. #10998 — 6/24/96 DATE



FLOODWAY PANEL

FLOODWAY MAP AND BOUNDARIES
FEMA PANEL 350002 0033
EFFECTIVE DATE: OCTOBER 14, 1983

JUL - 3 1996

SITE, GRADING AND DRAINAGE PLAN		REVISIONS	DATE
MONTOYA FAMILY RESIDENCE 3934 TOWER ROAD SW ALBUQUERQUE, NEW MEXICO	LARRY READ & ASSOCIATES Civil Engineers P. O. Box 90233 Albuquerque, New Mexico 87199-0233 (505) 858-3165		5/18/96
			SHEET NO.
			C1 OF 1

LAWRENCE D. READ NEW MEXICO 10998 REGISTERED PROFESSIONAL ENGINEER

R# 222 DATE 3-27-02 DP E.P.

CITY OF ALBUQUERQUE

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DIRECTOR 11/5/02

NOTARY PUBLIC
OFFICIAL SEAL
Roberta Duran
NOTARY PUBLIC
STATE OF NEW MEXICO
My Commission Expires 11/07/02

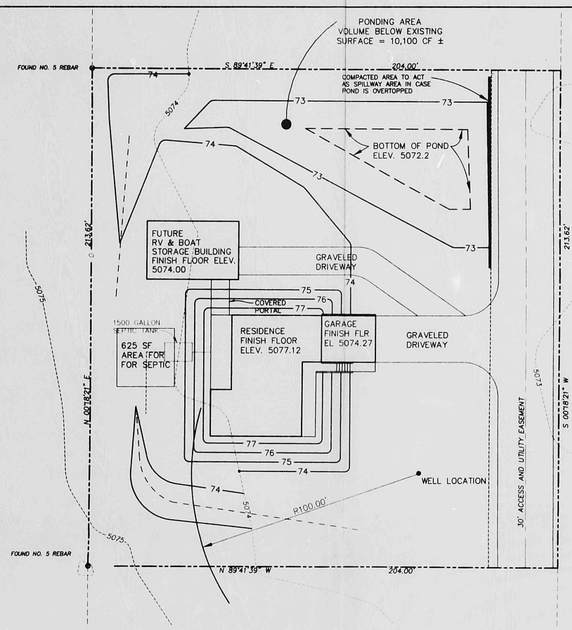
CITY OF ALBUQUERQUE
THIS MICROIMAGE IS THE BEST POSSIBLE REPRODUCTION DUE TO THE POOR QUALITY OF THE ORIGINAL DOCUMENT.

PLANS/PLATS ON FILE

FILE DESC: L10/D15

PLANS/PLATS 2

E 30 D 24 C 20 B 16 A 12 CITY OF ALBUQERQUE C D F



GRADING AND DRAINAGE PLAN

SCALE 1" = 20'

GRAPHIC SCALE

(IN FEET)
1 inch = 20 ft.

ENGINEER'S CERTIFICATION

THE SITE INCLUDING THE RETENTION POND HAS BEEN COMPLETED IN SUBSTANTIAL COMPLIANCE WITH THE ORIGINAL APPROVED GRADING AND DRAINAGE PLAN EXCEPT IDENTIFIED BY AS-CONSTRUCTED GRADING PLAN ABOVE AND AS FOLLOWS:

- THE FOOT PRINT OF THE FUTURE RV/BOAT STORAGE BUILDING HAS BEEN REDUCED 2000 sf TO 1000 sf AND THE FINISHED FLOOR HAS BEEN LOWERED BY 3". THE CORRESPONDING HYDROLOGY HAS BEEN MODIFIED ACCORDINGLY.
- THE "AS-CONSTRUCTED" SURVEY OF THE SITE FURNISHED BY PRECISION SURVEY, INC. ON SEPTEMBER 23, 1996 INDICATED A SLIGHTLY SMALLER POND VOLUME THAN THE ORIGINAL DESIGN (10,100 cf VS. 11,000 cf). DUE TO THE FUTURE BUILDING BEING SMALLER AND LOWER AS DESCRIBED ABOVE, THE POND IS SUFFICIENT SIZE.

LARRY D. READ P.E.

LAWRENCE D. READ NEW MEXICO 10998 REGISTERED PROFESSIONAL ENGINEER

DISCUSSION

DEVELOPED HYDROLOGY:

THE PROPOSED DEVELOPMENT INCLUDES 5031 S.F. OF IMPERVIOUS AREA (HOUSE, GARAGE, PATIOS, SIDEWALKS, AND RV STORAGE BUILDING) AND 1420 SF OF GRAVELED DRIVEWAYS, 5127 S.F. OF PRIVATE ACCESS, AND 625 S.F. FOR THE SEPTIC TANK AND LEACH FIELD. IT IS ASSUMED THAT 2000 S.F. OF LAWN AND GARDEN WILL BE DEVELOPED. THE PONDING AND SWALE AREAS NORTH AND WEST OF THE PROPOSED STRUCTURES HAVE BEEN CONSIDERED AS TYPE 'B' LAND TREATMENT. ALTHOUGH THEY WILL HAVE BEEN GRADED, THERE WILL BE NO FINE GRADING OR COMPACTION IN THESE AREAS.

IN ACCORDANCE WITH DPM PROCEDURES, THE FOLLOWING TABLE GIVES THE MAXIMUM 100 YEAR DISCHARGE AND 100 YEAR VOLUME FOR THIS DEVELOPMENT IN ZONE 1 FOR A TIME OF CONCENTRATION OF 12 MIN.

TABLE 1

TREATMENT	AREA (AC)	MAX RUNOFF (CFS/AC)	MAX Q (CFS)
A	0.215	1.29	0.28
B	0.264	2.03	0.54
C	0.429	2.87	1.23
D	0.093	4.37	0.41

TOTAL AREA 1.000 AC. TOTAL 100 YR. Q = 2.51 CFS = 2.46 CFS/AC

ALTHOUGH THE TOTAL ON-SITE RUNOFF GENERATED AFTER DEVELOPMENT (2.46 CFS/AC) IS GREATER THAN THE ASSUMED AVERAGE RUNOFF (2.22 CFS/AC) SHOWN IN 'OFFSITE WATERSHED HYDROLOGY BELOW, THE TOTAL RUNOFF CONTRIBUTION FROM THE SITE IS ONLY FROM THE CENTER OF THE GARAGE ROOF TO THE SOUTH. THIS CONTRIBUTION TO OFFSITE IS BASED ON 19560 SF TOTAL AREA THAT IS 47.8% TYPE 'A', 0% TYPE 'B', 40.8% TYPE 'C', AND 11.6% TYPE 'D' LAND TREATMENTS. TOTAL RUNOFF TO OFF-SITE IS (1.29)(0.215) + (2.03)(0) + (2.87)(0.182) + (4.37)(0.052) = 1.03 CFS/AC WHICH IS LESS THAN THE ASSUMED 2.22 CFS/AC FOR OFFSITE. THE NORTH PORTION OF THE SITE WILL DRAIN TO THE PONDING AREA TO BE RETAINED ON-SITE.

TABLE 2

TREATMENT	AREA (AC)	VOL RUNOFF (IN/AC)	MAX VOL (CF)
A	0.215	0.44	343
B	0.264	0.67	642
C	0.429	0.99	1542
D	0.093	1.97	665

TOTAL AREA 1.000 AC. TOTAL 100 YR. VOL = 3192 CF

HISTORICAL 100 YEAR VOL = 1.00 AC X 0.44 IN/AC = 1598 CF

INCREASE VOLUME DUE TO DEVELOPMENT = 1594 CF

THE PROPOSED DEVELOPMENT DISPLACES PONDING VOLUME BELOW THE BASE FLOOD ELEVATION 5076 AS FOLLOWS:

HOUSE, WALKS, EMBANKMENT	=	7139 CF
BOAT & RV STORAGE BUILDING	=	232 CF
GARAGE	=	335 CF
MAIN GRAVELED DRIVEWAY	=	269 CF
BOAT & RV STORAGE GRAVELED DRIVEWAY	=	241 CF

TOTAL DISPLACED VOLUME BELOW 5076 BFE = 8216 CF

TOTAL REQUIRED PONDING VOLUME (8216+1594) = 9810 CF

OFFSITE WATERSHED HYDROLOGY:

THIS AREA OF THE COUNTY IS CURRENTLY PLATTED AS 5 ACRE TRACTS, HOWEVER, THE TREND IS TO DIVIDE EACH TRACT INTO 1 ACRE (NET) TRACTS. THE TOTAL INCLUDING HALF OF THE ROADWAY IS 49,680 SF PER LOT. PER TABLE A-5, SECTION 22 OF THE CITY OF ALBUQ. DPM, A DENSITY OF 0.88 DU/ACRE GIVES AN IMPERVIOUS AREA (TYPE 'D') SOIL OF 15.9% OF THE TOTAL LAND AREA. THE ASSUMED PERCENTAGES OF SOIL TREATMENT IS: A = 41.9%, B = 20%, C = 20%. FOR HYDROLOGIC ZONE 1, THE RUNOFF PER WATERSHED ACRE IS (1.29)(0.419) + (2.03)(0.20) + (2.87)(0.20) + (4.37)(0.159) = 2.22 CFS/AC

OFFSITE FLOWS:

DIRECT FLOWS TO THIS SITE ARE FROM A SMALL (0.81 AC) WATERSHED AT THE WEST PROPERTY LINE. CONTRIBUTING DIRECT FLOW FROM THIS WATERSHED IS 1.80 CFS THAT ENTERS THIS SITE AS SHALLOW FLOW ACROSS THE ENTIRE WEST PROPERTY LINE. THIS SITE IS NEAR THE LOW POINT IN A REGIONAL PONDING AREA AS SHOWN ON THE ATTACHED FLOODWAY MAP. THIS INDIRECT FLOW IS REPRESENTED ON THE FEMA MAP (PANEL 33) AS A 100 YEAR FLOOD PLAIN WITH A BASE FLOOD ELEVATION OF 5076. THEREFORE, THIS SITE HAS BEEN DESIGNED TO PROVIDE FINISHED FLOOR ELEVATIONS OF 5077.1 OR 1.1 FEET ABOVE THE BFE. SINCE THE SITE CONTRIBUTES TO THE FLOOD PLAIN, IT HAS BEEN DESIGNED TO RETAIN ALL INCREASES IN RUNOFF VOLUME PLUS THE VOLUME DISPLACED BY DEVELOPMENT ON-SITE.

FLOOD PLAIN STATUS

AS SHOWN ON THE ADJACENT FLOODWAY MAP AND THE CORRESPONDING FEMA MAP PANEL 350002-0033 THIS SITE IS WITHIN A FEMA 100 YEAR FLOOD PLAIN DESIGNATED 'AZ' (EL 5076). THERE ARE NO CONCENTRATED FLOW ARROYOS IN THE IMMEDIATE AREA OF THIS SITE.

LOT ACCESS:

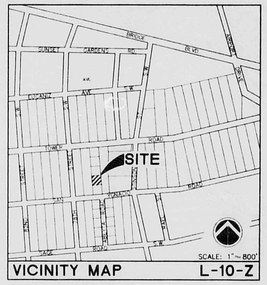
THIS TRACT OF LAND IS ACCESSED FROM TOWER ROAD, N.E. TOWER ROAD IS IMPROVED, AND IS MAINTAINED BY BERNALILLO COUNTY IN THIS SECTION. THE ROAD FROM TOWER TO THE SITE (WITHIN THE EASEMENT AT THE EAST PROPERTY LINE) IS NOT MAINTAINED BY BERNALILLO COUNTY. THE BERNALILLO COUNTY ROAD AGREEMENT IS INCLUDED ON THIS DOCUMENT.

FENCING

THIS LOT IS NOT CURRENTLY FENCED. THE OWNER AGREES THAT ANY FENCING INSTALLED IN THE FUTURE WILL MEET THE REQUIREMENTS OF FENCE TYPES APPROVED BY THE COUNTY THAT DO NOT IMPEDE FLOW.

EROSION

THE CONTRACTOR IS ADVISED THAT HE SHALL UTILIZE EARTHEN BERMS, HAY BALES, AND SILT FENCE AT THE RUNOFF DISCHARGE POINTS FROM THE SITE TO ASSURE ANY ERODED SOIL IS RETAINED ON THE SITE DURING CONSTRUCTION. ANY LOOSENED SOIL SHALL BE WATERED OR COVERED SO IT DOES NOT BECOME AIRBORNE.



VICINITY MAP L-10-Z

LEGAL DESCRIPTION: TRACT 417D, UNIT 3
TOWN OF ATRISCO GRANT
BERNALILLO COUNTY, NEW MEXICO

PROJECT BENCH MARK

THE PROJECT BENCH MARK IS THE CITY OF ALBUQ. MONUMENT "8-19".

AFFIDAVIT

ON APRIL 7, 1996 I INSPECTED THE PROJECT SITE. AT THAT TIME IT APPEARED THAT NO GRADING, FILLING, EXCAVATION, NOR CONSTRUCTION HAS OCCURRED SINCE THIS CONTOUR MAP WAS PREPARED.

LARRY D. READ, N.M.P.E. #10998 — 4/13/96 DATE

FLOODWAY PANEL

FLOODWAY MAP AND BOUNDARIES
FEMA PANEL 350002 0033
EFFECTIVE DATE: OCTOBER 14, 1983

LEGEND

- - - - - CONSTRUCTED SWALE
----29---- EXISTING CONTOUR
——29—— PROPOSED CONTOUR
EXISTING SPOT ELEVATION

SITE, GRADING AND DRAINAGE PLAN		REVISIONS	DATE
DORRIS FAMILY RESIDENCE 3932 TOWER ROAD SW ALBUQUERQUE, NEW MEXICO	LARRY READ & ASSOCIATES Civil Engineers P. O. Box 90233 Albuquerque, New Mexico 87199-0233 (505) 858-3165	COMMENTS 5/12/96 ENGINEER'S CERT. 9/23/96	4/11/96 SHEET NO. C1 OF 1

LAWRENCE D. READ NEW MEXICO 10998 REGISTERED PROFESSIONAL ENGINEER 9/23/96

HYDROLOGY DIVISION

CITY OF ALBUQUERQUE
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R# 271 DATE 3-27-02 DP EP

CITY OF ALBUQUERQUE

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DIRECTOR 11/15/02

NOTARY PUBLIC

OFFICIAL SEAL
Roberta Duran
NOTARY PUBLIC
STATE OF NEW MEXICO
My Commission Expires
8/01/02

E 30 D 24 C 20 B 16 A 12 CITY OF ALBUQERQUE C D F