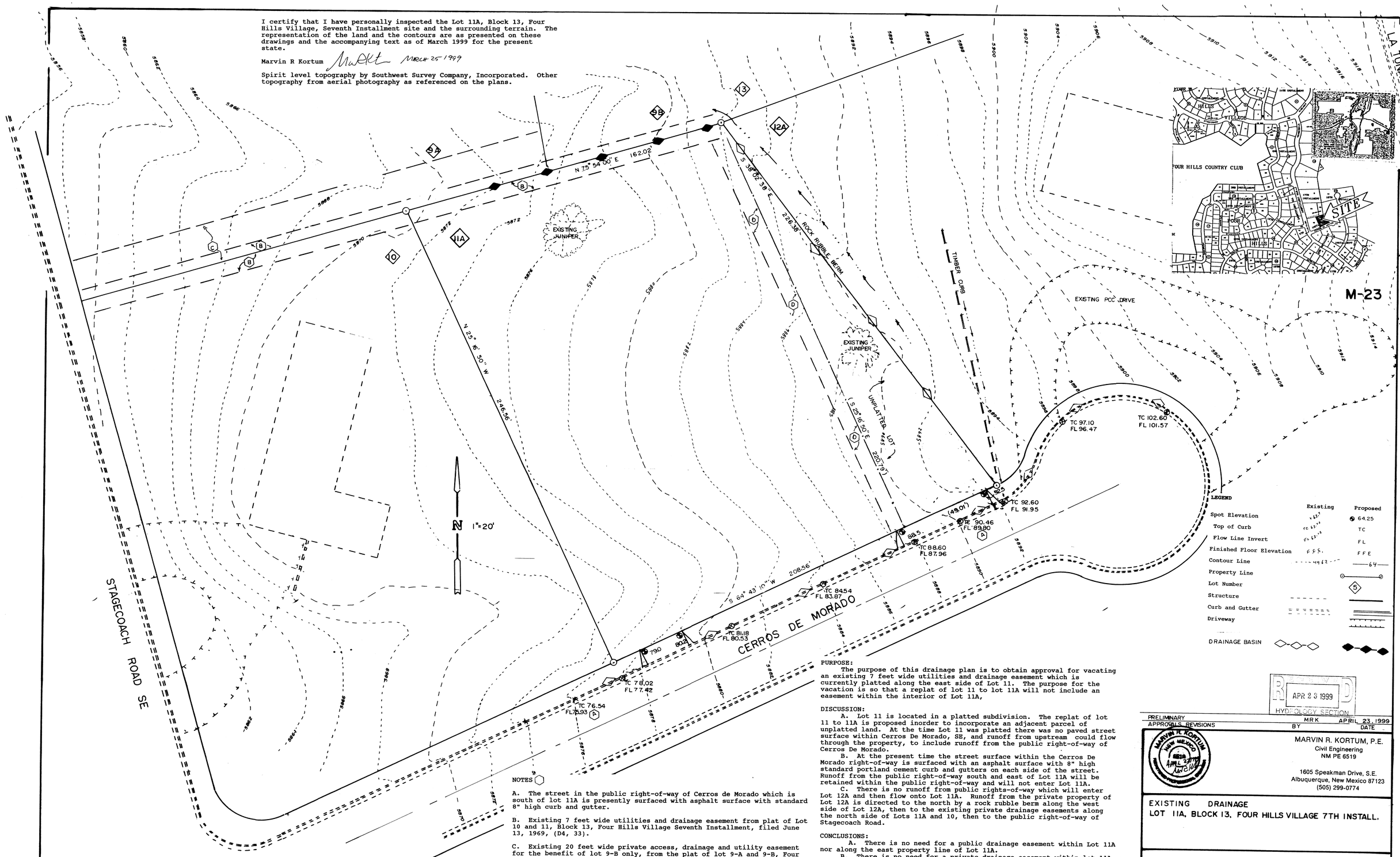
I certify that I have personally inspected the Lot 11A, Block 13, Four Hills Village, Seventh Installment site and the surrounding terrain. The representation of the land and the contours are as presented on these drawings and the accompanying text as of March 1999 for the present state.

Marvin R Kortum MARCH 25 1999

Spirit level topography by Southwest Survey Company, Incorporated. Other topography from aerial photography as referenced on the plans.



LEGEND

	Existing	Proposed
Spot Elevation	x 63.7	64.25
Top of Curb	TC 63.78	TC
Flow Line Invert	FL 63.48	FL
Finished Floor Elevation	F.F.E.	F.F.E
Contour Line	5962	64
Property Line		
Lot Number		(5)
Structure		
Curb and Gutter		
Driveway		
DRAINAGE BASIN		

LEGAL DESCRIPTION
LOT 11A, BLOCK 13, FOUR HILLS VILLAGE SEVENTH INSTALLMENT, ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO

BENCHMARK: ACS STATION 10-M23, LOCATED AT THE INTERSECTION OF STAGECOCH ROAD AND LA TUNA PLACE, SE. ELEVATION IS 5904.329, 1929 DATUM.

NOTES

A. The street in the public right-of-way of Cerros de Morado which is south of lot 11A is presently surfaced with asphalt surface with standard 8" high curb and gutter.

B. Existing 7 feet wide utilities and drainage easement from plat of Lot 10 and 11, Block 13, Four Hills Village Seventh Installment, filed June 13, 1969, (D4, 33).

C. Existing 20 feet wide private access, drainage and utility easement for the benefit of lot 9-B only, from the plat of lot 9-A and 9-B, Four Hills Village Seventh Installment, filed August 31, 1994, (94C, 293).

D. Existing 7 feet wide utilities and drainage easement from plat of Lot 10 and 11, Block 13, Four Hills Village Seventh Installment, filed June 13, 1969, (D4, 33). This 7 feet wide private drainage and public utilities easement is to be vacated upon approval of plat for lot 11A. Lot 11A consists of Lot 11 and the unplatted property directly east of Lot 11.

PURPOSE:
The purpose of this drainage plan is to obtain approval for vacating an existing 7 feet wide utilities and drainage easement which is currently platted along the east side of Lot 11. The purpose for the vacation is so that a replat of lot 11 to lot 11A will not include an easement within the interior of Lot 11A,

DISCUSSION:
A. Lot 11 is located in a platted subdivision. The replat of lot 11 to 11A is proposed inorder to incorporate an adjacent parcel of unplatted land. At the time Lot 11 was platted there was no paved street surface within Cerros De Morado, SE, and runoff from upstream could flow through the property, to include runoff from the public right-of-way of Cerros De Morado.
B. At the present time the street surface within the Cerros De Morado right-of-way is surfaced with an asphalt surface with 8" high standard portland cement curb and gutters on each side of the street. Runoff from the public right-of-way south and east of Lot 11A will be retained within the public right-of-way and will not enter Lot 11A.
C. There is no runoff from public rights-of-way which will enter Lot 12A and then flow onto Lot 11A. Runoff from the private property of Lot 12A is directed to the north by a rock rubble berm along the west side of Lot 12A, then to the existing private drainage easements along the north side of Lot 10, then to the public right-of-way of Stagecoach Road.

CONCLUSIONS:
A. There is no need for a public drainage easement within Lot 11A nor along the east property line of Lot 11A.
B. There is no need for a private drainage easement within lot 11A or along the east property line.
C. The existing private drainage easement along the north property line of Lot 11A should remain.

REFERENCES:
A. Topographic Orthophoto Map, M-23, Albuquerque Metropolitan Arroyo Flood Control Authority, Bernalillo County, New Mexico. Scale 1"=200'.

RECEIVED
APR 23 1999
HYDROLOGY SECTION

PRELIMINARY
APPROVALS REVISIONS BY DATE
MRK APRIL 23, 1999

MARVIN R. KORTUM, P.E.
Civil Engineering
NM PE 6519

1605 Speakman Drive, S.E.
Albuquerque, New Mexico 87123
(505) 299-0774

EXISTING DRAINAGE
LOT 11A, BLOCK 13, FOUR HILLS VILLAGE 7TH INSTALL.

PROJECT NO. M-23/D14 | MAP NO. M-23 | SHEET OF 1/1

I certify that I have personally inspected the Lot 11A, Block 13, Four Hills Village, Seventh Installment site and the surrounding terrain. The representation of the land and the contours are as presented on these drawings and the accompanying text as of March 1999 for the present state.

Marvin R Kortum *MRK* *March 25 1999*

Spirit level topography by Southwest Survey Company, Incorporated. Other topography from aerial photography as referenced on the plans.

LEGEND

	Existing	Proposed
Spot Elevation		64.25
Top of Curb		TC
Flow Line Invert		FL
Finished Floor Elevation		FFE
Contour Line		64
Property Line		
Lot Number		5
Structure		
Curb and Gutter		
Driveway		
DRAINAGE BASIN		

RECEIVED
MAR 26 1999
HYDROLOGY SECTION

PRELIMINARY	MRK	MARCH 25, 1999
APPROVALS REVISIONS	BY	DATE

MARVIN R. KORTUM, P.E.
Civil Engineering
NM PE 6519

1605 Speakman Drive, S.E.
Albuquerque, New Mexico 87123
(505) 299-0774

MARVIN R. KORTUM — NEW MEXICO — 6519

GRADING AND DRAINAGE PLAN
LOT 11A, BLOCK 13, FOUR HILLS VILLAGE 7TH INSTALL.
GRADING

PROJECT NO.	MAP NO.	SHEET OF
DRB 99-9/V99-7	M-23	1/2

NOTES

A. The street in the public right-of-way of Cerros de Morado which is south of lot 11A is presently surfaced with asphalt surface with standard 8" high curb and gutter.

B. Existing natural drainage channel with estimated peak historic flow from the 100 year-6 hour design flood of 3 CFS from Basin B. Additional runoff from adjacent basins is not included.

C. Existing natural drainage channel with estimated peak historic flow from the 100 year-6 hour design flood of 1.1 CFS from Basin C.

D. Existing 7 feet wide utilities and drainage easement from plat of Lot 11, Block 13, Four Hills Village Seventh Installment, filed June 13, 1969, (D4, 33).

E. Existing 5 feet wide drainage and utility easement, from plat of Lot 9, Block 13, Four Hills Village Seventh Installment, filed June 13, 1969, (D4, 33).

F. Existing 20 feet wide private access, drainage and utility easement for the benefit of lot 9-B only, from the plat of lot 9-A and 9-B, Four Hills Village Seventh Installment, filed August 31, 1994, (94C, 293).

G. Proposed 7 feet wide private drainage and public utilities easement to be dedicated upon approval of plat for lot 11A.

H. The driveway and parking area within the lot will be surfaced with impervious surface materials to the limits indicated. The driveway will have an inverted crown to channel runoff to the Cerros de Morado right-of-way.

J. Landscaped, garden or orchard area.

K. Area to remain essentially in its natural state.

L. Landscaped area to be enclosed within a walled yard.

M. For detailed house dimensions see architectural drawings.

N. Quantitative earthwork estimates should be based on more detailed topographic cross sections of the work area.

ADDITIONAL NOTES ON SHEET 2 OF 2

LEGAL DESCRIPTION
LOT 11A, BLOCK 13, FOUR HILLS VILLAGE SEVENTH INSTALLMENT, ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO

BENCHMARK: ACS STATION 10-M23, LOCATED AT THE INTERSECTION OF STAGECOACH ROAD AND LA TUNA PLACE, SE. ELEVATION IS 5904.329, 1929 DATUM.

PURPOSE:
The purpose of this grading and drainage plan is to obtain approval for a replat of lot 11 to lot 11A, and a building permit for a residential house on lot 11A.

SOILS: Soils on lot 11A are identified by reference C as Tesajo-Millet stony sandy loams. About 40% is a Tesajo stony sandy loam with 3% to 20% slopes and 40% is a Millet stony sandy loam with a 3% to 15% slopes. The Millet soil is on the ridges of alluvial fans, and the Tesajo soil is in swales adjacent to the ridges. On both soils the runoff is medium and the hazard of water erosion is moderate. Building foundations must be set with positive drainage away from the foundation.

DISCUSSION:
A. Lot 11A is located in a platted subdivision. Replat of lot 11A is proposed inorder to incorporate an adjacent parcel of unplatted land. Lot 11A is located on the west face of Manzanita foothills, with a slope down from east to west of about 15 feet (10% slope). The lot is rectangular in shape, bordered on the south by a dedicated public right-of-way, Cerros de Morado, and on the east, north and south sides by platted residential lots. All adjacent lots are developed with single family houses except for the vacant lot 9B directly north of lot 11A. The surface of lot 11A is covered with native vegetation, to include two Juniper trees, numerous cactus and shrubs, grass and other plants.

B. The building on lot 11A is to be sited on a ridge between two small arroyos. Access will be from the Cerros de Morado right-of-way by a paved driveway. Public sanitary sewer and water are available to the lot.

DRAINAGE CONSIDERATIONS:

A. Historic runoff from and across Lot 11A is channeled into two small arroyos, marked B and C on the drawings, with estimated peak runoff from the 100 year-6 hour storm of 3 CFS and 1.1 CFS, respectively.

B. Historic runoff patterns have been changed due to existing construction on lots 10 and 12A, which are adjacent to lot 11A, west and east, respectively. Runoff patterns also will be altered by proposed construction on lot 11A. The significant runoff patterns from the developed lots 10, 11A and 12A are outlined below:

1. A portion of the runoff from lot 12A is directed to the public right-of-way of Cerros de Morado by the driveway and a timber curb extending along the west portion of lot 12A. Most of the rest of the runoff from lot 12A is directed to the north by the lot slope, and by a constructed rock rubble berm along the common boundary between lot 12A and lot 11A. This flow then enters the existing natural swale going from east to west along the north lot line of lots 12A and 11A. This flow then crosses lot 9A in the existing natural swale, then entering the Stagecoach Road right-of-way.

2. There are four drainage basins resulting from the proposed construction on lot 11A. Basin D collects minor runoff from lot 12A and the northern portion of lot 11A, directing this runoff to the existing natural arroyo that exits lot 11A near the northwest corner of lot 11A, flowing then to the Stagecoach Road right-of-way through lot 9A. The estimated peak flow from Basin D for the 100 year-6 hour storm is 0.8 CFS (Table D). Basin E includes runoff from the house, patio and landscaped yard. Basin E is a closed basin, with the runoff being retained within the walled yard. Basin F is the west portion of the lot, including some roof runoff, with an estimated 100 year-6 hour peak flow of 0.5 CFS entering the natural swale crossing lot 10, flowing then to the Stagecoach Road right-of-way. Basin G includes a portion of the house, the garage, the driveway and the landscaped area south of the house. The estimated 100 year-6 hour peak flow of 1.3 CFS will flow directly to the right-of-way of Cerros de Morado.

C. Table A shows the estimated runoff from lot 11A in the undeveloped and proposed condition. There is an increase of 1.3 CFS due to the construction on lot 11A. As discussed in paragraph B, above, this increase in flow is directed to the public right-of-way of Cerros de Morado. There is a decrease in flow through lot 10 from 1.1 CFS in the undeveloped condition, to 0.5 CFS in the developed condition. There is also a decrease in the contribution to peak flow from lot 11A for that flow which crosses lot 9A, due to the closed yard on the north of the house.

D. Flows which enter the public right-of-way flow to existing natural drainage channels which empty into Tijeras Arroyo. The flows from Cerros de Morado and from the arroyo crossing lot 10 enter Stagecoach Road, then flow onto Soplo Road, then onto Camino Cerrito, then, at the intersection with Ranch Trail, entering a sub-surface storm drain which empties into the Four Hills Arroyo near the intersection of Camino Cerrito and Caballero Drive. Overflow from the sub-surface storm drain would flow along the surface of Camino Cerrito, entering the Four Hills Arroyo through an existing surface channel. Flows that enter Stagecoach Road after crossing lot 9A continue north on Stagecoach Road to Sagebrush Trail, then west, splitting at the intersection with Stagecoach Trail. These flows continue along Sagebrush Trail and Stagecoach Trail, flowing the parking lot and portions of the Four Hills Country Club golf course and other lots, then entering the arroyos leading to Tijeras Arroyo. The preferred routing for the flows is the routing along Soplo Road and Camino Cerrito because this route is all public right-of-way. The proposed grading of lot 11A diverts the increased runoff onto the preferred routing.

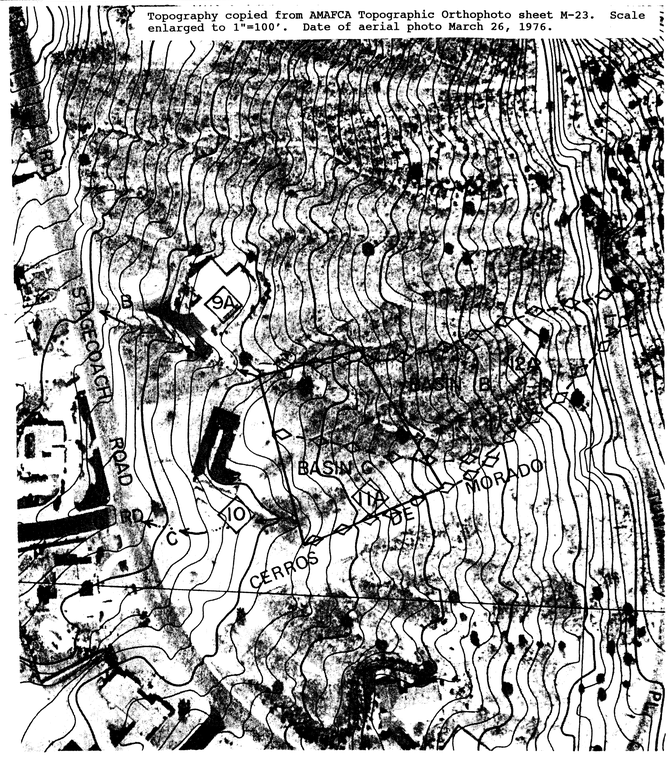
CONCLUSIONS:

A. The proposed construction is not within a designated 100 year floodplain.

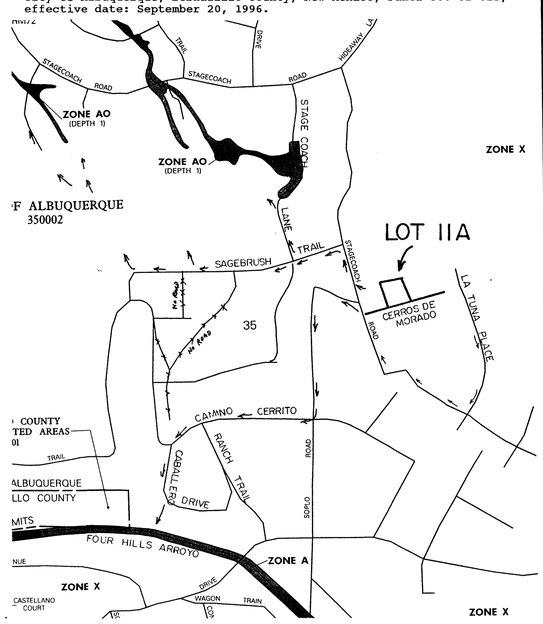
B. Construction as proposed will not increase the hazard from flooding to downstream properties.

C. The proposed grading and construction will protect the property from reasonable changes in the flood plain as designated on the current floodway map.

D. This Grading and Drainage Plan does not propose changes to the FLOODWAY or FIRM maps.



Topography copied from AMAFCA Topographic Orthophoto sheet M-23. Scale enlarged to 1"=100'. Date of aerial photo March 26, 1976.



Floodplain information copied from FEMA Flood Insurance Rate Map (FIRM), City of Albuquerque, Bernalillo County, New Mexico, Panel 386 of 825, effective date: September 20, 1996.

REFERENCES:

A. Bernalillo County Ordinance No. 90-6

B. Section 22.2, Hydrology, of the Development Process Manual, Volume 2, Design Criteria, for the City of Albuquerque...Bernalillo County...AMAFCA, January 1993.

C. Soil Survey of Bernalillo County and Parts of Sandoval and Valencia Counties, New Mexico, USDA-SCS.

D. Flood Insurance Rate Map (FIRM), City of Albuquerque, Bernalillo County, New Mexico, Federal Emergency Management Agency (FEMA), Panel 386 of 825. Effective date: September 20, 1996, scale 1"=500'.

E. Topographic Orthophoto Map, M-23, Albuquerque Metropolitan Arroyo Flood Control Authority, Bernalillo County, New Mexico. Scale 1'=2100'.

F. Open-channel Hydraulics, Richard H. French, McGraw-Hill Book Company, 1985.

NOTES (CONTINUED)

P. All berms and earthwork supporting non-building structures must be compacted to 95% of maximum dry density (Modified Proctor Test) to depth of undisturbed earth. Buildings may require separate subsurface soils testing and preparation.

Q. All cut and fill slopes and constructed drainage swales are to be provided with an erosion control surface by developer/owner. Coverings may be turf, rock, terraced with garden walls or timbers or similar according to the landscape plan. Erosion control is for protection and ease of maintenance. To prevent damage to downstream property, erosion control must be placed within six months of completion of the building, or one year from the issuing of the building permit. Erosion control may be provided by seeding with a native grass mixture as follows:

Common name	Genus-species	Pounds/Acre
"Palma"	Oryzopis	
Indian rice grass	Hymenoides	2.0
"Viva" Galleta grass	Hilaria Jasmesii	2.0
"Niner" Sideoates Gramma	Bouteloua curti Pedula	2.0
"Hatchita" Blue Gramma	Bouteloua Gracilis	3.0
Sand dropseed (NM Region)	Sporbolus Cryptandrus	1.0
Four-wing Saltbrush	Atriplel Canesoens	1.0

The seed will be spread on loose surface soil, raked or worked into the soil about one/half inch, and a straw mulch or a mulch mat placed over the seed to prevent erosion. The seeded area is to be watered daily until a turf is established. Areas which remain bare shall be reseeded, or alternative erosion control shall be used.

R. Additional fill may be placed around the perimeter foundation wall. All wall materials below the finished exterior grade shall be approved for direct contact with the earth. All fill so placed shall have a minimum slope of 5% away from the building.

S. Footings for foundation walls may be stepped. See architectual drawings for details on footings. The grading plan is based on use of a level pad for the lower (basement) level.

MARCH 23, 1999
RUNOFF FOR LOT 11A, BLOCK 13, SEVENTH INSTALLMENT, FOUR HILLS VILLAGE,

TABLE A
Runoff Estimate: For On-site Basin of .9807 acres, (LOT 11A).

Runoff Factors Zone 4, 100 YEAR			UNDEVELOPED USE				PROPOSED USE			
Land use	Peak	Total	Area SF	Percent	Peak Runoff CFS	Total Runoff CF	Area SF	Percent	Peak Runoff CFS	Total Runoff CF
	CFS/acre	inches								
A	2.20	0.80	42720	1.000	2.2	2848.0	11720	0.274	0.6	781.3
B	2.92	1.08	0	0.000	0.0	0.0	16000	0.375	1.1	1440.0
C	3.73	1.46	0	0.000	0.0	0.0	0	0.000	0.0	0.0
D	5.25	2.64	0	0.000	0.0	0.0	15000	0.351	1.8	3300.0
TOTALS			42720	1.000	2.2	2848.0	42720	1.000	3.5	5521.3
			0.9807 acre				0.9807 acre			

TABLE B
Runoff Estimate: For Undeveloped Basin of 1.3774 acres, BASIN B
(Main drainage basin)

Runoff Factors Zone 4, 100 YEAR			UNDEVELOPED USE				PROPOSED USE			
Land use	Peak	Total	Area SF	Percent	Peak Runoff CFS	Total Runoff CF	Area SF	Percent	Peak Runoff CFS	Total Runoff CF
	CFS/acre	inches								
A	2.20	0.80	60000	1.000	3.0	4000.0	0	0	0.0	0.0
B	2.92	1.08	0	0.000	0.0	0.0	0	0	0.0	0.0
C	3.73	1.46	0	0.000	0.0	0.0	0	0	0.0	0.0
D	5.25	2.64	0	0.000	0.0	0.0	0	0	0.0	0.0
TOTALS			60000	1.000	3.0	4000.0	0	0.000	0.0	0.0
			1.3774 acre				0.000 acre			

TABLE C
Runoff Estimate: For Undeveloped Basin of 1.3774 acres, BASIN B
(Main drainage basin)

Runoff Factors Zone 4, 100 YEAR			UNDEVELOPED USE				PROPOSED USE			
Land use	Peak	Total	Area SF	Percent	Peak Runoff CFS	Total Runoff CF	Area SF	Percent	Peak Runoff CFS	Total Runoff CF
	CFS/acre	inches								
A	2.20	0.80	22500	1.000	1.1	1500.0	0	0	0.0	0.0
B	2.92	1.08	0	0.000	0.0	0.0	0	0	0.0	0.0
C	3.73	1.46	0	0.000	0.0	0.0	0	0	0.0	0.0
D	5.25	2.64	0	0.000	0.0	0.0	0	0	0.0	0.0
TOTALS			22500	1.000	1.1	1500.0	0	0.000	0.0	0.0
			0.5165 acre				0.000 acre			

TABLE D
Runoff Estimate: For On-site Basin of 0.3558 acres, BASIN D
North portion of developed lot

Runoff Factors Zone 4, 100 YEAR			UNDEVELOPED USE				PROPOSED USE			
Land use	Peak	Total	Area SF	Percent	Peak Runoff CFS	Total Runoff CF	Area SF	Percent	Peak Runoff CFS	Total Runoff CF
	CFS/acre	inches								
A	2.20	0.80	15500	1.000	0.8	1033.3	11500	0.7-2	0.6	766.7
B	2.92	1.08	0	0.000	0.0	0.0	4000	0.218	0.3	360.0
C	3.73	1.46	0	0.000	0.0	0.0	0	0.010	0.0	0.0
D	5.25	2.64	0	0.000	0.0	0.0	0	0.010	0.0	0.0
TOTALS			15500	1.000	0.8	1033.3	15500	1.010	0.8	1126.7
			0.3558 acre				0.3558 acre			

TABLE E
Runoff Estimate: For On-site Basin of .1331 acres, BASIN E
Walled yard, patio and portion of house

Runoff Factors Zone 4, 100 YEAR			UNDEVELOPED USE				PROPOSED USE			
Land use	Peak	Total	Area SF	Percent	Peak Runoff CFS	Total Runoff CF	Area SF	Percent	Peak Runoff CFS	Total Runoff CF
	CFS/acre	inches								
A	2.20	0.80	5800	1.000	0.3	386.7	0	0.000	0.0	0.0
B	2.92	1.08	0	0.000	0.0	0.0	2800	0.483	0.2	252.0
C	3.73	1.46	0	0.000	0.0	0.0	0	0.000	0.0	0.0
D	5.25	2.64	0	0.000	0.0	0.0	3000	0.517	0.4	660.0
TOTALS			5800	1.000	0.3	386.7	5800	1.000	0.5	912.0
			0.1331 acre				0.1331 acre			

TABLE F
Runoff Estimate: For On-site Basin of .1607 acres, BASIN F
West side of lot and portion of house

Runoff Factors Zone 4, 100 YEAR			UNDEVELOPED USE				PROPOSED USE			
Land use	Peak	Total	Area SF	Percent	Peak Runoff CFS	Total Runoff CF	Area SF	Percent	Peak Runoff CFS	Total Runoff CF
	CFS/acre	inches								
A	2.20	0.80	7000	1.000	0.4	466.7	0	0.000	0.0	0.0
B	2.92	1.08	0	0.000	0.0	0.0	5600	0.800	0.4	504.0
C	3.73	1.46	0	0.000	0.0	0.0	0	0.000	0.0	0.0
D	5.25	2.64	0	0.000	0.0	0.0	1400	0.200	0.2	308.0
TOTALS			7000	1.000	0.4	466.7	7000	1.000	0.5	812.0
			0.1607 acre				0.1607 acre			

TABLE G
Runoff Estimate: For On-site Basin of .2824 acres, BASIN G
South part of lot, landscape, driveway, garage and portion of house

Runoff Factors Zone 4, 100 YEAR			UNDEVELOPED USE				PROPOSED USE			
Land use	Peak	Total	Area SF	Percent	Peak Runoff CFS	Total Runoff CF	Area SF	Percent	Peak Runoff CFS	Total Runoff CF
	CFS/acre	inches								
A	2.20	0.80	12300	1.000	0.6	820.0	0	0.000	0.0	0.0
B	2.92	1.08	0	0.000	0.0	0.0	3500	0.285	0.2	315.0
C	3.73	1.46	0	0.000	0.0	0.0	0	0.000	0.0	0.0
D	5.25	2.64	0	0.000	0.0	0.0	8800	0.715	1.1	1936.0
TOTALS			12300	1.000	0.6	820.0	12300	1.000	1.3	2251.0
			0.2824 acre				0.2824 acre			

NOTES:
a. Runoff factors from Section 22.2, Hydrology, of the Development Process Manual, Volume 2, Design Criteria, City of Albuquerque, Bernalillo County and AMAFCA, January, 1993
b. Land use descriptions: A. Uncompacted soil, unlined arroyos
B. Lawn, shrubs, undeveloped 10%-29% slopes
C. compacted soil, undeveloped 20% or more slope
D. Impervious areas
c. Peak runoff = Area (acres) x factor (CFS/acre) = CFS
d. Total runoff = Area (SF) x factor (inches) / 12 (inches /foot) = CF
e. Peak and total runoff is based on 6 hour, 100 year frequency storm
f. The current use is for the site in its natural state, or partially developed if off-site.
The undeveloped use is for the site in its natural state.
The proposed use is for full development of the basin, under present zoning

PRELIMINARY	MRK	MARCH 25, 1999
APPROVALS REVISIONS	BY	DATE

MARVIN R. KORTUM, P.E.
Civil Engineering
NM PE 651.
1605 Speakman Drive, S.E.
Albuquerque, New Mexico 87123
(505) 299-0774

GRADING AND DRAINAGE PLAN
LOT 11A, BLOCK 13, FOUR HILLS VILLAGE 7TH INSTALL.
NOTES, MAPS

PROJECT NO.

MAP NO SHEET OF
M-23 2/2