HYDROLOGY

F22/D8

LUTTRELL SUBDIVISION

TRACT "C"

DRAINAGE STUDY

F22-D8

1 PLAN

CHAPARRAL CONSTRUCTION COMPANY

P.O. BOX 11234
ALBUQUERQUE, NEW MEXICO 87112
TEL: 298-2195

RECEIVED
SEP 1 - 1978
Water Engineers

September 12, 1978

F22-D8

Mr. Dwayne Sheppard
City Engineer
City of Albuquerque
P.O. Box 1293
Albuquerque, New Mexico 87103

Dear Mr. Sheppard,

This is a formal request that the "Turn-Key Procedure" be used in design and construction of the utilities and streets for the Luttrell Sub-Division. We propose to use Chambers, Campbell, Isaacson, Chaplin, Inc. as engineers to perform this design and supervision work.

If this meets with your approval please advise us as soon as possible.

Sincerely,

Glen Luttrell

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

MAYOR
David Rusk

May 29, 1979

Chambers, Campbell, Isaacson & Chaplin, Inc.
3500 Indian School Road N.E.
Albuquerque, New Mexico 87106

Re: Luttrell Subdivision - Tract "C" Drainage Study

Gentlemen:

Due to the large number of drainage reports received in the past three weeks by the City Engineer's Office and to the limited staff resources, it has not been possible to reply within the time specified by the AMAFCA Res. 72-2. This letter is to acknowledge the reception of your drainage report and assure you that the best efforts will be made to reply in the shortest possible time.

Very truly yours,

Richard S. Heller

Richard S. Heller
City Engineer

BC/RSH/ms

cc - Richard Leonard-AMAFCA
Drainage File

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

MAYOR
David Rusk

June 18, 1979

Mr. Fred Arfman
Chambers, Campbell, Isaacson, Chaplin, Inc.
3500 Indian School Rd. N.E.
Albuquerque, N.M. 87106

F22-08

Re: Drainage Report Approval
Tract "C" of Luttrell Subdivision

Dear Mr. Arfman:

Your report has been reviewed and the concepts outlined agree in principle with AMAFCA Resolution 72-2 and current City drainage practices and is therefore approved.

When submitting your final drainage and grading plans, the back up material listed on Attachment No. 1 must be included to facilitate the review procedure. If this data is not included, it will cause delays in the checking procedure.

Very truly yours,

Bruno Conegliano
Assistant City Engineer-Hydrology

BC/ms

Attachment

cc- Richard Heller, City Engineer
Richard Leonard, AMAFCA
Drainage File

Reading file

June 30, 1980

Mr. Fred Aguirre
Municipal Development Department
City of Albuquerque
Post Office Box 1293
Albuquerque, New Mexico 87103

RE: Luttrell Subdivision

Dear Fred:

This letter shall serve as an addendum to the above referenced project's drainage report. We are requesting a variance to the ponding requirements for Lots 4, 15, 20, 21, 23, and 28 (see attachment). These lots do not have sufficient area in the rear yards for ponds and still be in compliance with the recommendations of the soils engineer. Therefore, we request that all of the storm water generated on these lots be allowed to leave the site.

Increased flows would either exit north on Carruthers Avenue or west on Spain Road. These two roads appear to have adequate downstream flow carrying capacities.

If all is in order, please send us a letter of approval so that we may proceed in securing FHA approval for this subdivision.

Thank you.

Respectfully,

Fred C. Arfman

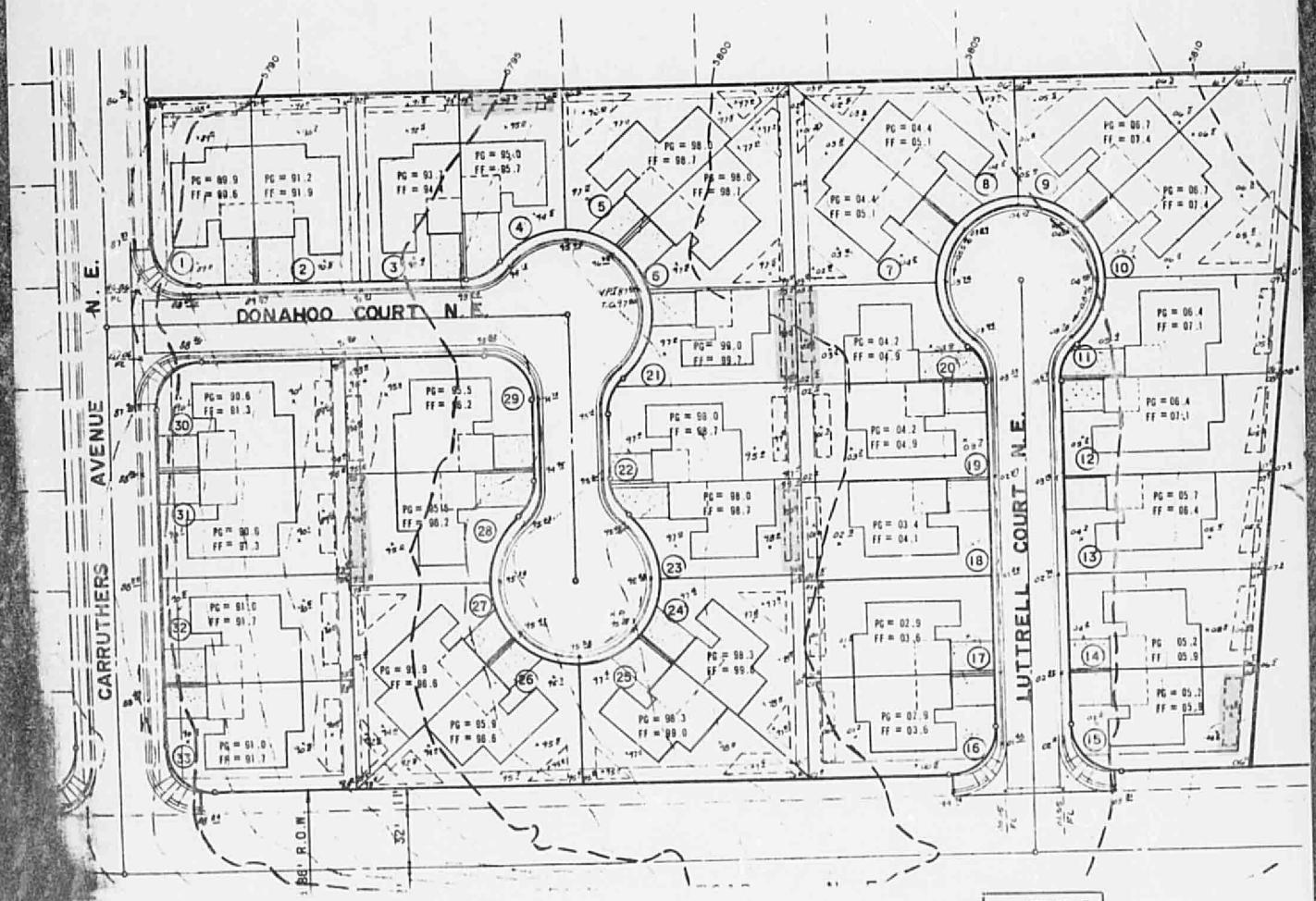
Fred C. Arfman, P.E.
Associate Vice President

FCA:df

APPROVED
CITY OF ALBUQUERQUE
Municipal Development Department

Richard S. Miller 7/8/80
City Engineer Date

Chambers, Campbell, Isaacson, Chaplin, Inc.
architects engineers planners 3500 indian school road ne albuquerque new mexico 87106 505 266 5522



_ Pond to be eliminated

EXHIBIT I

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

October 26, 1979

Mr. Fred Arfman
C.C.I.C.
3500 Indian School Rd. N.E.
Albuquerque, New Mexico 87106

Subject: Test Turnkey Project Work Authorization #T-47
Luttrell Subdivision - Tract C

Dear Mr. Arfman:

Under the provisions of the Test Turnkey Project procedures, this letter is the Work Authorization to begin field work on the project.

Sincerely,

Richard S. Heller

Richard S. Heller
City Engineer

RSH/fs

cc - H. R. Orr
Co-Con Inc.
Contract Manager
Water Resources
Dwayne Sheppard
Bob Kielich
LaMonte Urban
Bruno Conegliano
Jim Milton, Traffic Engineering

DRAINAGE STUDY

FOR

TRACT "C" OF LUTTRELL

SUBDIVISION

PREPARED BY:

CHAMBERS, CAMPBELL, ISAACSON & CHAPLIN, INC.

3500 INDIAN SCHOOL ROAD N.E.
ALBUQUERQUE, NEW MEXICO

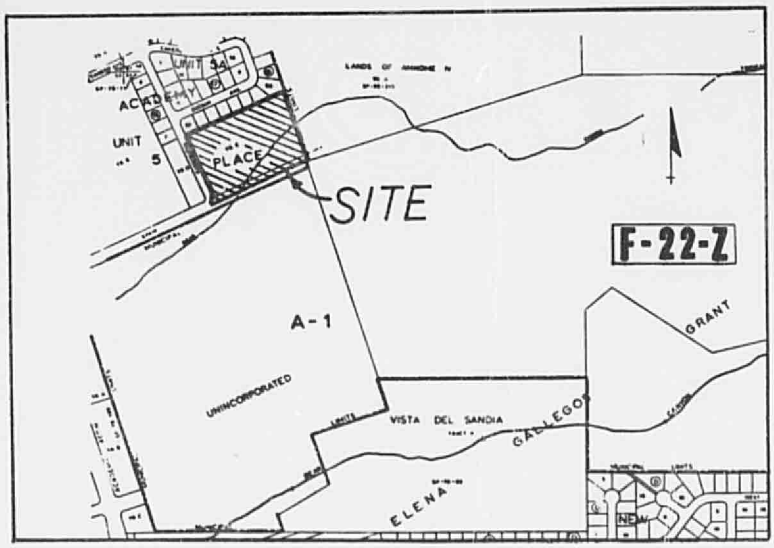
MAY, 1979

INTRODUCTION

At the request of Ron Baker, owner of Luttrell Tracts "C" and "D", CCIC has investigated the storm drainage characteristics for the site. This investigation addresses itself to the subject property in its undeveloped condition and analyzes the internal flows in its developed state with recommendations for compliance to AMAFCA's requirements and area characteristics.

SITE LOCATION AND TOPOGRAPHY

Luttrell Subdivision, Tract "C", formally known as Academy Place No. 5, Tract "C", is located in the Northeast Heights of Albuquerque, north of Spain Road, N.E., and east of Carruthers Avenue, N.E.



Ground topography is typical of the area, sloping generally from west to east, with irregular contour patterns. An average slope across this site is from the northeast to the southwest at 2.0%. Ground elevations vary from 5788 to 5812 (MSLD). Soils typically are composed of silts and sands, and ground cover consists mainly of rabbit brush and cactus.

The overall site comprises 5.172 acres. The property is situated east of Luttrell Tract "D", north of Overlook Subdivision, and west of Peppertree West; all of which are undeveloped at this time. To the north is Academy Place No. 5, which is currently in its late development stage.

DESIGN CRITERIA

Engineering Parameters: For calculation of composite coefficients of runoff, the following values of "C" were taken for the indicated land coverages:

(a) streets, driveways, roofs	0.95
(b) landscaped areas	0.15
(c) natural ground	0.30

In addition, all runoff volume calculations have been based on a 100 year-6 hour rainfall of 2.6" as per AMAFCA requirements. Rate of runoff calculations have been based on the frequency-intensity-duration relationship for a 100 year storm as presented by Gordon-Heckenhoff and Associate in their 1963 Master Plan of Drainage for the City of Albuquerque. This relationship is expressed by the following equation:

$$I = 189/(T_c + 25)$$

Flood Control Regulations: The drainage plan presented in this report has been designed to comply with the 1972 AMAFCA Resolution in regard to rate and volume leaving the site. That resolution has been interpreted to say that the

rate and volume allowed to leave the site after development shall be no greater that that prior to development.

COMPUTATIONAL PROCEDURES

Hydrological flow rate calculations are based on the rational runoff method. Time of concentrations were calculated using the Overland Time of Travel for undeveloped areas and open channel velocities for street flows. Estimates were made in percents of areas covered by each coverage type described in the above section for each drainage sub-area.

Volume calculation for sizing individual backyard ponds shall be based on a percentage of area to be ponded for each lot. In determining the net volumes of discharge for the entire site in both natural and developed states were performed by multiplication of the applicable "C" factor times the 100 year-6 hour rainfall (0.277) times the appropriate area to obtain cubic feet of water.

OFFSITE DRAINAGE

There are no offsite contributing areas. All runoff from the north is controlled by the development of Academy Place No. 5; all runoff from the east is to be directed by a drainage channel/rundown that will carry all flows under Spain Road and into the Bear Arroyo to the south. This system was first conceptualized in the Drainage Management portion of the Sector Development Plan for Academy-Tramway-Eubank Study. Further details shall be presented in the Drainage Studies for the Overlook Subdivision to the south and the Peppertree Subdivision to the east.

ONSITE DRAINAGE

Plate I delineates the internal patterns of drainage of the site. In order to comply with AMAFCA regulations, it will be necessary to use the rear-yard ponding approach to control runoff.

Storm water runoff will leave the site at two distinct locations; down Spain Road from Luttrell Court and northward on Carruthers Avenue.

Table I itemizes areas, coefficients of runoff, and volumes of discharge for each subarea of drainage shown on Plate I. A Summary talley of volumes of discharge in both the natural state and the developed state indicates that the rear-yard pond approach will, in fact, meet AMAFCA requirements.

SUMMARY OF RECOMMENDATIONS

In conclusion, we make the following recommendation regarding drainage for Luttrell Tract "C" Subdivision.

1. Rear-yard ponds be incorporated into the drainage plan.
2. Storm water runoff be allowed to leave the site at Luttrell Ct. and Donahue Ct.

TABLE I

VOLUME CALCULATIONS

Drainage Area Designation	Area (acres)	Amount of Rainfall	Area Running Off @ 0.95	Area Running Off @ 0.30	Composite "C"	Volume of Runoff (cu.ft.)	Volume to be Retained (cu.ft.)	Point of Departure Designation
A	0.95	2.6"	.50	.45	0.65	5850	4483	A
B	1.06	2.6"	.56	.49	0.65	6512	5851	B
C	0.21	2.6"	.16	.05	0.75	1470	1699	C
						13,841*	12,033*	

*The undeveloped rate of runoff is the same as the developed rate and the volume will be decreased from 14,298 cu.ft. to 13,841 cu.ft., therefore, the AMAFCA requirement is satisfied.

TABLE I

VOLUME CALCULATIONS

Drainage Area Designation	Area (acres)	Amount of Rainfall	Area Running Off @ 0.95	Area Running Off @ 0.30	Composite "C"	Volume of Runoff (cu.ft.)	Volume to be Retained (cu.ft.)	Point of Departure Designation
A	0.95	2.6"	.50	.45	0.65	5859	4483	A
B	1.06	2.6"	.56	.49	0.65	6512	5851	B
C	0.21	2.6"	.16	.05	0.75	1470	1699	C
						13,841*	12,033*	

*The undeveloped rate of runoff is the same as the developed rate and the volume will be decreased from 14,298 cu.ft. to 13,841 cu.ft., therefore, the AMAFCA requirement is satisfied.