HYDROLOGY G10/D8 THREE PLAN

G 10 - D8

3 PLANS

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

May 18, 1981

Mr. Bo Johnson
Trinity Enterprises
3107 Eubank N.E. Suite 3
Albuquerque, N.M. 87111

RE: EL RANCHO ATRISCO PHASE II DRAINAGE

Dear Mr. Johnson:

After field inspections by staff and review of your previous communications with the City, I find that the recommendations of the drainage report and of the development plan bear only slight resemblence to the intentions expressed in your letter to Mr. R. S. Heller dated December 30, 1980.

I also find no indications that the design criteria suggested in said letter were acceptable by the City Engineer or by AMAFCA.

While some of your recommendations may have merit, such as the use of community ponds for the reduction of the peak discharges and for other desirable objectives, the absence of a City Department with equipment, manpower, basic and continuous financing for the maintenance of facilities of the type suggested, precludes the adoption of your recommendation.

Secondly, I want to call your attention to the requirements of Section 21 of the Subdivision Ordinance. Among the data that must be supplied to obtain preliminary plat approval, is the submission of information on the existing and the proposed topography (grading). While spot elevations are a desirable supplement to the proposed contour configuration (see standards specified in the Subdivision Ordinance Section 5e, page 11) said spot elevations do not convey the visual information supplied by contour maps; the requirement for said contour maps is made in order to allow an understanding of the relationship between the existing and the proposed topography. Further, while information was supplied on the proposed ground elevation for "El Rancho Atrisco de los Santos", no proposed topography was furnished to this office to allow the evaluation of your plan for the remainder of the development. As an example, I note that a "shallow detention pond" east of Parcel 4b, is located on the slope of a knoll; without information on the proposed ground configuration I cannot evaluate your recommendation.

MUNICIPAL DEVELOPMENT DEPARTMENT

Richard S. Heller, P.E., City Engineer ENGINEERING DIVISION Telephone (505) 766-7467

Thirdly, you included with the drainage report a soil investigation performed in 1977 by F.M. Fox & Associates. That report pertains to lands to the east of the parcel to be developed and cannot be used as a document for this development. Among other things, the report conveys no information on some peculiar morphologic features of the 111.23 Acres under consideration; more specifically, the knoll mentioned in the previous paragraph and the ridge which is located along the boundary between parcels 4a and 4c and which extends eastward, across the El Rancho Atrisco de los Santos. These features clearly warrant detailed soil analysis since they could be the surface expression of underlying rock formations.

Fourthly, I am including for your review a copy of the orthophoto map on a scale of 1"-500', recently secured by the City. The information contained therein is more detailed than the information conveyed by the U.S.G.S. Quadrangle maps. One particularly intriguing piece of information, obtained and documented photographically by staff, is that what may have been a trail (such is the indication on the quadrangle map), has actually become a watercourse, which collects the runoff along the toe of the northern face of the lava flow.

The mentioned reconnaissance of the top of the lava flow, also indicates that the area contributing its flow to the channel constructed by Candlelight Homes between El Rancho Atrisco Unit II and Unit 8, may amount to almost 500 Acres. Further, that portion of the contributing area which is located on top of the Mesa appears to be impervious. Certainly, the appearance of the basaltic formation does not warrant the assumption of a value C=0.1 for the coefficient of runoff.

At the base of the cliff the runoff is collected by alluvial channels and undoubtedly channel losses will be experienced but not to the extent that you indicate.

The field reconnaissance of the land under discussion was made together with representatives of the U.S.G.S., since it is the intent of this office to increase the hydrologic data collection network in the metropolitan area. It is my belief that until a better understanding of the hydrology of the West Mesa is achieved, we must select conservative models and values for the peak flows that we can anticipate in our channels.

Taking a closer look at the actual drainage and development plan for the 111.23 Acres submitted to my office I note that the drainage of the land to the West of the proposed Unser Boulevard will be intercepted by this major thoroughfare. Since said land slopes northeasterly, to the west and north of the P.N.M. Switching Yard, and would be collected by the anticipated extension of Ouray Road, a plan must be devised for the collection and conveyance to an adequate point discharge of the runoff generated by that land.

Items that need to be adequately discussed in the report are as follows:

A - To the west of parcel 1b the drainage plan shows "temporary detention and sedimentation pond to be constructed and maintained until multi-family site is developed". "with dimension to be determined with future Development". The same pond also bears the indication "park and ride lot". This last designation appears to conflict to the designation of "dedicated open space and trail network".

As recognized by your master plan, strict compliance with Resolution 72-2 was called for, in order not to invalidate the design assumptions of the Ladera Detention Area and of its restricted outfall. In all cases, the topographic configuration of this pond must be supplied together with a definition of the outflow drain and of the overflow spillway. Further, a clear indication must be supplied of the ultimate peak discharge resulting from the contribution of the future apartment or condominium development, park and ride lot, added to the discharge from "offsite basin three", from the parcels 4a and 4b, to the drainage from Unser Boulevard, from Ouray Road and from the Land north of the switching yard. The indication must also be supplied on what will be the combined flow from the areas just mentioned when added to the flow collected by the desilting pond #3.

Incidentally, I want to point out that land which is necessary for drainage purposes (if, for instance, it is necessary to maintain a reduction of the peak discharges and control the outflow from a development), and which will contain standing water with every storm occurrence, could not be accounted for and accredited as "open space", in view of the fact that the primary function of that land is a drainage function; only <u>incidentally</u> that land can provide other beneficial uses.

B - Much more detailed information needs to be furnished on how flows would be conveyed to the different ponding areas; for instance, given the indication that <u>48</u> cfs collect at the intersection located west of the drainage easement in parcel 1b, the Engineer must indicate the proposed water depth at that location. Also, the Engineer must demonstrate that said and lesser flows will not be detrimental to traffic.

Indicate offsite 50cfs max to enter Santa Catarina

Similar determination will have to be supplied for the location where the proposed drainage easement from the northern half of parcel 1a, drains into the indicated collector street; also how will then the combined flow be routed to the dedicated open space?

done

C - Will the flows intercepted by the dike west of the single family parcel be conveyed south to the park and ride lot or will it be intercepted by the collector street bisecting the single family housing? In this last case what desilting facilities will be provided to collect only clear water onto the pavement? If the flow under ultimate conditions will be conveyed under the pavement in a structure, what size and configuration will this structure have? What configuration will the ultimate drainage channel west of the single family parcels have? What is the anticipated ultimate discharge after the development of the apartment project?

this will be directed through Santa Catarina

D - There is no indication of the anticipated treatment of the almost five acres east of the northern half of El Rancho Atrisco de los Santos. In the same vein, the question on how the flow from the northernmost tier of lots in this parcel will be conveyed to the Rinconada Channel needs to be discussed; the scope and extent of the Rinconada Channel bank stabilization which appears to be performed outside the boundaries of this property.

this is now directed to the south

E - In regard to the flows generated by parcels 3 and 4c, how much will this flow be and how will this flow be conveyed to the Rinconada Channel? Will an easement be available on the Rinconada Channel itself? How will the channel, presently experiencing flows only during storms with precipitation exceeding the natural retention and detention volume of the watershed, operate, when subjected to frequent yearly occurrences?

outside development plan area

F - Much more detailed information will have to be supplied before approval of any site development plans can be granted for all these parcels. For instance, on Basin 4a how will the flow collected by the channel between Lots 80 and 81 be made to cross the street without interfering with the traffic? The flow will have to be conveyed within a structure under the pavement since the City cannot accept a surface flow perpendicular to a public street when this flow is likely to be loaded with sediment. What will the right-of-way of the proposed drainage facility be? How will the flow be diverted to the drainage easement? I note here that since the flow is to be diverted for the purposes of this development, the Engineer will have to supply an indication on how the flow from Basin 2 will be collected and insure (through bonding or similar measures) that the construction of the proposed facility will be performed at the same time as the development. This requirement is established in order to guarantee the implementation of the drainage plan.

this area is recommended for diversion north to the Rinconada

this area not in new report

G - More detailed information must be supplied on the actual manner of conveyance of the flow from the cul-de-sac giving access to Lots 37 to 42, to the proposed detention area. Correspondingly, clarification is necessary for the facilities collecting the runoff from Basin 3 and discharging it into the "shallow detention pond" (inclusive of the 66 cfs reported to be generated by parcels 4a and 4b).

on map

H - Finally, I note that the offsite basins 1, 2 and 3 are not indicated on any maps and the only information supplied is a map prepared by Mr. Bordenave for the Old El Rancho Atrisco Unit 2. I believe that I do not need to stress the fact that the reviewer must be able to clearly understand the thinking of the Engineer submitting his plans to the City so that comments are significant and pertinent.

I hope that you will be able to address all the questions above in a satisfactory manner.

Very truly yours,

Charles M. Easterling, P.E.
Principal Asst./City Engineer

CE/BC/tsl

cc: Rich Leonard, AMAFCA
Al Candelaria

RPA

June 11, 1982

Dick:

Appreciate your patience regarding drainage report. Jake will have the drainage report in Brian's hands by 1:00 today. Will appreciate anything you can do for me.

Bo Johnson

Dick,
The drainage report was received at this office 6/14/82!
Brian

1

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

June 17, 1982

Subject: El Rancho Atrisco de Los Santos

Attending: Brian Burnett, City
Jake Bordenave, A, H & A

Items to be addressed:

1. No grading allowed north of development without written permission of property owner (making Lots 95 → 101, 102? temporary drainage easement acceptable solution - protection should be provided for roadway).

2. Open Space question must be settled. (ie, Open Space dedication can be used as ponding and detention areas). Need approval from planning.

3. ~~Amount (Volume) which must be detained to west of development must be determined and approved~~

Brian Burnett 6/17/82
Jake Bordenave 6/17/82

BGB
CMB
BPB

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

~~by the City Hydrologist.~~ BGB CME BB

4. Phase II Tract 7 El Rancho Atrisco must be dedicated as a temporary drainage easement either through platting or seperate instrument

5. Items listed in CME's letter of May 1981 should be addressed point-by-point. Item dealing with flows down Ouray is especially important. Making lots 1-5 a temporary drainage easement is an acceptable solution. (protection of street necessary).

6. A statement should be included outlining the flowrate which must be accepted from Phase II Tract 7- El Rancho Atrisco.

Bud Burnett
CME Enclosure
Jim Bachmann 6/18/82

MUNICIPAL DEVELOPMENT DEPARTMENT
Richard S. Heller, P.E., City Engineer
ENGINEERING DIVISION
Telephone (505) 766-7467

AN EQUAL OPPORTUNITY EMPLOYER

3

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

Extensive
7. Seeding required for ponds - need specifications and plan outlining the limits.

8. Need specifications of berms per new criteria.

9. Certification by Engineer required for berms and seeding.

10. Pipes between ponds should be RCP and should include a standpipe at each inlet.

~~11. PNM easements need to be CPE dedicated~~

11. Need guaranteed access to the ponding areas.

12. Passing offsite flows through lots 1-5 and 145, 146 acceptable if designed properly. Asphalt acceptable, Roadway needs protection.

Bill Burnett
Carl M Entsley 6-17-82
Pam Buchanan 6/17/82

ADAM, HAMLYN, ANDERSON
consulting engineers inc.
4055 MONTGOMERY BOULEVARD, N.E.
ALBUQUERQUE, NEW MEXICO 87109
505-881-1808

Rec'd 4:00 6/18/82

June 18, 1982
Mr. Richard Heller, City Engineer
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

Attn: Mr. Charles Easterling

Re: El Rancho Atrisco del los Santos
Drainage Report

Dear Sir:

Of the items discussed (see attachment #1) in our meeting on June 17, 1982, Items 5,6, & 12 are addressed herein. Items 1 thru 4 and Items 7 thru 11 are being addressed by Mr. B.K. Johnson, the Engineer of record for this development. This letter is intended as a supplement to the report prepared by Mr. J. Bordenave.

Item 5 Addressing items of your letter to Mr. Johnson dated May 18, 1981.

Page 1.

Paragraph 1 & 2 - no comment

Paragraph 3 - It is my understanding the City will accept the proposed ponds for maintenance upon certification by the Engineer as per Item 9 of June 17, 1982 Memo.

Paragraph 4 - Existing and proposed topography has been submitted with the drainage report submitted by J. Brodenave for the parcel designated El Rancho Atrisco de los Santos. The area under consideration does not include the knolls included in the original report.

Page 2.

Paragraph 1 - Two (2) copies of pertinent information relative to soils, prepared by F.M. Fox in Nov. 1980, is attached as attachment #2. In addition a soils map of the area is included in the report prepared by J. Bordenave.

Paragraphs 2 thru 5 - The 1" = 500' maps are included in the report prepared by J. Bordenave. The contributing area outlined on the 1"=500' maps closely resembles the area outlined on U.S.G.S. Quad maps included included in the report prepared by J. Bordenave for El Rancho Atrisco-Tract 2, Ladera Drive, Ouray Road, dated Sept. 1978.

PRINCIPALS:
CARL H. ADAM, P.E.
RICHARD L. HAMLYN, P.E.
JAMES D. ANDERSON, P.E.
DOYLE L. WISTE, P.E.
JEAN J. BORDENAVE, P.E.

ASSOCIATE:
PHILLIP K. MATTHEWS, P.E.

June 18, 1982
Mr. Richard Heller, City Engineer
Attn: Mr. Charles Easterling
Re: El Rancho Atrisco del los Santos
Drainage Report

Page 2

Though there is a large area the peak flows to the preposed development are not as high as might be expected due to basin shape (long and narrow). Also the soils maps and field reconnaisance indicate that though the soils are thin, the area is not impervious. I agree that we must be somewhat conservative in our estimates of runoff. Having lived in Albuquerque for over 35 years observation indicates to me that using data from the SCS method of runoff estimation will be conservative for natural conditions on the West Mesa.

Paragraph 6 - A dip section on Ouray Road within the PNM Easement will carry flows from south of Ouray Road to the earth channel constructed in El Rancho Atrisco Unit 2. This flow would pass thru the most woutherly pond of the proposed development prior to entering the earth channel.

Page 3, Question A. N/A.
A temporary channel is being constructed thru the proposed development thence into the most southerly pond in the proposed development. The pond is to be constructed with a C.T.B. overflow section to pass the 100 year upland flow. See Item 12 herein and Grading Plans prepared by B.K. Johnson.
Question B.
The drainage report prepared by J. Bordenave addresses flow and routing of iternally generated runoff.

Page 4, Question C.
See Page 3, Question A above.
Question D.
The 5 acre parcel is a part of future development and not a part of this report. The northerly tier of lots are to be drained to the ponding system within the development. No grading is to be performed outside the subdivision boundary on the north. The first three lots at the northwest corner are to be a temporary drainage easement. The pads are to be graded on these lots to provide protection for the street and adjoining lots.
Question E.
The report does not address the area in question. It is the assumption of the preparer that all areas within the future development will be detained and routed southerly to Ouray Road. If, due to topography, it is not possible route flows to the south detained flows may be routed to the northerly ponds within El Rancho Atrisco de los Santos.

June 18, 1982
Mr. Richard Heller, City Engineer
Attn: Mr. Charles Easterling
Re: El Rancho Atrisco del los Santos
Drainage Report

Question F
It is the recommendation of the report prepared by J. Bordenave, that all flows west of Unser Blvd. be diverted either north or south on the west side of Unser to structures that will be required due to other flows. This will lessen capital outlays and maintenance costs.
Question G.
This is not a part of the report, nor is it a part of the request for plat or development approval.
Question H.
1"=500' maps are in the report prepared for the subdivision by J. Bordenave,

Item 6

The report prepared by J. Bordenave indicated a 5 cfs inflow on Santa Catarina from offsite is intended. The purpose was to allow flows from upland detention basins to enter the downstream channel. The 5 cfs flow was taken into consideration in the routing of flows through the ponds in El Rancho Atrisco del los Santos. The flow was increased from 0 at time 0 to 5 cfs at 2 hours with the rate directly proportional to the accumulated rainfall using the mass curve in the City of Albuquerque DPM.

Item 12

Q=125 cfs
A temporary asphalt channel, 10' bottom, 2:1 side slopes shall be constructed through lots 1-5 and lot 146. 3-36" Ø CMP's shall be installed at the Todos Santos crossing. The channel shall have a one foot freeboard. Channel bends shall have a minimum radius of 50 feet. Channel depths shall be as follows:

Channel Grade	Water Depth,ft.	Velocity,fps	Channel Depth,ft.	Add'l Depth @50'conc.
3.5%	0.91	11.62	2.0	1.2
3.0%	0.95	11.04	2.0	1.1
2.5%	1.00	10.38	2.0	1.0
2.0%	1.07	9.63	2.5	0.8
1.5%	1.16	8.74	2.5	0.7
1.0%	1.30	7.61	2.5	0.6
0.5%	1.58	6.00	2.5	0.4

Asphalt lining shall extend westerly and northerly to include 50' of the north/south shannel along the west boundary of the development. Asphalt lining shall be placed at the Todos Santos crossing on the approach slopes.

REGISTERED PROFESSIONAL ENGINEER AND LAND SURVEYOR NO. 5110 NEW MEXICO JEAN J. BORDENAVE

JEAN J. BORDENAVE, P.E. & L.S. NO.5110

TRINITY ENTERPRISES, INC.

Civil Engineers
Land Planners
Developers

3107 Eubank, N.E.
Suite 3
Albuquerque, New Mexico 87111
(505) 292-7666

6/22/82

G10-D8

Mr. Richard E. Heller
City Engineer
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

Re: El Rancho Atrisco de los Santos

Dear Mr. Heller,

This letter is to certify that Mr. Jack McDowell, General Partner, TRIMAC, will maintain all ponds shown on the grading plans for the above referenced subdivision until such time as this subdivision is accepted by the City of Albuquerque.

Thank you,

Bo K. Johnson,
President

TRI-MAC, A Joint Venture

By: _____, general partner.

STATE OF NEW MEXICO)
) SS
COUNTY OF BERNALILLO)

The foregoing instrument was acknowledged before me this 22nd day of June, 1982 by Jack T. McDowell, a general partner of M-C Investment, being a partner of TRI-MAC, A Joint Venture.

My commission expires: May 8, 1984

Deborah Ravenscroft
NOTARY PUBLIC

G-10 A8

TRINITY ENTERPRISES, INC.

Civil Engineers
Land Planners
Developers

3107 Eubank, N.E.
Suite 3
Albuquerque, New Mexico 87111
(505) 292-7666

7/1/82

Mr. Richard E. Heller
City Engineer
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

Re: El Rancho Atrisco de los Santos

Dear Mr. Heller,

This letter is to certify that Mr. Jack McDowell, General Partner, TRIMAC, will maintain all ponds shown on the grading plans for the above referenced subdivision until such time as this subdivision is accepted by the City of Albuquerque. Until the City of Albuquerque accepts this subdivision, TRIMAC agrees to hold the City harmless for any liabilities.

Thank you,

Bo K. Johnson,
President

TRIMAC, A Joint Venture

By: _____, general partner.

STATE OF NEW MEXICO)
) SS
COUNTY OF BERNALILLO)

The foregoing instrument was acknowledged before me this 1st day of July, 1982 by Jack T. McDowell, general partner of M-C Investment, being a partner of TRIMAC, A Joint Venture.

My commission expires: 6-6-85

Rosita Webb
NOTARY PUBLIC

TRINITY ENTERPRISES, INC.

Civil Engineers
Land Planners
Developers

3107 Eubank, N.E.
Suite 3
Albuquerque, New Mexico 87111
(505) 292-7666

RECEIVED
JUL 06 1982
CITY ENGINEER

July 2, 1982

Mr. Chuck Easterling, City Engineer
City of Albuquerque
P.O. Box 1293
Albuquerque, N.M. 87103

Re: El Rancho Atrisco de los Santos

Dear Chuck,

Please find enclosed the revised letter per your request, holding the City harmless for any liabilities regarding ponds in the above referenced subdivision.

Thank You,

Thank you!

Bo K. Johnson
President

BKJ/rhp
enclosure

Who maintains after acceptance?
7/12

RSH
CDS 7/12
RETURN TO BRIAN B.
Copy to City Attorney?

Another copy file at the Court House
7/19/82

File in DR

DENNEY-GROSS & ASSOCIATES, INC.
CONSULTING ENGINEERS
2400 COMANCHE ROAD, N.E.
ALBUQUERQUE, NEW MEXICO 87107
(505) 884-0696

RECEIVED
AUG 13 1982
CITY ENGINEER

August 11, 1982

G10-D8

Mr. Brian Burnett
City of Albuquerque
Hydrology Department
P.O. Box 1293
Albuquerque, NM 87103

Re: El Rancho Atrisco de Los Santos
DGA Job No. 622.12

Dear Brian:

Per our meeting this date, we offer this letter as confirmation of details discussed in regards to subject project.

We will begin construction staking activities which will include all of Phase I as illustrated in our revised grading plan. That portion of Phase I containing lots adjacent to Ouray Boulevard will not be staked at this time pending resolution of the drainage problems associated with this area.

Upon completion of staking activities, the owner of the project will instruct his contractor to begin rough grading the site per the DGA revised grading plan.

In the interim, DGA will pursue a successful solution to the remaining drainage questions and will also modify the grading plans of Phases II and III per updated topographical information.

It has been revealed to us by the Owner of the project that the modifications to the construction plans for all phases will be completed by Trinity Enterprises, Inc. in accordance with modified grading and drainage information provided by DGA.

Brian, your assistance on this matter is certainly appreciated. We will keep you abreast of all future development.

Very truly yours,

Gary

Gary W. Tibljas, P.E.

GWT/lm
cc: Don Coe

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

G10 - D8

August 24, 1982

Mr. Bo Johnson
Trinity Enterprises
2104 San Mateo N.E.
Albuquerque, N.M. 87110

RE: EL RANCHO ATRISCO DE LOS SANTOS DRAINAGE REPORT

Dear Bo:

Based on up-dated topographic information submitted to this office, we are withdrawing approval of the referenced drainage report. We feel that the initial report prepared by Adam, Hamlyn, Anderson does not accurately reflect present field conditions. Therefore, the report should be re-submitted utilizing an updated topographic survey. Special attention should be given to the off-site flows generated by Atrisco Unit 8 and the design of Ouray Rd.

If you have any questions concerning this matter, please call.

Very truly yours,

Charles M. Easterling
Princ.Asst.City Eng./Hydrology

CME/BGB/tsl

cc: Jake Bordenave, Adam, Hamlyn, Anderson
R. S. Heller, City Engineer
C. D. Sheppard, Princ.Asst.City Eng.
Q. R. Kielich, Asst. City Eng., Design
Fred Aguirre, Hydrology Section

1. What about commitments from Mueller?

2. Does interim facilities require connection to any facilities that have not been required

3. How's is platting going to take place - Phase II Tract 7 need temporary drainage easement

4. Need maintenance agreement notarized and filed.

5. Rock storage in bottom of ponds.

6. Interface with Tract 2 El Rancho Atrisco? (especially street flows).

7. What about lots backing onto ponds? walls? weep holes?

8. Pond routing scheme?

9. Rolled curbs?

2. Certification of a) Seeding

1. Seeding required for ponds - natural vegatation - need specifications and diagram outlining limits

3. State 5 cfs allowable from Santa Catarina from El Rancho Atrisco Phase II Tract 7

4. Need to check with Planning on open space dedication and use of as drainage facility.

5. Can't grade off-site without permission.

6. Temporary drainage easement on Tract 7 - Phase II.

7. Off-site volume?

8.

Attachment

SERGENT, HAUSKINS & BECKWITH CONSULTING GEOTECHNICAL ENGINEERS

APPLIED SOIL MECHANICS • ENGINEERING GEOLOGY • MATERIALS ENGINEERING

B. DWAINE SERGENT, P.E.
BENNY E. MCMILLAN, P.E.
NORMAN H. WETZ, P.E.
JOHN B. HAUSKINS, P.E.
DALE V. BEDENKOP, P.E.
WM. DARRELL WILLIAMS
GEORGE H. BECKWITH, P.E.
ROBERT R. KOONS, P.E.
DONALD G. METZGER, P.G.
ROBERT D. BOOTH, P.E.
ROBERT W. CROSSLEY, P.E.
RALPH E. WEEKS, P.G.

November 17, 1980

Westland Development Corporation
401 Coors Road, N.W.
Albuquerque, New Mexico 87105

SHB Job No. E80-1103

Attention: Albert Candelaria

Re: El Rancho Atrisco - Tract 4
Albuquerque, New Mexico

Gentlemen:

Our Soil and Foundation Investigation Report on the referenced project is herewith submitted. The report includes the results of test drilling, laboratory analyses, and recommended criteria for foundation design and slab support.

Should any questions arise concerning this report, we would be pleased to discuss them with you.

Respectfully submitted,
Sergent, Hauskins & Beckwith Engineers

By Robert D. Booth
Robert D. Booth, P.E.

ROBERT D. BOOTH
NEW MEXICO
5711
REGISTERED PROFESSIONAL ENGINEER

Copies: Addressee (3)

REPLY TO: 2821 GIRARD BLVD., N.E., ALBUQUERQUE, NEW MEXICO 87107

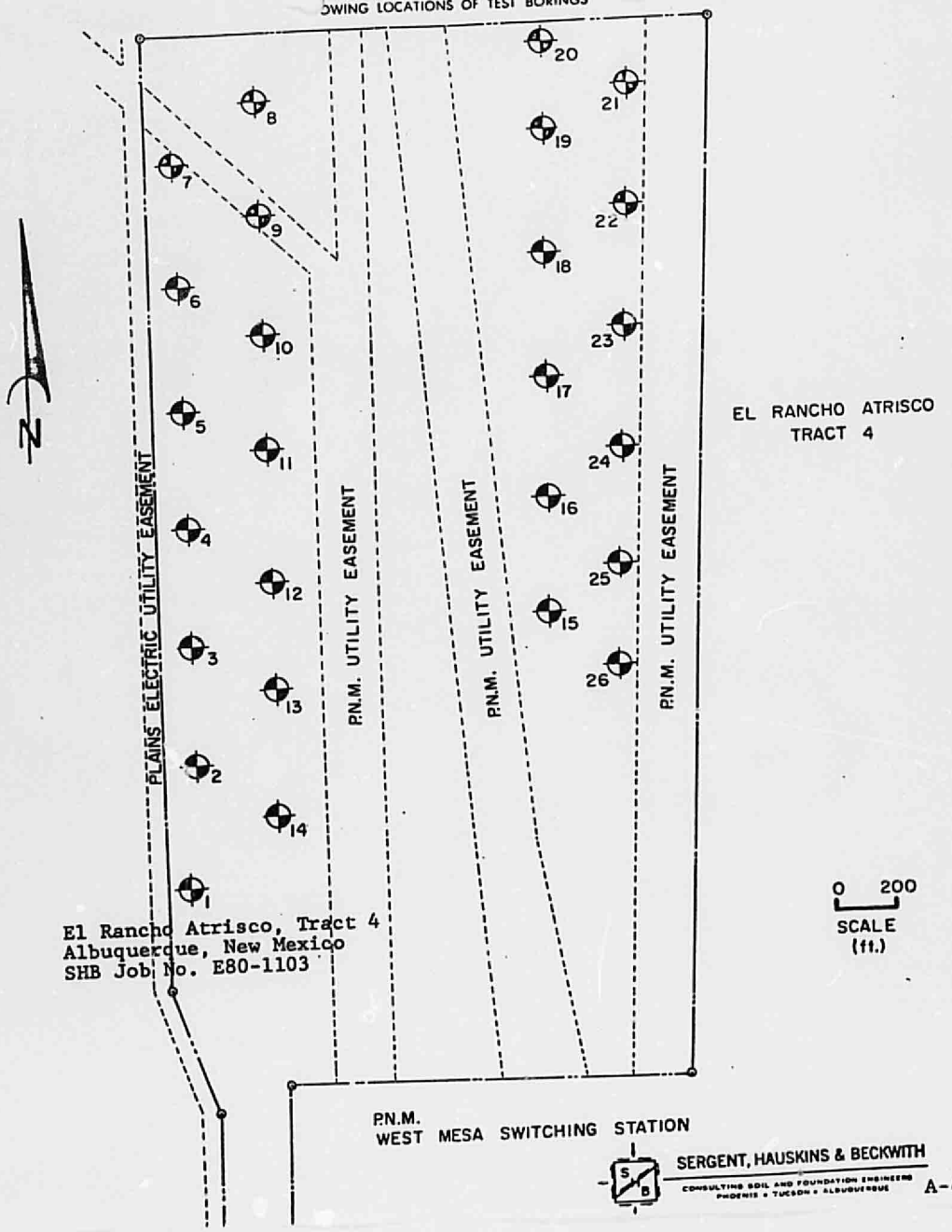
PHOENIX (602) 272-6848
ALBUQUERQUE (505) 345-8606
SANTA FE (505) 471-7836

the ground surface should be sloped away from their perimeters in a manner to allow flow along the drainage lines at a minimum grade of 2 percent to points at least 15.0 feet away from the building perimeters. Positive drainage should be provided from these points to streets or natural water courses. In no case should long term ponding of water be allowed around the perimeter of the structures. The possibility of moisture infiltration beneath the structures, in the event of plumbing leaks, should be considered in the design and inspection of underground water and sewer conduits.

Information regarding infiltration rates of runoff water into the native soils was requested by the client. For this reason, two in situ infiltration tests were performed. Data from the falling head, flooding type infiltration tests executed in the field indicated in situ permeabilities in the range from 13,500 feet per year to 22,400 feet per year. These tests were performed by jacking a 24 inch section of 5 inch diameter shelby tubing into the surface soil, leaving approximately 9 inches exposed above grade. Water was introduced into the tube and drawdown rates were observed. Based upon past test results and conditions incurred during testing, we feel that a lower permeability should be employed in water runoff calculations. Near surface soil dessication, coupled with soil disturbance during the tube insertion could have yielded excessive permeabilities. Using the test results plus past experience with similar soils as a guide, we can substantiate permeabilities in the order of 2,000 to 5,000 feet per year.

SITE PLAN

OWING LOCATIONS OF TEST BORINGS



El Rancho Atrisco, Tract 4
Albuquerque, New Mexico
SHB Job No. E80-1103

SERGENT, HAUSKINS & BECKWITH
CONSULTING SOIL AND FOUNDATION ENGINEERS
PHOENIX • TUCSON • ALBUQUERQUE

A-4

PROJECT El Rancho Atrisc Tract 4

JOB NO. E80-1103 DATE 10/17/80

LOG OF TEST BORING NO. 15

RIG TYPE CME-55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV.

DATUM

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0			☒	S	9		2		moderately firm to very firm	SILTY SAND, predominantly fine, nonplastic, brown to tan
			☒	S	11		3			
5			☒	S	15		3			note: weakly cemented @ 10'; some moderate lime cemented nodules @ 20'
10			☒	U	42	108	4			
								SM		
15			☒	S	25		2			
20			☒	S	28		6			
25										Stopped auger @ 19'6" Stopped sampler @ 21'0"

GROUND WATER

DEPTH	HOUR	DATE
	none	

SAMPLE TYPE

A – Auger cuttings. B – Block sample

S – 2" O.D. 1.38" I.D. tube sample.

SERGENT, HAUSKINS & BECKWITH

CONSULTING SOIL AND FOUNDATION ENGINEERS

PROJECT El Rancho Atrisco Tract 4

JOB NO. E80-1103 DATE 10/21,

LOG OF TEST BORING NO. 16

RIG TYPE CME-55

BORING TYPE 6½" Hollow Stem Auger

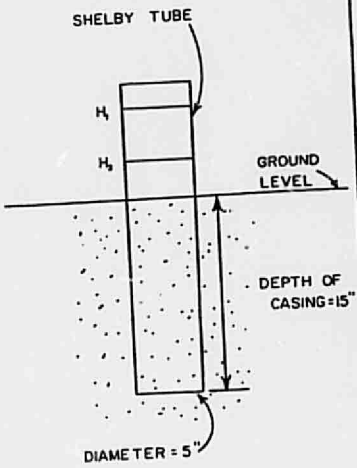
SURFACE ELEV. 5130+

DATUM Topo

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0			☒	S	6		2		soft to firm	SILTY SAND, predominantly fine, poorly graded, nonplastic, brown to tan
			☒	S	9		2			
			☒	S	12		4	SM-SP		
10			☒	S	9		3			
			☒	S	26		2			
20										Stopped auger @ 14'6" Stopped sampler @ 16'0"

FIELD PERMEABILITY TEST

TIME	READING IN	TIME	READING (FT³ OR IN)	TIME	READING (FT³ OR IN)
0	2				
1	2				
2	2-1/4				
3	2-1/2				
4	2-3/4				
5	3				
6	3-1/4				
7	3-1/4				
8	3-1/4				
9	3-1/2				
10	3-3/4				
11	3				
12	4				
13	4-1/4				
14	4-1/2				
15	4-1/2				



Permeability = 13,500 ft./yr.

GROUND WATER

DEPTH	HOUR	DATE
	none	

SAMPLE TYPE

A – Auger cuttings. B – Block sample

S – 2" O.D. 1.38" I.D. tube sample.

SERGENT, HAUSKINS & BECKWITH

CONSULTING SOIL AND FOUNDATION ENGINEERS

PROJECT El Rancho Atrisco Tract 4

JOB NO. E80-1103 DATE 10/1/80

LOG OF TEST BORING NO. 17

RIG TYPE CME-55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV. 5138+

DATUM Topo

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0			X	S	11		4		soft to hard	SILTY SAND, predominantly fine, trace of gravel nonplastic, light brown to tan
			X	S	6		3			
5			X	S	14		3			note: weakly lime cemented from 10'.
								SM		
10			X	S	19		5			
15			X	S	22		4			
20			X	S	58		5			
25										Stopped auger @ 19'6" Stopped sampler @ 21'0"

GROUND WATER

DEPTH	HOUR	DATE
	none	

SAMPLE TYPE

A – Auger cuttings. B – Block sample

S – 2" O.D. 1.38" I.D. tube sample.

U – 3" O.D. 2.42" I.D. tube sample.

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PROJECT El Rancho Atrisco Tract 4

JOB NO. E80-1103 DATE 10/1/80

LOG OF TEST BORING NO. 18

RIG TYPE CME-55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV. 5138+

DATUM Topo

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0			☒	S	5		2		soft to moderately hard	SILTY SAND, predominantly fine, nonplastic, brown to tan
			☒	S	9		2			
5			☒	S	13		6			
								SM		
10			☒	S	10		3			
15			☒	S	15		6			
20										Stopped auger @ 14'6" Stopped sampler @ 16'0"

GROUND WATER

DEPTH	HOUR	DATE
	none	

SAMPLE TYPE

A – Auger cuttings. B – Block sample

S – 2" O.D. 1.38" I.D. tube sample.

U – 3" O.D. 2.42" I.D. tube sample.

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PROJECT El Rancho Atrisc Tract 4

JOB NO. E80-1103 DATE 10/17/80

LC OF TEST BORING NO. 19

RIG TYPE CME-55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV. 5148+

DATUM Topo

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0			☒	S	4		2		very soft to firm	SILTY SAND, predominantly fine, poorly graded, nonplastic, brown to tan
5			☒	S	14		4			note: weakly cemented from 14'
10			☒	S	15		1	SP-SM		
15			☒	S	21		1			
20			☒	S	27		4			Stopped auger @ 19'6" Stopped sampler @ 21'0"
25										

GROUND WATER

DEPTH	HOUR	DATE
	none	

SAMPLE TYPE

A – Auger cuttings. B – Block sample

S – 2" O.D. 1.38" I.D. tube sample.

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PROJECT El Rancho Atrisc Tract 4

JOB NO. E80-1103 DATE 10/17/80

LOG OF TEST BORING NO. 20

RIG TYPE CME-55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV. 5149+

DATUM Topo

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0			☒	S	5		2		soft to firm	SILTY SAND, predominantly fine, small amount of gravel, nonplastic, brown to tan
5			☒	S	16		2			note: small amount of cobbles @ 5' and 12'
								SM		
10			☒	S	18		5			
15			☒	S	21		3			
20										Stopped auger @ 14'6" Stopped sampler @ 16'0"

GROUND WATER

DEPTH	HOUR	DATE
	none	

SAMPLE TYPE

A – Auger cuttings. B – Block sample

S – 2" O.D. 1.38" I.D. tube sample.

H – 3" O.D. 2.42" I.D. tube sample.

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PROJECT El Rancho Atrisco Tract 4

JOB NO. E80-1103 DATE 10/1/80

LOG OF TEST BORING NO. 21

RIG TYPE CME-55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV. 5144±

DATUM Topo

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0			☒	S	5		2		soft to firm	SILTY SAND, predominantly fine, nonplastic, light brown to tan
			☒	S	8		3			
5			☒	U	43(no-recovery)					
								SM		
10			☒	S	17		3			
15			☒	S	14		3			Stopped auger @ 14'6" Stopped sampler @ 16'0"
20										

GROUND WATER

DEPTH	HOUR	DATE
	none	

SAMPLE TYPE

A – Auger cuttings. B – Block sample

S – 2" O.D. 1.38" I.D. tube sample.

U – 3" O.D. 2.42" I.D. tube sample.

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PROJECT El Rancho Atrisco, Tract 4

JOB NO. E80-1103 DATE 10/18/80

LOG OF TEST BORING NO. 22

RIG TYPE CME-55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV. 5141+

DATUM Topo

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0			☒	S	6		2		soft to firm	SILTY SAND, predominantly fine, nonplastic, light brown to tan
			☒	S	17		2			
5			☒	S	26		2			note: trace of gravel @ 2'-7'
								SM		
10			☒	S	12		3			
15			☒	S	17		3			
20										Stopped auger @ 14'6" Stopped sampler @ 16'0"

GROUND WATER

DEPTH	HOUR	DATE
	none	

SAMPLE TYPE

A – Auger cuttings. B – Block sample

S – 2" O.D. 1.38" I.D. tube sample.

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PROJECT El Rancho Atrisco, Tract 4

JOB NO. E80-1103 DATE 10/18/80

LOG OF TEST BORING NO. 23

RIG TYPE CME-55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV. 5138±

DATUM Topo

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0			☒	S	11		4		moderately firm to firm	SILTY SAND, predominantly fine, nonplastic, light brown to tan note: trace of gravel @ 13'-14'
			☒	S	16		3			
5			☒	S	12		3			
								SM		
10			☒	S	16		3			
15			☒	S	12		3			
								ML	hard	SANDY SILT, predominantly fine with fine sand, nonplastic, light brown
20			☒	S	53		8			
25										Stopped auger @ 19'6" Stopped sampler @ 21'0"

GROUND WATER

DEPTH	HOUR	DATE
	none	

SAMPLE TYPE

A – Auger cuttings. B – Block sample

S – 2" O.D. 1.38" I.D. tube sample.

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PROJECT El Rancho Atrisc , Tract 4

JOB NO. E80-1103 DATE 10/18/80

LOG OF TEST BORING NO. 24

RIG TYPE CME-55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV. 5131+

DATUM Topo

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0			☒	S	11		3		moderately firm to firm	SILTY SAND, predominantly fine, nonplastic, light brown
			☒	S	15		3			
5			☒	S	15		2			
								SM		
10			☒	S	27		4			
15			☒	S	25 (no recovery)					
20										Stopped auger @ 14'6" Stopped sampler @ 16'0"

GROUND WATER

DEPTH	HOUR	DATE
	none	

SAMPLE TYPE

A – Auger cuttings. B – Block sample

S – 2" O.D. 1.38" I.D. tube sample.

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PROJECT El Rancho Atrisc Tract 4

JOB NO. E80-1103 DATE 10/18/80

LC OF TEST BORING NO. 25

RIG TYPE CME-55

BORING TYPE 6¾" Hollow Stem Auger

SURFACE ELEV. 5127+

DATUM Topo

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0			☒	S	6		3		soft to firm	SILTY SAND, predominantly fine, nonplastic, light brown
			☒	S	14		2			
5			☒	S	14		3			
10			☒	S	17		3	SM		
15			☒	S	20		2			
20			☒	S	35		10	SC	very firm	CLAYEY SAND, low to medium plasticity, light brown
25										Stopped auger @ 19'6" Stopped sampler @ 21'0"

GROUND WATER

DEPTH	HOUR	DATE
	none	

SAMPLE TYPE

A – Auger cuttings. B – Block sample

S – 2" O.D. 1.38" I.D. tube sample.

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PROJECT El Rancho Atrisco, Tract 4

JOB NO. E80-1103 DATE 10/18/80

LOG OF TEST BORING NO. 26

RIG TYPE CME-55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV. 5128±

DATUM Topo

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0			☒	S	6		3		soft to firm	SILTY SAND, predominantly fine, nonplastic, light brown
			☒	S	6		3			
5			☒	U	29	102	3			note: some gravel @ 13'
								SM		
10			☒	S	18		3			
15			☒	S	16		1			Stopped auger @ 14'6" Stopped sampler @ 16'0"
20										

GROUND WATER

DEPTH	HOUR	DATE
	none	

SAMPLE TYPE

A – Auger cuttings. B – Block sample

S – 2" O.D. 1.38" I.D. tube sample.

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CONSULTING SOIL AND FOUNDATION ENGINEERS

Job No. E80-1103

Project El Rancho Atrisco, Tract 4

Albuquerque, New Mexico

Material

Source

HOLE NO.	LOCATION	DEPTH	UNIFIED CLASS.	LL	PI	SIEVE ANALYSIS — ACCUM. % PASSING												LAB. NO.
						200	100	40	10	4	3/8	1/2	3/4	1	1-1/2	3	6	
1	See Site Plan	2½'	ML	23	NP	68	91	100										03-[illegible]
3	See Site Plan	2½'	SM	NV	NP	18	52	96	100									03-2
6	See Site Plan	2½'	SM	NV	NP	25	53	97	100									03-3
10	See Site Plan	4½'	SM-SP	NV	NP	10	23	91	95	96	98	100						03-1
12	See Site Plan	½'	SM	21	3	40	63	91	97	98	99	100						03-2
15	See Site Plan	9½'	SM	NV	NP	32	53	95	100									03-3
16	See Site Plan	½'	SM-SP	NV	NP	10	28	90	100									03-4
19	See Site Plan	½'	SP-SM	NV	NP	8	28	95	100									03-5
23	See Site Plan	2½'	SM	NV	NP	29	56	98	100									03-[illegible]
26	See Site Plan	4½'	SM	NV	NP	24	58	94	100									03-7

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