SAN IGNACIO SUBDIVISION
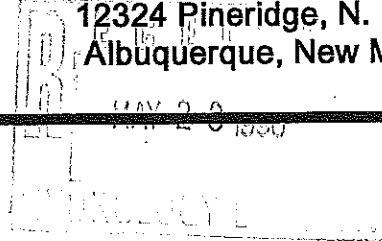# DRAINAGE AND GRADING PLAN

1500 Edith Blvd., N.E.
in Albuquerque, New Mexico
May, 1996

J-14/D

For: Greater Albuquerque Housing Partnership
c/o Mr. Chris Vigil
5101 Copper Ave., N.E.
Albuquerque, New Mexico 87108

By: C. A. Coonce & Associates, Inc.
12324 Pineridge, N. E.
Albuquerque, New Mexico 87112

GENERAL DISCUSSION:

THIS 13 LOT SUBDIVISION IS COMPRISED OF 2.2725 ACRES, AND IS LOCATED ON THE WEST SIDE OF EDITH BLVD., N.E., SOUTH OF ODELIA, N.E. THE TOPOGRAPHY OF THE TRACT SLOPES WESTWARD, AWAY FROM EDITH, AND IT CURRENTLY DRAINS TO THE ALBUQUERQUE/BERNALILLO COUNTY VEHICLE POLLUTION MANAGEMENT PROGRAM HEADQUARTERS SITE. THE CHANGE IN ELEVATION FROM EDITH BLVD TO THE WEST PROPERTY LINE IS APPROXIMATELY 13 FEET. THE EDITH FRONTAGE HAS FOUR CURB CUTS. THE SITE IS HARD PACKED (TREATMENT C) SOIL FROM YEARS OF AUTOMOBILES DRIVING ACROSS THE PROPERTY.

THE LOTS ARE TO BE DEVELOPED FOR AFFORDABLE HOUSING, WITH SOME PARTICIPATION BY THE CITY OF ALBUQUERQUE, AND ARE TO BE DEVELOPED AND SOLD BY THE GREATER ALBUQUERQUE HOUSING PARTNERSHIP.

EXISTING DRAINAGE CONDITION:

THE SITE AS IT EXISTS DRAINS TO THE ALBUQUERQUE/BERNALILLO COUNTY VEHICLE POLLUTION MANAGEMENT PROGRAM HEADQUARTERS SITE. IT EXITS THIS PROPERTY TO A 4:1 DROP OF SIX FEET IN THE CITY/COUNTY PROPERTY. IT THEN CROSSES A PAVED CIRCULAR DRIVE INTO A RETENTION POND, WHICH IS DRAINED INTO BROADWAY, N.E. BY AN 18 INCH DRAIN PIPE. THE DRAINAGE AND GRADING PLAN FOR THE CITY/COUNTY FACILITY IS J-14/D021. THE EXISTING TREATMENT IS "C" AND IS IN RAINFALL ZONE 2. THE EXISTING MAX. Q_{100} IS (2.2725) (3.14) = 7.14 C.F.S.

PROPOSED DRAINAGE

THE PLAT, AS PROPOSED, CONTAINS 13 LOTS COMPRISED OF 1.7109 ACRES, AND A CUL-DE-SAC CONTAINING 0.5616 ACRES, FOR A TOTAL AREA OF 2.2725 ACRES. THE DWELLING UNITS AS DESIGNED BY THE ARCHITECT ARE ZERO LOT LINE WITH A ONE CAR GARAGE ON A MINIMUM 5000 S.F. LOT.

THE LOTS AS DESIGNED, WITH THE EXCEPTION OF LOT 8, CAN ACCOMMODATE EITHER A 3 BEDROOM OR 4 BEDROOM DWELLING UNIT. THE DIFFERENCE IN IMPERVIOUS AREA BETWEEN THE TWO DESIGNS IS AN ADDITIONAL 85 S.F. FOR THE 4 BEDROOM UNIT. THE CALCULATIONS WERE BASED ON THE 4 BEDROOM UNITS, EXCEPT FOR LOT 8, IN ORDER TO BE ON THE CONSERVATIVE SIDE.

NINE OF THE 13 LOTS DO NOT BORDER ON THE WEST PROPERTY LINE AND HAVE THEIR ZERO LOT LINE ON THE DOWNHILL SIDE OF THE LOT. ALL OF THE STRUCTURE ROOF DRAINS ARE TO THE STREET, AND NO LOT IS PERMITTED CROSS-LOT DRAINAGE. ON THE NINE LOTS (1-6 AND 11-13)THE PRECIPITATION WHICH FALLS IN THE BACK YARD IS RETAINED AND PERCOLATED INTO THE WATER TABLE.

THE RUNOFF IS BASED UPON TWO LAND TREATMENTS, THE PERVIOUS BEING LANDSCAPED TREATMENT B AND THE IMPERVIOUS BEING ROOF, PAVING, AND CONCRETE (TREATMENT D). THE RESPECTIVE RUNOFF IS IN C.F.S./ACRE FOR B AND D RESPECTIVELY, IN RAINFALL ZONE 2 IS 2.28 AND 4.70. THE R-O-W CONTAINS 0.5616 ACRES , OF WHICH 0.5248 AC. IS IMPERVIOUS AND 0.0368 AC. IS PERVIOUS LANDSCAPE AREA. THE AREA DRAINING TO THE R-O-W DIRECTLY TO THE WEST PROPERTY LINE IS 0.3760 ACRE TREATMENT B PERVIOUS, AND 1.1220 ACRES TREAT D IMPERVIOUS. THE TOTAL RUNOFF WILL BE (0.3760) (2.28) + (1.1220) (4.7) = 0.86 + 5.27 = 6.13 C.F.S. FOR THE 100 YEAR PEAK DISCHARGE vs. 7.14 C.F.S.

FOR THE EXISTING CONDITION. THE LOWERING OF THE PEAK DISCHARGE AFTER DEVELOPMENT IS DUE TO THE BACK YARD RETENTION.
IN ORDER TO PREVENT CROSS-LOT DRAINAGE AND MAINTAIN A MAXIMUM SIDE SLOPE OF 3:1 RETAINING WALLS ARE REQUIRED ON SOME OF THE LOTS. THESE LOT LINES ARE INDICATED WITH A T.W. SPOT ELEVATION, LOCATED AT EACH POINT OF THE LOT WHICH REQUIRES A RETAINING WALL FROM ONE T.W. SPOT ELEVATION TO THE NEXT.

THE RUNOFF FROM THE CUL-DE-SAC TO THE CITY/COUNTY FACILITY IS SHOWN VIA A SWALE WITHIN A 20 FT. WIDE DRAINAGE EASEMENT BETWEEN LOTS 8 AND 9. THE PEAK Q FROM THE CUL-DE-SAC TO THE SWALE IS $(0.2240)(2.20) + (1.0216)(4.7) = 0.51 + 4.80 = 5.31$ C.F.S. THE DIFFERENCE FROM THE TOTAL Q_{100} OF 6.13 C.F.S. IS 0.82 C.F.S. AND IS THE SHEET FLOW ACROSS THE PROPERTY LINE FROM LOTS 7, 8, AND 9.

IT IS RECOMMENDED THAT, RATHER THAN THE SURFACE FLOW AS SHOWN IN THIS DRAWING, THAT A DROP INLET BE PLACED AT THE WEST END OF THE CUL-DE-SAC, AND AN 18 INCH CP GO FROM THIS DROP INLET TO THE BOTTOM OF THE CITY/COUNTY EAST LANDSCAPED AREA WHERE IT WOULD RELEASE VIA AN END SECTION EAST OF THE PAVED CIRCULAR DRIVE. A CONCRETE PIPE IS RECOMMENDED , AS IT WOULD BE NEAR THE SAME COLOR AS THE EXISTING GRAVEL OVER PLASTIC LANDSCAPING IN THE CITY PROPERTY . THIS METHOD WOULD BE MORE EXPENSIVE, BUT WOULD MAKE LOTS 8 AND 9 MUCH BETTER FOR THE OCCUPANTS. IT WOULD NOT BE VISUALLY OFFENSIVE AT THE CITY OUTLET , AND THE DEVELOPER WOULD BE REQUIRED TO REPLACE ANY DISTURBED CITY LANDSCAPING TO THE EXISTING CONDITION. EITHER METHOD WILL REQUIRE THE 20 FOOT DRAINAGE EASEMENT AS SHOWN.

SHOULD THE CITY OF ALBUQUERQUE HYDROLOGY DEPARTMENT AND THE VEHICLE POLLUTION STAFF AGREE TO THIS SOLUTION, THE DROP INLET AND DRAINAGE PIPE WILL BE INCLUDED IN THE INFRASTRUCTURE LIST AND CONSTRUCTION DRAWINGS FOR THE DEVELOPMENT REVIEW COMMITTEE SUBMITTAL.

FLOOD PLAIN STATUS:

NO PORTION OF THIS TRACT IS WITHIN A FEMA DESIGNATED FLOOD PLAIN.

EXISTING DRAINAGE FROM OFFSITE:

THIS SITE HAS NO DRAINAGE FROM OFFSITE, EXCEPT FOR AN OCCUPIED DWELLING AT THE SOUTHWEST CORNER, WHICH IS NOT A PART OF THIS SUBDIVISION. THIS DRAINAGE IS UNAFFECTED , AND WILL CONTINUE AS IT NOW FLOWS.

THE EDITH BLVD. DRAINAGE SPLITS FLOW DIRECTION APPROXIMATELY 30 FEET NORTH OF THE CUL-DE-SAC ENTRY TO EDITH. THE FLOWS IN EDITH TO THE NORTH AND SOUTH ARE SMALL. NONE OF THE PROPERTY ON THE WEST SIDE OF EDITH IN THIS REACH FLOWS INTO EDITH. ALL OF THE DRAINAGE IS WESTWARD ACROSS THE ADJACENT LOTS AND TO BROADWAY.

SWALE TO CITY FACILITY:

THE SWALE TO THE CITY OF ALBUQUERQUE AS DRAWN IS A SIMPLE 6 INCH DEEP V DITCH, WITH 30: 1 SIDE SLOPE. USING A MANNING'S n = 0.030 AND 5.31 C.F.S. FOR THE 100 YEAR DISCHARGE, AND THE SLOPE OF 0.0217, THE FLOW DEPTH IS 0.29 FT. (3.5") AND THE VELOCITY IS 2 F.P.S. THE FLOW IS SUB-CRITICAL AND EROSION CAN BE PREVENTED WITH 3/4" TO 2" GRAVEL PLACED OVER LANDSCAPING CLOTH WITHIN THE DRAINAGE EASEMENT.

FOLLOWING IS THE CIVIL TOOLS SOLUTION FOR THIS SWALE:

NATURAL CHANNELS

VARIABLES LIST:

Y - FLOW ELEVATION   Q - FLOWRATE   S- CHANNEL SLOPE

VARIABLE TO BE SOLVED (Y,Q OR S) ? Y

Enter up to 20 cross-section points.
Enter <Return> only for distance to end.

Q (CFS)   ? 5.31
S (FT/FT)   ? .0217

CROSS SECTION POINTS

DIST	ELEV	COEFF	DIST	ELEV	COEFF
0	65	.030			
15	64.5	.030			
30	65	.030			

RESULTS

Y =	64.79 FT
A =	2.61 SF
P =	17.70 FT
V =	2.04 FPS
F =	0.93 SUB-CRITICAL FLOW