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File 1994-0037 Name: Vista Del Norte – Final Plat – 27 ¾ Rd. and G Rd.

Present	Scanned	
		A few items are denoted with an asterisk (*), which means they are to be scanned for permanent record on the ISYS retrieval system. In some instances, items are found on the list but are not present in the scanned electronic development file because they are already scanned elsewhere on the system. These scanned documents are denoted with (**) and will be found on the ISYS query system in their designated categories. Documents specific to certain files, not found in the standard checklist materials, are listed at the bottom of the page. Remaining items, (not selected for scanning), will be listed and marked present. This index can serve as a quick guide for the contents of each file.
X	X	**Table of Contents**
		***Review Sheet Summary**
X	X	***Application form**
		Review Sheets
X		Receipts for fees paid for anything
X	X	***Submittal checklist**
		***General project report**
		Reduced copy of final plans or drawings
		Reduction of assessor's map.
		Evidence of title, deeds, easements
X	X	***Mailing list to adjacent property owners**
		Public notice cards
		Record of certified mail
		Legal description
		Appraisal of raw land
		Reduction of any maps – final copy
		***Final reports for drainage and soils (geotechnical reports)**
		Other bound or non-bound reports
		Traffic studies
X	X	***Review Comments**
X	X	***Petitioner's response to comments**
X	X	***Staff Reports**
		***Planning Commission staff report and exhibits**
		***City Council staff report and exhibits**
		***Summary sheet of final conditions**

DOCUMENT DESCRIPTION:

X	X	Planning Commission Minutes – 4/5/94 - **	X		Street & Sewer Plan & Profile – Applewood Street, Applewood Court, E. Piazza Place, E. Piazza Court, Anazi Court
X	X	Subsurface Soils Exploration Report	X		Storm Drain Details – Applewood Court, E. Piazza Court
X	X	Final Drainage Report	X		General Notes & Typical Sections
X	X	Correspondence	X	X	Final Plan
X		E-mails	X		Final Plat – GIS Historical Maps
X		Correspondence – (confidential)	X		Composite Plan
X		Legal Ad – 4/22/94	X	X	Post-Developed Stormwater Mgmt Map
X	X	Ordinance No. 2729 - **			
X	X	Declaration of Covenants – Bk 2119 / Pg 815			
X		Warranty Deed – not conveyed to City - 11/3/97 – Bk 2060 / Pg 911			
X	X	Avigation Eastment – not recorded			
X		Development Improvements Agmt – not recorded, not signed			

DEVELOPMENT APPLICATION

Community Development Department
250 North 5th Street Grand Junction, CO 81501
(303) 244-1430

Receipt 995
Date 3-2-94
Rec'd By MP
File No. #37 94

We, the undersigned, being the owners of property situated in Mesa County, State of Colorado, as described herein do hereby petition this:

PETITION	PHASE	SIZE	LOCATION	ZONE	LAND USE
[X] Subdivision Plat/Plan	[ ] Minor [X] Major [ ] Resub	13ac	27 3/4 & G Rds	PR-2	SF Residential
[ ] Rezone				From: To:	
[X] Planned Development	[ ] ODP [ ] Prelim [X] Final	13ac	27 3/4 & G Rds	PR-2	SF Residential
[ ] Conditional Use					
[ ] Zone of Annex					
[ ] Text Amendment					
[ ] Special Use					
[ ] Vacation					[ ] Right-of-Way [ ] Easement

[X] PROPERTY OWNER	[X] DEVELOPER	[X] REPRESENTATIVE
T.L. Benson	Dale Cole	Rolland Engineering
Name	Name	Name
2370 E. Piazza Pl.	235 No. 7th St.	405 Ridges Blvd., Suite A
Address	Address	Address
Grand Jct., CO 81506	Grand Jct., CO 81501	Grand Jct., CO 81503
City/State/Zip	City/State/Zip	City/State/Zip
(303) 241-0233	(303) 243-7711	(303) 243-8300
Business Phone No.	Business Phone No.	Business Phone No.

NOTE: Legal property owner is owner of record on date of submittal.

We hereby acknowledge that we have familiarized ourselves with the rules and regulations with respect to the preparation of this submittal, that the foregoing information is true and complete to the best of our knowledge, and that we assume the responsibility to monitor the status of the application and the review comments. We recognize that we or our representative(s) must be present at all hearings. In the event that the petitioner is not represented, the item will be dropped from the agenda, and an additional fee charged to cover rescheduling expenses before it can again be placed on the agenda.

X Charles Aboune - Rolland Engineering 3-1-94
Signature of Person Completing Application Date

X T.L. Benson
Signature of Property Owner(s) - Attach Additional Sheets if Necessary

SUBMITTAL CHECKLIST

MAJOR SUBDIVISION: FINAL

Location: *G Road & 27 3/4 Road* Project Name: *Vista Del Norté*

ITEMS / DISTRIBUTION

DESCRIPTION *#37 94*

DESCRIPTION	SSID REFERENCE	● City Community Development	● City Dev. Eng.	● City Utility Eng.	● City Property Agent	● City Parks/Recreation	● City Fire Department	● City Attorney	● City G.J.P.C. (8 sets)	O City Downtown Dev. Auth.	● City Police	● County Planning	O County Bldg. Dept.	● County Surveyor	● Walker Field	● School Dist. #51	● Irrigation District *Grand Valley*	O Drainage District	● Water District */Ute*	O Sewer District	● U.S. West	● Public Service	● GVRP	O CDOT	● Corps of Engineers	● Colorado Geologic Survey	● U.S. Postal Service	● Persigo WWTF						*29* TOTAL REQ'D
● Application Fee *see back*	VII-1	1																																
● Submittal Checklist*	VII-3	1																																
● Review Agency Cover Sheet*	VII-3	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1						
● Application Form*	VII-1	1	1	1	1	1	1	1	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1						
● 11"x17" Reduction of Assessor's Map	VII-1	1	1	1	1	1	1	1	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1						
~~● Evidence of Title~~	~~VII-2~~	~~1~~	~~1~~		~~1~~			~~1~~																										
~~● Appraisal of Raw Land~~	~~VII-1~~	~~1~~	~~1~~		~~1~~	~~1~~																												
~~● Names and Addresses~~	~~VII-3~~	~~1~~																																
~~● Legal Description~~	~~VII-2~~	~~1~~			~~1~~																													
O Deeds	VII-1	1			1			1																										
O Easements	VII-2	1	1	1	1			1													1	1	1											
● Aviation Easement	VII-1	1			1			1							*1*																			
O ROW	VII-3	1	1	1	1			1													1	1	1											
● Covenants, Conditions, & Restrictions	VII-1	1	1					1																										
O Common Space Agreements	VII-1	1	1					1																										
● County Treasurer's Tax Cert.	VII-1	1																																
● Improvements Agreement/Guarantee*	VII-2	1	1	1				1																										
O CDOT Access Permit	VII-3	1	1																															
O 404 Permit	VII-3	1	1																															
O Floodplain Permit*	VII-4	1	1																															
● General Project Report	X-7	1	1	1	1	1	1	1	8	1	1	1	1	1	1	1	1		1	1	1	2	1	1	1	1	1	1						
● Composite Plan	IX-10	1	2	1	1																													
● 11"x17" Reduction Composite Plan	IX-10	1				1	1	1	8	1	1	1	1				1	1	1	1	1	1	1	1	1	1		1						
● Final Plat	IX-15	1	2	1	1			1						1																				
● 11"x17" Reduction of Final Plat	IX-15	1							8	1	1	1			1	1	1	1	1	1	1	1	1				1							
● Cover Sheet	IX-11	1	2																															
● Grading & Stormwater Mgmt Plan	IX-17	1	2															1							1	1								
O Storm Drainage Plan and Profile	IX-30	1	2															1			1	1	1											
● Water and Sewer Plan and Profile	IX-34	1	2	1			1												1	1	1	1	1					1						
● Roadway Plan and Profile	IX-28	1	2															1																
O Road Cross-sections	IX-27	1	2																															
O Detail Sheet	IX-12	1	2																															
O Landscape Plan	IX-20	2	1	1																														
● Geotechnical Report	X-8	1	1										1													1								
O Phase I & II Environmental Report	X-10,11	1	1																															
● Final Drainage Report	X-5,6	1	2															1																
O Stormwater Management Plan	X-14	1	2															1							1									
O Sewer System Design Report	X-13	1	2	1																1														
O Water System Design Report	X-16	1	2	1															1															
● ~~Traffic Impact Study~~ *Reduction of Final Plan*	X-15	1	●						*8*	*1*	*1*	*1*			*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	[illegible]										
● *Final Plan*		*1*	*2*	*1*	*1*			*1*						*1*																				

NOTES:
1) An asterisk in the item description column indicates that a form is supplied by the City.
2) Required submittal items and distribution are indicated by filled in circles, some of which may be filled in during the pre-application conference. Additional items or copies may be subsequently requested in the review process.
3) Each submitted item must be labeled, named, or otherwise identified as described above in the description column.

PRE-APPLICATION CONFERENCE

Date: 2/16/94
Conference Attendance: Kristen Ashbeck, Rolland Engineering
Proposal: Final Plat/Plan
Location: 27 3/4 & G Road

Tax Parcel Number: _____
Review Fee: $915 + $490 check to Colorado Geologic Survey
(Fee is due at the time of submittal. Make check payable to the City of Grand Junction.)

Additional ROW required? _____
Adjacent road improvements required? _____
X Area identified as a need in the Master Plan of Parks and Recreation? Canal trail
X Parks and Open Space fees required? $225/lot Estimated Amount: _____
X Recording fees required? Plat, Plan, Covenants, Impr. Agr. Estimated Amount: _____
Half street improvement fees required? _____ Estimated Amount: _____
Revocable Permit required? _____
State Highway Access Permit required? _____

Applicable Plans, Policies and Guidelines _____

Located in identified floodplain? FIRM panel # _____
Located in other geohazard area? _____

Located in established Airport Zone? Clear Zone, (Critical Zone), Area of Influence? _____
X Avigation Easement required? Yes

While all factors in a development proposal require careful thought, preparation and design, the following "checked" items are brought to the petitioner's attention as needing special attention or consideration. Other items of special concern may be identified during the review process.

O Access/Parking	O Screening/Buffering	O Land Use Compatibility
O Drainage	O Landscaping	O Traffic Generation
O Floodplain/Wetlands Mitigation	O Availability of Utilities	O Geologic Hazards/Soils

O Other _____
Related Files: 144-93

It is recommended that the applicant inform the neighboring property owners and tenants of the proposal prior to the public hearing and preferably prior to submittal to the City.

PRE-APPLICATION CONFERENCE

WE RECOGNIZE that we, ourselves, or our representative(s) must be present at all hearings relative to this proposal and it is our responsibility to know when and where those hearings are.

In the event that the petitioner is not represented, the proposed item will be dropped from the agenda, and an additional fee shall be charged to cover rescheduling expenses. Such fee must be paid before the proposed item can again be placed on the agenda. Any changes to the approved plan will require a re-review and approval by the Community Development Department prior to those changes being accepted.

WE UNDERSTAND that incomplete submittals will not be accepted and submittals with insufficient information, identified in the review process, which has not been addressed by the applicant, may be withdrawn from the agenda.

WE FURTHER UNDERSTAND that failure to meet any deadlines as identified by the Community Development Department for the review process may result in the project not being scheduled for hearing or being pulled from the agenda.

X L. L. Benson
Signature(s) of Petitioner(s)

X Charles Osborne - Rolland Engineering
Signature(s) of Representative(s)

DRAWING STANDARDS CHECKLIST

ROADWAY PLAN & PROFILE

ITEM		GRAPHIC STANDARDS	OK	NA
SECTION VIII	A	Scale: 1" = 20', 30', 40', or 50' H: 1" = 2', 3', 4' or 5' V		
	B	Drawing size: 24" x 36"		
	C	Primary features consist only of proposed roadway, lighting, and traffic features		
	D	Notation: All non-construction text, and also construction notation for all primary features		
	E	Line weights of existing and proposed (secondary and primary) features per City standards		
	F	Location: All primary facilities are fully located horizontally and vertically		
	G	Horizontal control: Subdivisions and all public utilities (final drawings) tied to Section aliquot corners		
	H	Vertical control: Existing and proposed benchmarks on U.S.G.S. datum		
	I	Orientation and north arrow		
	J	Stamped and sealed drawings by registered professional competent in the work		
	K	Title block with names, titles, preparation and revision dates		
	L	Reference to City Standard Drawings and Specifications		
	M	Legend of symbols used		
	N	List of abbreviations used		
	P	Multiple sheets provided with overall graphical key and match lines		
	Q	Contouring interval and extent		
	R	Neatness and legibility		

ITEM		FEATURES	Plan	Profile	OK	NA
→	1	Use the Composite or Site Plan as a base map or otherwise provide similar information.	X			
	2	Segmentize plan view as required to provide profiles below plan views.	X			
	3	Show all existing and proposed profiles at C_l and right and left F_ls. Provide slopes,				
		with "+" or "-".		X		
	4	Show existing and proposed profiles at edge of pavement if there is no gutter.		X		
	5	Note adjustment of all MH rims and valve covers for final grade.	X			
	6	Elevation of F_l at fillet/valley pan interface.	X			
	7	Station & elevation of F_l at BCRs, ECRs, and handicap ramps.	X			
	8	Station & elevation of pavement C_l and F_l at endpoints, BCRs, ECRs, PCs, PTs,				
		PRCs, and PCCs.		X		
	9	Station & elevation of C_l and F_l, VPIs, VPCs, VPTs, and high & low points.		X		
	10	Station & elevation at all grade changes and C_l pavement warp at valley pans.		X		
	11	Provide pavement, base, and subgrade specifications.				
	12	Barricades, turn-arounds, tapers, delineators, driveways.	X			
	13	Street lights, signals, signing, and other traffic controls.	X			
	14	Show future road extension alignment to support current design, where applicable.	X	X		
	15	Provide all necessary details or reference detail and/or cross-section sheets.				
	16	Show proposed permanent benchmark (for new subdivisions) and all proposed horizontal	X			
		control survey markers at street intersections, offset if required.				

COMMENTS

1 For a definition of abbreviations used above, see page VIII-4.

FILE: DELNORT1.SAM

VISTA DEL NOR'TE SUBDIVISION
GENERAL PROJECT REPORT

PREPARED FOR:

T. L. BENSON & DALE COLE
235 NORTH 7TH STREET
GRAND JUNCTION, CO 81501

PREPARED BY:

ROLLAND ENGINEERING
405 RIDGES BOULEVARD
SUITE A
GRAND JUNCTION, CO 81503

FEBRUARY 26, 1994

#37 94

PROJECT DESCRIPTION

THE DEVELOPMENT WILL CONSIST OF APPROXIMATELY 25 SINGLE FAMILY RESIDENTIAL LOTS AVERAGING 15,000 SQUARE FEET. SIX TO EIGHT OF THE LOTS WILL BE DESIGNED TO ACCOMMODATE ZERO LOT LINE STRUCTURES. THE HOMES WILL RANGE IN SIZE FROM 1400 SQUARE FEET TO 2500 SQUARE FEET. THE HOMES WILL BE OF QUALITY CONSTRUCTION INTENDED TO TARGET THE RETIRED OR APPROACHING RETIREMENT MARKET.

VISTA DEL NOR`TE SUBDIVISION IS APPROXIMATELY 13 ACRES LOCATED AT WHAT WOULD BE 27 3/4 AND G ROADS. THE SITE LIES IMMEDIATELY NORTH OF APPLE CREST SUBDIVISION AND EAST OF PTARMIGAN ESTATES.

PUBLIC BENEFIT

THE GRAND JUNCTION AREA CONTINUES TO ENJOY A HEALTHY GROWTH WITH A PORTION OF THAT GROWTH BEING ATTRIBUTABLE TO RETIRED PEOPLE SEEKING THE LIFESTYLE OFFERED BY OUR COMMUNITY. DEL NOR`TE SUBDIVISION HOPES TO OFFER A LOCATION AND ATTRACTIVE DEVELOPMENT SUITED TO THIS DESIRE.

PROJECT COMPLIANCE

REZONE REQUEST: WE ARE REQUESTING THE REZONE TO PR TO CONSOLIDATE THE EXISTING ZONING TO ONE THAT ALLOWS DEVELOPMENT CONSISTENT WITH OUR PROPOSAL AND THE SURROUNDING LAND USE .

RIGHT-OF-WAY VACATION: G ROAD ACCESS TO THIS PROPERTY IS NOT NECESSARY FOR OUR DEVELOPMENT AND IT'S EXTENSION THROUGH THE PROPERTY WOULD NOT SERVE ANY FUTURE USE. THE GOVERNMENT HIGHLINE CANAL LIES IMMEDIATELY TO THE WEST OF INTERSTATE 70 AND THE PROPERTY HAS TWO OTHER PUBLIC ACCESSES.

SURROUNDING LAND USE: THE PROPERTY IS A THREE SIDED PARCEL. THE ENTIRE WEST SIDE OF THE PROPERTY IS BOUNDED BY THE GOVERNMENT HIGHLINE CANAL. THE PROPERTY ON THE SOUTH AND WEST SIDES IS BOUNDED ALMOST ENTIRELY BY COURTLAND, CROWN HEIGHTS, PTARMIGAN ESTATES, AND PARTEE SUBDIVISIONS. ALL OF THESE SUBDIVISIONS ARE SINGLE FAMILY RESIDENTIAL PROPERTIES SIMILAR TO THAT WHICH WE ARE PROPOSING.

SITE ACCESS AND TRAFFIC: ACCESS TO THE SITE IS AVAILABLE FROM BOTH APPLEWOOD STREET AND EAST PIAZZA PLACE. WE ARE PROPOSING CONNECTING THESE ACCESS STREETS THEREBY ALLOWING TWO ACCESSES TO

OUR PROJECT WHILE ENHANCING THE NEIGHBORHOOD TRAFFIC PATTERNS AND SAFETY CONCERNS OF THE ABOVE MENTIONED SURROUNDING SUBDIVISIONS.

WALKING TRAILS WILL BE DEDICATED AROUND THE PROPERTY AS SHOWN ON THE FINAL PLAT. DEDICATION OF WALKING TRAILS WILL BE AS WE PROPOSED. TRAIL WILL BE A 20 FOOT DEDICATION ALONG THE SOUTHERN BOUNDARY, ALONG THE WESTERN BOUNDARY FROM THE SOUTHWEST CORNER TO THE G ROAD EASEMENT, AND THEN FROM THAT POINT NORTHEASTERLY TO THE GOVERNMENT HIGHLINE CANAL.

UTILITIES: ALL PUBLIC UTILITIES ARE READILY AVAILABLE TO THE SITE AND ARE SHOWN ON FINAL PLAN. THERE ARE CURRENTLY TWO FIRE HYDRANTS VERY NEAR THE SITE; ONE ON THE END OF APPLEWOOD STREET AND ONE ON EAST PIAZZA PLACE. FIRE LINES WILL BE INSTALLED WITHIN THE DEVELOPMENT TO MEET FIRE CODE. WE DO NOT ANTICIPATE ANY SPECIAL OR UNUSUAL DEMANDS ON ANY UTILITIES OR OTHER PUBLIC FACILITIES.

STORMWATER DRAINAGE: WE ARE PROPOSING A DRAINAGE SYSTEM THAT DIRECTS STORMWATER RUNOFF FROM 70 PERCENT OF THE SITE TO A DITCH LOCATED ALONG THE EASTERN BOUNDARY OF THE PROPERTY. THE GRAND VALLEY WATER USERS ASSOCIATION(GVWA) OPERATES AND MAINTAINS A DRAIN DITCH ALONG THE BORDER OF THE SITE TO INTERCEPT SEEPAGE FROM THE GOVERNMENT HIGHLINE CANAL. THIS DITCH EMPTIES TO THE NORTH AND WEST. THIS IS NOT THE HISTORIC COURSE FOR STORMWATER FROM THIS SITE. ROLLAND ENGINEERING AND THE GVWA HAVE TALKED ABOUT THIS PARTICULAR DRAINAGE SCENARIO.

ALTHOUGH FINAL APPROVAL FROM GVWA IS PENDING, THIS SOLUTION IS SO PRACTICAL AND OF SUCH BENEFIT TO THE TOTAL DRAINAGE BASIN WE ARE CONFIDENT THAT COMMON SENSE WILL PREVAIL.

THE COLLECTION SYSTEM TO CONVEY THE WATER TO THE GVWA DITCH WILL BE STORM SEWER INLETS AND PIPE WHICH WE PROPOSE TO BE MAINTAINED BY THE CITY OF GRAND JUNCTION.

PLEASE REFER TO THE DRAINAGE REPORT FOR DETAILS OF OUR PROPOSAL.

SITE SOILS AND GEOLOGY: ACCORDING TO THE SOIL CONSERVATION MAPPING THE SITE SOILS CONSIST OF A FRUITA CLAY LOAM. THE SITE SLOPES GENTLY TO THE SOUTH AND EAST WITH SLOPES UP TO 2%. THE SITE IS AN OLD ALLUVIAL FAN DEPOSIT ON MANCOS SHALE. WE ANTICIPATE THAT THE MANCOS SHALE BEDROCK DEPOSIT WILL BE FAIRLY DEEP (UP TO 20 FEET) ON THIS SITE.
SEE THE COMPREHENSIVE GEOTECHNICAL REPORT FOR VISTA DEL NOR'TE FOR SPECIFIC GEOLOGIC INFORMATION.

SIGNAGE: VISTA DEL NOR'TE SIGNAGE WILL BE CONSTRUCTED AT THE ENTRANCE(S) TO THE SUBDIVISION.

DEVELOPMENT SCHEDULE

DEVELOPMENT WILL BEGIN UPON APPROVAL OF FINAL PLAT. WE HOPE TO OBTAIN COMPLETE BUILD OUT WITHIN TWO YEARS OF THE START.

#3794

2945-011-24-001
RONALD R SCRIBNER
4031 APPLEWOOD ST
GRAND JUNCTION, CO 81506-8405

2945-011-24-002
CARL O QUIST
VIVIAN A
4021 APPLEWOOD ST
GRAND JUNCTION, CO 81506-8405

2945-011-24-016
RONALD R SCRIBNER
HELEN D
4031 APPLEWOOD ST
GRAND JUNCTION, CO 81506-8405

2945-011-27-001
RAYMOND L PALMER
MARY S
2402 APPLEWOOD CIR
GRAND JUNCTION, CO 81506-8433

2945-011-27-002
LARRY J ZARLINGO
SANDRA KAY
2412 APPLEWOOD CIR
GRAND JUNCTION, CO 81506-8433

2945-011-27-003
JOHN A HESSLINK
CORINE R
2420 APPLEWOOD CIR
GRAND JUNCTION, CO 81506-8433

2945-011-27-004
DON J SANDUSKY
NADINE L
2430 APPLEWOOD CIR
GRAND JUNCTION, CO 81506-8433

2945-011-27-005
GEORGE W RICE
VIRGINIA C
2436 APPLEWOOD CIR
GRAND JUNCTION, CO 81506-8433

2945-011-28-002
KEITH M ESTRIDGE
CONNIE S
4020 APPLEWOOD ST
GRAND JUNCTION, CO 81506-8406

2701-364-01-001
GERALDINE F CREIGHTON
702 BUNKER DR
GRAND JUNCTION, CO 81506-3914

2701-364-01-002
GUY R O'REAR
704 BUNKER DR
GRAND JUNCTION, CO 81506-3914

2701-364-01-003
WAYNE R NEELY
CHARLENE F
706 BUNKER DR
GRAND JUNCTION, CO 81506-3914

2701-364-01-005
HERBERT W WRIGHT
MAXINE B
710 BUNKER DR
GRAND JUNCTION, CO 81506-3914

2701-364-01-006
FRANK W NELSON
DIANA E
712 BUNKER DR
GRAND JUNCTION, CO 81506-3914

2945-011-00-003
CHARLES F ROBERTS
R F
681 28 RD
GRAND JUNCTION, CO 81506-4869

2945-011-28-003
NEVA W JENKINS
2421 APPLEWOOD CIR
GRAND JUNCTION, CO 81506-8431

2945-011-46-022
ROBERT K SACCO
LINDA L
2656 CHESTNUT CT
GRAND JUNCTION, CO 81506-1809

AA000095595

"

2945-011-46-024
T L BENSON
MARION J
2370 E PIAZZA PL
GRAND JUNCTION, CO 81506-8442

2701-364-10-008
HAZEL M KRETSCHMAN
715 BUNKER DR
GRAND JUNCTION, CO 81506-8713

2945-011-47-002
TATIANA KRAEVSKY SUDDUTH
2360 E PIAZZA PL
GRAND JUNCTION, CO 81506-8442

2701-364-10-009
DOUGLAS B WEST
VIRGINIA M
603 SERANADE DR
GRAND JUNCTION, CO 81504-5527

2701-364-10-010
JOHN C OWEN
PATRICIA A
1302 HENDRICK DR
CARBONDALE, CO 81623-1800

2945-011-36-012
NORMA E ALBERTSON
2348 N SEVILLE CIR
GRAND JUNCTION, CO 81506-8455

2945-011-36-024
JOHN W BURNELL
LOIS C
2357 E PIAZZA PL
GRAND JUNCTION, CO 81506-8432

2945-011-36-025
PETE LEVKULICH
JO ANNE
2337 E PIAZZA PL
GRAND JUNCTION, CO 81506-8432

2945-011-36-026
RICHARD HAMILTON NILSSON
& MARIBEL 1989 TRUST
2351 E PIAZZA PL
GRAND JUNCTION, CO 81506-8432

2945-011-44-002
JOHN NELSON PAXSON
KARLENE R P
4061 MAUREEN ST
GRAND JUNCTION, CO 81506-8400

2945-011-44-005
ROMA L MACGLASHAN
4071 MAUREEN ST
GRAND JUNCTION, CO 81506-8400

2945-011-46-021
GILBERT GALLEGOS
MARIAN R
2350 E PIAZZA PL
GRAND JUNCTION, CO 81506-8442

2945-011-36-011
CARL J KOIZUMI
JEAN E
3954 N SEVILLE CIR
GRAND JUNCTION, CO 81506-8471

2945-011-46-025
DAVID L NOCK
SHERRYL C K
2380 E PIAZZA PL
GRAND JUNCTION, CO 81506-8442

2945-011-47-001
RALPH W KNAPP
LAVONNE A
2368 E PIAZZA PL
GRAND JUNCTION, CO 81506-8442

2701-364-01-007
DARREL E PHELPS
PEGGY J
714 BUNKER DR
GRAND JUNCTION, CO 81506-3914

2701-364-01-008
JOHN S LEEVER
BETTY
716 BUNKER DR
GRAND JUNCTION, CO 81506-3914

2701-364-01-011
ANTHONY MONTOYA
718 BUNKER DR
GRAND JUNCTION, CO 81506-3914

2701-364-02-006
JANET PINEAU
DIANNE RANYAN
709 BUNKER DR
GRAND JUNCTION, CO 81506-3913

2701-364-02-007
CAROL R MITCHELL
707 BUNKER DR
GRAND JUNCTION, CO 81506-3913

2701-364-02-008
KARL P FITZPATRICK
VERDA M
705 BUNKER DR
GRAND JUNCTION, CO 81506-3913

2701-364-02-009
VERA J GILBERT
703 BUNKER DR
GRAND JUNCTION, CO 81506-3913

2701-364-02-010
WAYNE B WILCOX
BARBARA ANN
701 BUNKER DR
GRAND JUNCTION, CO 81506-3913

SUBSURFACE SOILS EXPLORATION

VISTA DEL NORTE

Grand Junction, Colorado

Prepared For:

ROLLAND ENGINEERING
405 Ridges Blvd.
Grand Junction, Colorado

Prepared By:

LINCOLN-DeVORE, INC.
1441 Motor Street
Grand Junction, CO 81505

March 1, 1994

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ROLLAND ENGINEERING
405 Ridges Blvd.
Grand Junction, CO 81503

Re: SUBSURFACE SOILS EXPLORATION

VISTA DEL NORTE SUBDIVISION

Grand Junction, Colorado

Dear Sir:

Transmitted herein are the results of a Subsurface Soils Exploration for the proposed Vista del Norte Residential Subdivision, located in the City of Grand Junction, Colorasdo

If you have any questions after reviewing this report, please feel free to contact this office at any time. This opportunity to provide Geotechnical Engineering services is sincerely appreciated.

Respectfully submitted,

LINCOLN-DeVORE, INC.

By: _____
Edward M. Morris, E.I.T.
Western Slope Branch Manager
Grand Junction, Office

Reviewed by: _____
George D. Morris, P.E.
Colorado Springs Office

LDTL Job No. 80161-J

EMM/ss

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INTRODUCTION

PROJECT DESCRIPTION

This report presents the results of our geotechnical evaluation performed to determine the general subsurface conditions of the site applicable to construction of an 26 lot, single family, residential subdivision. A vicinity map is included in the Appendix of this report.

To assist in our exploration, we were provided with a preliminary site analysis plan, prepared by Rolaand Engineering. The Boring Location Plan attached to this report is based on that plan provided to us.

We understand that the proposed structures will probably consist of one and two story, wood framed structures with a the possibility of full basements and concrete floor slabs-on-grade. Lincoln DeVore has not seen a full set of building plans, but structures of this type typically develop wall loads on the order of 600 to 1800 plf and column loads on the order of 8 to 18 kips.

The characteristics of the subsurface materials encountered were evaluated with regard to the type of construction described above. Recommendations are included herein to match the described construction to the soil characteristics found. The information contained herein may or may not be valid for other purposes. If the proposed site use is changed or types of construction proposed, other than noted herein, Lincoln DeVore should be contacted to determine if the information in

this report can be used for the new construction without further field evaluations.

PROJECT SCOPE

The purpose of our exploration was to evaluate the surface and subsurface soil and geologic conditions of the site and, based on the conditions encountered, to provide recommendations pertaining to the geotechnical aspects of the site development as previously described. The conclusions and recommendations included herein are based on an analysis of the data obtained from our field explorations, laboratory testing program, and on our experience with similar soil and geologic conditions in the area.

This report provides site specific information for the construction of a 18 to 20 lot residential subdivision. Included in this report are recommendations regarding general site development and foundation design criteria.

Specifically, the intent of this study is to:

1. Explore the subsurface conditions to the depth expected to be influenced by the proposed construction.
2. Evaluate by laboratory and field tests the general engineering properties of the various strata which could influence the development.
3. Define the general geology of the site including likely geologic hazards which could have an effect on site development.
4. Develop geotechnical criteria for site grading and earthwork.
5. Identify potential construction difficulties and provide recommendations concerning these problems.
6. Recommend an appropriate foundation system for the anticipated structure and develop criteria for foundation design.

FIELD EXPLORATION AND LABORATORY TESTING

A field evaluation was performed on February 28, 1994 and consisted of a site reconnaissance by our geotechnical personnel and the drilling of four exploration borings. These shallow exploration borings were drilled within the proposed building areas, near the locations indicated on the Boring Location Plan. The exploration borings were located to obtain a reasonably good profile of the subsurface soil conditions. All exploration borings were drilled using a CME 45B, truck mounted drill rig with continuous flight auger to depths of approximately 14 to 18 feet. Samples were taken with a standard split spoon sampler, California lined sampler, thin wall Shelby tubes and by bulk methods. Logs describing the subsurface conditions are presented in the attached figures.

Laboratory tests were performed on representative soil samples to determine their relative engineering properties. Tests were performed in accordance with test methods of the American Society for Testing and Materials or other accepted standards. The results of our laboratory tests are included in this report. The in-place moisture content and the standard penetration test values are presented on the attached drilling logs.

FINDINGS

SITE DESCRIPTION

The project site is located, in part, in the Northeast Quarter the Northeast Quarter of Section 1, Township 1 South, Range 1 West and in part, in the Southeast Quarter the Southeast Quarter of Section 36, Township 1 North, Range 1 West of the Ute Principal Meridian, Mesa County, Colorado. More specifically the site is located immediately East of the Ptarmigan Estates and Partee Heights Subdivisions , South of the U.S. Bureau of Reclamation Highline Canal and contains approximately 11 acres. The site is within the city limits of Grand Junction, Colorado.

The topography of the site is relatively flat, being located on an ancient debris fan feature, which originated in the Bookcliffs to the North. The ground surface in the vicinity of the site has an overall gradient to the South, Southwest. The exact direction of surface runoff on this site will be controlled to an extent by the proposed new construction and will be variable. Surface and subsurface drainage on this site can be described as poor to fair.

GENERAL GEOLOGY AND SUBSURFACE DESCRIPTION

The geologic materials encountered under the site consist of 10 to in excess of 20 feet of alluvial clays, silts and sands which overly the Mancos Shale Formation. The geologic and engineering properties of the materials found in our four shallow exploration borings will be discussed in the following sections.

The soils on this site consist of a series of silty clay, sand and clayey silt soils which are a product of mud flow/debris flow features which originate on the south-facing slopes of the Bookcliffs. These mud flow/debris flow features are a small part of a very extensive mud flow/debris flow complex along the base of the Bookcliffs and extending to the Colorado River. Utilizing recent events and standard evaluation techniques, this tract is not considered to be within with an active debris flow hazard area. The surface soils are an erosional product of the upper Mancos Shale and the Mount Garfield Formations which are exposed on the slopes of the Bookcliffs. The soils contained within these mud flow/debris flow features normally exhibit a metastable condition which can range from very slight to severe.

The finer grained portions of the soils found on this site contain strata of metastable soil, which is defined as an unsaturated soil that undergoes a radical rearrangement of particles and loss of volume upon wetting, with or without additional loading. The addition of moisture by <u>any</u> means whatsoever, will weaken the internal cohesion of the soil and saturation may destroy it until the granular structure is rearranged and a new stability achieved. Considerable settlement may take place before the internal structure is stabilized. Variable, deep wetting is the most serious settlement condition, since this causes uneven settlements. Protection from the addition of water, both surface and subsurface, is very important to maintaining stability in this soil. Based on the field and

laboratory testing of the soils on this site, the severity of the metastable soils can be described as low to moderate.

The surface alluvial soils on this site were found to be somewhat clayey. For the purposes of this report, these soils are designated Soil Type I.

This soil type was classified as a low plastic, silty clay (CL) under the Unified Classification System. The Standard Penetration Tests ranged from 18 blows per foot to 42 blows per foot. Penetration tests of this magnitude indicate that the soil is of variable consistency. The moisture content varied from 11.5% to 19.4%, indicating a relatively dry to moist soil. This soil is plastic and is sensitive to changes in moisture content. With decreased moisture, it will tend to shrink, with some cracking upon desiccation. Upon increasing moisture, it will tend to expand. Expansion tests were performed on remolded samples of the soil and expansive pressures on the order of 450 psf were found to be typical. This material will also consolidate upon saturation or excessive loading. If recommended bearing values are not exceeded, such settlement will remain within tolerable limits. The allowable maximum bearing value was found to be on the order of 1200 psf. A minimum dead load of 400 psf will be required. This soil was found to contain sulfates in detrimental quantities.

Some strata of these soils contained very large amounts of soluble sulfate salts. Such large quantities of sulfate salts indicate that solution may occur, thus creating a significant amount of voids in the soil profile. For this reason, some strata of this soil type may be considered

metastable over a long period of time and the above allowable bearing capacities may not be appropriate.

Soil Type II was found as sandy Silt strata throughout the soil profile. Soil Type II is somewhat variable in texture and in thickness across the site.

This Soil Type was classified as a sandy Silt (ML) under the Unified Classification System. This material is of low to no plasticity, of low to moderate permeability, and was encountered in a low density,slightly moist condition. This soil will undergo long-term consolidation upon the addition of larger amounts of moisture. This soil will settle after being loaded. The maximum allowable bearing capacity for this soil was found to be 1400 psf, with 150 psf minimum dead load pressure required. The finer grained portion of Soil Type II contains sulfates in detrimental quantities.

The sand and gravelly sands found in this exploration program is found to be the predominate soil type on this tract. These soils are designated Soil Type III.

This Soil Type was classified as a silty, gravely sand (SM) under the Unified Classification System. This material is of low to no plasticity, of low to moderate permeability, and was encountered in a low density, moist condition. This soil will undergo short to moderate-term consolidation upon the addition of larger amounts of moisture. This soil will settle after being loaded. The maximum allowable bearing capacity for this soil was found to be 1600 psf, with 400 psf minimum dead load pressure required. The finer grained portion of Soil

Type III contains sulfates in detrimental quantities.

Soil Type IV represents the Mancos Shale Formation, which is considered to be bedrock beneath this site. The Mancos Shale is described as a thinbedded, drab, light to dark gray marine shale, with thinly interbedded fine grain sandstone and siltstone layers. Some portions of the Mancos Shale are bentonitic, and therefore, are highly expansive. The majority of the shale, however, has only a moderate expansion potential. Formational shale was encountered in Test Boring Nos. 1, 3 & 4 at depths of 10 to 18 feet. It is anticipated that this formational shale will probably affect the construction and the performance of the deeper foundations on portions of the site if full basements are constructed.

Soil Type IV was classified as a low plastic silty clay (CL) under the Unified Classification System. The soil was found to be of low plasticity and of medium to high density. The moisture content was found to be approximately 16.4% in the weathered portion indicating a relatively moist soil. This soil is plastic and is sensitive to changes in moisture content. With decreased moisture, it will tend to shrink, with some cracking upon desiccation. Upon increasing moisture, it will tend to expand. Expansion tests were performed on typical samples of the soil and expansive pressures on the order of 1400 psf were found to be typical. For shallow foundation system, the allowable maximum bearing value was found to be on the order of 4500 psf for the upper portions of the shale. A minimum dead load of 1400 psf will be required. This soil was found to contain sulfates in detrimental quantities.

GROUND WATER:

A free water table came to equilibrium during drilling at 12 to 13 feet below the present ground surface in Exploration Borings 1, 2 & 3. Free Water was not encountered in Exploration Boring No. 4. This is probably not a true phreatic surface but is an accumulation of subsurface seepage moisture (perched water). In our opinion the subsurface water conditions shown are a permanent feature on this site. The depth to free water would be subject to fluctuation, depending upon external environmental effects.

Due to the proximity of the Mancos Shale Formation, there exists a possibility of a perched water table being maintained and elevated in the alluvial soils which overlie the Mancos Shale. This perched water would probably be the result of increased irrigation due to the presence of lawns and landscaping and roof runoff. The exploration holes indicate that the top of the Mancos Shale Formation is relatively flat and that subsurface drainage would probably be quite slow. While it is believed that under the existing conditions at the time of this exploration the construction process would not be effected by any free-flow waters, it is very possible that several years after development is initiated, a troublesome perched water condition may develop which will provide construction difficulties. In addition, this potential perched water could create some problems for existing or future foundations on this tract. Therefore it is recommended that the future presence of a perched water table be considered in all design and construction

of both the proposed residential structures and any subdivision improvements.

Because of capillary rise, the soil zone within a few feet above the free water level identified in the borings will be quite wet. Pumping and rutting may occur during the excavation process, particularly if the bottom of the foundations are near the capillary fringe. Pumping is a temporary, quick condition caused by vibration of excavating equipment on the site. If pumping occurs, it can often be stopped by removal of the equipment and greater care exercised in the excavation process. In other cases, geotextile fabric layers can be designed or cobble sized material can be introduced into the bottom of the excavation and worked into the soft soils. Such a geotextile or cobble raft is designed to stabilize the bottom of the excavation and to provide a firm base for equipment.

Data presented in this report concerning ground water levels are representative of those levels at the time of our field exploration. Groundwater levels are subject to change seasonally or by changed environmental conditions. Quantitative information concerning rates of flow into excavations or pumping capacities necessary to dewater excavations is not included and is beyond the scope of this report. If this information is desired, permeability and field pumping tests will be required.

CONCLUSIONS AND RECOMMENDATIONS

GENERAL DISCUSSION

No geologic conditions were apparent during our reconnaissance which would preclude the site development as planned, provided the recommendations contained herein are fully complied with. Based on our investigation to date and the knowledge of the proposed construction, the site condition which would have the greatest effect on the planned development is the presence of metastable strata and zones of highly concentrated water soluble sulfate salts.

Since the exact magnitude and nature of the foundation loads are not precisely known at the present time, the following recommendations must be somewhat general in nature. Any special loads or unusual design conditions should be reported to Lincoln DeVore so that changes in these recommendations may be made, if necessary. However, based upon our analysis of the soil conditions and project characteristics previously outlined, the following recommendations are made.

OPEN FOUNDATION OBSERVATION

Since the recommendations in this report are based on information obtained through random borings, it is possible that the subsurface materials between the boring points could vary. Therefore, prior to placing forms or pouring concrete, an open excavation observation should be performed by representatives of Lincoln DeVore. The purpose of this observation is to determine if the subsurface soils directly below the proposed foundations are similar to those encountered in our

exploration borings. If the materials below the proposed foundations differ from those encountered, or in our opinion, are not capable of supporting the applied loads, additional recommendations could be provided at that time.

Since no site grading plan was made available at the time of writing this report, the extent of site grading and the proposed footing elevations is not known. Therefore, these grading recommendations must be considered preliminary until Lincoln DeVore has had the opportunity to review the site grading plans.

In general, we recommend all structural fill in the area beneath any proposed structure or roadway be compacted to a minimum of 90% of its maximum modified Proctor dry density (ASTM D1557). This structural fill should be placed in lifts not to exceed six (6) inches after compaction. We recommend that fill be placed and compacted at approximately its optimum moisture content (+/-2%) as determined by ASTM D 1557. Structural fill should be a granular, non-expansive soil.

We recommend that all backfill placed around the exterior of the buildings, and in utility trenches which are outside the perimeter of the buildings and not located beneath roadways or parking lots, be compacted to a minimum of 85% of its maximum Proctor dry density (ASTM D 698).

No major difficulties are anticipated in the course of excavating into the surficial soils on the site. It is probable that safety provisions such as sloping or bracing the sides of excavations over 4 feet deep will be necessary. Any such

safety provisions shall conform to reasonable industry safety practices and to applicable OSHA regulations. The OSHA Classification for excavation purposes on this site is Soil Class B for excavations less than 6 feet and Soil Class C for excavations in excess of 6 feet.

DRAINAGE AND GRADIENT:

Adequate site drainage should be provided in the foundation area both during and after construction to prevent the ponding of water and the saturation of the subsurface soils. We recommend that the ground surface around the structure be graded so that surface water will be carried quickly away from the building. The minimum gradient within 10 feet of the building will depend on surface landscaping. We recommend that paved areas maintain a minimum gradient of 2%, and that landscaped areas maintain a minimum gradient of 8%. It is further recommended that roof drain downspouts be carried across all backfilled areas and discharged at least 10 feet away from the structure. Proper discharge of roof drain downspouts may require the use subsurface piping in some areas. Planters, if any, should be so constructed that moisture is not allowed to seep into foundation areas or beneath slabs or pavements.

If adequate surface drainage cannot be maintained, or if subsurface seepage is encountered during excavation for foundation construction, a full perimeter drain is recommended for this building. It is recommended that this drain consist of a perforated drain pipe and a gravel collector, the whole being fully wrapped in a geotextile filter fabric. We

recommend that this drain be constructed with a gravity outlet. If sufficient grade does not exist on the site for a gravity outlet, then a sealed sump and pump is recommended. Under no circumstances should a dry well be used on this site.

The existing drainage on the site must either be maintained carefully or improved. We recommend that water be drained away from structures as rapidly as possible and not be allowed to stand or pond near the building. We recommend that water removed from one building not be directed onto the backfill areas of adjacent buildings. We recommend that a hydrologist or drainage engineer experienced in this area be retained to complete a drainage plan for this site.

Should an automatic lawn irrigation system be used on this site, we recommend that the sprinkler heads be installed no less than 5 feet from the building. In addition, these heads should be adjusted so that spray from the system does not fall onto the walls of the building and that such water does not excessively wet the backfill soils.

FOUNDATIONS

Assuming that some amount of differential movement can be tolerated, then a shallow foundation system designed on the basis of 1200 psf maximum is recommended. In this case, recommendations pertaining to balancing, reinforcing, drainage and inspection are considered extremely important and must be followed.

It should be noted that the term "footings" as used above includes the wall on grade or "no footing" type of foundation system. On this particular site, the use of a more conventional footing, the use of a "no footing", or the use of voids will depend entirely upon the foundation loads exerted by the structure. We would anticipate the use of more conventional footings on this site.

Contact stresses beneath all continuous walls should be balanced to within + or -150 psf at all points. Isolated interior column footings should be designed for contact stresses of about 150 psf less than the average used to balance the continuous walls. The criterion for balancing will depend somewhat upon the nature of the structure. Single-story, slab on grade structures may be balanced on the basis of dead load only. Multi-story structures may be balanced on the basis of dead load plus 1/2 live load, for up to 3 stories.

Stem walls for a shallow foundation system should be designed as grade beams capable of spanning at least twelve feet. These "grade beams" should be horizontally reinforced both near the top and near the bottom. The horizontal reinforcement required should be placed continuously around the

structure with no gaps or breaks. A foundation system designed in this manner should provide a rather rigid system and, therefore, be better able to tolerate differential movements associated with settlement of the low density strata in the soil profile.

If metastable strata or large concentrations of soluble sulfate salts are encountered on a building site, then a conventional shallow foundation system, underlain by structural fill, placed in accordance with the recommendations contained within this report may be utilized. The foundation would consist of continuous spread footings beneath all bearing walls and isolated spread footings beneath all columns and other points of concentrated load. Such a shallow foundation system, resting on the properly constructed structural fill, may be designed on the basis of an allowable bearing capacity of 2200 psf maximum. Recommendations pertaining to balancing, reinforcing, drainage, and inspection are considered extremely important and must be followed. Contact stresses beneath all continuous walls should be balanced to within + or - 200 psf at all points. Isolated interior column footings should be designed for contact stresses of about 150 psf less than the average used to balance the continuous walls. The criteria for balancing will depend somewhat on the nature of the structure. Single-story, slab-on-grade structures may be balanced on the basis of dead load only. Multi story structures may be balanced on the basis of dead load plus one half live load, for up to three stories.

SETTLEMENT:

Close estimates of total and differential settlement will not be provided in this report since Lincoln DeVore has not been given exact foundation loads. Upon completion of the structural plans, the predicted settlements can be supplied upon request.

FROST PROTECTION

We recommend that the bottom of all foundation components rest a minimum of 1-1/2 feet below finished grade or as required by the local building codes. Foundation components must not be placed on frozen soils.

DEEP FOUNDATIONS:

Under some loading conditions,we recommend that a deep foundation system, consisting of either drilled piers or driven piles be used to carry the weight of the proposed structure. Deep foundations must extend through the low density, upper lean clay materials and into the underlying clays of the Mancos Shale Formation. Both types of foundation have advantages and disadvantages with respect to this site. In general, the drilled piers are utilized for residential construction and will be addressed in this report.

We recommend that drilled piers have a minimum shaft length of 8 feet and be embedded at least 4 and no more than 6 feet into the relatively unweathered bedrock. At this level,these piers may be designed for a maximum end bearing

capacity of 2500 psf, plus 1800 psf side support considering only the side wall area embedded in the bedrock. Due to the expansive potential of the bedrock, a minimum dead load uplift is required, consisting of a point uplift of 1400 psf and 250 psf side uplift, based on the side wall embedded in the bedrock. The overburden is soft and no supporting or uplift values are assigned to this material. The weight of the concrete in the pier may be incorporated into the required dead load.

Based upon our experience in this area and due to rather poor surface and subsurface drainage conditions of the subdivision, a drilled pier foundation system may be the preferred system for basement structures. It must be noted that a drilled pier and fully voided grade beam system is quite rigid and will be quite sensitive to relative differential movements of the individual piers. The presence of subsurface water in the Mancos Shale Formation indicates that a 'Stable Strata Below The Zone of Seasonal Moisture Change' may not be adequately defined at this period of time.

It is recommended that the bottoms of all piers be thoroughly cleaned prior to the placement of concrete. The amount of reinforcing in each pier will depend on the magnitude and nature of loads involved. As a rule of thumb, reinforcing equal to approximately 1/2 of 1% of the gross cross-sectional concrete area should be used. Additional reinforcing should be used if structural conditions warrant. We recommend that reinforcing extend through the full length of pier.

To minimize the possibility of voids

developing in the drilled piers, concrete with a slump of 5 to 6 inches is recommended. We recommend that piers be dewatered and thoroughly cleaned of all loose material prior to placing the steel cage and concrete. The pier excavation should contain no more than 2 inches of free water unless the concrete is placed by means of a tremie extending to the bottom of the pier. A free fall in excess of 5 feet is not recommended when placing concrete in drilled piers.

We recommend that casing be pulled as the concrete is being placed and that a 5 foot head of concrete be maintained while pulling the casing. It is recommended that drilled piers be plumb with 2% of their length and that the shaft maintain a constant diameter for the full length of the pier and not allowed to "mushroom" at the top.

DRILLED PIER OBSERVATION:

The foundation installation for drilled piers should be continuously observed by a representative of Lincoln DeVore to determine that the recommended bearing material has been adequately penetrated and that soil conditions are as anticipated by the exploration. This observation will aid in attaining an adequate foundation system. In addition, abnormalities in the subsurface conditions encountered during foundation installation can be identified and corrective measures taken as required. Lincoln DeVore requires a minimum of one working day's notice, and a copy of the foundation plan, to schedule any field observation.

GRADE BEAMS:

A reinforced concrete grade beam is recommended to carry the exterior wall loads in conjunction with the deep foundation system. We recommend that this grade beam be designed to span from bearing point to bearing point and not be allowed to rest on the ground surface between these points. We recommend a void space be left between the bottom of the grade beam and the subgrade below due to the expansive nature of the subgrade soils.

CONCRETE SLABS ON GRADE

Slabs could be placed directly on the natural soils or on a structural fill. We recommend that all slabs on grade be constructed to act independently of the other structural portions of the building. One method of allowing the slabs to float freely is to use expansion material at the slab-structure interface.

If slabs are utilized with full basements construction, it is recommended that slabs-on-grade be constructed over a capillary break of approximately 6 inches in thickness. We recommend that the material used to form the capillary break be free draining, granular material and not contain significant fines. A free draining outlet is also recommended for this break so that it will not trap water beneath the slab. A vapor barrier is recommended beneath the floor slab and above the capillary break. To prevent difficulty in finishing concrete, a 2 inch sand layer should be placed above the break. An alternate method of reducing finishing problems would be to place the vapor barrier beneath approximately 6 inches of a minus 3/4 inch gravel fill. This method must be very carefully accomplished to minimize excessive puncturing and tearing of the vapor barrier.

It is recommended that floor slabs on grade be constructed with control joints placed to divide the floor into sections not exceeding 360 square feet, maximum. Also, additional control joints are recommended at all inside corners and at all columns to control cracking in these areas.

Problems associated with slab 'curling' are usually minimized by proper curing of the placed concrete

slab. This period of curing usually is most critical within the first 5 days after placement. Proper curing can be accomplished by continuous water application to the concrete surface or by the placement of a 'heavy' curing compound, formulated to minimize water evaporation from the concrete. Curing by continuous water application must be carefully undertaken to prevent the wetting or saturation of the subgrade soils.

EARTH RETAINING STRUCTURES

The active soil pressure for the design of earth retaining structures may be based on an equivalent fluid pressure of 52 pounds per cubic foot. The active pressure should be used for retaining structures which are free to move at the top (unrestrained walls). For earth retaining structures which are fixed at the top, such as basement walls, an equivalent fluid pressure of 65 pounds per cubic foot may be used. It should be noted that the above values should be modified to take into account any surcharge loads, sloping backfill or other externally applied forces. The above equivalent fluid pressures should also be modified for the effect of free water, if any.

The passive pressure for resistance to lateral movement may be considered to be 253 pcf per foot of depth. The coefficient of friction for concrete to soil may be assumed to be .27 for resistance to lateral movement. When combining frictional and passive resistance, the latter must be reduced by approximately 1/3.

REACTIVE SOILS

Since groundwater in the Grand Junction area typically contains sulfates in quantities detrimental to a Type I cement, a Type II or Type I-II or Type II-V cement is recommended for all concrete which is in contact with the subsurface soils and bedrock. Calcium chloride should not be added to a Type II, Type I-II or Type II-V cement under any circumstances.

PAVEMENTS

Samples of the surficial native soils at this property that may be required to support pavements have been evaluated using the Hveem-Carmany method (ASTM D-2844) to determine their support characteristics. The results of the laboratory testing are as follows:

Soil Type I, Silty Clay

R =	6
Expansion @ 300 psi =	0
Displacement @ 300 psi =	4.20

Soil Type II, Sandy Silt and Silty Sand

R =	22
Expansion @ 300 psi =	0
Displacement @ 300 psi =	4.00

Due to the presence of metastable soils on this tract, we recommend the subgrade beneath pavements be recompacted to a minimum depth of 12 inches.

We recommend that the asphaltic concrete pavement meet the State of Colorado requirements for a Grade C mix. In addition, the asphaltic concrete pavement should be compacted to a minimum of 95% of its maximum Hveem density. The aggregate base course should meet the requirements of State of Colorado Class 5 or Class 6 material, and have a minimum R value of 78. We recommend that the base course be compacted to a minimum of 95% of its maximum Modified Proctor dry density (ASTM D-1557), at a moisture content within + or -2% of optimum moisture.

The native subgrade shall be scarified and recompacted to a minimum of 90% of their maximum Modified Proctor day density (ASTM D-1557) at a moisture content within + or -2% of optimum moisture.

All pavement should be protected from moisture migrating beneath the pavement structure. If surface drainage is allowed to pond behind curbs, islands or other areas of the site and allowed to seep beneath pavement, premature deterioration or possibly pavement failure could result.

We recommend that the rigid concrete pavement have a minimum flexural strength (F_t) of 650 psi at 28 days. This strength requirement can be met using Class P or AX or A or B Concrete as defined in Section 600 of the Standard Specifications for Road and Bridge Construction, Colorado DOT. It is recommended that field control of the concrete mix be made utilizing compressive strength criteria. Flexural Strength should only be used for the design process. Control joints should be placed at a minimum distance of 12 feet in all directions. If it is desired to increase the spacing of control joints, then 66-66 welded wire fabric should be placed in the mid-point of the slab. If the welded wire fabric is used, the control joint spacing can be increased to 40 feet. Construction joints designed so that positive joint transfer is maintained by the use of dowels is recommended.

Concrete with a lower flexural strength may be allowed by the agency having jurisdiction however, the design section thicknesses should be confirmed. In addition, the final durability of the pavement should be carefully considered.

The concrete should be placed at the lowest slump practical for the method of placement. In all circumstances, the maximum slump should be limited to 4 inches. Proper consolidation of the plastic concrete is important. The placed concrete must be properly protected and cured.

Control joints should be placed at a minimum distance of 12 feet along the slab/road lane length or to match curb and gutter jointing and 15 feet in width. If it is desired to increase the spacing of control joints, then 66-66 welded wire fabric should be placed in the mid-point of the slab. If the welded wire fabric is used, the control joint spacing can be increased to a maximum of 40 feet.

LIMITATIONS

This report is issued with the understanding that it is the responsibility of the owner, or his representative to ensure that the information and recommendations contained herein are brought to the attention of the individual lot purchasers for the subdivision. In addition, it is the responsibility of the individual lot owners that the information and recommendations contained herein are brought to the attention of the architect and engineer for the individual projects and the necessary steps are taken to see that the contractor and his subcontractors carry out the appropriate recommendations during construction.

The findings of this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether they be due to natural processes or the works of man on this or adjacent properties. In addition, changes in acceptable or appropriate standards may occur or may result from legislation or the broadening of engineering knowledge. Accordingly, the findings of this report may be invalid, wholly or partially, by changes outside our control. Therefore, this report is subject to review and should not be relied upon after a period of 3 years.

The recommendations of this report pertain only to the site investigated and are based on the assumption that the soil conditions do not deviate from those described in this report. If any variations or undesirable conditions are encountered during construction or the proposed

construction will differ from that planned on the day of this report, Lincoln DeVore should be notified so that supplemental recommendations can be provided, if appropriate.

Lincoln DeVore makes no warranty, either expressed or implied, as to the findings, recommendations, specifications or professional advice, except that they were prepared in accordance with generally accepted professional engineering practice in the field of geotechnical engineering.

SOILS DESCRIPTIONS:

SYMBOL	USCS	DESCRIPTION
		Topsoil
		Man-made Fill
	GW	Well-graded Gravel
	GP	Poorly-graded Gravel
	GM	Silty Gravel
	GC	Clayey Gravel
	SW	Well-graded Sand
	SP	Poorly-graded Sand
	SM	Silty Sand
	SC	Clayey Sand
	ML	Low-plasticity Silt
	CL	Low-plasticity Clay
	OL	Low-plasticity Organic Silt and Clay
	MH	High-plasticity Silt
	CH	High-plasticity Clay
	OH	High-plasticity Organic Clay
	Pt	Peat
	GW/GM	Well-graded Gravel, Silty
	GW/GC	Well-graded Gravel, Clayey
	GP/GM	Poorly-graded Gravel, Silty
	GP/GC	Poorly-graded Gravel, Clayey
	GM/GC	Silty Gravel, Clayey
	GC/GM	Clayey Gravel, Silty
	SW/SM	Well-graded Sand, Silty
	SW/SC	Well-graded Sand, Clayey
	SP/SM	Poorly-graded Sand, Silty
	SP/SC	Poorly-graded Sand, Clayey
	SM/SC	Silty Sand, Clayey
	SC/SM	Clayey Sand, Silty
	CL/ML	Silty Clay

ROCK DESCRIPTIONS:

SYMBOL	DESCRIPTION
	SEDIMENTARY ROCKS
	CONGLOMERATE
	SANDSTONE
	SILTSTONE
	SHALE
x x x x x x	CLAYSTONE
	COAL
	LIMESTONE
	DOLOMITE
	MARLSTONE
	GYPSUM
	Other Sedimentary Rocks
	IGNEOUS ROCKS
	GRANITIC ROCKS
+ + + + + +	DIORITIC ROCKS
	GABBRO
	RHYOLITE
	ANDESITE
	BASALT
	TUFF & ASH FLOWS
	BRECCIA & Other Volcanics
	Other Igneous Rocks
	METAMORPHIC ROCKS
	GNEISS
	SCHIST
	PHYLLITE
	SLATE
	METAQUARTZITE
	MARBLE
	HORNFELS
	SERPENTINE
	Other Metamorphic Rocks

SYMBOLS & NOTES:

SYMBOL	DESCRIPTION
	9/12 Standard penetration drive Numbers indicate 9 blows to drive the spoon 12" into ground.
	ST 2-1/2" Shelby thin wall sample
	W_o Natural Moisture Content
	W_x Weathered Material
Free water	Free water table
	γ^o Natural dry density
	T.B. – Disturbed Bulk Sample
	② Soil type related to samples in report
15' W_x Form.	Top of formation
	Test Boring Location
	Test Pit Location
	Seismic or Resistivity Station. Lineation indicates approx. length & orientation of spread (S = Seismic, R = Resistivity)

Standard Penetration Drives are made by driving a standard 1.4" split spoon sampler into the ground by dropping a 140 lb. weight 30". ASTM test des. D-1586.

Samples may be bulk, standard split spoon (both disturbed) or 2-1/2" I.D. thin wall ("undisturbed") Shelby tube samples. See log for type.

The boring logs show subsurface conditions at the dates and locations shown, and it is not warranted that they are representative of subsurface conditions at other locations and times.

LINCOLN DeVORE TESTING LABORATORY

COLORADO: Colorado Springs, Pueblo, Glenwood Springs, Montrose, Gunnison, Grand Junction. – WYO. – Rock Springs

EXPLANATION OF BOREHOLE LOGS AND LOCATION DIAGRAMS

ROLLAND ENGR. – VISTA DEL NORTE SUB.
EXPLORATION BORING LOCATIONS
GRAND JUNCTION, CO

LINCOLN DeVORE ENGINEERS · GEOLOGISTS	1441 MOTOR STREET GRAND JCT., COLORADO COLO. SPRINGS–PUEBLO	
	LD # 80161-J	SHEET 1 OF 1
DRAWN BY J.L. SPARKS	SCALE 1" = 100'	DATE 2-28-1994
CHECKED BY E.M. MORRIS	CONT. INT.	REV.

BORING NO. 1

BORING ELEVATION:

DEPTH (FT.)	SOIL LOG		DESCRIPTION				BLOW COUNT	SOIL DENSITY pcf	WATER %
			Surface Soils - Sandy Silt and Minor Silty Clay						
			Alluvial, Debris Fan Deposit		Some Metastable Strata				
		ML	Very Sandy Silt	Low Density		Moist	CS	8/6	
		II	Small Gravel Fragments of Sandstone					18/12	
5				High Sulfates as Caliche			5		
			Increasing Gravels		Very Stratified				
		CL	Silty Clay	Low Density			ST		
		I	Gravelly Strata	Some Larger Sandstone Fragments					
10					Increasing Moisture		10		
		Free Water ▼							
		SM	Gravelly Silty Sand		Non-Plastic		ST		
		III	Low Density	Hole is Caving					
15				Some Flowing Sands			15		
			Continued to drill in very stratified, low density sands and gravels						
		IV ?							
			Low Plastic, Silty Clay on bit, MANCOS SHALE ?						
20			TD @ 18'				20		
25							25		
30							30		

Blow Counts are cumulative for each 6 inches of sampler penetration.

Free Water @ 12'

During Drilling 2-28-94

LOG OF SUBSURFACE EXPLORATION

VISTA DEL NORTE SUBDIVISION

Grand Junction, Colorado

Rolland Engineering

Date: 3-1-94

LINCOLN - DeVORE, Inc.

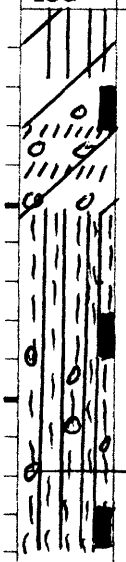
Grand Junction, Colorado

Job No. 80161-J

Drawn EMM

BORING NO. 2

BORING ELEVATION:

DEPTH (FT.)	SOIL LOG	DESCRIPTION				BLOW COUNT	SOIL DENSITY pcf	WATER %
		Surface Soils - Sandy Silt and Silty Clay						
		Alluvial, Debris Fan Deposit		Some Metastable Strata				
		CL Silty Clay	Low Density	Moist	CS	5/6		
		I Stratified	Some Sandstone Fragments			16/12		
5		High Sulfates as Caliche			5			
			Very Stratified					
		SM Gravelly Silty Sand		Non-Plastic	CS	8/6		
		III Low Density	Increasing Moisture			23/12		
10		Occ. Small Gravels			10			
		Free Water ▼						
		SM Silty Sand		Non-Plastic	CS	8/6		
		III Low Density	Hole is Caving at Water Table			12/12		
15			Fine to Medium Grained Sands		15			
		TD @ 14'						
20					20			
25					25			
30					30			

Blow Counts are cumulative for each 6 inches of sampler penetration.

Free Water @ 12'

During Drilling 2-28-94

LOG OF SUBSURFACE EXPLORATION

VISTA DEL NORTE SUBDIVISION

Grand Junction, Colorado

Rolland Engineering

Date: 3-1-94

LINCOLN - DeVORE, Inc.

Grand Junction, Colorado

Job No. 80161-J

Drawn: EMM

BORING NO. 3

BORING ELEVATION:

DEPTH (FT.)	DESCRIPTION				BLOW COUNT	SOIL DENSITY pcf	WATER %
	Surface Soils - Sandy Silt and Silty Clay						
	Alluvial, Debris Fan Deposit		Some Metastable Strata				
	CL Silty Clay	Low Density	Moist	ST			
	I Stratified	High Sulfates as Caliche					
5		Compressible		5			
	Very Stratified Silty Sand and Silty Clay						
	SL Sandy, Silty Clay	Alluvial, Debris Fan Deposit		CS	8/6		
	II	Very Moist to Wet			23/12		
10				10			
	Gravells and larger Fragments of Sandstone						
	In a Sand and Silty Clayey Sand Matrix						
	Free Water ▼		Non-Plastic	ST			
	SM Gravelly Silty Sand						
15	III Low Density	Increasing Moisture		15			
	Mancos Shale	Weathered	Saturated	BULK			
	CL Silty Clay	Firmer with depth					
	IV	Expansive					
20				20			
	TD @ 18'						
25				25			
30				30			
	Blow Counts are cumulative for each						
	6 inches of sampler penetration.						
	Free Water @ 13'						
	During Drilling 2-28-94						

LOG OF SUBSURFACE EXPLORATION

VISTA DEL NORTE SUBDIVISION
Grand Junction, Colorado

Rolland Engineering

Date: **3-1-94**

LINCOLN - DeVORE, Inc.

Grand Junction, Colorado

Job No. **80161-J**

Drawn **EMM**

BORING NO. 4

BORING ELEVATION:

DEPTH (FT.)	SOIL LOG	DESCRIPTION					BLOW COUNT	SOIL DENSITY pcf	WATER %
		Surface Soils - Clayey Sands and Silts							
		Alluvial, Debris Fan Deposit		Some Metastable Strata					
		SM III	Gravelly Silty Sand	Low Density		Moist	ST		
			Low Density	High Sulfates as Caliche					
5		Some Compressible Clayey Silt Strata					5		
		Increasing Gravels		Coarse Grained Sands					
		Stratified Silty Sand and Gravels with thin Silty Clay							
		SM III	Gravelly Silty Sand	Alluvial, Debris Fan Deposit			ST		
			Low Density	Very Moist to Wet					
10							10		
		Mancos Shale		Weathered		Very Moist			
		CL IV	Silty Clay	Firmer with depth					
				Expansive		Fractured	CS	21/6	
		Fissle, in part, Laminated Bedding						96/12	
15		Very Hard to Drill		Some thin Siltstone Strata			15		
				Less Moisture with depth					
		TD @ 16'							
20							20		
25							25		
30							30		
		Blow Counts are cumulative for each 6 inches of sampler penetration.							
		NO Free Water During Drilling				2-28-94			

LOG OF SUBSURFACE EXPLORATION

VISTA DEL NORTE SUBDIVISION
Grand Junction, Colorado

Rolland Engineering

Date: 3-1-94

LINCOLN - DeVORE, Inc.

Grand Junction, Colorado

Job No. 80161-J

Drawn: EMM

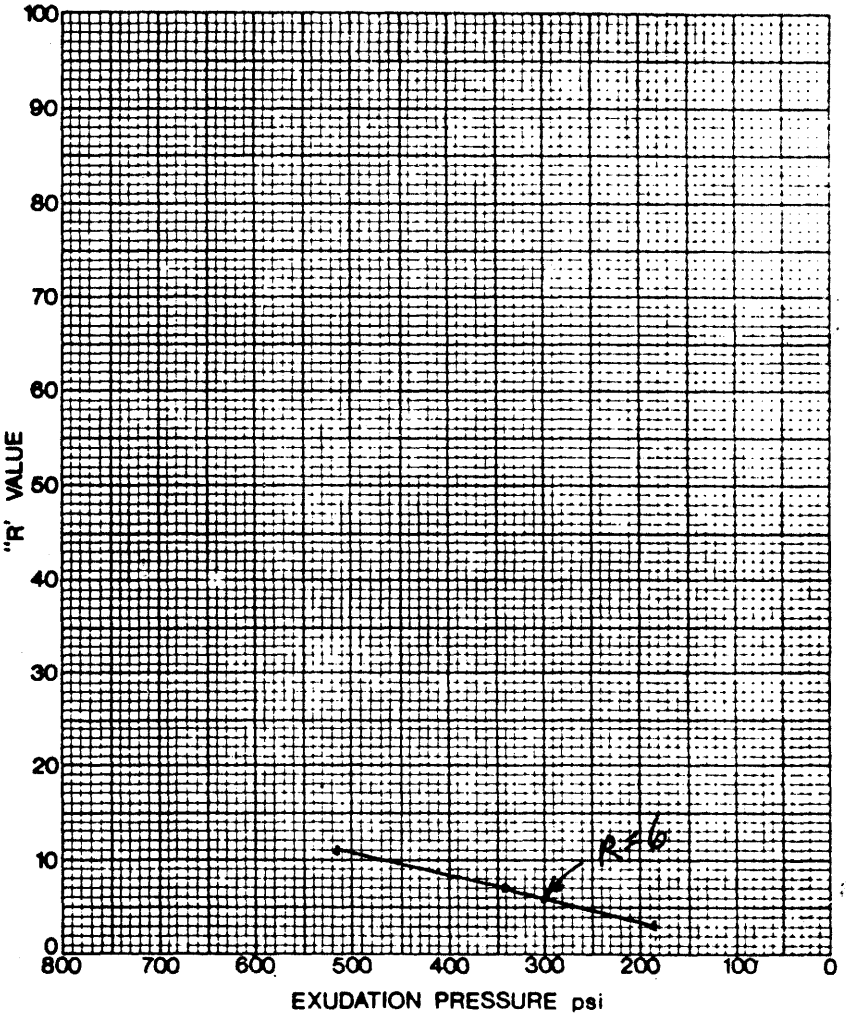
SAMPLE: Soil TYPE I SILTY CLAY (CL)

TEST SPECIMAN			A	B	C	D	E
DATE TESTED			2-25-94	2-25-94	2-25-94		
SPECIMEN FABRICATION	Compactor Air Pressure	psi	1				
	Initial Moisture	%	12.8%	12.8	12.8		
	Moisture at Compaction	%	18.8%	17.8	16.8		
	Briquette Height	in.	2.46	2.54	2.34		
	Density	pcf	107.9	108.5	111.1		
EXUDATION PRESSURE		psi	183	342	515		
EXPANSION PRESSURE DIAL			0	0	0		
STABIL-OMETER	P_h at 1000 pounds	psi	61	60	59		
	P_h at 2000 pounds	psi	153	143	132		
	Displacement	turns	4.21	4.19	3.88		
	"R" Value		3	7	12		
CORRECTED "R" VALUE			3	7	11		

EXPANSION @ 300 PSI EXUDATION PRESSURE 0
DISPLACEMENT @ 300 PSI EXUDATION PRESSURE 4.20
"R: VALUE @ 300 PSI EXUDATION PRESSURE 6

1½"	
1"	
3/4"	
1/2"	
3/8"	
4	100
10	99
20	99
40	99
100	84
200	69
.02 mm	49
.005 mm	31

LIQUID LIMIT	32
PLASTIC LIMIT	14
PLASTICITY INDEX	8
SAND EQUIVALENT	



Lincoln DeVore, Inc.
Geotechnical Consultants

VISTA del NORTE SUB. GRD. JCT., Co

ROLLAND ENGINEERING | DATE 3-1-94

JOB NO. 80161-J | DRAWN EMM

SAMPLE: SOIL TYPE II SANDY SILT (ML)

			TEST SPECIMAN	A	B	C	D	E
			DATE TESTED	2-2-94	2-2-94	2-2-94		
SPECIMEN FABRICATION			Compactor Air Pressure	psi				
			Initial Moisture	%	7-8	7-8	7-8		
			Moisture at Compaction	%	13-8	14-8	15-8		
			Briquette Height	in.	2.43	2.49	2.53		
			Density	pcf	123.1	114.1	111-8		
			EXUDATION PRESSURE	psi	684	195	99		
			EXPANSION PRESSURE DIAL		0-2	0	0		
STABIL-OMETER			P_h at 1000 pounds	psi	32	44	48		
			P_h at 2000 pounds	psi	90	118	122		
			Displacement	turns	3.25	4.02	4.30		
			"R" Value		37	18	15		
			CORRECTED "R" VALUE		36				

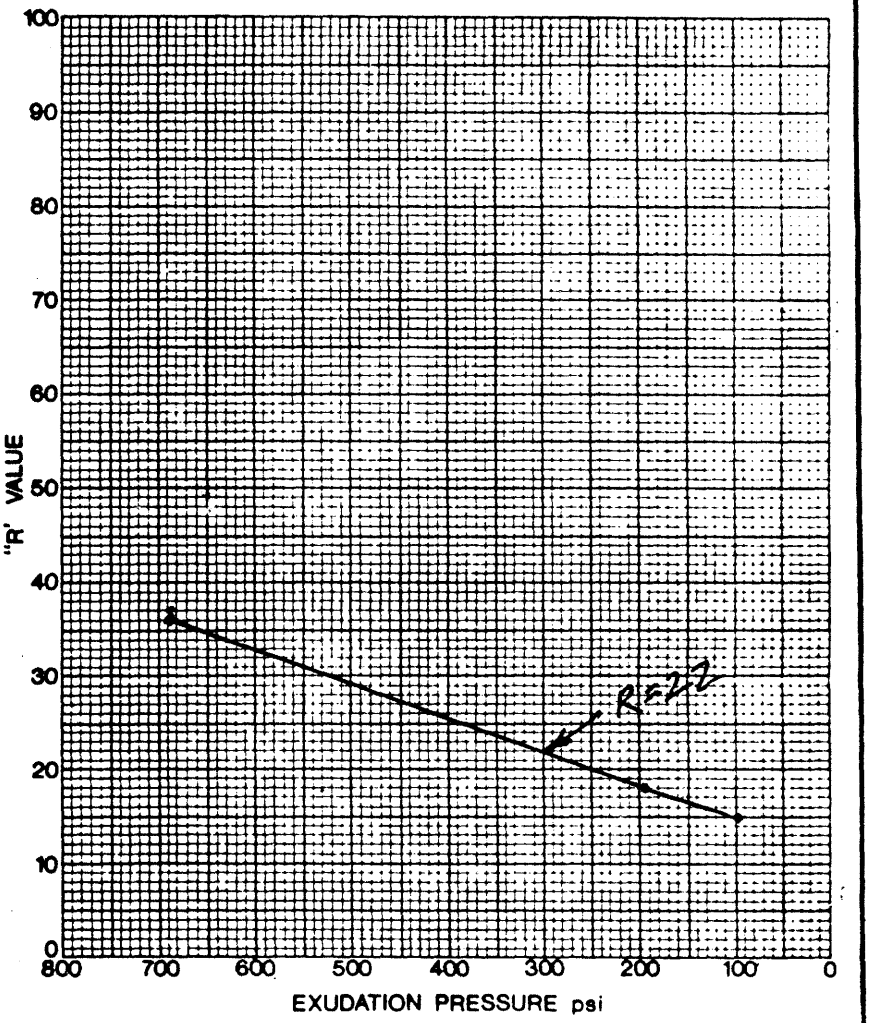
EXPANSION @ 300 PSI EXUDATION PRESSURE 0

DISPLACEMENT @ 300 PSI EXUDATION PRESSURE 4.00

"R: VALUE @ 300 PSI EXUDATION PRESSURE R-22

1½"	
1"	
3/4"	100
1/2"	99
3/8"	99
4	98
10	91
20	90
40	89
100	82
200	67
.02 mm	49
.005 mm	32

LIQUID LIMIT	23
PLASTIC LIMIT	19
PLASTICITY INDEX	4
SAND EQUIVALENT	



Lincoln DeVore, Inc.
Geotechnical Consultants

VISTA del NORTE SUB. GRD. JCT., CO.

ROLLAND ENGINEERING

DATE 5-1-94

JOB NO. 80161-J

DRAWN EMH

REVIEW COMMENTS

FILE #37-94 **TITLE HEADING:** Final Plat/Plan - Vista Del Nor'te

LOCATION: 27 3/4 Road & G Road

PETITIONER: Dale Cole

PETITIONER'S ADDRESS/TELEPHONE: 235 N 7th Street
Grand Junction, CO 81501
243-7711

PETITIONER'S REPRESENTATIVE: Rolland Engineering

STAFF REPRESENTATIVE: Kristen Ashbeck

NOTE: WRITTEN RESPONSE BY THE PETITIONER TO THE REVIEW COMMENTS IS REQUIRED ON OR BEFORE 5:00 P.M., MARCH 28, 1994.

GRAND VALLEY RURAL POWER **3/4/94**
Perry Rupp **242-0040**

None at this time.

U.S. WEST **3/7/94**
Leon Peach **244-4964**

New or additional telephone facilities necessitated by this project may result in a "contract" and up-front monies required from developer, prior to ordering or placing of said facilities. For more information, please call Leon Peach at 244-4964.

CITY PARKS & RECREATION DEPARTMENT **3/7/94**
Don Hobbs **244-1542**

Composite plan does not specifically identify trails. We would like a map for our review prior to final approval.

CITY UTILITY ENGINEER **3/8/94**
Bill Cheney **244-1590**

WATER - Ute Water - show degree of bend on water line angle points.

SEWER - City/County

1. Show on profiles where water lines intersect sewer lines.
2. Establish a benchmark within the limits of the project that can be used to check elevations at some future date.

GENERAL - It appears from the "Final Plat" that no corners have been set around the perimeter of the subdivision. The plat cannot be approved until evidence that the corners have been set is submitted.

GRAND JUNCTION POLICE DEPARTMENT **3/9/94**
Mark Angelo **244-3587**

1. It appears the cul-de-sac to Lots 1 & 15 has not been changed to keep it back from the drainage ditch; or has it?
2. There is nothing in the narrative or diagram to indicate what is going to be done with the open space.
3. Is the bike/walking trail asphalt, concrete, or what?

UTE WATER **3/11/94**
Gary R. Mathews **242-7491**

Water mains are installed 2-3' in oil on the north and east sides of the street. Connection to Applewood Street and East Piazza Place with an 8" main would supply sufficient fire flow requirements. Policies and fees in effect at the time of application will apply.

CITY DEVELOPMENT ENGINEER **3/11/94**
Jody Kliska **244-1591**

See attached comments and red-lined drawings.

U.S. POSTAL SERVICE **3/14/94**
Cheryl Fiegel **244-3435**

This is City delivery - centralized delivery can be extended immediately. Curbside or behind the sidewalk delivery cannot be extended until 50% completion is reached.

SCHOOL DISTRICT #51 **3/14/94**
Lou Grasso **242-8500**

See attached comments.

COMMUNITY DEVELOPMENT DEPARTMENT **3/16/94**
Kristen Ashbeck **244-1437**

See attached comments.

PUBLIC SERVICE COMPANY **3/16/94**
Dale Clawson **244-2695**

ELECTRIC AND GAS: Require 14' front lot line multi-purpose utility easement. Require that the southwesterly 10 feet of Lot 6, Block 2 (126.60 ft.) be dedicated as utility easement to be able to serve Lot 5.

CITY PROPERTY AGENT **3/16/94**
Tim Woodmansee **244-1565**

Please provide on the Final Plat:
1. A metes & bounds description of the subdivision boundary;
2. Widths of rights-of-way and easements being dedicated;
3. Distances along the lot lines.

WALKER FIELD AIRPORT AUTHORITY **3/18/94**
Mike Sutherland **244-9100**

This development lies within the Airport Area of Influence, as well as underlying common aircraft traffic patterns, so may be affected by overflight of aircraft. An Avigation Easement is required to be recorded at or before filing of the subdivision plat. Please send a copy of the recorded document to Walker Field Airport Authority following recording.

It is our recommendation that, due to this residential development's proximity to aircraft flight paths and the airport proper, that additional soundproofing insulation, as well as planned landscape features, be designed into each residence and site to help mitigate potential sound-level perceptions.

37-94 VISTA DEL NOR'TE - FINAL PLAT/PLAN
COMMUNITY DEV DEPT COMMENTS 3/16/94

1. The zoning approved for this site was a density not to exceed 2 units per acre. With the acreage shown and the additional unit, the density is now approximately 2.4 units per acre. This will require a zone change request for increased density that must be heard by City Council.

2. Can the canal property be legally deeded to them without appearing as a parcel on this subdivision plat? If it is included on the plat, it could solve the density issue above.

3. The City is still requiring written comment as to why the canal easement cannot be provided (from the developer and canal company).

4. Block 2, Lot 5 (former open space) must have a minimum of 20 feet of frontage on a public right-of-way. The ingress-egress easement is not sufficient access to this parcel.

5. Ingress-egress easement must be clarified as pedestrian easement and included in dedication.

6. Include a pedestrian easement in the 40-foot irrigation easement.

7. Note on Final Plan that side yard setbacks on Lots 2-7, Block 3 may be zero as indicated to allow for common wall construction. Also place a note on the final plat regarding construction of common wall units on Lots 2-7, Block 3 (condition of Planning Commission approval of preliminary).

8. Need clarification of easement lines, no build zones. For example, does the Grand Valley Power easement overlap with the no-build zone or is it just the strip outside of the no-build zone?

9. Any street names proposed? Must be labeled on Final Plat and Plan.

10. Is Dale Cole president of a company that owns this parcel or is he himself owner? If not a company, delete reference to president. Clarify in signature block.

11. If the pedestrian easement is accepted as shown, the City needs written verification from Grand Valley Rural Power that a paved trail can be constructed within their easement; it will not be considered a structure, and will not conflict with any other restrictions.

12. It appears that off-site easements are needed on the canal property for the 14-foot multipurpose easement that encroaches on their property and for the storm sewer outlet facilities (2 locations).

13. Delete all references to Lots 16 through 21 in covenants--replace with new Lot, Block numbers. Development on these lots should be described in the covenants as attached, common wall single family units rather than as single family, adjoining wall townhomes.

14. Clarify in covenants for future property owners that a fence cannot be constructed in GVRP no-build zone; however, the property owner will be responsible for maintenance of the areas behind the fence to property lines (e.g. keeping weeds cut).

15. Proof-read covenants for typos and missing words (e.g. item 7 and item 9). Also, spelling of Norte is different in covenants than on other documents--make them consistent one way or the other.

15. Where is the Public Service easement that they requested be provided if G Road is vacated?

16. G Road right-of-way vacation will be scheduled for City Council once the comments on the Final Plan/Plat have been adequately addressed.

17. Payment of Open Space fees in the amount of $6,075 ($225 per lot) shall be due prior to recordation of the Final Plat.

March 14, 1994

REVIEW COMMENTS FOR: **Vista Del Norte #37-94**

TYPE OF REVIEW: **Final Plans**

REVIEWED BY: **Jody Kliska**

Drainage Report

What is in the drainage report is ok. Need to show on plans the outlet facilities, if any, as calculated in the drainage report.

Need to include claculations for sizing the storm drain pipes and the inlets of the catch basins. If the developed flows exceed the storm drain inlet capacity, then calculations showing the depth of water in the streets and gutter need to be included.

Plat

Plat dedications should follow the attached guidelines. Please provide a computer printout of external closure for the subdivision.

Grading and Stormwater Management Plan

Is the intention to retain runoff from areas B & C in the ditch with no outlet facility?

Is the runoff from area A going to run down the existing streets? What is the purpose of the two rectangular areas labeled detention site - how does water get in and out, what are the grades of the sites?

Street and Sewer Plans

Please label the profile drawings. What is the cross-slope you are using? City recommended normal crown is 2%.

A detail of the storm drains should be provided, adn must be constructed in accordance with City Standards.

A detail of the handicap ramps should be provided, and these too need to be constructed in accordance with City Standards.

The type, size, and length of pipe from the catch basins to the detention sites should be spelled out.

Add a note regarding service markers and endpoint locations to general notes.

Add a note requiring all Ute water lines to be tested in accordance with City of Grand Junction specifications prior to street construction.

Please specify compaction requirements for subgrade, base course, and pavement in accordance with City standards.

Attached is the SSID checklist for roadway plans and profiles. Items 7,13, and 15 need to included on the plans.

FH locations

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COURTLAND SUBD.

Limits of NO STRUCTURE ZONE

GRAND VALLEY POWER EASEMENT

A REPLAT OF LOT FIFTEEN
APPLE CREST SUBDIVISION

INGRESS-EGRESS EASEMENT

APPLEWOOD STREET

APPLECREST SUBDIVISION

CROWN HEIGHTS SUBDIVISION

PTARMIGAN ESTATES

EAST PIAZZA PLACE

UNDERGROUND UTILITIES (9' Back of ROW Typ.)

LOT 11 BLOCK 3

LOT 1 BLOCK 1

LOT 1 BLOCK 2

LOT 1 BLOCK 3

LOT 15 BLOCK 2

NEW 8" WATER

NEW 8" SEWER

Limits of NO STRUCTURE ZONE

GRAND VALLEY POWER EASEMENT

INGRESS-EGRESS EASEMENT

PARTEE HEIGHTS SUBDIVISION

40' IRRIGATION EASEMENT

G ROAD ROW TO BE VACATED

SOUTH R-O-W

NORTH R-O-W

DRAIN DITCH

℄ GOVERNMENT HIGHLINE CANAL

WATER PROVIDED BY:
UTE WATER
SANITARY SEWER BY:
CITY OF GRAND JUNCTION
ELECTRIC & GAS BY:
PUBLIC SERVICE
TELEPHONE BY:
U.S. WEST
CABLE TV BY:
UNITED ARTIST (TCI)

Note: Streets will be developed per City of Grand Junction standards

Land Use Breakdown

AREA IN LOTS	9.39 AC	84%
AREA IN R.O.W.	1.73 AC	16%
TOTAL AREA	11.12 AC	100%
TOTAL NUMBER OF LOTS = 27		

SCALE: 1"=50'

FH

APPROVED - CITY OF GRAND JUNCTION

CITY ENGINEER _____ DATE _____

ROLLAND ENGINEERING
405 Ridges Blvd
Grand Jct, CO 81503
(303) 243-8300

COMPOSITE PLAN
Vista Del Norte
Subdivision

Designed	TDR	Checked		Sheet	1
Drawn	CTJ	Date	3/94	of	1

STATE OF COLORADO

COLORADO GEOLOGICAL SURVEY
Division of Minerals and Geology

Department of Natural Resources
1313 Sherman Street, Rm. 715
Denver, Colorado 80203
Phone (303) 866-2611
FAX (303) 866-2461

FAXED 3/23/94

DEPARTMENT OF
NATURAL
RESOURCES

Roy Romer
Governor

Ken Salazar
Executive Director

Michael B. Long
Division Director

Vicki Cowart
State Geologist
and Director

March 23, 1994

MA-94-0032

Ms. Kristin Ashbeck
City of Grand Junction
Community Development Department
250 North 5th Street
Grand Junction, Colorado 81501

Re: Proposed Final Plat/Plan: Vista del Norte -- Vic. Intersection of 27 3/4 Road and G Road, Grand Junction

Dear Ms. Ashbeck:

At your request, we have reviewed the materials submitted for and made a field inspection on March 15, 1994, of the site of the proposed residential subdivision indicated above. The following comments summarize our findings.

(1) The most significant geology-related considerations that must be addressed in development of this parcel as planned are "soils" and groundwater conditions. The kinds of surficial materials that occur are highly variable, both laterally and vertically, as to their composition and physical properties. The data and conclusions presented in the submitted Lincoln DeVore, Inc., and our own observations and conclusions based on other studies in the Grand Valley support strongly a requirement that every structure have a detailed soils and foundation investigation and an individually engineered foundation based upon the results of it. The foundation-engineering problems are complicated further by a relatively shallow ground-water table(s) which undoubtedly will rise after the subdivision builds out. In this area, this situation is complicated even more by proximity to the Government Highline Canal. Because of these present and future ground-water conditions, use of basements should be done only with extreme caution. Pumped foundation drains probably will be necessary and the variability of soils types seen in basement excavations should be carefully studied by the soils and foundation engineer prior to designing either the foundation or its drain system.

(2) At the time of site visit, some clearing of brush and debris had already commenced. There was also a significant amount of trash and other refuse on the parcel. We caution that the developer should completely clean up the area and properly dispose of off site all deleterious materials. All fills or other newly placed earth should be properly compacted and contain no organics, demolition refuse, etc.

(3) The plan and methods used to direct surface runoff from the subdivision to the GVWA leakage-interception ditch for the Government Highline Canal should be reviewed by a qualified drainage engineer prior to its approval. Also, the possibility that the Government Highline Canal will, in the future, be more effectively lined or placed in a buried pipe adjacent to this subdivision should be considered in the subdivision drainage plan and the discussion about future water-table elevations indicated above. The **GENERAL PROJECT REPORT** alludes to a drainage report, but the only document about surface drainage that were sent to us to review is the "Grading and Storm Water Management Plan" which is a relevant, generally annotated map.

(4) If it has not been done already, a radiation survey of the property should be made to determine if any radioactive materials have been dumped or otherwise placed on the site.

In summary, we consider this to be a viable residential subdivision proposal if the recommendations made above are followed and made conditions of its approval.

Sincerely,

James M. Soule

James M. Soule
Engineering Geologist

MESA COUNTY VALLEY SCHOOL DISTRICT NO.51

REVIEW AGENCY COMMENT SHEET

Date: 3/14/94 Project: 37-94 Vista Del Norte

Comments:

X Provide sidewalks/hard surface walkways that will allow access to adjacent developments.

X Provide sidewalks/hard surface walkways that will allow access to any roadway adjacent to the development.

X Provide bus loading/unloading areas at each perimeter of the development where a roadway exists. The areas would be of sufficient length to allow a bus to enter and exit in a safe manner. Such areas would be a hard surface. The area should also provide space for students to congregate while waiting for a bus.

Note: Because a bus loading area exists, it does not guarantee a bus stop at that location. A number of factors determine the location of the stops and they are subject to change.

SCHOOL ENROLLMENT IMPACT:

School	Current Status	Project Impact Estimate
Ele.: Tope	550 CAP: 452	+6
M.S.: West	493 CAP: 500	+3
H.S.: Grand Jct	1554 CAP: 1630	+5

Other:

CAP: = DESIRED Building Capacity

ROLLAND ENGINEERING **405 RIDGES BLVD., GRAND JUNCTION, CO 81503**
(303) 243-8300

RESPONSE TO REVIEW COMMENTS

VISTA DEL NORTE
FINAL PLAT/PLAN
27 3/4 ROAD & G ROAD
FILE #37-94

Grand Valley Rural Power
N/A

U.S. West
We are aware of the requirements of U. S. West.

City Parks and Recreation Department
We have revised the Composite Plan to clarify trail easement locations.

City Utility Engineer
We have revised the plans to include the requested additional information.

Grand Junction Police Department
1. The cul-de-sac is 20 feet from the westerly top of the drain ditch. Also a fence is being requested along the entire easterly boundary of the subdivision by the Canal Company.
2. The open space (Lot 5 Blk 2) is being deeded to the Canal Company.
3. The trail system is a dedicated easement only with no improvements.

Ute Water
Comments are so noted.

City Development Engineer
We have met with Jody to discuss her comments. We are providing the additional information and have made the revisions/additions to the plans that she requests.

U.S. Postal Service
Comments are so noted.

School District 51
Sidewalks will be provided on both sides of all proposed streets that will connect with existing sidewalks in adjacent developments.

ROLLAND ENGINEERING 405 RIDGES BLVD., GRAND JUNCTION, CO 81503
(303) 243-8300

Community Development Department

1. The total area of the subdivision has always been a confusing issue. When the desired density was calculated to "clean-up" the existing zoning it was calculated utilizing the old Pesman survey to the toe of the canal roadway (14 +/- acres). The total gross acreage to the centerline of the canal is 17.35 acres. Lot 5, Block 2 is being eliminated by including it in the Canal Company deeding. This will leave 26 lots on 17.35 acres or a density of 1.5 units per acre.
2. We are treating the Canal Company right-of-way in a similar manner to roadway right-of-way.
3. Attached is a letter stating our position on the canal easement trail. We have requested that the Canal Company respond to your request.
4. This lot has 60 feet of frontage on "G" Road.
5. So noted.
6. So noted.
7. So noted.
8. We have added a detail to clarify.
9. So noted.
10. Changes made to correct.
11. Grand Valley Rural Power is providing written verification.
12. The Canal Company is aware that easements will exist on their property.
13. Corrections made (see attached).
14. Additions made (see attached).
15. Corrections made (see attached).
15. Additions made to plat.
16. No comment.
17. So noted.

Public Service

The additions were made to the plat.

City Property Agent

The additions were made to the plat.

Walker Field Airport Authority

Avigation Easement to be provided.

COLEMAN, JOUFLAS & WILLIAMS
ATTORNEYS AT LAW
2452 Patterson Road
P.O. Box 55245
Grand Junction, Colorado 81505

Joseph Coleman
Gregory Jouflas
John Williams

Telephone
(303) 242-3311

Telecopier
(303) 242-1893

FC Kathy P
Dan W

March 25, 1994

John Shaver
Assistant City Attorney
Grand Junction City Hall
250 N. 5th Street
Grand Junction, CO 81501

RE: Vista Del Norte
Final Plat/Plan

Dear John:

Dale Cole has asked this firm to respond to the City's request for "written comment as to why the canal easement cannot be provided". The simple answer is: Mr. Cole does not own or have an interest in the canal bank.

The Vista Del Norte property is subject to the right-of-way for the Government Highline Canal. Historically this right-of-way was not specifically defined, but is a right-of-way of sufficient width to provide whatever the Grand Valley Water Users Association deems necessary for the use and maintenance of the canal. Because of the pending Vista Del Norte Subdivision, the canal company agreed to specifically define its right-of-way.

Dale Cole and Tom Rolland negotiated with the U.S. Government and the Grand Valley Water Users Association to determine the right-of-way rights. The right-of-way has been determined by a survey. A quit claim deed has been prepared to confirm the right-of-way. This quit claim deed is corrective in nature, is not a conveyance of property to Grand Valley Water Users Association and is to be signed and delivered only for the purpose of confirming the right-of-way.

The City has requested an easement for a walking path along the canal bank. Cole and Rolland have discussed this request with Mr. Klapwych and the Board of Directors of the Grand Valley Water Users Association. The Association will not allow or agree to the walking trail easement.

Once again, I emphasize to you that the deed to the Grand Valley Water Users Association is corrective in nature. It's purpose is to set forth specifically the historical ownership of the right-of-way by the canal company.

Please call if you have additional questions.

Sincerely,

COLEMAN, JOUFLAS & WILLIAMS

JOHN WILLIAMS

JEW/kap

GRAND VALLEY POWER

P.O. Box 190, 2727 Grand Avenue
Grand Junction, Colorado 81502-0190
(303) 242-0040 • FAX (303) 242-0612

March 28, 1994

Mr. Dale Cole
Cole & Co Realty
235 N. 7th Street
Grand Junction, CO 81501

Subject: Trail Improvements - Vista Del Norte

Dear Mr. Cole:

Grand Valley Power Lines, Inc. does not object to the erection of trail improvements within utility easements crossing the proposed "Vista Del Norte Subdivision". The improvements shall be limited to construction design and materials typical of pedestrian access needs and shall be limited to such design that will not impede, endanger or detract from the use, maintenance and upgrading of existing Grand Valley Power facilities within said easement. "Furthermore in the portion of the easement designated as "No Structure Zone" fencing constructed of any materials including cedar, chain link, etc. is prohibited. Absolutely no structures or obstructions are permitted in the zone including landscaping that will prevent continuous access." All improvements will be placed at the risk of the installer. Grand Valley Power Lines assumes no liability regarding said trail improvements. Grand Valley reserves the rights to make a written determination on the trail plan as to the acceptability of such improvements on recorded easements Book 1796 pages 750 thru 763.

Sincerely,

Charles A. Mitisek
Manager of Engineering

cc: Grand Junction Community Development
Attn: Kristin Ashbeck

ROLLAND ENGINEERING

405 RIDGES BOULEVARD, SUITE A
GRAND JUNCTION, COLORADO 81503
(303) 243-8300

March 28, 1994

Ms. Kristen Ashbeck
Community Development
City of Grand Junction
250 N. 5th Street
Grand Junction, CO 81501

Re: **RESPONSE TO REVIEW COMMENTS**
VISTA DEL NORTE FILE #37-94

Dear Kristen:

Attached are our written responses to the review comments dated 3/16/94.

We have outlined the responses to coincide with your original comments. Also attached are revised drawings with changes per the comments. Please contact us if you have any questions or need additional information.

Sincerely,

Charles Osborne
ROLLAND ENGINEERING

cc: Dale Cole

CO/smp

To: kristena
From: Kathy Portner
Subject: Vista Del Nor'te
Date: 3/28/94 Time: 4:52p

Originated by: TIMW 3/28/94 3:26p
Forwarded by: KATHYP 3/28/94 4:52p (CHANGED)

Kris--I received this from Tim W.

********** ORIGINAL MESSAGE FOLLOWS **********

I received a copy of the final plat for Vista Del Nor'te today. It still lacks a metes & bounds description of the subdivision boundary. Missing dimensions along lot lines are too numerous to mention. The last statement in the dedication refers to common open areas - where are these (is it Lot 1, Block 1, since this does not appear to be a buildable lot?) Shouldn't the width of the Grand Valley Rural Power easement be shown?

I may have other comments after these issues have been addressed. Timw.

STAFF REVIEW

FILE: 37-94
DATE: March 31, 1994

STAFF: Kristen Ashbeck

REQUEST: Final Plat and Plan - Vista Del Norte Subdivision

LOCATION: G Road and 27-3/4 Road

APPLICANT: T.L. Benson and Dale Cole

EXISTING LAND USE: Vacant

SURROUNDING LAND USE:
NORTH: Highline Canal and Interstate 70
SOUTH: Single Family Residential
EAST: Highline Canal and Interstate 70
WEST: Single Family Residential

STAFF ANALYSIS: Planning Commission approved the Preliminary Plan for the Vista Del Norte subdivision at its January 1994 meeting. The conditions of preliminary approval included: 1) that a homeowner's association be established with appropriate covenants; 2) Lot A and access to it and the site detention area be dedicated to the homeowner's association as private open space; 3) determine the correct property boundary and provide a 20' easement at a location that can be worked out amiably between City staff and the developer; 4) provide a temporary cul-de-sac on E. Piazza Place between the two phases of the project; 5) restriction of the use of Lots 16-21 for the construction of zero lot line common wall single family residences only; and 6) Side yard setbacks of a minimum of 5' be established for Lots 1-15 and 22-25.

The details of items 1, 5 and 6 have been adequately addressed. Items 2 and 4 are no longer applicable due to revisions to the plan. There is no longer any open space area to be deeded to the homeowner's association. The drainage has been redirected to flow to the canal drain ditch so the former detention area will become another residential lot. The plan now shows a total of 26 lots as opposed to the 25 lots proposed at the preliminary phase. This is still within the density of the PR-2 zoning approved by Planning Commission and City Council (actual density is now 1.5 units per acre).

Regarding the trail easement (item 3), the developer has now included the entire property within the proposed subdivision boundary. Upon recordation of the plat, the area shown as Tracts A and B shall be conveyed in fee simple to a public entity (Bureau of Land Management or Bureau of Reclamation or the City of Grand Junction). The Bureau of Reclamation has indicated that, once the property is owned in fee simple authority exists for the property to be used for or encumbered with an easement for the purposes of recreational access. In addition, the developer has dedicated a pedestrian easement within the Grand Valley Rural Power easement along the south and west boundaries of the property. There is also a pedestrian easement connecting the remaining G Road right-of-way to the canal area tract.

STAFF RECOMMENDATION: Approval subject to the following conditions:

1) City Council approval of the G Road right-of-way vacation prior to recordation of the Plat and Plan.

2) Revised Final Plan that corresponds to revisions made to the Final Plat (e.g. revised property boundary and Lot numbering).

3) Deed Tract A and Tract B in fee simple to a specified public entity. The intended use of this parcel shall be multipurpose to include pedestrian/bicycle access for the general public for recreation purposes. The deed shall be executed at the time of plat/plan recording.

4) All outstanding technical deficiencies of the Plat and Plan cited by the review agencies shall be corrected.

5) Payment of Open Space fees in the amount of $225 per lot ($5,850) prior to recordation of the Plat and Plan.

6) Requirement of a pedestrian/bicycle access easement from G Road to the canal area tract.

7) Execution and recordation of an Improvements Agreement and Guarantee prior to recordation of the Plat and Plan.

8) Execution and recordation of an Avigation Easement prior to recordation of the Plat and Plan.

RECOMMENDED PLANNING COMMISSION MOTION:

Mr. Chairman, on item 37-94 the Final Plan and Final Plat for the Vista Del Norte subdivision, I move that we approve the request with the conditions outlined in the staff recommendation (see above).

GRAND VALLEY WATER USERS ASSOCIATION

GRAND VALLEY PROJECT, COLORADO

500 South Tenth Street (303) 242-5065 FAX (303) 243-4871
GRAND JUNCTION, COLORADO 81501-3740

April 1, 1994

To Whom It May Concern

Re: File No. 37-94

The developers of Vista Del Nor'te Subdivision have petitioned the Board of Directors of the Grand Valley Water Users Association (Association) for permission to discharge storm water from only areas "B & C" of the subdivision into the adjacent Association controlled drainage ditch. Such permission has been granted by the Association and as part of that arrangement, Lot 5, Block 2 (out-lot) is to be deeded by the developer(s), to the Association.

Suitable fencing for safety, privacy, etc., along the perimeter of the subdivision adjacent to the drain ditch and canal on the east and an irrigation easement on the north will be a condition of the subdivision's approval by the Association. (See attached marked up composite plan).

The developers have advised of the City's request for a walking path easement along the canal bank at the subdivision's location. As stated in Mr. John William's letter of March 25th 1994 to John Shaver, Assistant City Attorney, "the Association will not allow or agree to the walking trail easement." This is in accordance with Association policy which was re-confirmed last night (3/31/94) during a meeting of the Association Board of Directors.

Thank you for the opportunity to comment. Please advise if there are any questions.

J.W. Hayenga, Mgr.
(4/1/94)

COLEMAN, JOUFLAS & WILLIAMS
ATTORNEYS AT LAW

Joseph Coleman
Gregory Jouflas
John Williams

2452 Patterson Road
P.O. Box 55245
Grand Junction, Colorado 81505

Telephone
(303) 242-3311

Telecopier
(303) 242-1893

April 1, 1994

Kristin Ashbeck
Community Development Department
City of Grand Junction
250 North 5th Street
Grand Junction, CO 81501

RE: Vista Del Norte
Final Plat Submittal

Dear Kristin:

As discussed at our meeting with you and John Shaver on March 31, 1994, I provide the following comments to your list of "outstanding issues". You have assured my client that based upon this submittal of comments and revisions to the final plat, final approval for Vista Del Norte will be on the Planning Commission agenda on April 5, 1994.

I address each issue in the order of your list, a copy of which I attach.

1. The boundary to the property goes to the centerline of the canal, subject to the right-of-way reserved to the United States. Although we believed that the plat accurately represented this boundary as drawn, it is revised and submitted today.

Lot 5, Block 2 will be labeled as a tract. An interest in this tract will be conveyed to the Canal Company as part of an agreement concerning its use.

2. Lot 5, Block 2 is not intended to be a residential building lot (see #1 above). However, it does have 60 feet of frontage on G Road as platted.

3. Per discussions with Bill Klapwyk comments of the Grand Valley Water Users Association are expected by Monday, April 4, 1994, and will be delivered to Community Development.

4. All of the plat details you request have been added.

5. A notation has been added to the plat concerning the need for engineered foundations. It is my understanding from the meeting that no further response is expected.

6. The property over which the canal right-of-way runs is included in the plat. As a result, the requested easement encroachment and storm sewer facilities are not depicted.

7. You confirmed at the meeting that the issue of the other 1/3 of run-off has been addressed by Don Newton to your satisfaction.

8. I cannot provide a copy of the deed at this time. Further research will be required concerning the "real party in interest" to be deeded the property. If Mr. Shaver is correct in his legal analysis, a deed will go to the U.S. Government. We have been told by the U.S. Department of Reclamation to deal with the Grand Valley Water User's Association. My client's desire is to delineate the specific boundaries of the canal right-of-way and correct record title to the right-of-way via a deed. Mr. Cole will cooperate with the City, U.S. Government and the Canal Company to accomplish this end and will determine the appropriate method of conveyance in the next several weeks.

One of the concerns of Dale Cole, and the reason for his request of the March 31 meeting, was a statement made (I believe by the Development Department) that the final plat submittal would be tabled and not be before the Planning Commission on April 5, 1994. We were assured at our meeting yesterday, however, that the final plat submittal would go before the Planning Commission this week if (1) the requested detail is included on the plat; (2) the tract of land next to the cannal is clearly labeled as part of the property; (3) Lot 5, Block 2 is clearly labeled and defined as a building lot or a tract; and (4) the remaining listed issues are addressed. These elements/responses have now been submitted and it is my client's expectation that final plat approval for Vista Del Norte will be on the April 5 Planning Commission agenda.

Thank you.

Sincerely,

COLEMAN, JOUFLAS & WILLIAMS

John Williams/KP

JOHN WILLIAMS

Enclosure
JEW/kap

Re: Krisa

COLEMAN, JOUFLAS & WILLIAMS
ATTORNEYS AT LAW

Joseph Coleman
Gregory Jouflas
John Williams

2452 Patterson Road
P.O. Box 55245
Grand Junction, Colorado 81505

Telephone
(303) 242-3311

Telecopier
(303) 242-1893

April 1, 1994

John Shaver
Assistant City Attorney
Grand Junction City Hall
250 N. 5th Street
Grand Junction, CO 81501

VIA FAX 244-1599

Dear John:

This letter is in response to your letter dated April 1, 1994. I was (technically) mistaken. Mr. Cole owns to the centerline of the canal, subject to the right-of-way. You and I are in agreement (along with the surveyor and engineer) on this issue.

Sincerely,

COLEMAN, JOUFLAS & WILLIAMS

JOHN WILLIAMS

JEW/kap

4/7/94

Contract → proposal

Bill
Russ

- Law enforcement
- Liability -
- Operations/Maintenance
  no interference
  protection of facilities (City $)

Warranty Deed

Palisade to Indian Wash primarily fee land
few parcels

Once proposal submitted, commitment to include GVWU

RECOMMENDED MOTION CHANGE

ITEM 3)

Deed Tract A to the Grand Valley Water Users Association

Deed Tract B to the United States Of America if they will accept the property by the date of the recording of the plat. If this is not met then deed Tract B to the Grand Valley Water User Association.

No mention in the motion of the intent of the use of the Tract or of inclusion of other rights than those that exist today.

City of Grand Junction, Colorado
250 North Fifth Street
81501-2668
FAX: (303) 244-1599

1 April 1994

John Williams
c/o Coleman, Jouflas and Williams
P.O. Box 55245
Grand Junction, CO 81505

re: Vista Del Norte

Dear John,

This letter is being written to you following our meeting of March 31, 1994 wherein you, Dale Cole, Susan Gazdak, Rick Mason, Tom Rolland, Kristen Ashbeck and I discussed the proposed Vista Del Norte subdivision.

After that meeting I reviewed certain file documents pertaining to the subdivision. Included among those documents was your letter to me dated March 25, 1994. In that letter you stated that "Mr. Cole does not own or have an interest in the canal bank." Yesterday it was specifically represented that Cole's contract interest, which he stated was scheduled to close today, included property up and including the centerline of the canal. Would you please explain and please also identify if you are relying on a current survey and/or some recorded instrument as a basis for the interest claimed by Mr. Cole.

Your assistance is appreciated.

OFFICE OF THE CITY ATTORNEY

by: _____
John P. Shaver
Assistant City Attorney
250 N. 5th Street
Grand Junction, CO 81501
(303) 244-1501

pc: Ms. Kristen Ashbeck
Mr. Tim Woodmansee

VISTA DEL NORTE - OUTSTANDING ISSUES

1. The boundary of the platted area does not include all property under the developer's ownership (to the centerline of the canal), yet the total gross acreage is used to calculate residential density.

   Lot 5, Block 2 is intended to be "dedicated" to the Canal Company. If so, it should be a tract not a lot, as should the area "to be deeded to the Canal Company". Dedication should state what/who these areas are for.

2. If Lot 5, Block 2 is intended to be a residential building lot, it has no frontage on a public ROW. The developer responded that the lot has 30' of frontage on G Road--a ROW that is being vacated.

3. No response from Canal Company re: why trail access cannot be provided along area to be deeded to them. There is also nothing in writing from them indicating they approve of the developer using the ditch for 2/3 of the project's run-off.

4. Plat details: lacks metes and bounds description of subdivision boundary, missing a lot of dimensions along lot lines, has dedication language about open space to Homeowners Association and no open space exists, width of GVRP easement not shown, and T.L. Benson is owner of property not Dale Cole (signature block)

5. No acknowledgement of/response to Geologic Survey comments. At least need note on plat & plan re: engineered foundations.

6. If property deeded to Canal Company is not included within subdivision boundaries, need easements from them allowing 14' easement encroachment and placement of storm sewer facilities on their property.

7. Drainage report/plan still do not address where the other 1/3 of the run-off will go.

8. Need to provide a copy of the "deed". We presume it is actually being deeded to the U.S. Government not to the Canal Company to be consistent with ownership patterns along the canal.

STAFF REVIEW

FILE: 144-93

DATE: April 14, 1994

STAFF: Kristen Ashbeck

REQUEST: Right-of-Way Vacation

LOCATION: Portion of G Road near G Road and 27-3/4 Road

APPLICANT: T.L. Benson and Dale Cole

EXISTING LAND USE: Vacant

SURROUNDING LAND USE:
NORTH: Highline Canal and Interstate 70
SOUTH: Single Family Residential
EAST: Highline Canal and Interstate 70
WEST: Single Family Residential

EXISTING ZONING: Planned Residential 2 units per acre (PR-2)

SURROUNDING ZONING:
NORTH: Planned Airport Development (PAD)
SOUTH: Planned Residential and R-2 (county zone)
EAST: PAD
WEST: Residential Single Family 5 units per acre (RSF-5) and Planned Residential

EXECUTIVE SUMMARY: The developer of Vista Del Norte Subdivision located at 27-3/4 and G Roads is requesting a vacation of a portion of the G Road right-of-way.

STAFF ANALYSIS:

Vacation. The proposed vacation of the G Road right-of-way which runs east-west through the site meets the criteria set forth in Section 8-3 of the Zoning and Development Code. City Council tabled this item at the February 2, 1994 meeting until the developer determined an adequate easement for Public Service east-west across the site and adequately addressed the potential for a trail easement along the canal. The City also wanted to consider options of retaining an easement for trail access within the G Road right-of-way at that time.

The developer has accommodated the request by Public Service in the 40-foot Irrigation and Utilities easement that runs from the remaining G Road right-of-way northeast to the canal area tract.

Trail Easements. The developer has now included the entire property within the proposed subdivision boundary. On the Preliminary Plan, the area shown as Tract B was not included because the developer claimed it was to be "deeded" to the canal company. However, this property is actually owned by the petitioner; thus, it was required to be included within the

subdivision boundary. Upon recordation of the plat, the developer intends to deed Tract A to the Grand Valley Water Users Association for maintenance purposes.

Planning Commission, at its April 5, 1994 meeting, approved the Final Plan and Plat for Vista Del Norte with the condition that (among others) Tract B be deeded to the United States Government (Bureau of Reclamation) or, if the U.S. Government will not accept the deed by the time the plat is ready to be recorded (earliest would be effective date of the G Road right-of-way vacation ordinance), then Tract B will also be deeded to the Grand Valley Water Users Association. The Bureau of Reclamation has initially indicated that they would be willing to accept the deed for Tract B and that once the property is owned in fee simple, authority exists for the property to be used for or encumbered with an easement for the purposes of recreational access.

In addition, the developer has dedicated a pedestrian easement within the Grand Valley Rural Power easement along the south and west boundaries of the property. There is also a pedestrian easement connecting the remaining G Road right-of-way to the canal area tract (within the 40-foot utility easement previously mentioned). Thus, there is no need to retain an easement for pedestrian access purposes within the G Road right-of-way.

STAFF RECOMMENDATION: Approval

PLANNING COMMISSION ACTION (1/4/94):

Recommend approval of the right-of-way vacation of a portion of G Road with the conditions that a utility easement be retained as required for Public Service; and 2) a legal description be provided prior to first reading by the Council (5-0).

May 3, 1994

City of Grand Junction
Community Development Department
attn: Ms. Kristen Ashbeck
250 N. 5th Street
Grand Junction, CO 81501

Re: Vista Del Norte improvements to infrastructure prior to recording of Final Plat.

Dear Kristen,

I would like to confirm the general agreements reached at our meeting on April 29, 1994. Meeting participants were Kristen Ashbeck, Jody Kliska, Dale Cole, Mark Young, and Trevor Brown.

1) No improvements guarantee is necessary if all Subdivision improvements are completed prior to recording of the Final Plat.

2) Four sets of stamped plans will be provided to City Engineering along with the cost estimate sheets from Improvements Agreement Forms.

3) Construction will be allowed to commence upon plan approval by City Engineer.

4) acceptance of Vista Del Norte Subdivision Improvements by the City Engineer will allow recording of Final Plat .

5) Drainage fees, proof of ownership, and a revised Avigation Easement will be due before final recording of the Plat.

Please advise if we have misstated or overlooked any issues.

Sincerely,

ROLLAND ENGINEERING
Trevor A. Brown

TAB
cc: Mr. Dale Cole

City of Grand Junction, Colorado
250 North Fifth Street
81501-2668
FAX: (303) 244-1599

4 May 1994

John Williams
c/o Coleman, Jouflas and Williams
P.O. Box 55245
Grand Junction, CO 81505

via facsimile and U.S. Mail

re: Vista Del Norte

Dear John,

This letter is being written to confirm our prior telephone conversations regarding delivery to the City of the deed for tract B of Vista Del Norte subdivision, conveying said tract from Dale Cole to the Bureau of Reclamation.

Specifically, you and I have spoken most recently on April 26 and May 2, 1994, regarding the delivery of a warranty deed for tract B.

In our conversation of April 26, 1994, you represented that the deed would be delivered on or before noon April 28 or at the latest by Friday April 29, 1994. The deed was not delivered. We then spoke on Monday May 2, 1994, and again it was represented that a deed would be transmitted to my office by May 3, 1994. The deed has yet to be provided.

As you well know, the conveyance of tract B to the federal government is vitally important to both the City and your client. Although the Bureau has been receptive to the idea of acceptance of the deed to tract B, administrative hurdles to final acceptance do remain. Overcoming those hurdles may take time. Since time is of the essence and delay has been occasioned by your client, the City expects Mr. Cole to deliver the deed by no later than the close of business May 4, 1994. Due to the fact that the meetings with the Bureau have to be rescheduled, the City also expects that Mr. Cole will agree in writing to an extension of 10 working days beyond the current deadline of May 23, 1994.

Please call if there are questions or if clarification is needed.

Thank you in advance for your cooperation.

OFFICE OF THE CITY ATTORNEY

by: _____

John P. Shaver
Assistant City Attorney
250 N. 5th Street
Grand Junction, CO 81501
(303) 244-1501

pc: Ms. Kristen Ashbeck
Mr. David Varley

Kris

City of Grand Junction, Colorado
250 North Fifth Street
81501-2668
FAX: (303) 244-1599

May 5, 1994

Mr. Russ Starbo
c/o United States Bureau of Reclamation
2764 Compass Drive
Grand Junction, CO 81506

Dear Russ,

This letter will confirm our conversation of earlier today regarding the enclosed draft deed from Dale Cole to the United States Bureau of Reclamation for tract B of Vista del Norte subdivision. For your ready reference I have attached a reduction of the plat for Vista del Norte and have highlighted tract B thereon.

As you are aware from our prior meetings on this subject, the owner and developer of Vista del Norte is endeavoring to unencumber that portion of his property planned for residential development by specifically defining the canal easement that presently burdens the entirety of the property. It is the City's understanding that the developer has received prior written assurances from the Bureau that the proposed transaction will satisfactorily accomplish the developer's purposes and protect the interests of the Bureau and the canal company. The schedules referred to in the deed were not provided to the City at this time, but reference to the enclosed map should assist you in locating tract B and the balance of the property referred to in the deed. As soon as the schedules are received I will forward copies for your review.

This letter will also serve to confirm our discussion of this morning regarding pedestrian and non-vehicular recreational access to the canal roads throughout the valley. As I mentioned, and I know you are aware from prior conversations, the City is in the process of preparing an agreement specifying the terms of access to the canal roads. The agreement also specifies that the City will assume certain responsibilities that are attendant to recreational use of those areas. The City fervently desires to see that the canal roads are made available for recreational use. Use of the canal rights of way for recreational and water conveyance purposes typifies the multiple use public land management philosophy.

The City would greatly appreciate the opportunity to meet with you and any other Bureau staff needed to finalize both the deed

to tract B and the access agreement. Please contact me at your earliest convenience so that we can set up a meeting for some time next week.

If you have questions or to set a meeting, please call me at the number found below.

OFFICE OF THE CITY ATTORNEY

by: _____
John P. Shaver
Assistant City Attorney
250 N. 5th Street
Grand Junction, CO 81501
(303) 244-1501

pc: Ms. Kristen Ashbeck
Ms. Kathy Portner
Mr. Larry Timm
Mr. David Varley

WARRANTY DEED

Grantor, Dale Cole, whose address is 2102 North First Street, Grand Junction, County of Mesa, State of Colorado, for the consideration of ten dollars and other valuable consideration, in hand paid, hereby sell(s) and convey(s) to United States of America, whose legal address is _____, County of _____, and State of _____, the following real property in the County of Mesa, State of Colorado, to wit:

Legal Description of real property is set forth on Schedule "A" attached hereto.

with all its appurtenances, and warrant(s) the title to the same, subject to 1994 real property taxes, due in 1995, and all subsequent real property taxes; reservations, restrictions, easements and rights-of-way, if any, of record or apparent on said property.

Grantee has historically claimed a right-of-way by reservation across real property owned by Grantor for ditches and canals constructed by authority of the United States. The purpose of this deed is to identify, clarify and convey to Grantee the real property used by Grantee for such purpose. By the acceptance and recordation of this deed, Grantee agrees that the property conveyed herein is the entire right-of-way crossing Grantor's property, and releases and quit claims any and all interest Grantee has for such right-of-way across or on Grantor's property described in Schedule "B" attached hereto.

Signed this _____ day of _____, 1994.

_____
Dale Cole

STATE OF COLORADO)
)ss.
COUNTY OF MESA)

Subscribed and sworn to before me this _____ day of _____, 1994, by Dale Cole.

Witness my hand and official seal.

My Commission expires: _____

_____
Notary Public

City of Grand Junction, Colorado
250 North Fifth Street
81501-2668
FAX: (303) 244-1599

May 6, 1994

RECEIVED GRAND JUNCTION
PLANNING
MAY 9 1994

Mr. Russ Starbo
c/o United States Bureau of Reclamation
2764 Compass Drive
Grand Junction, CO 81506

Dear Russ,

Please find enclosed schedule A and B pertaining to Vista del Norte. The schedules describe both tract B and the balance of the development. The legal descriptions were prepared by Richard Mason of Rolland Engineering.

If you have questions, please call.

OFFICE OF THE CITY ATTORNEY

by: _____
John P. Shaver
Assistant City Attorney
250 N. 5th Street
Grand Junction, CO 81501
(303) 244-1501

Encl. (2)

pc: Ms. Kristen Ashbeck

May 6, 1994

City of Grand Junction, Colorado
250 North Fifth Street
81501-2668
FAX: (303) 244-1599

Mr. Russ Storbo
U.S. Bureau of Reclamation
2764 Compass Drive
PO Box 60340
Grand Junction, Colorado 81506

Dear Mr. Storbo,

While the City is in the process of initiating negotiations with the Bureau of Reclamation regarding development of recreational trails on the existing valley canal system, we thought it would be appropriate to give you some background as to the planning which has already been undertaken by the community which substantiates our efforts in this regard. Most recently, the City adopted the Grand Junction Parks, Recreation and Open Space Master Plan in 1992, and the Metropolitan Planning Organization (MPO) completed a Multi-Modal Transportation Study in June 1993 and a draft of the Mesa County 2015 Transportation Plan in March 1994. All of these documents have identified a canal trail system as an important and integral part of the future transportation network in the Grand Valley.

The first phase of the parks plan involved a survey of area residents to determine priorities for recreation facilities. The response to this survey was that walking, jogging and bicycling were by far the most popular activities, and that a trail network was the most important facility need. The plan responded to this need by depicting a trail system on the plan, with the Highline Canal identified as the highest priority trail route within the network.

Due to the major findings of the Multi-Modal Study, a Master Bicycle/Pedestrian Plan for the Grand Valley, Grand Junction/Mesa County Urbanized Area was developed. The plan proposes a comprehensive system of pedestrian and bicycle improvements over the next 20 years including off road bike routes such as the canal trails.

Work on the 2015 Transportation Plan has continued this trail planning with the general goal of the off road pedestrian and bicycle network to "provide a continuous valley wide system of off road trails connecting major employment centers, community centers, schools and places of residence utilizing the riverfront, drainages and canals as a continuous system of greenways and multiple use corridors". Objectives to achieve this goal are stated as follows:

- develop a long term strategy to construct trails along certain irrigation canals, recognizing the liability, easement, law enforcement and maintenance issues

- develop a pilot project to demonstrate the safe recreational trail uses of irrigation ditches

Thus, it is evident that a significant planning effort has already been expended by the community to identify and begin the process of expanding canal use to include recreational purposes. There appears to be broad public support for the effort. Perhaps it is just a matter of time and cooperation by the entities involved before it will become a reality. The City is looking forward to continuing negotiations with the Bureau of Reclamation, the various water user groups, and land owners to attain our goals. The cooperation you have shown thus far is very encouraging and your continued assistance will be greatly appreciated.

Sincerely,

Larry Timm, Director
Department of Community Development

c: Mr. John Shaver
Mr. David Varley
Ms. Kathy Portner
Ms. Kristen Ashbeck

October 31, 1994

Grand Junction Community Development Department
Planning • Zoning • Code Enforcement
250 North Fifth Street
Grand Junction, Colorado 81501-2668
(303) 244-1430 FAX (303) 244-1599

Mr. Kendall Latham
U.S. Bureau of Reclamation
2764 Compass Drive
PO Box 60340
Grand Junction, Colorado 81506

Dear Kendall,

The developer of the Vista Del Norte subdivision has indicated that the required infrastructure improvements for the development are nearing completion, thus, he will be requesting that the plat be recorded in the very near future. Please find enclosed a print of the final plat to be recorded for the Vista Del Norte subdivision. Tract B which will be deeded to the Bureau of Reclamation and the encumbrances on that tract are shown as will be recorded. No revisions to the plat relative to these details are expected. The plat has formally been approved by the Utility Coordinating Committee at its May 11, 1994 meeting and is only awaiting completion of the deeding of Tract B and signature by the required City officials.

This information is provided to you in order to facilitate a timely completion of the conveyance of Tract B. It is our understanding that it is a mutual goal of the Bureau, the City and the property owner to record the plat and the deed transferring Tract B simultaneously. Failure to complete the conveyance will result in the transfer of Tract B to the Grand Valley Water Users rather than to the Bureau which will make realization of a pedestrian access along this portion of the canal extremely difficult.

Please do not hesitate to call me if you need further information regarding this matter.

Sincerely,

Kristen Ashbeck
Planner

c: Mr. David Varley, Assistant City Manager
Mr. John Shaver, Assistant City Attorney

37-94

file in Vista Del Norte

February 10, 1995

City of Grand Junction, Colorado
250 North Fifth Street
81501-2668
FAX: (303) 244-1599

Dale Cole
Cole & Company Realty
235 N. 7th Street
Grand Junction, CO 81501

Subject: Vista Del Norte Subdivision

Dear Mr. Cole:

A final inspection of the streets and drainage facilities in Vista Del Norte Subdivision was conducted on November 23, 1995. As a result of this inspection, a list of remaining items was given to Rolland Engineering for completion. These items were reinspected on February 3, 1995 and found to be satisfactorily completed.

"As Built" record drawings and required test results for the streets and drainage facilities were received on January 5, 1995. These have been reviewed and found to be acceptable.

In light of the above, the streets and drainage improvements are accepted for future maintenance by the City of Grand Junction.

This acceptance is subject to a warranty of all materials and workmanship for a period of one year beginning February 3, 1995.

Thank you for your cooperation in the completion and acceptance of this project.

Sincerely,

Jody Kliska, P.E.
City Development Engineer

cc: Don Newton
Doug Cline
Walt Hoyt
Kathy Portner
Rolland Engineering

United States Department of the Interior

BUREAU OF RECLAMATION

Upper Colorado Region
Western Colorado Area Office

Northern Division
2764 Compass Drive
PO Box 60340
Grand Junction CO 81506-8785

Southern Division
835 E 2nd Avenue
PO Box 640
Durango CO 81302-0640

FEB - 9 1996

KLeatham-ND
LND-6.00

Mr. Dale Cole
2102 North 1st Street
Grand Junction CO 81501

Subject: Land Management - Executed and Recorded Land Donation Contract and Warranty Deed, Contract No. 5-LM-4A-00040, Government Highline Canal, Grand Valley Unit,Colorado

Dear Mr. Cole:

Enclosed for your files are conformed copies of the subject Land Donation Contract and Warranty Deed for Tract B in the Vista del Norte subdivision. These documents have been executed by the United States and recorded in the Mesa County Clerk and Recorder's office.

Thank you for your cooperation in this matter. If you have any questions or comments, please contact Kendal Leatham at (970) 248-0673.

Sincerely,

Alan M. Schroeder

Alan M. Schroeder, Acting
Land & Recreation Resources
Group Chief

Enclosures

cc: Mr. Dick Procter, Manager
Grand Valley Water Users Association
500 South 10th Street
Grand Junction CO 81501

Grand Junction City Planning Department
Attention: Ms. Christine Ashbeck
250 North 5th Street
Grand Junction CO 81501 (ea w/copies of encl)

CONFORMED COPY

Book2182 Page456
1734582 0932AM 10/27/95
Monika Todd Clk&Rec Mesa County Co

Contract No. 5-LM-4A-00040

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
COLORADO RIVER BASIN SALINITY CONTROL PROJECT
GRAND VALLEY UNIT, COLORADO

LAND DONATION CONTRACT

THIS CONTRACT, made this 24 day of JULY, 1995, in pursuance of the Act of June 17, 1902 (32 Stat. 388), and acts amendatory thereof or supplementary thereto, between THE UNITED STATES OF AMERICA, hereinafter referred to as the United States, acting through such officer as is authorized therefor by the Secretary of the Interior, and DALE G. COLE (~~single~~/married) hereinafter referred to as Grantor.

WITNESSETH, that:

WHEREAS, the Grantor desires to donate, in fee title, a parcel of land to the United States, and declines compensation, including severance damages, as provided by the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (84 Stat. 1894); and

WHEREAS, the United States has determined that such a land donation would not be incompatible with project purposes; and

WHEREAS, all costs and expenses related to this Land Donation Contract shall be the responsibility of the Grantor; and

NOW THEREFORE, in consideration of the mutual agreements herein contained, the parties hereto do covenant and agree as follows:

1. The Grantor agrees:

A. To convey by good and sufficient deed with covenants of warranty to the United States, free of lien or encumbrance, except as otherwise provided herein, the following-described real property situated in the County of Mesa, State of Colorado, to-wit:

A parcel of land located in the SE¼SE¼ of Section 36, T.1 N., R.1 W., and NE¼NE¼ of Section 1, T.1 S., R.1 W., all in the Ute Meridian, Mesa County, Colorado, more particularly described as follows:

Commencing at the Southwest Corner of said SE¼SE¼ of Section 36 from whence the Southeast Corner of said Section 36 bears South 89°59'46" East Thirteen Hundred Nineteen and Eighty-eight Hundredths (1319.88) feet; thence South 00°02'30" East Thirty (30) feet; thence North 47°53'57" East Three Hundred Thirteen and Eighty-six Hundredths (313.86) feet to the point of beginning; thence North 31°41'33" West Four Hundred Forty-three and Ninety-nine Hundredths (443.99) feet; thence North 00°02'13" West Four Hundred Twenty-three and Ninety-two Hundredths (423.92) feet; thence South 36°26'12" East One Hundred Two and Thirty-five Hundredths (102.35) feet; thence Two Hundred Eleven and Eighty-nine Hundredths (211.89) feet on the arc of a Four Hundred Seventy (470.00) foot radius curve to the left, the chord of which bears South 17°50'21" East Two Hundred Ten and Ten Hundredths (210.10) feet; thence South 30°45'15" East Twelve Hundred Eighty and Eighty-seven Hundredths (1280.87) feet; thence Three Hundred Seventy-six and Five Hundredths (376.05) feet on the arc of a Seven Hundred Twenty-five (725.00) foot

radius curve to the left, the chord of which bears South 45°36'50" East Three Hundred Seventy-one and Eighty-five Hundredths (371.85) feet; thence North 89°57'59" West Two Hundred Fifteen and Forty-two Hundredths (215.42) feet; thence North 32°20'35" West Two Hundred Eighty-nine and Twenty-five (289.25) feet; thence South 55°43'43" West Forty-three and Two Hundredths (43.02) feet; thence North 32°19'29" West Two Hundred Ninety-six and Seventy-one Hundredths (296.71) feet; thence North 32°22'48" West One Hundred Forty-seven and Twenty-five Hundredths (147.25) feet; thence North 34°29'36" West Two Hundred Ninety-eight and Sixty-three Hundredths (298.63) feet to the point of beginning and containing 6.03 acres more or less.

Together with all improvements and appurtenances thereto belonging or in anywise appertaining.

Excepting and reserving from said conveyance any coal, oil, gas, and other mineral rights (but not sand or gravel) owned by the Grantor in the above-described land, together with the right to prospect for and remove the same, but any rights reserved hereunder shall be exercised in such a manner as will not interfere with the construction, operation, and maintenance of any works of the Colorado River Basin Salinity Control Project, Grand Valley Unit. It is agreed that any exploration or exploitation of such coal, oil, gas, and other minerals shall be approved by the Secretary of the Interior or his duly-authorized representative.

B. That the real property to be conveyed to the United States, as described in Article 1.A. hereof, shall be free from lien or encumbrance except: (i) coal, oil, gas, and other mineral rights reserved to or outstanding in third parties as of the date of this contract; (ii) rights-of-way for roads, railroads, telephone lines, transmission lines, ditches, conduits, or pipelines on, over, or across said lands in existence on such date.

C. To procure and have recorded all assurances of title and affidavits which the Grantor may be advised by the United States are necessary and proper to show in the Grantor complete fee simple unencumbered title to the subject property, subject only to the interests, liens, or encumbrances expressly provided herein. All abstracts, certificates of title, title insurance, and recording fees, will be at the Grantor's expense. All documents pertaining to this Land Donation Contract will be recorded.

2. The United States agrees:

A. Upon approval of Grantor's unencumbered title and reports, as stated herein, by the United States, Grantor will issue a Warranty Deed, as required by Article 1.A., conveying fee title to the above-described real property to the United States. The Warranty Deed form will be provided by the United States to the Grantor for Grantor's signature.

B. To provide the necessary NEPA and Hazardous Waste documents.

3. No Member of or Delegate to Congress or Resident Commissioner shall be admitted to any share or part of this Donation Contract and Grant of Fee Title Land, or to any benefit that may arise therefrom, but this restriction shall not be construed to extend to this contract if made with a corporation or company for its general benefit.

4. This agreement shall be binding upon and inure to the benefit of the heirs, successors, and assigns of the parties hereto.

WITNESS WHEREOF, the parties hereto have signed their names the day and year first above-written.

THE UNITED STATES OF AMERICA

By ~~Regional Supervisor of Water and Land~~, Realty Officer
Bureau of Reclamation
Upper Colorado Region

Grantor

By: Dale G. Cole

Approved:
Reg. Solicitor's Office

ACKNOWLEDGEMENT

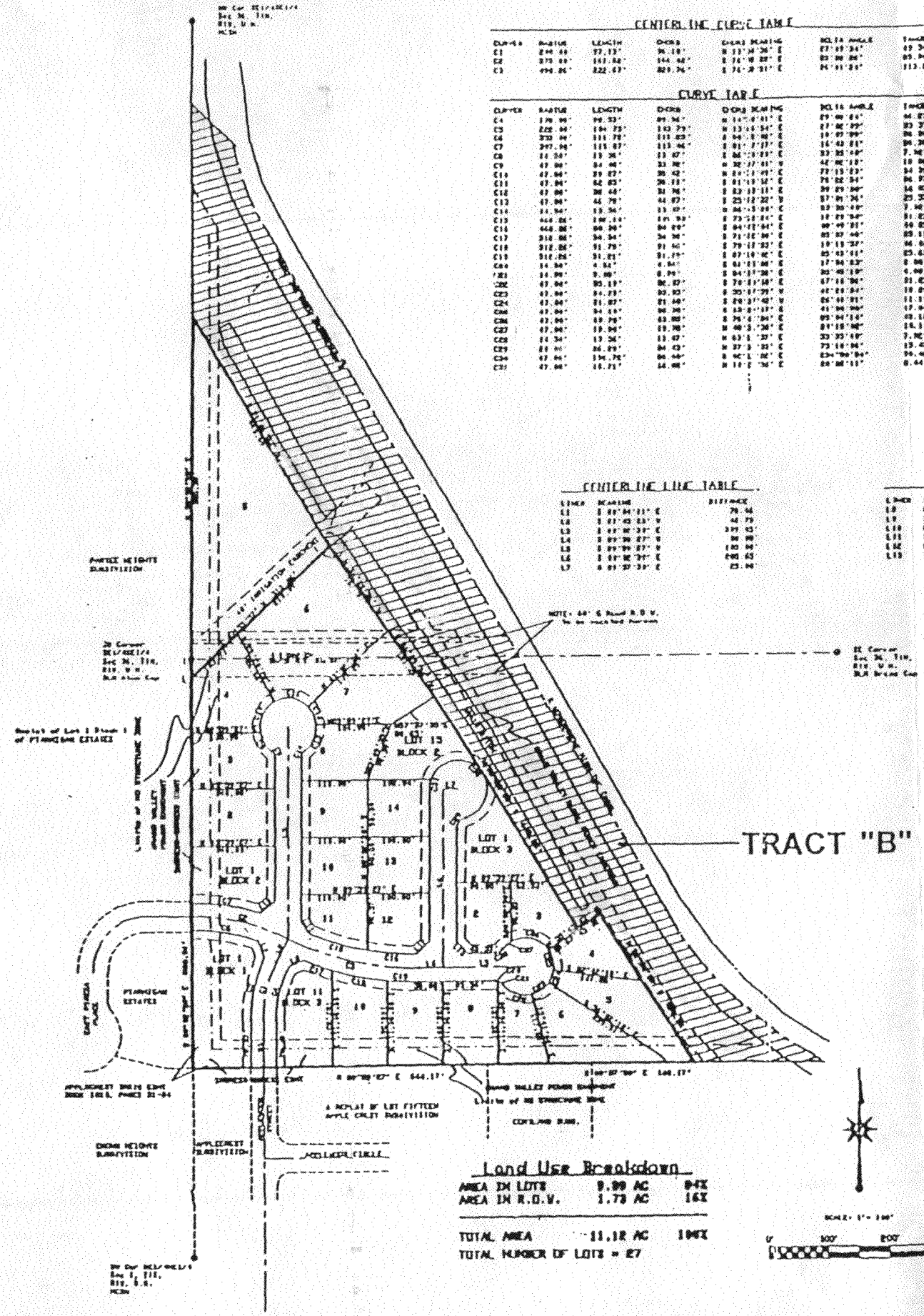
State of Colorado)
) ss.
County of Mesa)

On this 2nd day of February, 19 95, personally appeared before me Dale G. Cole to me known to be the individual or individuals, described herein and who executed the within and foregoing instrument, and acknowledged that he signed the same as his free and voluntary act and deed, for the uses and purposes therein mentioned.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year first above written.

(NOTARY SEAL)

Notary Public in and for the
State of Colorado
Residing at 235 N. 7th Street, Grand Junction, CO. 81501
My commission expires: 11/3/97



VISTA DEL NOR'TE

KNOW ALL MEN BY THESE PRESENTS:

That the undersigned, Dale Cole, is the owner of fee simple of land being a part of the SE1/4 of Section 36, Township 1 North, Range 1 West of the Ute Meridian, and a part of the NE1/4 of Section 1, Township 1 South, Range 1 West of the Ute Meridian and being more particularly described as follows:

All that part of Lots 2 and 7, Joyner Subdivision, lying West of Government Canal, in Section 36, Township 1 North, Range 1 West, Ute Meridian;
AND all that part of Lots 9 and 10, Joyner Subdivision, lying South of Government Canal, in Section 1, Township 1 South, Range 1 West, Ute Meridian;
all in Mesa County, Colorado.

That said owner has caused the said real property to be laid out and surveyed as VISTA DEL NOR'TE, Mesa County, Colorado.

That said owner does hereby dedicate to the City of Grand Junction, on behalf of itself and of the public for the installation, operation, maintenance and repair of utilities, which shall include but not be limited to electric facilities, sanitary sewer facilities, telephone facilities and natural gas facilities, together with the right of ingress and egress on, along, over, under, through, and across said easements, and also together with the right to trim interfering trees and brush; provided, however that the beneficiaries of said easements shall utilize the same in a reasonable and prudent manner; that said owner does hereby dedicate to the City of Grand Junction, on behalf of itself and the public, that real property which is labeled as drainage easement on the accompanying plat for the conveyance of storm runoff, together with the right of ingress and egress on, along, over, under, through and across said easement, and also together with the right to dredge and to remove and/or trim interfering vegetation; that said owner does hereby dedicate to the Vista Del Nor'te Homeowners Association, Inc. those areas designated as Common Open Areas for the uses as stipulated in the covenants as recorded in Book _____ at Page _____ thru _____ inclusive.

That all expenses for street paving or improvements shall be borne by the seller or purchaser, not Mesa County or the City of Grand Junction.

IN WITNESS WHEREOF said owner has caused the same to be hereunto subscribed this _____ day of _____ A.D. 1993.

_____
Dale Cole, President

_____

STATE OF COLORADO)
) ss
COUNTY OF MESA)
The foregoing instrument was acknowledged before me this _____ day of _____ A.D. 1993.

My commission expires: _____

WITNESS MY HAND AND OFFICIAL SEAL.

CLERK AND RECORDER'S CERTIFICATE
STATE OF COLORADO)
) ss
COUNTY OF MESA)
I hereby certify that this instrument was filed in my office at _____ o'clock ____M., this _____ day of _____ A.D. 1993 and is duly recorded as Reception Number _____ in Plat Book _____, Page _____ through _____ inclusive.

_____ _____ _____
Clerk and Recorder Deputy Fees

Amended Covenants, Conditions and Restrictions recorded in Book 1936, at Pages 731 thru 793 inclusive.

CITY OF GRAND JUNCTION CERTIFICATE OF APPROVAL
Approved this _____ day of _____ A.D. 1993.

_____ _____
President of Council City Manager

SURVEYOR'S CERTIFICATE
I, Richard A. Mason, do hereby certify that the accompanying plat of VISTA DEL NOR'TE, a subdivision of a part of the City of Grand Junction, County of Mesa, has been prepared under my direct supervision and accurately represents a field survey of the same. Also said plat conforms to all applicable survey requirements of the Zoning and Development Code of the City of Grand Junction and all applicable state laws and regulations.

_____
Richard A. Mason
Registered Professional Land Surveyor
P.L.S. No. 18469

_____
Date

NOTICE: According to Colorado law you must commence any legal action based upon any defect in this survey within three years after you first discover such defect. In no event, may any action based upon any defect in this survey be commenced more than ten years from the date of the certification shown hereon.

ROLLAND ENGINEERING
491 Ridges Blvd
Grand Jct, CO 81503
(303) 243-8311

Final Plat
Vista Del Nor'te
Subdivision

Designed	TDR	Checked	RAM	Sheet	1
Scale	CFO	Date	3/94	of	1

CONFORMED COPY

1734583 0932AM 10/27/95
MONIKA TODD CLK&REC MESA COUNTY CO
DOCUMENT FEE $EXEMPT

WARRANTY DEED

BOOK2182 PAGE460

DALE G. COLE (~~single~~/married) 2102 North 1st Street, City of Grand Junction, County of Mesa, State of Colorado, Grantor, hereby conveys in fee title to the UNITED STATES OF AMERICA, Grantee, whose address is, Bureau of Reclamation, 125 State Street, Salt Lake City, Utah 84138, acting pursuant to the provisions of the Act of June 17, 1902 (32 Stat. 388), and acts amendatory thereof or supplementary thereto, for the sum of One Dollar ($1.00) and other good and valuable consideration, the following described real property located in the County of Mesa, State of Colorado, to wit:

A parcel of land located in the Southeast Quarter of the Southeast Quarter (SE¼SE¼) of Section Thirty-six (36), Township One (1) North, Range 1 West, and the Northeast Quarter of the Northeast Quarter (NE¼NE¼) of Section One (1), Township One (1) South, Range One (1) West, all in the Ute Meridian, Mesa County, Colorado, more particularly described as follows:

> Commencing at the Southwest Corner of said SE¼SE¼ of Section 36 from whence the Southeast Corner of said Section 36 bears South 89°59'46" East Thirteen Hundred Nineteen and Eighty-eight Hundredths (1319.88) feet; thence South 00°02'30" East Thirty (30) feet; thence North 47°53'57" East Three Hundred Thirteen and Eighty-six Hundredths (313.86) feet to the point of beginning; thence North 31°41'33" West Four Hundred Forty-three and Ninety-nine Hundredths (443.99) feet; thence North 00°02'13" West Four Hundred Twenty-three and Ninety-two Hundredths (423.92) feet; thence South 36°26'12" East One Hundred Two and Thirty-five Hundredths (102.35) feet; thence Two Hundred Eleven and Eighty-nine Hundredths (211.89) feet on the arc of a Four Hundred Seventy (470.00) foot radius curve to the left, the chord of which bears South 17°50'21" East Two Hundred Ten and Ten Hundredths (210.10) feet; thence South 30°45'15" East Twelve Hundred Eighty and Eighty-seven Hundredths (1280.87) feet; thence Three Hundred Seventy-six and Five Hundredths (376.05) feet on the arc of a Seven Hundred Twenty-five (725.00) foot radius curve to the left, the chord of which bears South 45°36'50" East Three Hundred Seventy-one and Eighty-five Hundredths (371.85) feet; thence North 89°57'59" West Two Hundred Fifteen and Forty-two Hundredths (215.42) feet; thence North 32°20'35" West Two Hundred Eighty-nine and Twenty-five (289.25) feet; thence South 55°43'43" West Forty-three and Two Hundredths (43.02) feet; thence North 32°19'29" West Two Hundred Ninety-six and Seventy-one Hundredths (296.71) feet; thence North 32°22'48" West One Hundred Forty-seven and Twenty-five Hundredths (147.25) feet; thence North 34°29'36" West Two Hundred Ninety-eight and Sixty-three Hundredths (298.63) feet to the point of beginning and containing 6.03 acres more or less.

And warrant the title to all of the above-described real property together with all improvements and appurtenances thereto belonging or in anywise appertaining.

Excepting and reserving from said conveyance any coal, oil, gas, and other mineral rights (but not sand or gravel) owned by the Grantor in the above-described land, together with the right to prospect for and remove the same, but any rights reserved hereunder shall be exercised in such a manner as will not interfere with the construction, operation, and maintenance of any works of the Colorado River Basin Salinity Control Project, Grand Valley Unit. It is agreed that methods of exploration, exploitation, or extraction of any such coal, oil, gas, and other minerals shall be approved by the Secretary of the Interior or his duly-authorized representative.

Subject to coal, oil, gas, and other minerals reserved to or outstanding in third parties as of the date of this contract; also subject to rights-of-way or easements for roads, railroads, telephone lines, transmission lines, ditches, conduits, or pipelines on, over, or across said lands in existence on such date.

This conveyance is made pursuant to the provisions of that certain Land Donation Contract, Contract No. 5-LM-4A-00040, dated the 24 day of July, 1995, between the United States of America and Dale G. Cole.

This real property is acquired by the Bureau of Reclamation, Department of the Interior, for the United States of America.

Witness the hand of said Grantor this 19 day of Oct, A.D., 1995.

Dale G. Cole

ACKNOWLEDGMENT

State of Colorado)
) ss.
County of Mesa)

On this 23rd day of October, 1995, personally appeared before me Dale G. Cole to me known to be the individual or individuals, described in and who executed the within and foregoing instrument, and acknowledged that he signed the same as his free and voluntary act and deed, for the uses and purposes therein mentioned.

IN WITNESS WHEREOF, I have Hereunto set my hand and affixed my official seal the day and year first above written.

(NOTARIAL SEAL) NOTARY PUBLIC PATRICIA DIXON MONTGOMERY STATE OF COLORADO

Patricia Dixon Montgomery
Notary Public in and for the
State of
Residing at
My commission expires: 9/20/97

City of Grand Junction, Colorado
250 North Fifth Street
81501-2668
FAX: (303) 244-1599

Mr. Alan M. Schroeder
Land & Recreation Resources Group
United States Department of the Interior
Bureau of Reclamation
2764 Compass Drive
Grand Junction, Colorado 81506-8785

January 3, 2001

RE: Pedestrian Easement in Vista Del Norte Subdivision, Grand Junction

Dear Mr. Schroeder,

City of Grand Junction staff was recently reviewing the file for the subdivision referenced above regarding pedestrian access along the U.S. Government Highline Canal. According to our records, Tract B of the Vista Del Norte subdivision in Grand was deeded to the United States Government by the developer with the understanding that the Bureau of Reclamation would, in turn, grant the City an easement over a portion of the tract for pedestrian access. Please refer to the enclosed plat map and excerpt of the minutes of the public hearing. Our files do not reflect that an easement was ever granted to the City as intended and agreed upon. Please send us a copy of the grant of easement if it was accomplished or prepare the easement for recording.

Thank you for your attention to this matter.

Sincerely,

Kristen Ashbeck
Senior Planner

encl

United States Department of the Interior

BUREAU OF RECLAMATION
Upper Colorado Region
Grand Junction Projects Office
P.O. Box 60340
2764 Compass Drive
Grand Junction, Colorado 81506-8758

JAN 12 1995

GJ-453A
LND-6.00

Mr. Dale Cole
Cole and Company Realty
235 North 7th Street
Grand Junction CO 81501

Subject: Land Management - Land Donation Contract, Contract No. 5-LM-4A-00040, Government Highline Canal, Grand Valley Unit, Colorado

Dear Mr. Cole:

Enclosed are four copies of the subject contract. Reclamation has fulfilled its obligations as stated in Article 2. by preparing a Warranty Deed form, which will be provided to you for signature upon execution of this contract. Reclamation has also obtained the necessary NEPA and hazardous waste compliance documents.

Before the Warranty Deed can be executed, you need to provide Reclamation with, as stated in Article 1.C., assurances of title and affidavits showing you have complete fee simple unencumbered title to the subject property.

Please review this contract and, if satisfactory, sign all four contracts and return them to this office with your affidavits. After review of the affidavits and execution of the contract by the United States, a Warranty Deed form will be forwarded to you for your signature. After signature of the Warranty Deed form it should be returned to this office. Reclamation will have the contract and deed recorded in the Mesa County Recorder's office and provide you with the recorded copies.

If you have any questions or comments, please contact Kendal Leatham at (303) 248-0673.

Sincerely,

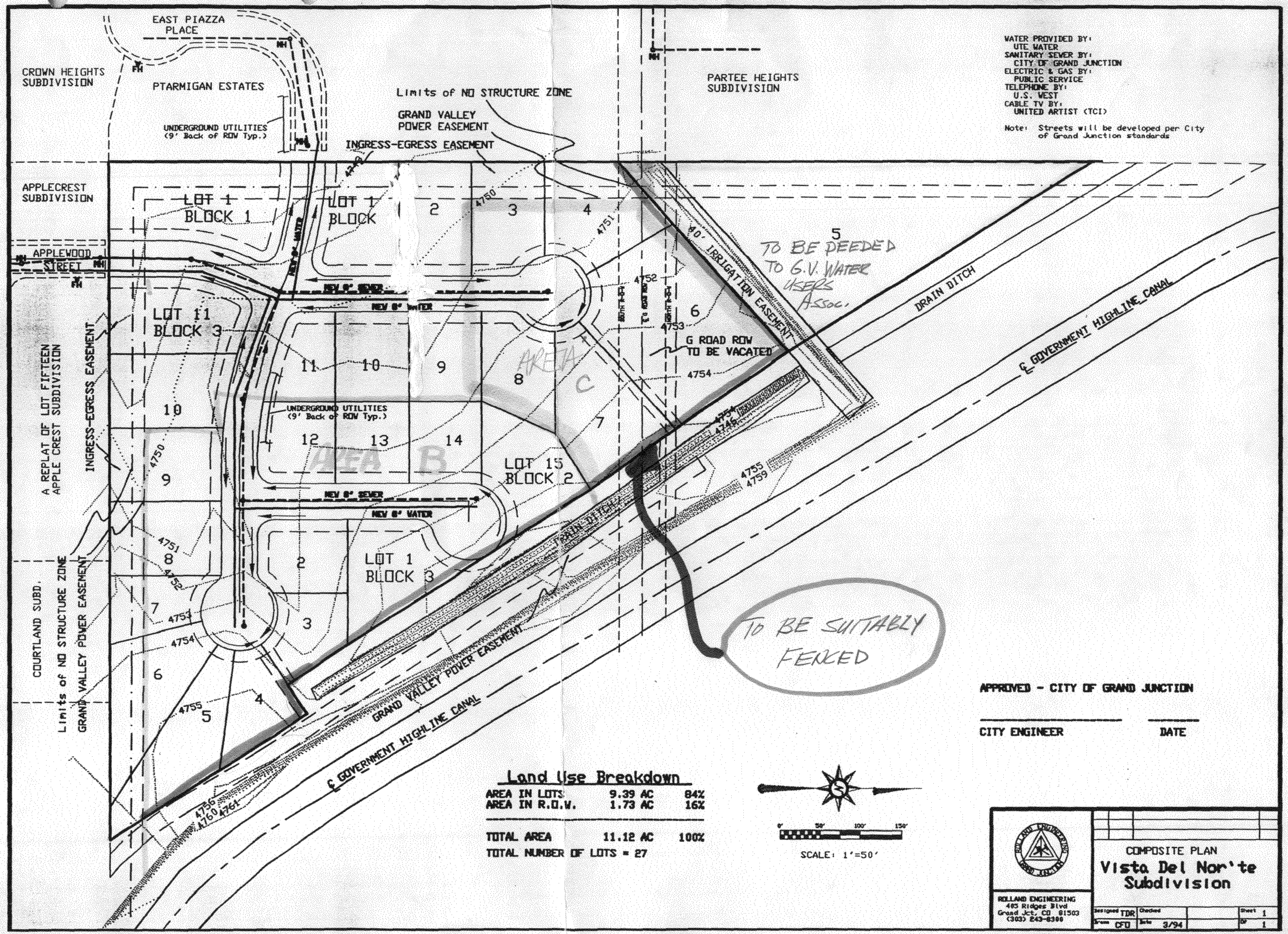
Ed Warner

For David W. Mutz
Chief, Water and Land Division

Enclosures 4

cc: Mr. Richard Proctor
Manager, Grand Valley Water
Users Association
500 South 10th Street
Grand Junction CO 81501

Ms. Kristen Ashbeck
Grand Junction Community
Development Department
250 North Fifth Street
Grand Junction CO 81501-2668
(ea w/o encl)



Land Use Breakdown

AREA IN LOTS	9.39 AC	84%
AREA IN R.O.W.	1.73 AC	16%
TOTAL AREA	11.12 AC	100%

TOTAL NUMBER OF LOTS = 27

0' 50' 100' 150'

SCALE: 1"=50'

APPROVED - CITY OF GRAND JUNCTION

CITY ENGINEER _____ DATE _____

ROLLAND ENGINEERING
405 Ridges Blvd
Grand Jct, CO 81503
(303) 243-8300

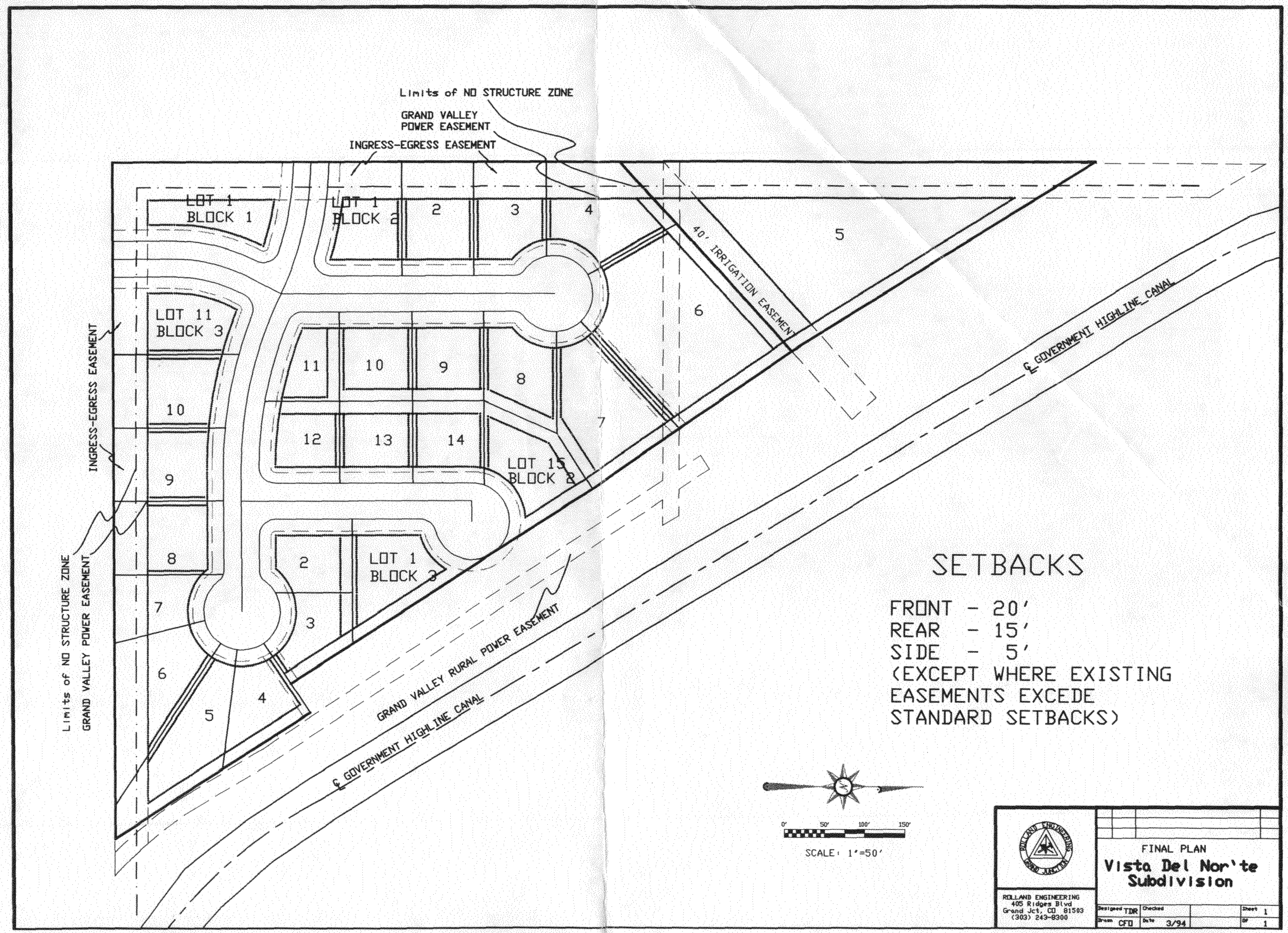
COMPOSITE PLAN
Vista Del Nor'te Subdivision

Designed	Checked		Sheet
TDR			1
Drawn	Date		OF
CFD	3/94		1

Ú:\BéNSUN\ûûMP âJe MÃr Ý 09:55: ÝS Ý99C ûûäâAND éNGèNéêêèNG

C:\USER\MAURICE\CUSTOMER\ROLLAND\SETBACK Tue Mar 1 14:25:59 1994 Plotted by LK Survey Instruments, Grand Jct, Co

#37 94



SETBACKS

FRONT - 20'
REAR - 15'
SIDE - 5'
(EXCEPT WHERE EXISTING EASEMENTS EXCEDE STANDARD SETBACKS)

0' 50' 100' 150'

SCALE: 1"=50'

ROLLAND ENGINEERING
405 Ridges Blvd
Grand Jct, CO 81503
(303) 243-8300

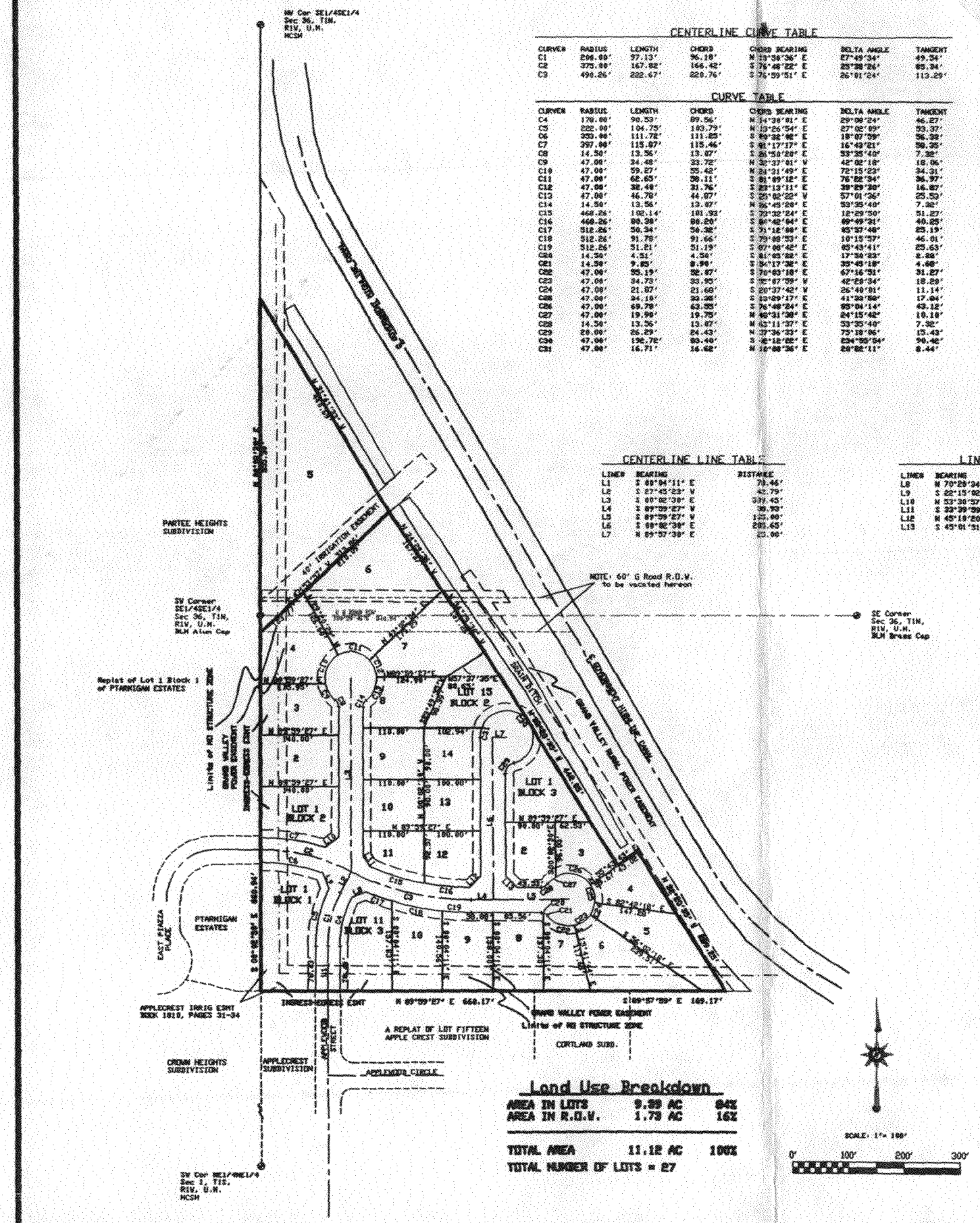
FINAL PLAN

Vista Del Nor'te Subdivision

Designed TDR	Checked		Sheet 1
Drawn CFD	Date 3/94		Of 1

37 94

G:\BENSON\DWG-PLAT\ 3Je MAr Y YO: CY: Y5 Y99C GUAAND ENGINEERING



CENTERLINE CURVE TABLE

CURVE#	RADIUS	LENGTH	CHORD	CHORD BEARING	DELTA ANGLE	TANGENT
C1	200.00'	97.13'	96.18'	N 13°38'36" E	27°49'34"	49.54'
C2	375.00'	167.82'	166.42'	S 76°48'22" E	25°38'26"	85.34'
C3	498.26'	222.67'	220.76'	S 76°59'51" E	26°01'24"	113.29'

CURVE TABLE

CURVE#	RADIUS	LENGTH	CHORD	CHORD BEARING	DELTA ANGLE	TANGENT
C4	170.00'	90.53'	89.56'	N 14°38'01" E	29°08'24"	46.27'
C5	222.00'	104.75'	103.79'	N 13°26'54" E	27°02'09"	53.37'
C6	353.00'	111.78'	111.85'	S 80°32'48" E	18°07'39"	56.38'
C7	397.00'	115.87'	115.46'	S 81°17'17" E	16°43'21"	58.35'
C8	14.50'	13.56'	13.07'	S 26°50'28" E	53°35'40"	7.32'
C9	47.00'	34.48'	33.72'	N 32°37'01" W	42°02'18"	18.06'
C10	47.00'	59.27'	55.42'	N 34°31'49" E	72°15'23"	34.31'
C11	47.00'	62.65'	58.11'	S 81°49'12" E	76°22'34"	36.97'
C12	47.00'	32.48'	31.76'	S 23°13'11" E	39°34'30"	16.87'
C13	47.00'	46.78'	44.87'	S 25°52'22" W	57°01'36"	25.53'
C14	14.50'	13.56'	13.07'	N 26°45'28" E	53°35'40"	7.32'
C15	468.26'	102.14'	101.93'	S 73°32'24" E	12°29'50"	51.27'
C16	468.26'	80.38'	80.28'	S 84°46'04" E	09°49'31"	40.25'
C17	512.26'	50.34'	50.32'	S 71°12'08" E	05°37'48"	25.19'
C18	512.26'	91.78'	91.66'	S 79°08'53" E	10°15'57"	46.01'
C19	512.26'	51.21'	51.19'	S 07°08'42" E	05°43'41"	25.63'
C20	14.50'	4.51'	4.49'	S 81°05'28" E	17°50'23"	2.28'
C21	14.50'	9.85'	8.90'	S 54°17'32" E	35°45'18"	4.60'
C22	47.00'	55.19'	52.07'	S 76°03'18" E	67°16'51"	31.27'
C23	47.00'	34.73'	33.95'	S 35°07'59" W	42°19'34"	18.20'
C24	47.00'	21.07'	21.68'	S 20°37'42" W	25°40'01"	11.14'
C25	47.00'	34.10'	33.36'	S 13°29'17" E	41°33'58"	17.84'
C26	47.00'	69.78'	63.55'	S 76°48'24" E	85°04'14"	43.12'
C27	47.00'	19.98'	19.75'	N 46°31'38" E	24°15'42"	10.18'
C28	14.50'	13.56'	13.07'	N 63°11'37" E	53°35'40"	7.32'
C29	28.00'	26.29'	24.43'	N 27°36'33" E	75°18'06"	15.43'
C30	47.00'	196.78'	83.48'	S 28°18'28" E	234°28'54"	90.48'
C31	47.00'	14.71'	14.62'	N 16°08'36" E	20°22'11"	8.44'

CENTERLINE LINE TABLE

LINE#	BEARING	DISTANCE
L1	S 88°04'11" E	79.46'
L2	S 27°45'23" W	42.79'
L3	S 00°02'39" E	339.45'
L4	S 89°59'27" W	38.93'
L5	S 89°59'27" W	125.00'
L6	S 00°02'39" E	295.65'
L7	N 89°57'39" E	23.00'

LINE TABLE

LINE#	BEARING	DISTANCE
L8	N 70°29'24" E	26.29'
L9	S 22°15'02" E	30.29'
L10	N 53°30'57" E	32.18'
L11	S 39°39'39" E	22.15'
L12	N 45°18'29" E	29.39'
L13	S 45°01'31" E	28.28'

Land Use Breakdown

AREA IN LOTS	9.39 AC	84%
AREA IN R.O.W.	1.73 AC	16%
TOTAL AREA	11.12 AC	100%

TOTAL NUMBER OF LOTS = 27

VISTA DEL NOR'TE

KNOW ALL MEN BY THESE PRESENTS:

That the undersigned, Dale Cole, is the owner of two parcels of land being a part of the SE1/4 of Section 36, Township 1 North, Range 1 West of the Ute Meridian, and a part of the NE1/4 of Section 1, Township 1 South, Range 1 West of the Ute Meridian and being more particularly described as follows:

All that part of Lots 2 and 7, Jaynes Subdivision, lying West of Government Canal, in Section 36, Township 1 North, Range 1 West, Ute Meridian;
AND all that part of Lots 9 and 10, Jaynes Subdivision, lying South of Government Canal, in Section 1, Township 1 South, Range 1 West, Ute Meridian;
all in Mesa County, Colorado.

That said owner has caused the said real property to be laid out and surveyed as VISTA DEL NOR'TE, Mesa County, Colorado.

That said owner does hereby dedicate to the City of Grand Junction, on behalf of itself and of the public for the installation, operation, maintenance and repair of utilities, which shall include but not be limited to electric facilities, sanitary sewer facilities, telephone facilities and natural gas facilities, together with the right of ingress and egress on, along, over, under, through, and across said easements, and also together with the right to trim interfering trees and brush; provided, however that the beneficiaries of said easements shall utilize the same in a reasonable and prudent manner; that said owner does hereby dedicate to the City of Grand Junction, on behalf of itself and the public, that real property which is labeled as drainage easement on the accompanying plat for the conveyance of storm runoff, together with the right of ingress and egress on, along, over, under, through and across said easement, and also together with the right to dredge and to remove and/or trim interfering vegetation; that said owner does hereby dedicate to the Vista Del Nor'te Homeowners Association, Inc. those areas designated as Common Open Areas for the uses as stipulated in the covenants as recorded in Book _____ at Page _____ thru ____ inclusive.

That all expenses for street paving or improvements shall be borne by the seller or purchaser, not Mesa County or the City of Grand Junction.

IN WITNESS WHEREOF said owner has caused its name to be hereunto subscribed this _____ day of _____ A.D. 1993.

_____
Dale Cole, President

_____

STATE OF COLORADO)
) ss
COUNTY OF MESA)
The foregoing instrument was acknowledged before me this _____ day of _____ A.D. 1993.

My commission expires: _____

WITNESS MY HAND AND OFFICIAL SEAL.

CLERK AND RECORDER'S CERTIFICATE
STATE OF COLORADO)
) ss
COUNTY OF MESA)
I hereby certify that this instrument was filed in my office at _____ o'clock ___.M., this _____ day of _____ A.D. 1993 and is duly recorded as Reception Number _____ in Plat Book _____, Page _____ through _____ inclusive.

_____ _____ _____
Clerk and Recorder Deputy Fees

Amended Covenants, Conditions and Restrictions recorded in Book 1992, at Pages 751 thru 793 inclusive.

CITY OF GRAND JUNCTION CERTIFICATE OF APPROVAL
Approved this _____ day of _____ A.D. 1993.

_____ _____
President of Council City Manager

SURVEYOR'S CERTIFICATE
I, Richard A. Mason, do hereby certify that the accompanying plat of VISTA DEL NOR'TE, a subdivision of a part of the City of Grand Junction, County of Mesa, has been prepared under my direct supervision and accurately represents a field survey of the same. Also said plat conforms to all applicable survey requirements of the Zoning and Development Code of the City of Grand Junction and all applicable state laws and regulations.

_____
Richard A. Mason
Registered Professional Land Surveyor
P.L.S. No. 19469

_____
Date

NOTICE: According to Colorado law you must commence any legal action based upon any defect in this survey within three years after you first discover such defect. In no event, may any action based upon any defect in this survey be commenced more than ten years from the date of the certification shown hereon.

ROLLAND ENGINEERING
405 Ridges Blvd
Grand Jct, CO 81503
(303) 243-8300

Final Plat
Vista Del Nor'te Subdivision

Designed	TDR	Checked	RAM			Sheet	1
Drawn	CFD	Date	3/94			Of	1

FINAL
DRAINAGE REPORT
FOR
Vista Del Nor`te
Subdivision

PREPARED FOR:
T.L. Benson & Dale Cole

PRESENTED TO:
The City of Grand Junction

#37 94

ROLLAND ENGINEERING

405 Ridges Blvd, Suite A, Grand Jct, CO 81503

ROLLAND ENGINEERING

405 RIDGES BOULEVARD, SUITE A
GRAND JUNCTION, COLORADO 81503
(303) 243-8300

March 1, 1994

Ms. Jody Kliska
Development Engineer
City of Grand Junction
Public Works Department
250 North 5th Street
Grand Junction, CO 81501

RE: **FINAL DRAINAGE REPORT FOR VISTA DEL NOR'TE SUBDIVISION**

Dear Jody,

Enclosed you will find the Final Drainage Report for the Vista Del Nor'te Subdivision. Drainage calculations for the 2 and 100-year design storms were performed for this report.

Please call us if you have any questions or need additional information. Thank you for your time and consideration regarding this project.

Respectfully submitted,
ROLLAND ENGINEERING

Mark D. Young, E.I.T.

MDY:lvg

Enclosures

FINAL DRAINAGE REPORT
FOR
VISTA DEL NOR'TE SUBDIVISION

PREPARED FOR:

MR. T. L. BENSON & MR. DALE COLE
235 NORTH 7TH STREET
GRAND JUNCTION, CO 81501

PREPARED BY:

ROLLAND ENGINEERING
405 RIDGES BOULEVARD
SUITE A
GRAND JUNCTION, CO 81503

MARCH 1, 1994

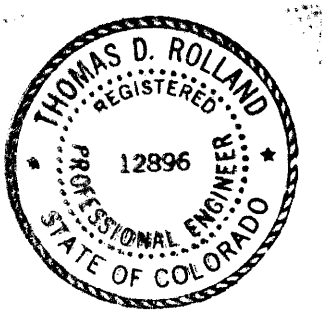


TABLE OF CONTENTS

GENERAL LOCATION AND DESCRIPTIONS

VISTA DEL NOR' TE SUBDIVISION IS AN APPROXIMATELY 13 ACRE SITE LOCATED AT WHAT WOULD BE 27 3/4 AND G ROADS. THE SITE LIES IMMEDIATELY NORTH OF APPLE CREST SUBDIVISION AND EAST OF PTARMIGAN ESTATES. ACCESS TO THE SITE CAN BE GAINED FROM BOTH APPLEWOOD STREET AND EAST PIAZZA PLACE. THE SITE LIES AT THE VERY TOP OF A MAJOR DRAINAGE BASIN THAT FLOWS SOUTHWEST FROM THE SITE AND CONTAINS APPROXIMATELY 200 ACRES. THE HISTORIC FLOW OF THE MAJOR BASIN CROSSES 27 1/2 ROAD AT CORTLAND AVENUE AND CROSSES 12TH STREET INTO LAKESIDE SUBDIVISION. THE BASIN IS APPROXIMATELY 7000 FEET LONG AND 1000 FEET WIDE. THE MAJOR DRAINAGE BASIN IS NEARLY COMPLETELY DEVELOPED AND INCLUDES CROWN HEIGHTS, PTARMIGAN ESTATES, FIRST PRESBYTERIAN CHURCH, PTARMIGAN RIDGE, BELL RIDGE, SPOMER, AND LAKESIDE SUBDIVISIONS.

THE SOILS ON THIS SITE CONSIST OF A FRUITA CLAY LOAM. THE GROUND COVER CONSISTS OF NATIVE GRASSES AND SAGE BRUSH.

EXISTING DRAINAGE CONDITIONS

THE MAJOR DRAINAGE BASIN GENERALLY HAS GENTLE SLOPES UP TO 2% TO THE SOUTH AND WEST. AS WE STATED ABOVE THE BASIN IS NEARLY ALL DEVELOPED. THERE ARE NO PREVIOUSLY DETERMINED 100 YEAR FLOODPLAINS IN THE BASIN. THIS SITE CAN DRAIN OUT BOTH APPLEWOOD STREET AND/OR EAST PIAZZA PLACE BUT WILL EVENTUALLY END UP AT THE INTERSECTION OF 27 1/2 ROAD AND CORTLAND AVENUE. CARE WILL NEED TO BE TAKEN TO DETERMINE WHICH COURSE OF DRAINAGE TO UTILIZE DUE TO POSSIBLE FLOW LIMITATIONS. AS WE MENTIONED THIS SITE IS AT THE VERY TOP OF THE BASIN; BECAUSE IT IS BOUNDED ON THE NORTH AND EAST BY THE GOVERNMENT HIGHLINE CANAL AND ITS DRAINAGE DITCH WE HAVE VIRTUALLY NO OUTSIDE STORMWATER INFLUENCE.

PROPOSED DRAINAGE CONDITIONS

BASED ON FURTHER EVALUATIONS AND DISCUSSIONS WITH THE CITY OF GRAND JUNCTION AND GRAND VALLEY WATER USERS ASSOCIATION, WE ARE PROPOSING TO ROUTE AS MUCH DEVELOPED RUNOFF AS POSSIBLE TO THE EXISTING GOVERNMENT HIGHLINE CANAL'S DRAINAGE DITCH LOCATED ALONG THE NORTH AND EAST SIDE OF THE SITE. IT IS OUR OPINION THAT BY IMPLEMENTING THIS APPROACH A SIGNIFICANT REDUCTION IN RUNOFF CAN BE ACHIEVED, THUS GREATLY RELIEVING AN ALREADY TAXED DRAINAGE SYSTEM LOCATED DOWNSTREAM WITHIN THIS BASIN. OUR PLAN WILL ROUTE ABOUT
64% OF THE DEVELOPED RUNOFF INTO A DIFFERENT SUBBASIN; BUT CONFLUENCES TO THE SAME BASIN ALONG HORIZON DRIVE NEAR 7TH STREET.

ON-SITE DETENTION WILL BE INCORPORATED TO MAINTAIN RELEASE INTO THE BASIN AT HISTORIC RATES FOR THE 2 & 100 YEAR STORM EVENTS. THE ROUTED DRAINAGE WILL BE DETAINED AND RELEASED AT THE HISTORIC RATES.

ACCESS FOR MAINTENANCE OF DRAINAGE FACILITIES WILL BE VIA A COMBINATION OF PUBLIC RIGHT-OF-WAY AND DEDICATED DRAINAGE EASEMENTS. OWNERSHIP AND MAINTENANCE RESPONSIBILITY OF THE DRAINAGE FACILITIES WILL BE THAT OF THE CITY OF GRAND JUNCTION.

DESIGN CRITERIA AND APPROACH

HAVING PERFORMED A PREVIOUS STUDY IN THIS BASIN, WE ARE AWARE THAT THERE ARE SOME CONSTRAINTS TO THE SYSTEM AT 27 1/2 ROAD AND CORTLAND AVENUE THAT WILL HAVE TO BE MAINTAINED. BEYOND THAT, WE ARE NOT AWARE OF ANY MASTER PLAN OR OTHER LIMITATIONS ON THE BASIN OR THIS SITE.

THE HYDROLOGY AND HYDRAULIC CALCULATIONS CONDUCTED FOR THIS SITE UTILIZED THE INTERIM OUTLINE OF GRADING AND DRAINAGE CRITERIA (JULY 1992) PER THE CITY OF GRAND JUNCTION. THE RATIONAL METHOD WAS USED TO PERFORM THE ANALYSIS FOR THE 2 AND 100 YEAR DESIGN EVENTS.

ON-SITE DETENTION WILL BE PROVIDED FOR THIS PROJECT. THE 100 YEAR DESIGN EVENT WAS USED TO DETERMINE THE REQUIRED DETENTION VOLUME. THERE WILL NOT BE ANY OFF SITE STORM WATER CONTRIBUTION TO THIS DEVELOPMENT.

CONCLUSION

SUMMARIZED BELOW ARE THE DRAINAGE CALCULATIONS FOR THIS PROJECT:

DRAINAGE CALCULATIONS

RATIONAL METHOD: 2 & 100 YEAR DESIGN STORMS

EXISTING TOTAL SITE RUNOFF RATES

2-YEAR STORM HISTORIC

$Q_{2h} = 1.08cfs$

100-YEAR STORM HISTORIC

$Q_{100h} = 6.91cfs$

EXISTING RUNOFF RATES TO PRIVATE PROPERTY

2-YEAR STORM HISTORIC

$Q_{2h} = 1.08cfs$

100-YEAR STORM HISTORIC

$Q_{100h} = 6.91cfs$

PROPOSED TOTAL SITE RUNOFF RATES (AFTER DETENTION)

2-YEAR STORM DEVELOPED

$Q_{2d} = 1.08cfs$

100-YEAR STORM DEVELOPED

$Q_{100d} = 6.91cfs$

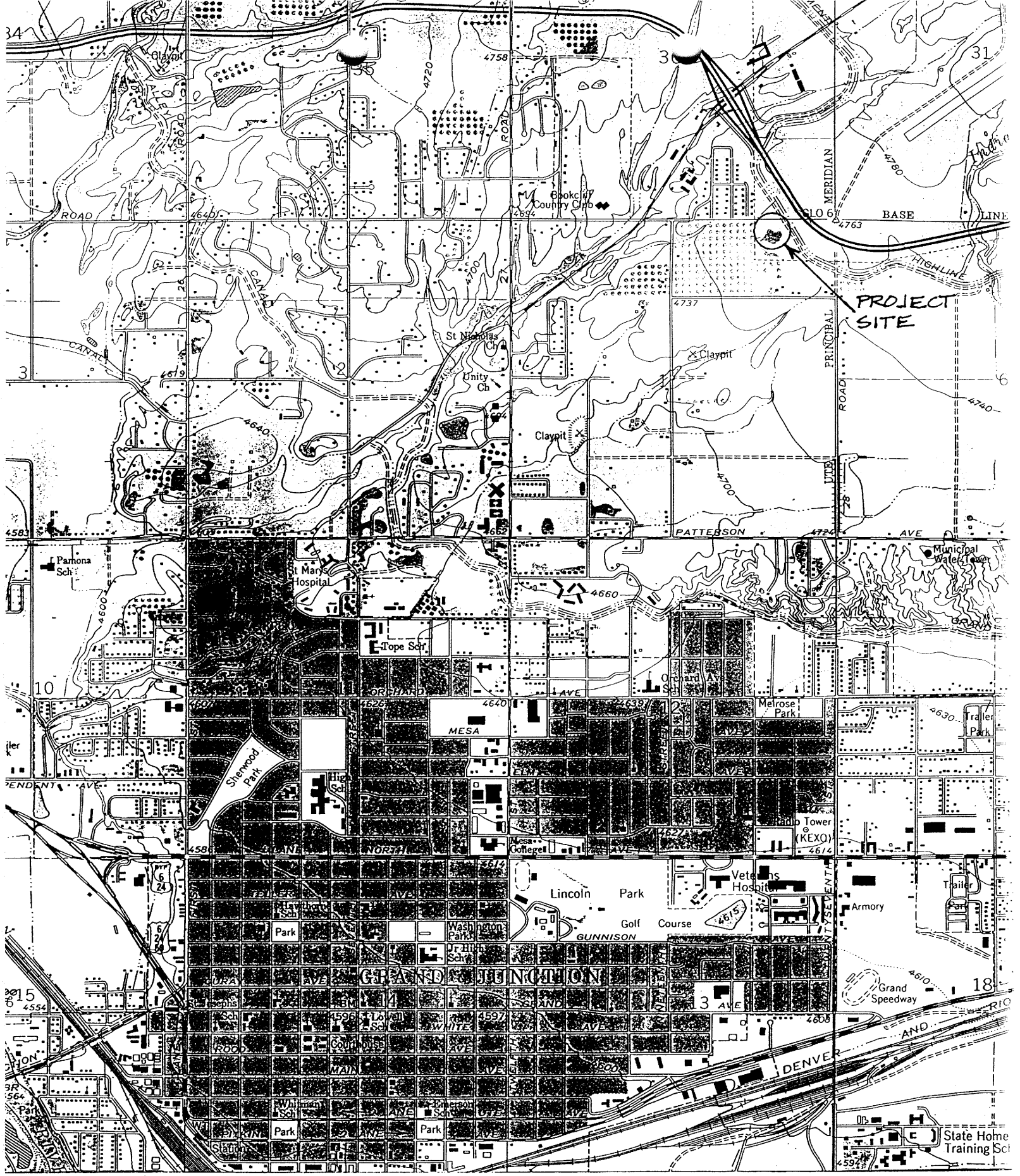
PROPOSED RUNOFF RATES TO PRIVATE PROPERTY (AFTER DETENTION)

2-YEAR STORM DEVELOPED

$Q_{2d_A} = 0.39cfs$
$Q_{2d_B} = 0.43cfs$
$Q_{2d_C} = 0.26cfs$
$Q_{2d} = 1.08cfs(TOTAL)$

100-YEAR STORM DEVELOPED

$Q_{100d_A} = 2.48cfs$
$Q_{100d_B} = 2.77cfs$
$Q_{100d_C} = 1.66cfs$
$Q_{100d} = 6.91cfs(TOTAL)$



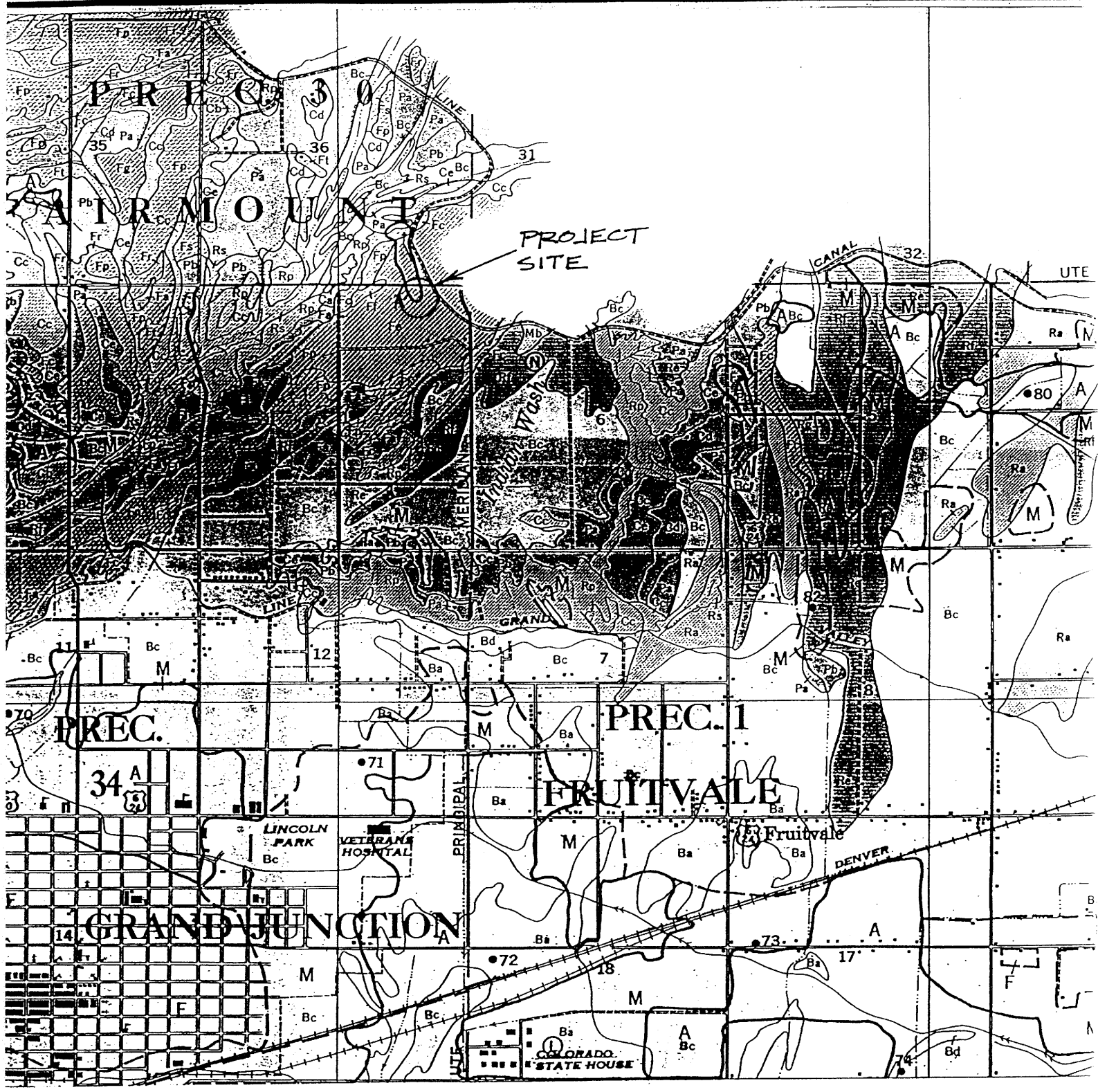
VICINITY MAP

FIGURE 1

SOIL MAP

GRAND JUNCTION AREA - COLORADO

SHEET NO. 3



SLIGHTLY TO MODERATELY DEVELOPED, MODERATELY FINE-TEXTURED SOILS WITH MODERATELY PERMEABLE SUBSOILS

Fe → Fruita clay loam, 0-2 percent slopes

Fruita clay loam, 2-5 percent slopes

Fruita clay loam, moderately deep, 0-2 percent slopes

Fruita clay loam, moderately deep, 2-5 percent slopes

FIGURE 2

APPENDIX A

Vista Del Nor'te Drainage

2-YEAR STORM – HISTORIC

FILE: NORTSTRM
date: 3/1/94

A = 9.24 ac
Hydrologic soil group = B ⇒ Moderate infiltration.
C_{2h} = 0.10
S = 1.0%
V = 0.85 ft/sec {Average between "short grass" & "nearly bare"}.
L = 900 ft

$$T_{C_{2h}} = \frac{900}{0.85}\left(\frac{1}{60}\right) = 17.65\,\text{min} \approx 18\,\text{min}.$$

I_{2h} = 1.17 in/hr

Therefore $Q_{2h} = 0.10(1.17)(9.24) =$ 1.08 cfs

2-YEAR STORM – DEVELOPED

SUB-BASIN A

A_A = 3.32 ac
C_{2d} = 0.35
S = 1.0%
V = 2.00 ft/sec
L = 470 ft

$$T_{C_{2d}} = \frac{470}{2}\left(\frac{1}{60}\right) = 3.92\,\text{min}, \text{ Use 5 min.}$$

I_{2d} = 1.95 in/hr.

Therefore $Q_{2d_A} = 0.35(1.95)(3.32) =$ 2.27 cfs ⇒Reduce A_A by +50%

SUB-BASIN B

A_B = 3.70 ac
C_{2d} = 0.35
S = 0.50%
V = 1.4 ft/sec {Concrete}
L = 450 ft

$$T_{C_{2d}} = \frac{450}{1.4}\left(\frac{1}{60}\right) = 5.36\,\text{min} \qquad \text{Say 5 min.}$$

I_{2d} = 1.95 in/hr.

Therefore $Q_{2d_B} = 0.35(1.95)(3.70) =$ 2.53 cfs

2-YEAR STORM – DEVELOPED (continued)

SUB-BASIN C

A_C = 2.22 ac
C_{2d} = 0.35
S = 0.75%
V = 1.75 ft/sec
L = 300 ft
$T_{C_{2d}} = \frac{300}{1.75}\left(\frac{1}{60}\right) = 2.86$ Say 5 min.
I_{2d} = 1.95 in/hr.

Therefore $Q_{2d_C} = 0.35(1.95)(2.22) =$ 1.52 cfs

100-YEAR STORM -- HISTORIC

A = 9.24 ac
C_{100h} = 0.25
S = 1.0%
V = 0.85 ft/sec
L = 900 ft
$T_{C_{100h}} = T_{C_{2h}} = 18$ min.
I_{2h} = 2.99 in/hr.

Therefore $Q_{100h} = 0.25(2.99)(9.24) = \underline{6.91 \text{ cfs}}$

100-YEAR STORM -- DEVELOPED

SUB-BASIN A

A_A = 3.32 ac
C_{100d} = 0.50
S = 1.0%
V = 2 ft/sec
L = 470 ft
$T_{C_{100d}} = T_{C_{2d}} = 5$ min.
I_{100d} = 4.95 in/hr.

Therefore $Q_{100d} = 0.50(4.95)(3.32) = \underline{8.22 \text{ cfs}}$

SUB-BASIN B

A_B = 3.70 ac
C_{100d} = 0.50
S = 0.50%
V = 1.4 ft/sec
L = 450 ft
$T_{C_{100d}} = T_{C_{2d}} = 5.36$ min. Say 5 min.
I_{100d} = 4.95 in/hr

Therefore $Q_{2d_B} = 0.50(4.95)(3.70) = \underline{9.16 \text{ cfs}}$

100-YEAR STORM – DEVELOPED (Continued)

SUB-BASIN C

A_C = 2.22 ac
C_{100d} = 0.50
S = 0.75%
V = 1.75 ft/sec
L = 300 ft
$T_{C_{100d}} = T_{C_{2d}} = 2.86$ min. Say 5 min.
I_{100d} = 4.95 in/hr

Therefore $Q_{100d_C} = 0.50(4.95)(2.22) =$ 5.49 cfs

SUMMARY OF RUNOFF CALCULATIONS

HISTORIC RUNOFF:

On-Site	Off-Site
Q_{2h} = 1.08 cfs	$Q_{2h} = 0$
Q_{100h} = 6.91 cfs	$Q_{100h} = 0$

DEVELOPED RUNOFF:

On-Site	Off-Site
$Q_{2d_A} = 2.27 cfs$	$Q_{2d_A} = 0$
$Q_{100d_A} = 8.22 cfs$	$Q_{100d_A} = 0$
$Q_{2d_B} = 2.53 cfs$	$Q_{2d_B} = 0$
$Q_{100d_B} = 9.16 cfs$	$Q_{100d_B} = 0$
$Q_{2d_C} = 1.52 cfs$	$Q_{2d_C} = 0$
$Q_{100d_C} = 5.49 cfs$	$Q_{100d_C} = 0$

MAXIMUM RELEASE RATE:

2-YEAR STORM

$$Q_{MAX_{2_A}} = 1.08\left(\frac{3.32}{9.24}\right) = 0.39cfs$$

$$\left.\begin{aligned} Q_{MAX_{2_B}} &= 1.08\left(\frac{3.70}{9.24}\right) = 0.43cfs \\ Q_{MAX_{2_C}} &= 1.08\left(\frac{2.22}{9.24}\right) = 0.26cfs \end{aligned}\right\} 0.69\text{cfs}$$

$$Q_{MAX_2} = 0.39 + 0.43 + 0.26 = 1.08cfs \qquad \text{O.K.}$$

100-YEAR STORM

$$Q_{MAX_{100_A}} = 6.91\left(\frac{3.32}{9.24}\right) = 2.48cfs$$

$$\left.\begin{aligned} Q_{MAX_{100_B}} &= 6.91\left(\frac{3.70}{9.24}\right) = 2.77cfs \\ Q_{MAX_{100_C}} &= 6.91\left(\frac{2.22}{9.24}\right) = 1.66cfs \end{aligned}\right\} 4.43 \text{ cfs}$$

$$Q_{MAX_{100}} = 2.48 + 2.77 + 1.66 = 6.91cfs \qquad \text{O.K.}$$

REQUIRED STORAGE - 2 YEAR STORM

SUB-BASIN A:

$Q_{MAX_{2_A}} = 0.39 cfs$

$Q_O = 0.75 Q_{MAX} = 0.75(0.39) = 0.29 cfs$

$\overline{C_d} = 0.35$

$T_{c_{2h}} = 18.0 \text{ min.}$

$T_{c_{2d}} = 5.0 \text{ min.}$

$K = \frac{18.0}{5.0} = 3.6$

A = 3.32 ac

CRITICAL DURATION:

$$T_{d_2} = \left[((6.33)(0.35)(3.32)) / \left((0.29) - \left(\left((0.29)^2 (5.0) \right) / ((81.2)(0.35)(3.32)) \right) \right) \right]^{0.5}$$

-15.6

= 35.15 min.

INTENSITY AT CRITICAL DURATION:

$I_{d_2} = 40.6/(35.15 + 15.6) =$ 0.80 in/hr

RUNOFF AT CRITICAL DURATION:

$Q_{d_2} = 0.35(0.80)(3.32) = 0.93 cfs$

STORAGE VOLUME REQUIRED:

$$V_{d_2} = 66[((0.93)(35.15)) - ((0.29)(35.15)) - ((0.29)(5.0)) + \left(((3.6)(0.29)(5.0))/2 \right) + \left(\left((0.29)^2 (5.0) \right) / ((2)(0.93)) \right)]$$

= 1576.22 cf

Say $V_{d_{2_A}}$ = 1600 cf

REQUIRED STORAGE - 100 YEAR STORM

SUB-BASIN A:

$Q_{MAX_{100_A}} = 2.48 cfs$

$Q_O = 0.80 Q_{MAX} = 0.80(2.48) = 1.98 cfs$

$\overline{C_d} = 0.50$

$T_{C_{2h}} = 18.0 \text{ min.}$

$T_{C_{2d}} = 5.0 \text{ min.}$

$K = \frac{18.0}{5.0} = 3.6$

A = 3.32 ac

CRITICAL DURATION:

$$T_{d_{100}} = \left[((2925)(0.50)(3.32)) / \left((1.98) - \left(\left((1.98)^2 (5.0) \right) / ((234)(0.50)(3.32)) \right) \right) \right]^{0.5}$$

- 25

= 25.16 min

INTENSITY AT CRITICAL DURATION:

$I_{d_{100}} = 117/(25.16 + 25) =$ 2.33 in/hr

RUNOFF AT CRITICAL DURATION:

$Q_{d_{100}} = 0.50(2.33)(3.32) =$ 3.87 cfs

STORAGE VOLUME REQUIRED:

$$Vd_{100} = 66[((3.87)(25.16)) - ((1.98)(25.16)) - ((1.98)(5.0)) +$$

$$\left(((3.6)(1.98)(5.0))/2 \right) + \left(\left((1.98)^2 (5.0) \right) / ((2)(3.87)) \right)]$$

=3828.33 cf

Say $Vd_{100_A} =$ 3800 cf

REQUIRED STORAGE - 2 YEAR STORM

FILE: NORDSTOR date: 3/1/94

COMBINED SUB-BASINS B & C :

$$Q_{MAX_{2_{BC}}} = 0.43 + 0.26 = 0.69 cfs$$

$$Q_O = 0.75 Q_{MAX} = 0.75(0.69) = 0.52 cfs$$

$$\overline{C_d} = 0.35$$

$$T_{C_{2h}} = 18.0 \text{ min.}$$

$$T_{C_{2d}} = 5.0 \text{ min.}$$

$$K = \frac{18.0}{5.0} = 3.6$$

$$A = 3.70 + 2.22 = 5.92 ac$$

CRITICAL DURATION:

$$T_{d_2} = \left[((633.4)(0.35)(5.92)) / \left((0.52) - \left(\left((0.52)^2 (5.0) \right) / ((81.2)(0.35)(5.92)) \right) \right) \right]^{0.5} - 15.6$$

= 35.03 min.

INTENSITY AT CRITICAL DURATION:

$$I_{d_2} = 40.6/(35.03 + 15.06) = 0.80 \text{ in/hr}$$

RUNOFF AT CRITICAL DURATION:

$$Q_{d_2} = 0.35(0.80)(5.92) = 1.66 \text{ cfs}$$

STORAGE VOLUME REQUIRED:

$$Vd_2 = 66[((1.66)(35.03)) - ((0.52)(35.03)) - ((0.52)(5.0)) + \left(((3.6)(0.52)(5.0))/2 \right)$$

$$+ \left(\left((0.52)^2 (5.0) \right) / ((2)(1.66)) \right)]$$

=2799.81 cf

Say $Vd_{2_{BC}}$ = 2800 cf

REQUIRED STORAGE - 100 YEAR STORM

$Q_{MAX_{100_{BC}}} = 2.77 + 1.66 = 4.43 cfs$

$Q_O = 0.75 Q_{MAX} = 0.75(4.43) = 3.32 cfs$

$\overline{C_d} = 0.50$

$T_{C_{100_h}} = 18.0 \text{ min.}$

$T_{C_{100_d}} = 5.0 \text{ min.}$

$K = \frac{18.0}{5.0} = 3.6 \text{ min.}$

A = 5.92 ac

CRITICAL DURATION:

$$T_{d_{100}} = [((2925)(0.50)(5.92))/((3.32) - \left(((3.32)^2(5.0)\right)/$$

$$((234)(0.50)(5.92))))]^{0.5} - 25 = \underline{26.69 \text{ min.}}$$

INTENSITY AT CRITICAL DURATION:

$I_{d_{100}} = 117/(26.69 + 25) =$ <u>2.26 in/hr</u>

RUNOFF AT CRITICAL DURATION:

$Q_{d_{100}} = 0.50(2.26)(5.92) =$ <u>6.69 cfs</u>

STORAGE VOLUME REQUIRED:

$$V_{d_{100}} = 66[((6.69)(26.69)) - ((3.32)(26.69)) - ((3.32)(5.0)) +$$

$$\left(((3.6)(3.32)(5.0))/2\right) + \left(\left((3.32)^2(5.0)\right)/((2)(6.69))\right)]$$

= 7084.72 cf

Say $V_{d_{100}} =$ <u>7100 cf</u>

AVAILABLE ON-SITE STORAGE CAPACITY

@D = 0.50 ft

$A = 20(80) + 0.5(20)(20) = 1800 ft^2$

$V = \left[0 + 1800 + ((0)(1800))^{0.5} \right] \frac{0.5}{3} = 300 cf$

Total Volume = 0 + 300 = 300 cf

@D = 1.00 ft

A = 20(180) + 0.5(20)(20) = 3800 ft^2

$V = \left[1800 + 3800 + ((1800)(3800))^{0.5} \right] \frac{0.5}{3} = 1369 cf$

Total Volume = 300 + 1369 = 1669 cf

@D = 1.50 ft

A = 20(280) + 0.5(20)(20) = 5800 ft^2

$V = \left[3800 + 5800 + ((3800)(5800))^{0.5} \right] \frac{0.5}{3} = 2382 cf$

Total Volume = 1669 + 2382 = 4051 cf

@D = 2.00 ft

A = 20(380) + 0.5(20)(20) = 7800 ft^2

$V = \left[5800 + 7800 + ((5800)(7800))^{0.5} \right] \frac{0.5}{3} = 3388 cf$

Total Volume = 4051 + 3388 = 7439 cf

AVAILABLE OFF-SITE STORAGE CAPACITY

1) Government Highline Canals (South Drainage Ditch)

@D = 0.50 ft

$A = 4.5(701.5) = 3157\ ft^2$

$$V = \left[2100 + 3157 + ((2100)(3157))^{0.5}\right]\frac{0.5}{3} = 1305cf$$

$V_T = 0 + 1305 = 1305$ cf

@D = 1.00 ft

$A = 6.0(703) = 4218\ ft^2$

$$V = \left[3157 + 4218 + ((3157)(4218))^{0.5}\right]\frac{0.5}{3} = 1837cf$$

$V_T = 1305 + 1837 = 3142$ cf

@D = 1.50 ft

$A = 7.5(704.5) = 5284\ ft^2$

$$V = \left[4218 + 5284 + ((4218)(5284))^{0.5}\right]\frac{0.5}{3} = 2371cf$$

$V_T = 3142 + 2371 = 5513$ cf

@D = 2.00 ft

$A = 9.0(706) = 6354\ ft^2$

$$V = \left[5284 + 6354 + ((5284)(6354))^{0.5}\right]\frac{0.5}{3} = 2905cf$$

$V_T = 5513 + 2905 = 8418$ cf

AVAILABLE OFF-SITE STORAGE CAPACITY (Continued)

@D = 2.50 ft

$A = 10.5(707.5) = 7429\ ft^2$

$$V = \left[6354 + 7429 + ((6354)(7429))^{0.5}\right]\frac{0.5}{3} = 3442cf$$

$V_T = 8418 + 3442 = 11860$ cf

@D = 3.00 ft

$A = 12.0(709) = 8508\ ft^2$

$$V = \left[7429 + 8508 + ((7429)(8508))^{0.5}\right]\frac{0.5}{3} = 3981cf$$

$V_T = 11860 + 3981 = 15841$ cf

@D = 3.50 ft

$A = 13.5(710.5) = 9592\ ft^2$

$$V = \left[8508 + 9592 + ((8508)(9592))^{0.5}\right]\frac{0.5}{3} = 4522cf$$

$V_T = 15841 + 4522 = 20363$ cf

@D = 4.00 ft

$A = 15.0(712) = 10680\ ft^2$

$$V = \left[9592 + 10680 + ((9592)(10680))^{0.5}\right]\frac{0.5}{3} = 5066cf$$

$V_T = 20363 + 5066 = 25429$ cf

AVAILABLE OFF-SITE STORAGE CAPACITY (Continued)

@D = 4.50 ft

A = 16.5(713.5) = 11773 ft^2

$$V = \left[10680 + 11773 + ((10680)(11773))^{0.5} \right] \frac{0.5}{3} = 5611 cf$$

V_T = 25429 + 5611 = 31040 cf

@D = 5.00 ft

A = 18.0(715) = 12870 ft^2

$$V = \left[11773 + 12870 + ((11773)(12870))^{0.5} \right] \frac{0.5}{3} = 6159 cf$$

V_T = 31040 + 6159 = 37199 cf

@D = 5.50 ft

A = 19.5(716.5) = 13972 ft^2

$$V = \left[12870 + 13972 + ((12870)(13972))^{0.5} \right] \frac{0.5}{3} = 6709 cf$$

V_T = 37199 + 6709 = 43908 cf

@D = 6.00 ft

A = 21.0(718) = 15078 ft^2

$$V = \left[13972 + 15078 + ((13972)(15078))^{0.5} \right] \frac{0.5}{3} = 7261 cf$$

V_T = 43908 + 7261 = 51169 cf

AVAILABLE OFF-SITE STORAGE CAPACITY (Continued)

@D = 6.50 ft

A = 22.5(719.5) = 16189 ft^2

$$V = \left[15078 + 16189 + ((15078)(16189))^{0.5} \right] \frac{0.5}{3} = 7815 cf$$

V_T = 51169 + 7815 = 58984 cf

@D = 7.00 ft

A = 24.0(721) = 17304 ft^2

$$V = \left[16189 + 17304 + ((16189)(17304))^{0.5} \right] \frac{0.5}{3} = 8372 cf$$

V_T = 58984 + 8372 = 67356 cf

OUTLET DESIGN - 2 YEAR STORM

On-Site:

$Q_{MAX_2} = 0.39cfs$

Depth of storage at critical duration = 1.0 ft from Depth vs. Storage Graph.

USING ORIFICE EQUATION:

Try 4" diameter pipe and assume C = 0.60

$Q_{cap_2} = 0.60(0.0873)[2(32.2)(1.0-0.17)]^{0.5} = 0.38cfs$ O.K.

OUTLET DESIGN - 100 YEAR STORM

On-Site:

$Q_{MAX_{100}} = 2.48cfs$

Depth of storage at critical duration = 1.48 ft from Depth vs. Storage Graph.

USING ORIFICE EQUATION:

Try 8" diameter pipe and assume C = 0.60

$Q_{cap_{100}} = 0.60(0.349)[2(32.2)(1.48-0.33)]^{0.5} = 1.80cfs$ (8" dia.)

$Q_{cap_{100}} = 0.60(0.0873)[2(32.2)(1.48-0.17)]^{0.5} = 0.48cfs$ (4" dia.)

Total $Q_{cap_{100}}$ = 2.28 cfs O.K.

OUTLET DESIGN - 2 YEAR STORM

Off-Site:

$Q_{MAX_2} = 0.69 cfs$

Depth of storage at critical duration = 0.94 ft from Depth vs. Storage Graph.

USING ORIFICE EQUATION:

8" diameter pipe exists, assume C = 0.60

$Q_{cap_2} = 0.60(0.349)[2(32.2)(0.94-0.33)]^{0.5} = 1.31 cfs$

Due to the existing 8" dia. pipe Q_{cap_2} exceeds Q_{MAX_2}, therefore, outlet design will be based on 100 year event.

OUTLET DESIGN - 100 YEAR STORM

Off-Site:

$Q_{MAX_{100}} = 4.43 cfs$

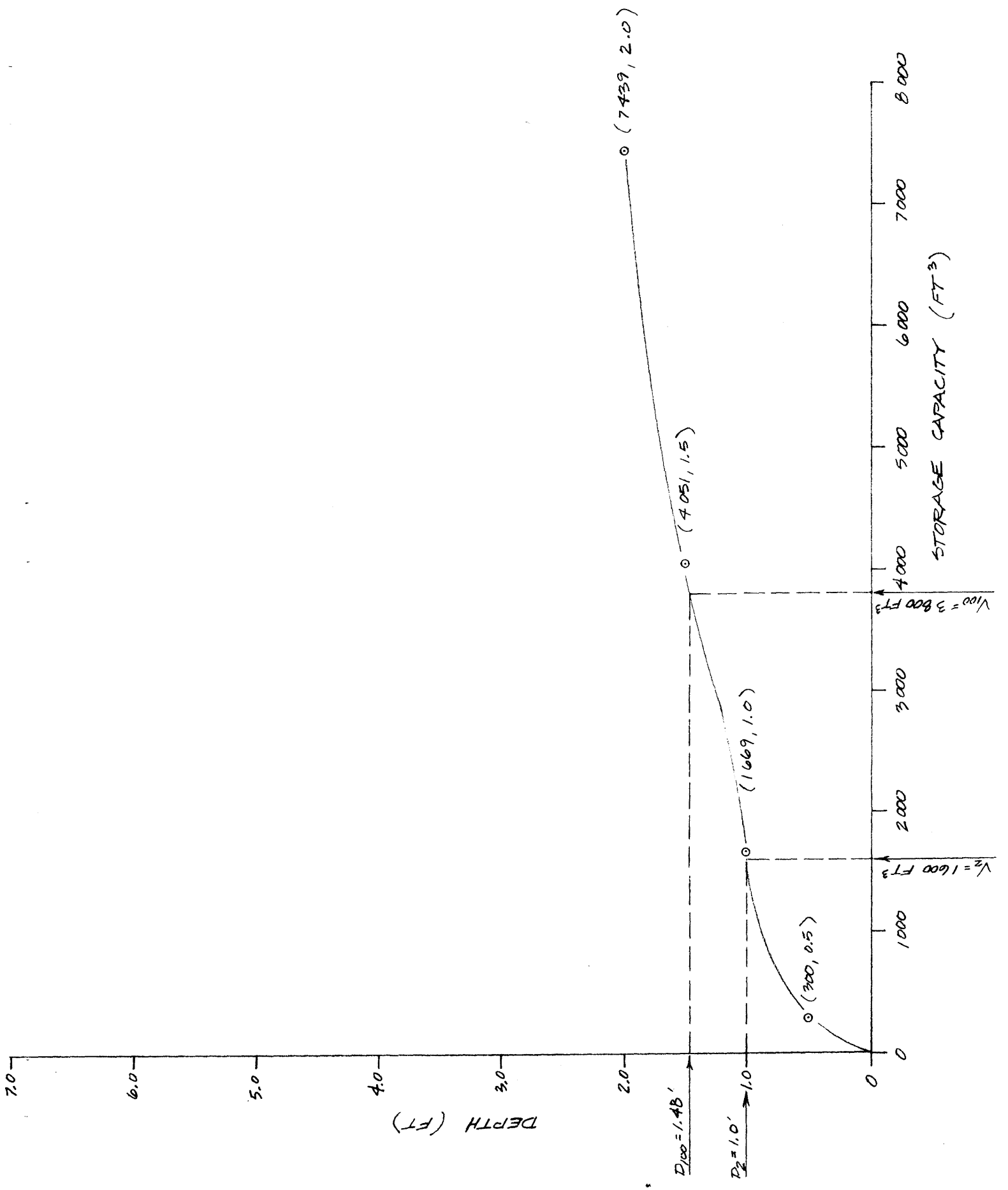
Depth of storage at critical duration = 1.79 ft from Depth vs. Storage Graph.

USING ORIFICE EQUATION:

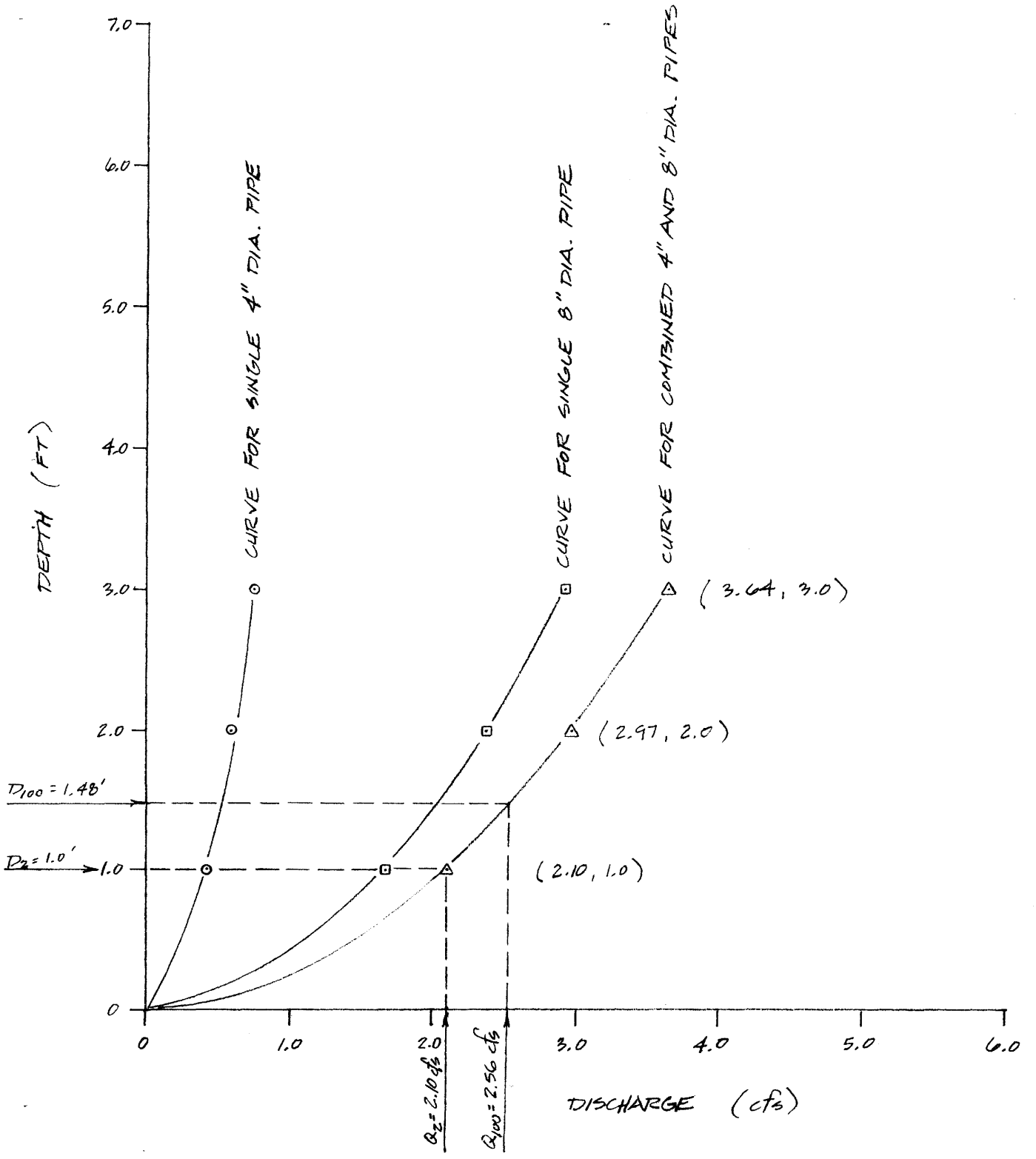
$Q_{cap_{100}} = 0.60(0.349)[2(32.2)(1.79-0.33)]^{0.5} = 2.03$ cfs O.K.

APPENDIX B

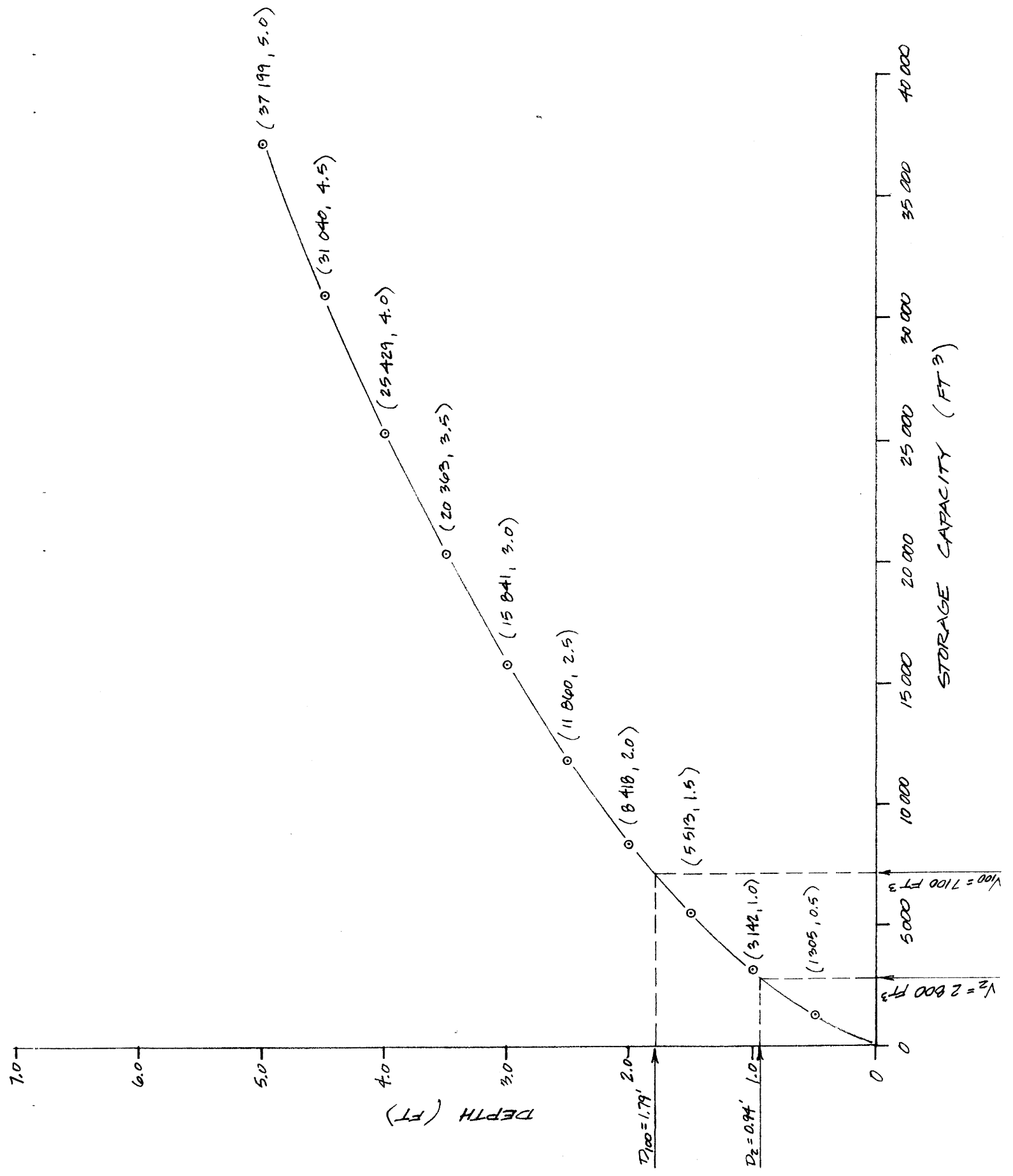
VISTA DEL NORTE SUBDIVISION: ON-SITE DETENTION



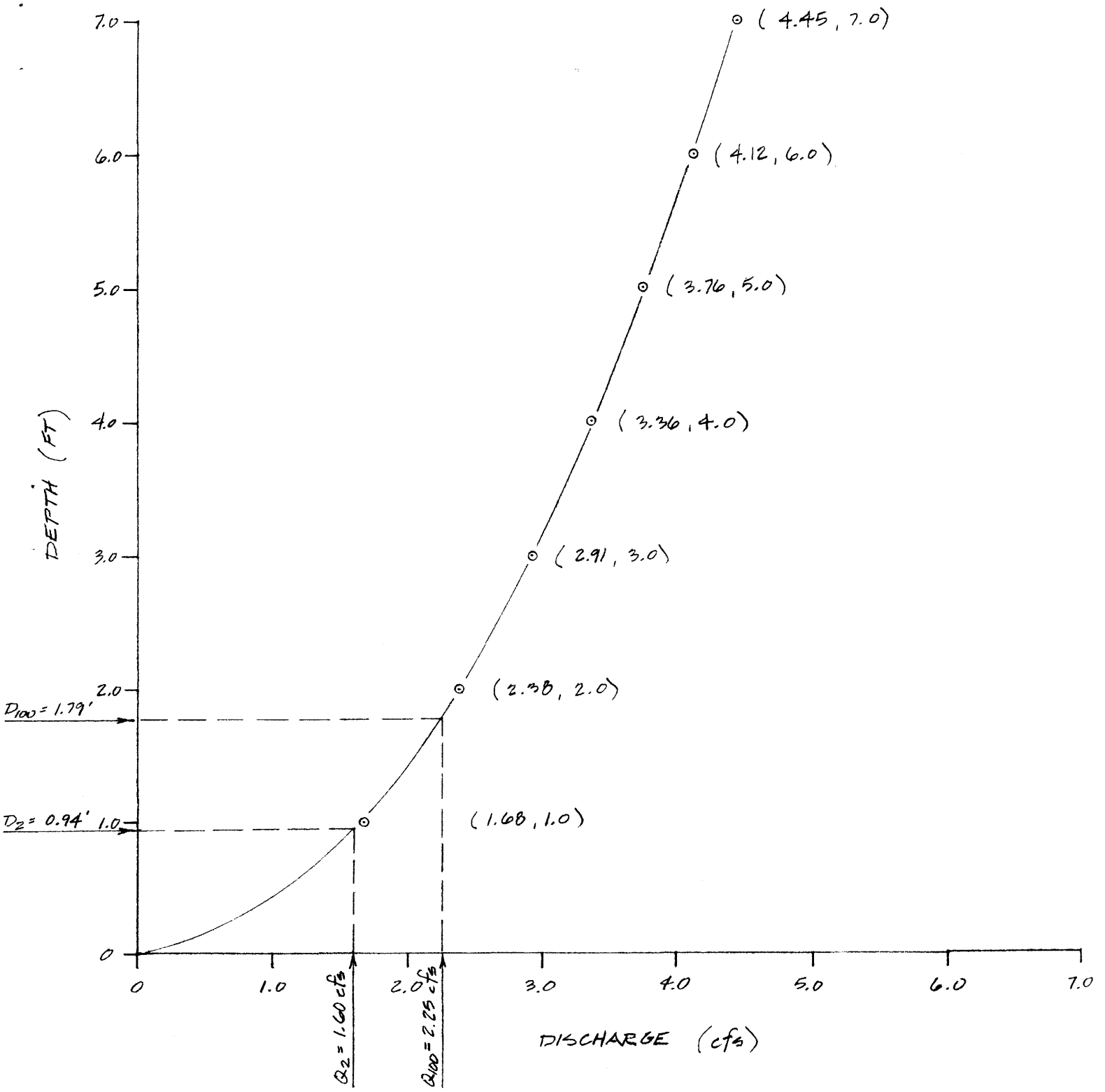
VISTA DEL NORTE SUBDIVISION: ON-SITE DETENTION



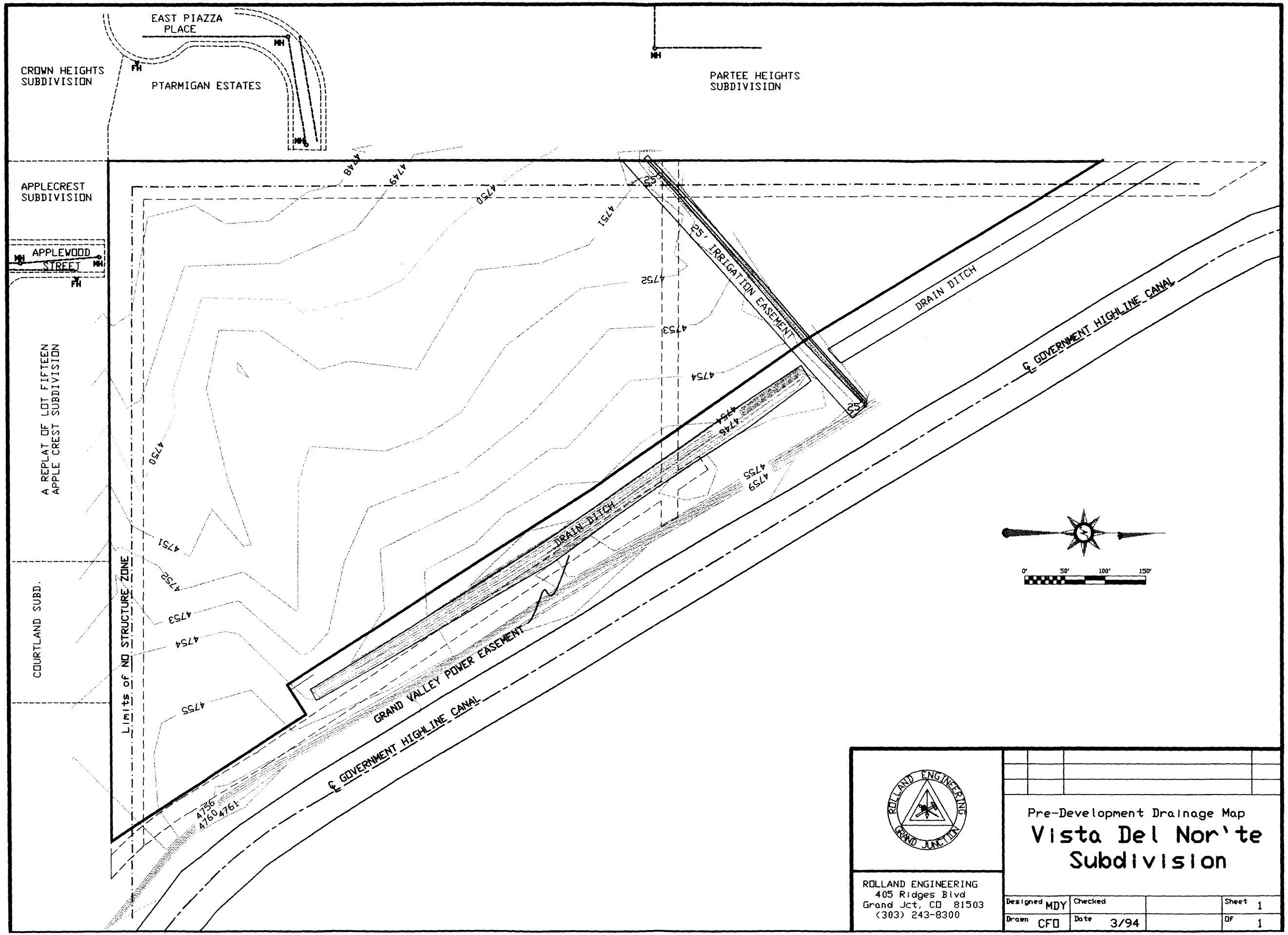
VISTA DEL NORTE SUBDIVISION: OFF-SITE DETENTION



VISTA DEL NORTE SUBDIVISION: OFF-SITE DETENTION



APPENDIX C



ROLLAND ENGINEERING
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Pre-Development Drainage Map

Vista Del Nor'te Subdivision

Designed MDY	Checked		Sheet 1
Drawn CFD	Date 3/94		OF 1

APPENDIX D

SUPPLEMENT 1

Chipeta-Persayo shaly loams, 5 to 10 percent slopes (CB).—The more strongly sloping areas of Chipeta-Persayo shaly loams have the same soil characteristics that were described for Chipeta-Persayo shaly loams, 2 to 5 percent slopes. None of the complex is cultivated; it occurs in association with the complex having 2 to 5 percent slopes. The native cover consists of shadscale, a scattered growth of grasses, and some saltsage, rabbitbrush, and pricklypear cactus. The browse is better than on the associated undulating and sloping areas of Chipeta-Persayo silty clay loams.

Chipeta-Persayo silty clay loams, 5 to 10 percent slopes (CC).—This complex occupies a considerable acreage, mainly north of the Colorado River in the western half of the area. The soils are derived from material weathered from the thick Mancos shale formation. Except for their silty clay loam texture in the surface layer, the soils are very similar to those of the Chipeta-Persayo shaly loam complex on 5 to 10 percent slopes.

The Persayo soil in this complex contains somewhat more silt and fine sand and is slightly more permeable than the Persayo soil in the complex of Chipeta and Persayo shaly loams, but it is nonetheless highly erodible if cropped. In fact, the platy, compact, impervious shale under both soils of this complex permits so much erosion that only a sharp or choppy surface remains.

Use and management.—Because the surface of this complex is choppy and uneven, leveling for irrigation generally is not practical. Almost all of the complex therefore is used for periodic grazing. Even if the complex were leveled to permit growing of ordinary field crops, the soils would be so low in inherent fertility and so slowly permeable to plant roots that they would produce low yields.

Probably this complex is best used for periodic grazing. Some areas could be irrigated for pasture, but the difficulty of establishing a stand of grasses and the high erodibility of the soils keep the average stockraiser from attempting this. Moreover, a number of the larger areas and several of the smaller ones are on knobs scattered, for the most part, in the lower half of the valley and lie well above the level of the present irrigation system.

Fruita clay loam, 0 to 2 percent slopes (FE).—This fairly extensive soil occurs on old alluvial fans and in relatively low mesalike positions. The alluvial deposits are 4 to 10 feet thick and overlie Mancos shale. The alluvium is derived mainly from fine-grained sandstone but contains small quantities of material from shale and igneous rock.

The 8- to 10-inch surface soil is a slightly hard, calcareous clay loam, light brown to light reddish brown when dry and brown to reddish brown when moist. The upper subsoil is light-brown to light reddish-brown clay loam. At depths of 15 to 22 inches it grades into the lower subsoil, a very pale-brown, very strongly calcareous loam or clay loam that is mottled with soft, white accumulations of lime. Small fragments of sandstone and other rock occur in places.

The very gentle slopes favor irrigated crops. The position of the soil on comparatively narrow mesas facilitates underdrainage, and practically all the soil is free of harmful concentrations of salts. Like other soils of the area, this one has a low organic-matter content. When moist, the soil is friable throughout the profile. Internal drainage is medium. The moderate permeability favors successful growth of deep-rooted crops.

Use and management.—Nearly all of this soil is cultivated. The chief crops are pinto beans, alfalfa, corn, cantaloups, small grains, and truck crops. Yields generally are good. This would be a good soil for fruit growing, but it is subject to occasional low temperatures and frosts.

Ordinarily, alfalfa is left on the soil 4 or 5 years and then followed by corn, a small grain, and pinto beans. No set crop rotation is practiced. For alfalfa or beans, most farmers apply manure when available, or use superphosphate at the rate of 100 to 125 pounds an acre.

Fruita clay loam, 2 to 5 percent slopes (FF).—This soil has a profile almost identical to that of Fruita clay loam, 0 to 2 percent slopes, but its greater slope and more undulating surface make it less favorable for irrigation. Shale ordinarily occurs at depths of 3½ to 5 feet or more.

Use and management.—Although all of this soil could be cultivated, the areas now cropped represent about 88 percent of the total acreage. The chief crops are alfalfa, beans, small grains, and corn, which yield about the same as on Fruita clay loam, 0 to 2 percent slopes. Soil management is about the same, but more care is necessary to control erosion and to prevent the thinning of the soil mantle over the underlying shale. Farmers should be particularly careful to construct their small irrigation furrows at gradients that will assure the least amount of erosion.

Fruita clay loam, moderately deep, 0 to 2 percent slopes (FG).—This soil occurs in the more level parts of the area. It is located on mesalike tracts that have been more affected by geologic erosion than the larger mesas on which Fruita clay loam soils occur. Consequently, it has somewhat less depth to shale. The soil occurs as scattered narrow areas in association with Fruita clay loam, 0 to 2 percent slopes.

The surface soil and subsoil, similar to corresponding layers in Fruita clay loam, 0 to 2 percent slopes, rest on Mancos shale at depths ranging from 1½ to 4 feet. The soil is calcareous. In places it is somewhat mottled with white accumulations of lime or contains soft segregations of lime. The soil is moderately permeable but its moderate depth to shale limits the growth of deep-rooted crops and, in places, retards subsoil drainage. A few areas located about a quarter of a mile north of Loma are exceptionally shallow; the shale occurs at depths of 1 to 1½ feet.

Use and management.—About 80 percent of this soil is cultivated. Beans, alfalfa, corn, and small grains, listed in the approximate order of their importance, are the chief crops. The soil would not be well suited to orchard fruits, even if the climate were suitable. The very slow underdrainage and the very slow permeability of the shale beds are unfavorable. This soil is less productive than Fruita clay loam, 0 to 2 percent slopes, especially for deep-rooted crops. Also, more care is necessary to prevent erosion if the productivity of this soil is to be maintained.

Fruita clay loam, moderately deep, 2 to 5 percent slopes (FH).—Like the deeper Fruita soils, this soil is derived from alluvial material

SUPPLEMENT 2

SECTION 3

HYDROLOGIC SOIL GROUPS

This section gives definition of four soil groups that are used in determining hydrologic soil-cover complexes, for estimating runoff from rainfall.

Definitions

The hydrologic soil groups, according to their infiltration and transmission rates, are:

A. (Low runoff potential). Soils have high infiltration rates even when thoroughly wetted. These consist chiefly of deep, well to excessively drained sands or gravel. These soils have a high rate of water transmission in that water readily passes through them.

B. Soils having moderate infiltration rates when thoroughly wetted. These consist chiefly of moderately fine to moderately coarse textures. These soils have a moderate rate of water transmission.

C. Soils having slow infiltration rates when thoroughly wetted. These consist chiefly of soils with a layer that impeded downward movement of water or soils with moderately fine to fine texture. These soils have a slow rate of water transmission.

D. (High runoff potential). Soils having very slow infiltration rates when thoroughly wetted. These consist chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a very slow rate of water transmission.

Source of Data

Local Soil Conservation Service field offices have soil survey data for their respective areas. Much of this existing data was mapped with soil symbols or with soil series names that may not be current. These symbols or soil series names may be converted to current names with assistance from respective SCS offices. The 1979 publication, "Soils of Colorado" has current soil series names and hydrologic groups. This information is included in Table S-2 of this publication.

REFERENCES

APPENDIX A

INTENSITY - DURATION - FREQUENCY (I-D-F) TABLE

(Based upon The 1992 Mesa County Drainage Criteria Manual)

TIME (MIN)	2-YEAR ITENSITY (IN/HR)	100-YEAR ITENSITY (IN/HR)	TIME (MIN)	2-YEAR ITENSITY (IN/HR)	100-YEAR ITENSITY (IN/HR)
5	1.95	4.95	33	0.83	2.15
6	1.83	4.65	34	0.82	2.12
7	1.74	4.40	35	0.81	2.09
8	1.66	4.19	36	0.80	2.06
9	1.59	3.99	37	0.79	2.03
10	1.52	3.80	38	0.78	2.00
11	1.46	3.66	39	0.77	1.97
12	1.41	3.54	40	0.76	1.94
13	1.36	3.43	41	0.75	1.91
14	1.32	3.33	42	0.74	1.88
15	1.28	3.24	43	0.73	1.85
16	1.24	3.15	44	0.72	1.82
17	1.21	3.07	45	0.71	1.79
18	1.17	2.99	46	0.70	1.76
19	1.14	2.91	47	0.69	1.73
20	1.11	2.84	48	0.68	1.70
21	1.08	2.77	49	0.69	1.67
22	1.05	2.70	50	0.66	1.64
23	1.02	2.63	51	0.65	1.61
24	1.00	2.57	52	0.64	1.59
25	0.98	2.51	53	0.63	1.57
26	0.96	2.46	54	0.62	1.55
27	0.94	2.41	55	0.61	1.53
28	0.92	2.36	56	0.60	1.51
29	0.90	2.31	57	0.59	1.49
30	0.88	2.27	58	0.58	1.47
31	0.86	2.23	59	0.57	1.45
32	0.84	2.19	60	0.56	1.43

APPENDIX B

RATIONAL METHOD
RECOMMENDED AVERAGE RUNOFF COEFFICIENTS

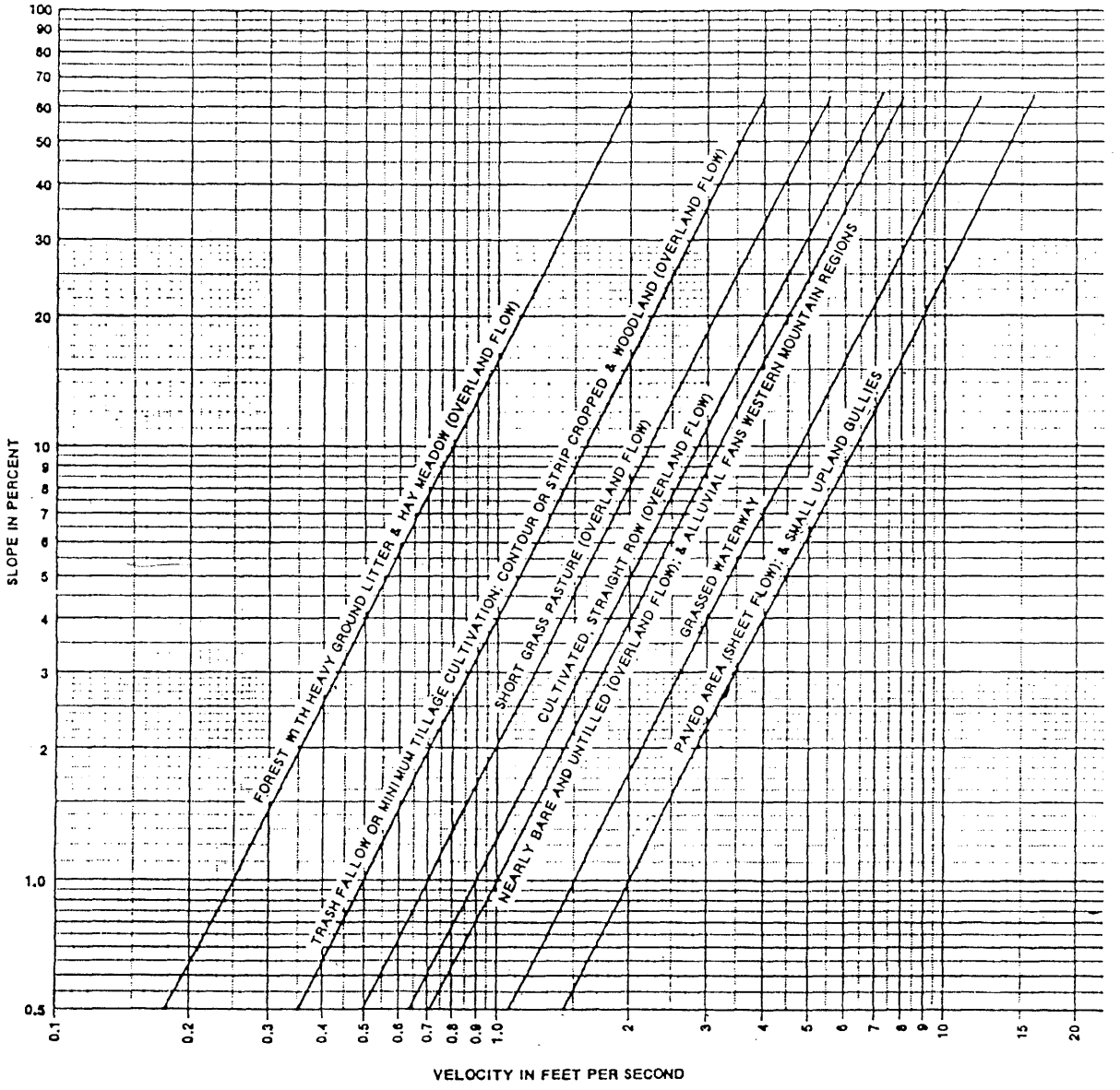
Land Use or Surface Characteristics	"C" VALUES 2-YR STORM A&B*	2-YR STORM C&D*	100-YR STOR A&B*	100-YR STOR C&D*
Undeveloped Areas (Vacant or pre-development analysis condition)	0.10	0.20	0.25	0.35
Residential Areas				
Less than 1/8 acre per unit	0.55	0.65	0.70	0.80
1/8 acre per unit	0.50	0.60	0.65	0.75
1/4 acre per unit	0.40	0.50	0.55	0.65
1/3 acre per unit	0.35	0.45	0.50	0.60
1/2 acre per unit	0.30	0.40	0.45	0.55
1 acre per unit	0.25	0.35	0.40	0.50
Pavement and Roofs	0.90	0.90	0.95	0.95
Gravel and Soil Traffic areas	0.70	0.70	0.85	0.85
Lawns and Green Landscaping	0.15	0.25	0.30	0.40
Gravel and Non-Green Landscaping	0.45	0.50	0.60	0.70
Parks, Cemeteries, Pastures	0.25	0.35	0.40	0.50
Schools	0.45	0.50	0.60	0.70

* Refers to SCS soil hydrologic group classification.

MESA COUNTY
STORM DRAINAGE CRITERIAL MANUAL

FIGURE 402

Taken from TR-55 (1975) and NEH-4, both SCS publications.



AVERAGE VELOCITIES FOR OVERLAND FLOW