

**DRAINAGE REPORT
FOR
COUNTRY MEADOWS UNIT III
(A PORTION OF TRACT A, TRAVILLA SUBDIVISION)
AT VENTANA RANCH**

APRIL 19, 2002

Prepared for:

**LAS VENTANAS LIMITED PARTNERSHIP
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Date

UNDER THE SUPERVISION OF:

Kevin Patton, P.E.



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I. PURPOSE

The purpose of this report is to present the drainage management plan for Country Meadows Unit III Subdivision (a portion of Tract A, Travilla Subdivision) at Ventana Ranch and to obtain approval of the preliminary/final plat and grading plan by the Development Review Board (DRB). The proposed development of the Country Meadows Unit III Subdivision consists of 72 single family detached residential lots on approximately 12.87 acres.

This report will reference the following City of Albuquerque and the Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA) approved studies prepared for the Ventana Ranch Subdivision development: 1) the Las Ventanas Subdivision Drainage Master Plan, dated April 1995 and 2) the Final Addendum No. 4 For The Design Analysis Report For Ventana Ranch Subdivision Drainage Facilities, dated July 2000, the Drainage Report For Tract 23 At Ventana Ranch, dated January 17, 2002, and the Drainage Report for Tract 24 at Ventana Ranch, dated March 30, 2001.

The Las Ventanas Subdivision Drainage Master Plan, dated April 1995 (hereafter referred to as the LVSDMP), was prepared to summarize the findings of a hydrologic analysis of existing and developed drainage conditions for the proposed Las Ventanas Subdivision and formulates a drainage master plan for the development of the property. The report evaluated drainage in Las Ventanas Subdivision based on the Piedras Marcadas Hydrologic model prepared by Molzen-Corbin & Associates in 1993, and provided a conceptual plan for drainage in order to determine drainage facilities sizes and total costs. In addition, it provided drainage outfall alternatives for the Las Ventanas Subdivision.

The Final Addendum No. 4 For the Design Analysis Report For Ventana Ranch Subdivision Drainage Facilities, approved by the City of Albuquerque July 2000, was prepared to re-evaluate the hydrology and hydraulics for drainage outfall options for tracts in the north central portion of Ventana Ranch, a subdivision in the northwest Albuquerque. In addition, this report confirmed that the proposed changes in the subdivision and the resulting changes in the hydrology do not change the storm drain hydraulics for the North Outfall or the West Branch Calabacillas

Storm Drain diversion, as presented in Addendum No. 3. Addendum No. 3 was approved by the City of Albuquerque and by AMAFCA. Using the revised hydrology, the hydraulics for the North Outfall and the West Branch Calabacillas Storm Drain Diversion were checked to assure adequate capacity for the revised flow rates.

The Drainage Report for Tract 24 at Ventana Ranch, dated March 30, 2001, prepared by Bohannon Huston. The report was prepared to present the drainage management plan for Tract 24 (Vista de Arenal) of the Ventana Ranch Subdivision, which include a temporary retention pond to the north of the subdivision.

The Drainage Report for Tract 23 at Ventana Ranch, Dated January 17, 2002, prepared by Bohannon Huston. The report was prepared to present the drainage management plan for Tract 23 (Travilla Subdivision) of the Ventana Ranch and to obtain approval of the preliminary/final plat and grading plan by the Development Review Board (DRB).

II. METHODOLOGIES

Please refer to the above referenced reports for the specific methodologies used in preparing those individual reports or plans.

Site conditions will be analyzed for a 10-year and 100-year, 6-hour storm event in accordance with the City of Albuquerque Drainage Ordinance and the Development Process Manual (DPM) Volume 2, Design Criteria, Section 22.2, Hydrology, for the City of Albuquerque, January 1993.

The site, as described in the 'Site Location and Characteristics' section below, is approximately 12.87 acres. Therefore, Part A of the DPM, Section 22.2, which provides a simplified procedure for projects with sub-basins smaller than 40 acres was used.

The existing approved drainage report referenced in the preparation of this plan is the "Las Ventanas Subdivision Drainage Master Plan" (LVSDMP) prepared by Bohannon Huston (originally dated April 1995 and updated October 1995). Additional information was provided in "The Final Addendum No. 4 For The Design Analysis Report for Ventana Ranch Subdivision Drainage Facilities" prepared by Bohannon Huston dated December 1997. This report identifies downstream drainage improvements and confirms that the storm drain hydraulics for the North Outfall or the West Branch Calabacillas Storm Drain Diversion presented in Addendum 3, have not been changed. The developed flows from this tract will ultimately drain into the West Branch Calabacillas Storm Drain.

when will this be built?

III. SITE LOCATION AND CHARACTERISTICS

Ventana Ranch is a 940-acre development located west of Paradise Hills between Paseo del Norte and Irving Boulevards. Country Meadows Unit III (a portion of Tract A, Travilla Subdivision) is located in the northeastern quadrant of the Ventana Ranch Master Plan. The remaining portion of Tract A, Travilla Subdivision bounds the proposed subdivision to the north, Universe Blvd. to the east, Country Meadows Unit II is to the south, and Vista De Arenal (also known as Tract 24) is to the west. The site will be accessible from Universe Blvd. and Country Knoll.

IV. EXISTING HYDRAULIC AND HYDROLOGIC CONDITIONS

The proposed subdivision (Country Meadows Unit III) is located within Basin 4 (12.87ac, $Q_{100}=12.87\text{cfs}$) and consists of mass graded terrain with gradual slopes ranging 1% to 5%. The soil throughout this region has a Hydrologic Soil Group (HSG) classification of Type "A". Types "A" soils are known to have infiltration rates and are typically found in desert climates similar to that of Ventana Ranch. Existing drainage patterns direct the runoff to the North East to an existing temporary retention pond. The approved Final Addendum No. 4 reexamined the hydrology and storm drain hydraulics for this portion of Tract A including Travilla and Vista De Arenal



REGISTERED PROFESSIONAL ENGINEER
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Subdivisions at Ventana Ranch. The existing temporary retention pond, which was built with Vista de Arenal (Tract 24), will collect the all developed flows from Travilla Subdivision (Tract 23), Vista De Arenal (Tract 24), Country Meadows Unit III (a portion of Tract A, Travilla Subdivision), and the undeveloped flows generated by offsite basins 1-3. The temporary retention pond will be discussed in greater detail in section 6 of this report. There are no recognized FEMA Floodplains within the proposed development.

V. PROPOSED HYDRAULIC AND HYDROLOGIC CONDITIONS

For additional assistance throughout this portion of the report, please refer to the Existing Drainage Basin Map, Proposed Drainage Basin Map and the Grading and Drainage Plan enclosed in the Exhibit section of this report.

Discharge ($Q_{100} = 44.88\text{cfs}$) generated by Country Meadows Unit III (a portion of Tract A, Travilla Subdivision) will flow through the proposed internal streets to two collection points located at the ends of Ventana Hills Road and Country Manor Place. The runoff will then discharge offsite, down an asphalt rundown with asphalt curb to dumped basalt rock. The asphalt rundown will prevent erosion near the site and the dumped basalt rock will serve as dissipaters, reducing the velocity of the runoff preventing damage to the existing temporary retention pond. As mentioned previously, the approved Final Addendum No. 4 reevaluated the hydraulic conditions for Tract A and provided a temporary retention pond. This report conforms to the Final Addendum No. 4 in that the total volume to be retained on Tract A is less than the design capacity stated within the addendum. The development of Country Meadows Unit III does not change the terrain of the offsite basins north of the subdivision including the existing temporary retention pond. A copy of The Final Addendum No. 4 is provided in Appendix E of this report. Figures 1-3, from the Final Addendum No. 4, contain additional information concerning the future phasing and drainage conditions for Tract A, Travilla Subdivision at Ventana Ranch

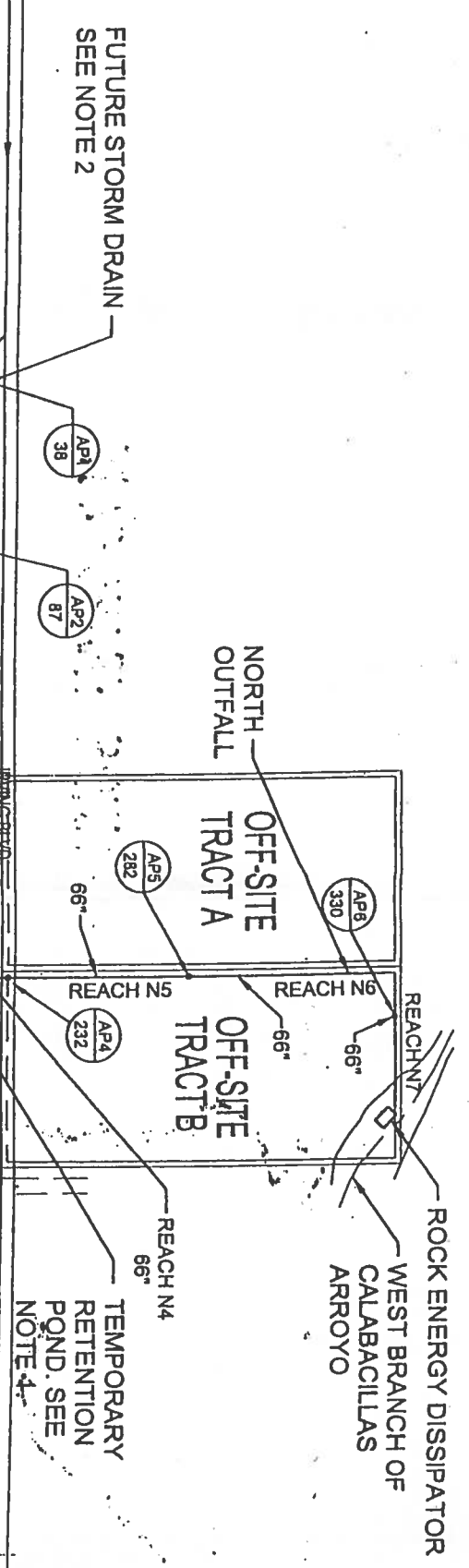
LEGEND

WEST BRANCH CALABACILLAS
STORM DRAIN DIVERSION AND
NORTH OUFALL STORM DRAIN

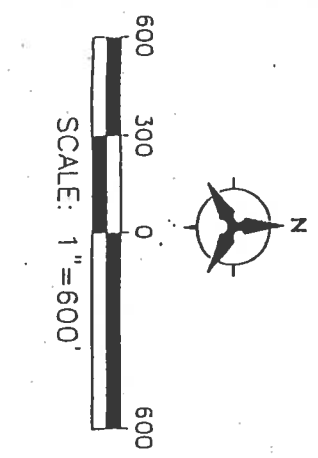
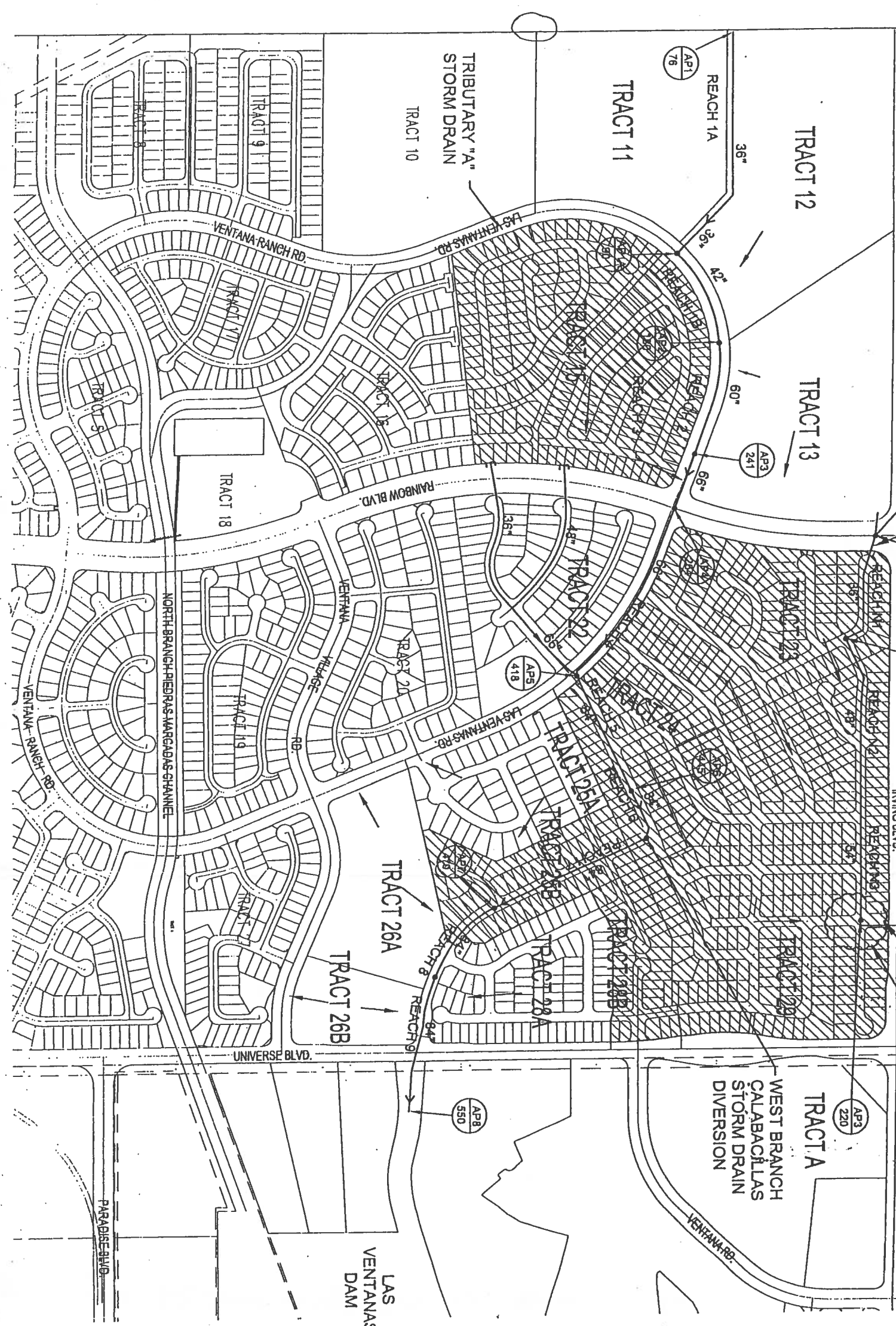
FLOW DIRECTION

ANALYSIS POINT
100-YR FLOW (CFS)

CONCEPTUAL PROPOSED
LOT LAYOUTS



- NOTES:**
1. A TEMPORARY RETENTION POND MAY BE CONSTRUCTED WITHIN TRACT 29 TO CONTROL RUNOFF UNTIL THE NORTH OUFALL IS CONSTRUCTED. EASEMENT AND COVENANT IN PLACE - SEE PLAT FOR TRACT X-1-A-1 (APPENDIX C).
 2. WITH THE DEVELOPMENT OF TRACTS 23, 24, & 29, A STORM DRAIN WILL BE CONSTRUCTED TO CONVEY RUNOFF FROM THE NORTHEAST CORNER OF TRACT 13, IRVING BOULEVARD AND RAINBOW AT IRVING. THIS STORM DRAIN WILL ALSO SERVE TRACTS 23, 24, & 29.
 3. ADDENDUM NO. 3 ADDRESSED THE NORTH OUFALL TO THE WEST BRANCH OF THE CALABACILLAS AND WAS APPROVED BY THE CITY OF ALBUQUERQUE AND BY AMAFCA.

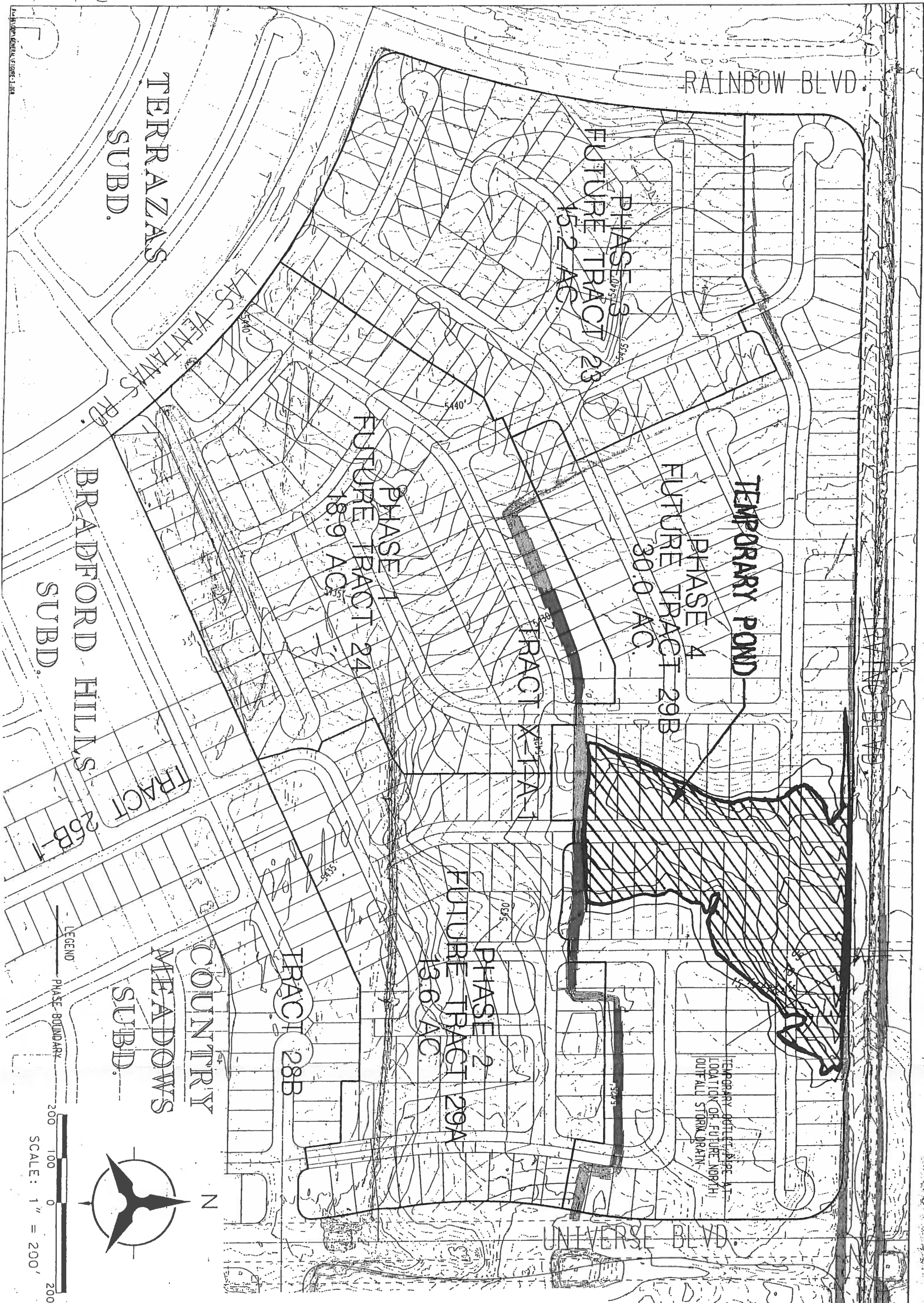


VENTANA RANCH
FIGURE 2
PROPOSED DRAINAGE PLAN
DEVELOPED CONDITIONS
JUNE 2000

Bohannon & Huston

Courtyard One 7500 JEFFERSON NE Albuquerque NEW MEXICO 87109

ENGINEERS PLANNERS PHOTOGRAMMETRISTS SURVEYORS SOFTWARE DEVELOPERS



VENTANA RANCH
FIGURE 3
PHASING PLAN

JUNE 2000

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TRACT A-1

4C

A. On-Site Basins

The proposed site is broken into seven (7) major on-site basins. Each of the basins is discussed in further detail below. See proposed drainage basin map (Exhibit 4) for analysis point locations.

Basin A (2.37ac, $Q_{100}=8.26\text{cfs}$) encompasses the entire length of Ventana Hills Road left of the centerline and fourteen (14) lots, #23-36. All of the developed flow from this basin will flow off-site and be collected by the temporary retention pond just north of this subdivision.

Basin B (2.90ac, $Q_{100}=10.12\text{cfs}$) encompasses the remaining portion of Ventana Hill Road and sixteen (16) lots, #21-22 and #37-50. Runoff from this basin will combine with the runoff generated by onsite basins E and G at analysis point #3. The combined runoff will discharge off site to be collected by the temporary retention pond. See Exhibit 4 at the end of this report for the location of the temporary retention pond.

Basin C (2.46ac, $Q_{100}=8.56\text{cfs}$) encompasses Country Manor Place south of Country Cove Place and fourteen (14) lots, #51-64. All of the developed flow will combine with the flow in Basin G at analysis point #2.

Basin D (2.94ac, $Q_{100}=10.25\text{cfs}$) encompasses the entire length of Country Sage and eighteen (18) lots, #1-10 and #65-72. All of the developed flow will combine with the flow in Basin G at analysis point #1.

Basin E (1.45ac, $Q_{100}=5.06\text{cfs}$) encompasses the entire length of Country Cove Place north of the centerline and eight (8) lots, #11-18. A portion of the developed flow (4.30cfs) will spill over the valley gutter, at the intersection of Country Cove Place and Country Manor Place, and combine with the runoff from Basin F. The residual flow (0.76cfs) will combine with the existing runoff from Basin B in Ventana Hills Road at analysis point #3. See proposed drainage basin map (Exhibit 4) for location of the existing temporary retention pond.

Basin F (0.41ac, $Q_{100}=1.42\text{cfs}$) encompasses the remainder of Country Manor Place north of the intersection with Country Cove Place. All of the developed flow in this basin including the flow from Basin E will discharge offsite and be collected by the temporary retention pond.

Basin G (0.34ac, $Q_{100}=1.41\text{cfs}$) encompasses the remainder of Country Cove Place right of the centerline. All of the developed flow generated from Basins C and D will discharge into this basin and combine with the existing flow. All of the developed flow from Basin G will discharge into Basin B analysis point #3. A small portion of developed flow from Basin G (0.85cfs) will spill over the centerline of Ventana Hills Road and combine with the runoff from Basin A at analysis point #3.

In Summary, All of the developed flow from Country Meadows Unit III will be collected by the existing temporary retention pond located Northeast of the subdivision. For more information concerning the existing temporary retention pond, please refer to Appendix E of this report.

B. Off-Site Basins

Basin 1 (18.88ac, $Q_{100}=26.18\text{cfs}$) borders Tract 23 to the South, Rainbow Blvd. to the West, Irving Blvd. to the North and the temporary retention pond to the east. This basin has a Type "A" Hydrologic Soil Group (HSG) rating, according to chapter 22.2 of the DPM, and is known for its high infiltration characteristics. The developed runoff from Travilla Subdivision (Tract 23) discharges ($Q_{100}=41.2\text{cfs}$) into offsite Basin 1. This additional discharge results in an increased flow ($Q_{100}=67.3\text{cfs}$) that will discharge into the existing temporary retention pond. Rainbow Blvd. will cut off all outside flow to the temporary retention pond and to the Calabacillas Storm Drain.

Basin 2 (4.91ac, $Q_{100}=6.81\text{cfs}$) is located within the temporary retention pond located Northeast of Country Meadows Unit III Subdivision. The developed flow ($Q_{100}=47.50\text{cfs}$) from Vista de Arenal (Tract 24) will discharge into this basin increasing the

net flow ($Q_{100}=54.31\text{cfs}$) within this basin. For more information concerning this basin, refer to section six of this report.

Basin 3 has been divided into two sub-basins, Basins 3-1 and 3-2, due to the layout of the proposed subdivision and the existing temporary retention pond. Sub-Basin 3-1 (7.70ac, $Q_{100}=10.68\text{cfs}$) shares a western boundary with the existing temporary retention pond and Vista de Arenal (Tract 24), Country Meadows Unit II to the south, Universe Blvd. to the East, and Irving Blvd. to the North. This basin has a Type "A" Hydrologic Soil Group (HSG) similar to Basin 1. The developed flow ($Q_{100}=44.88\text{cfs}$) from Country Meadows Unit III will discharge into Sub-Basin 3-1, increasing the flow ($Q_{100}=55.56\text{cfs}$) within this sub-basin that will be collected by the existing temporary retention pond. Sub-Basin 3-2 (0.25ac, $Q_{100}=0.35\text{cfs}$) is bound by the existing temporary retention pond to the north and east, and by Vista de Arenal (Tract 24) to the west and South. The existing temporary retention pond will collect all of the flow generated within these two sub-basins.

VI. POND ANALYSIS – EXISTING TEMPORARY RETENTION POND

The primary function of the temporary retention pond is to collect runoff from off-site Basins 1-3, Travilla Subdivision (Tract 23), Vista de Arenal (Tract 24), Country Meadows Unit III, and the future development of Tract B, Country Meadows Unit III (also known as the remaining undeveloped portion of Tract A, Travilla Subdivision). The 5414 contours delineate the boundary for the temporary retention pond. The combined flow from off-site Basin 1, Vista De Arenal (Tract 24), Travilla Subdivision (Tract 23), and Country Meadows Unit III (Tract 29A), result in a temporary net volume of 9.18 acre-ft (based on the 100-year, 10 day event). This temporary net volume is less than the volume listed in the approved Final Addendum No. 4 of 9.80 acre-ft. The modified layouts for Country Meadows Unit III and Travilla Subdivision are the cause for the discrepancy in the two volumes. The existing temporary retention pond will collect all of the developed flow from the onsite basins in Country Meadows Unit III.

In the future, when the remaining portion of Tract A, Travilla Subdivision (also known as Tract B, Country Meadows Unit III) is developed, the existing temporary retention pond will be removed. At that time an approved outfall storm drain will drain the site and carry the flows under Irving Blvd., through the North 20 (offsite Tract B as noted in Figure 2 of the Final Addendum No. 4), and discharge into the West Branch Calabacillas Arroyo. This storm drain will tie directly to the TVI stub on Universe Blvd.

Not big enough

VII. CONCLUSION

The Final Addendum No. 4 governs the development of Country Meadows Unit III (a portion of Tract A, Travilla Subdivision) of the Ventana Ranch Subdivision. Increases in runoff, depth and velocity due to proposed development are within parameters anticipated within the previously approved Master Drainage Plan for this area. These flows can be safely conveyed by the improvements proposed in this drainage plan to existing drainage facilities, which have adequate capacity to accept such runoff. Erosion and dust control, consisting of erosion control berms, snow fencing and sedimentation basins, are proposed to prevent soil washing or blowing into paved streets, storm drains, and existing development areas. Therefore we believe this report supports the preliminary/final plat and grading plan submittals and should be approved as requested.

Basin Summary

Country Meadows Unit III

BASIN I.D.	AREA (AC)	UNITS #	% LAND TREATMENT				DISCHARGE (CFS)	
			A	B	C	D	10 YR	100YR

HYDROLOGICAL VOLUMETRIC & DISCHARGE DATA (EXISTING)

1	18.88		90.0%	5.0%	5.0%	0.00%	6.37	26.18
2	4.91		90.0%	5.0%	5.0%	0.00%	1.66	6.81
3-1	7.7		90.0%	5.0%	5.0%	0.00%	2.60	10.68
3-2	0.25		90.0%	5.0%	5.0%	0.00%	0.08	0.35
4	12.87		90.0%	5.0%	5.0%	0.00%	4.34	17.84

HYDROLOGICAL VOLUMETRIC & DISCHARGE DATA (DEVELOPED)

A	2.37	14	0.0%	23%	23%	54%	4.92	8.26
B	2.90	16	0.0%	23%	23%	54%	6.02	10.12
C	2.46	14	0.0%	23%	23%	54%	5.09	8.56
D	2.94	18	0.0%	23%	23%	54%	6.10	10.25
E	1.45	8	0.0%	23%	23%	54%	3.01	5.06
F	0.41	2	0.0%	23%	23%	54%	0.84	1.42
G	0.34	0	0.0%	5%	5.0%	90%	0.91	1.41

TOTAL

12.87 72

26.89

45.08

NOTES: 1) Impervious percentages were calculated from the DPM equation A-4, with the remaining percentages distributed to land treatment type B, due to the relatively flat terrain

$$N = \text{UNITS/ACRES} = 5.6$$

$$\%D = 7 * \text{SQRT}((N*N) + (5*N)) = 53.9 \%$$

*Table A-4

**Table A-11

SUMMARY OF THE ROADWAY CAPACITY ANALYSIS FOR COUNTRY MEADOWS UNIT III (TRACT 29A) AT VENTANA RANCH

Ventana Hills Road

Drainage Basins & Analysis Points	Roadway Grade (%)	Roadway Cross-Slope (%)	Q(100 YR) in Roadway (cfs)	Curb Type	Depth of Water in Roadway (ft)	Velocity of Storm Water in Roadway (ft/s)	V ² /2*g	EGL	ROW Elevation (ft)	Comments
Basin A	0.63	2.00 (Crown)	0.22	STD	0.12	0.95	0.01	0.13	0.85	OK
	1.47	2.00 (Crown)	7.03	STD	0.31	2.53	0.10	0.41	0.85	OK
	1.56	2.00 (Crown)	9.11	STD	0.33	2.77	0.12	0.45	0.85	OK
Basin B	0.80	2.00 (Crown)	0.2	STD	0.10	1.03	0.02	0.12	0.85	OK
	1.47	2.00 (Crown)	8.89	STD	0.33	2.68	0.11	0.44	0.85	OK
	1.56	2.00 (Crown)	30.05	STD	0.47	4.03	0.25	0.72	0.85	OK
Analysis Point #3	1.56	2.00 (Crown)	28.82	STD	0.46	3.96	0.24	0.70	0.85	OK

Country Cove Place

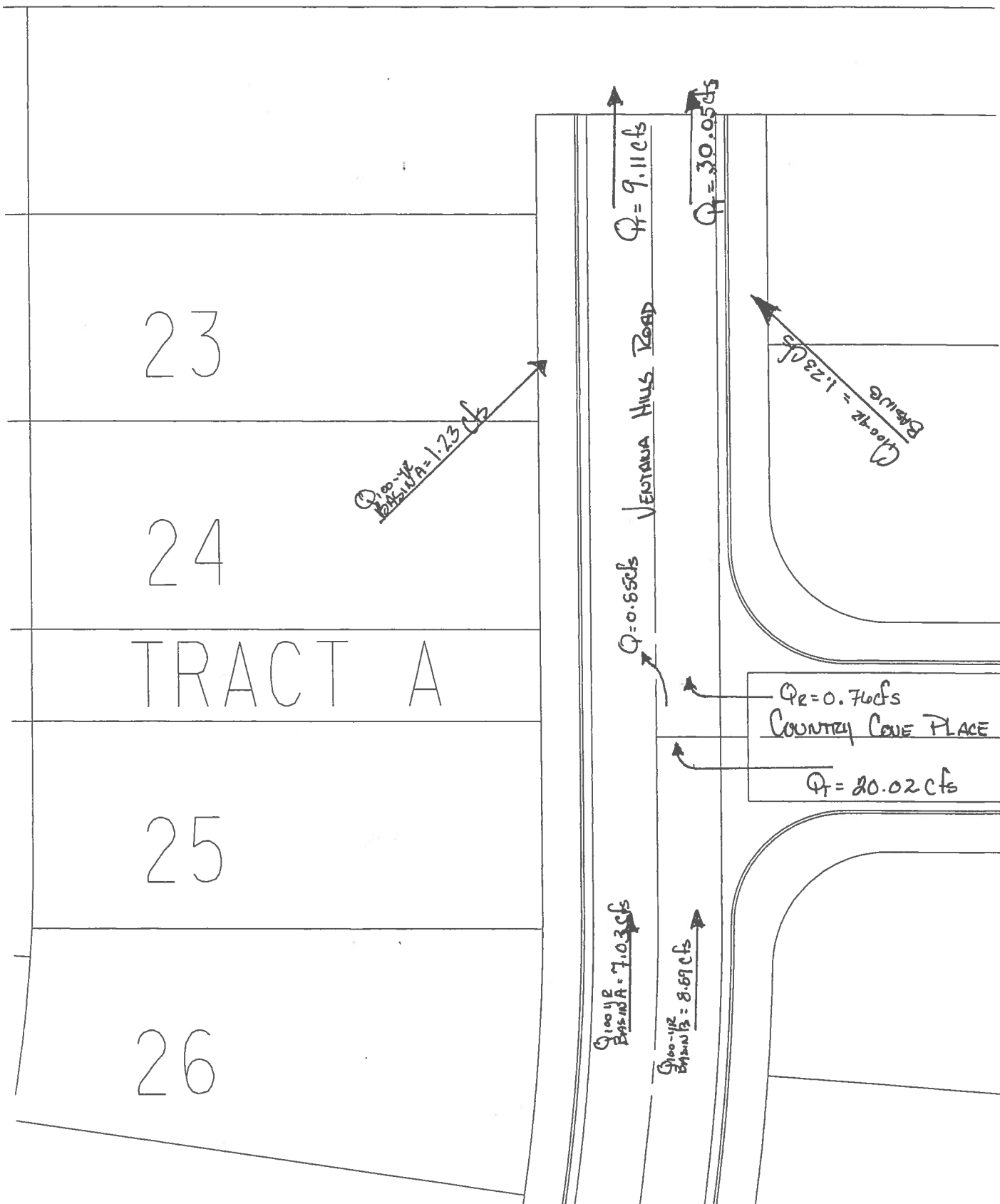
Drainage Basins & Analysis Points	Roadway Grade (%)	Roadway Cross-Slope (%)	Q(100 YR) in Roadway (cfs) *	Curb Type	Depth of Water in Roadway (ft)	Velocity of Storm Water in Roadway (ft/s)	V ² /2*g	EGL	ROW Elevation (ft)	Comments
Basin E	0.60	2.00 (Crown)	0.76	STD	0.18	1.10	0.02	0.20	0.87	OK
Basin G	0.60	2.00 (Crown)	20.02	STD	0.48	2.57	0.10	0.58	0.87	OK
Analysis Point #1	0.60	2.00 (Crown)	10.95	STD	0.40	1.99	0.06	0.46	0.87	OK
Analysis Point #2	0.60	2.00 (Crown)	19.31	STD	0.47	2.53	0.10	0.57	0.87	OK

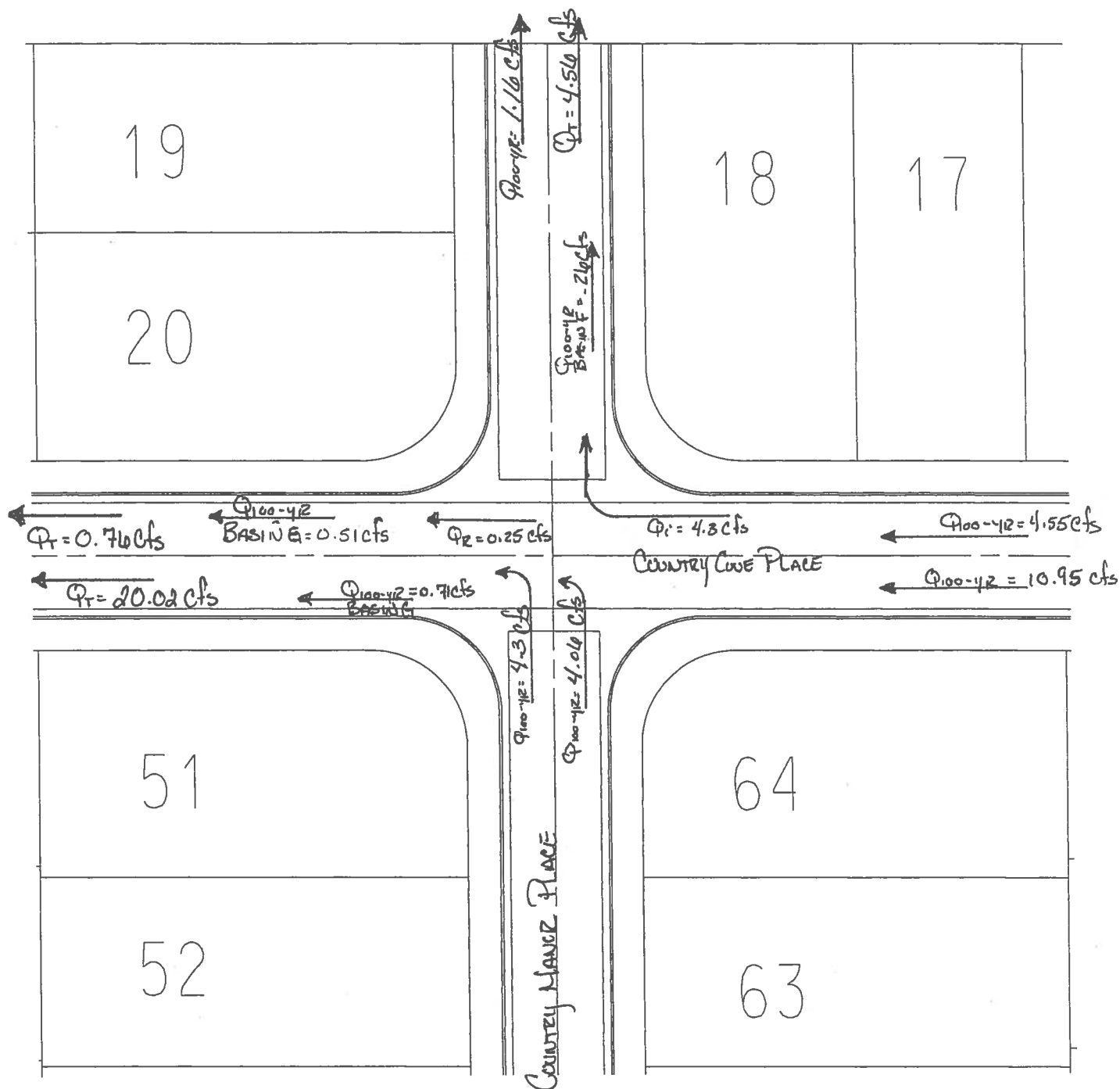
Country Manor Place

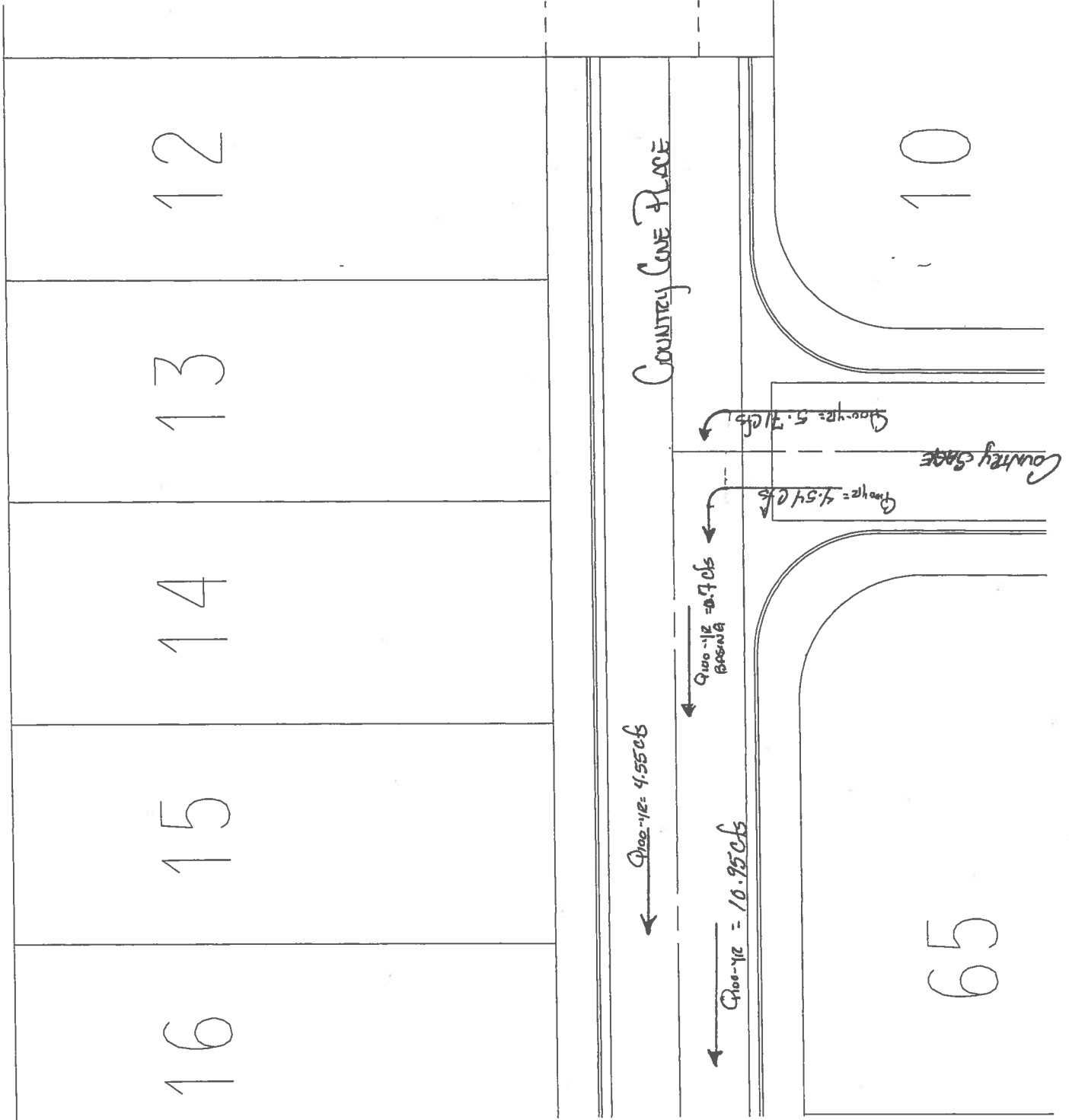
Drainage Basins & Analysis Points	Roadway Grade (%)	Roadway Cross-Slope (%)	Q(100 YR) in Roadway (cfs) *	Curb Type	Depth of Water in Roadway (ft)	Velocity of Storm Water in Roadway (ft/s)	V ² /2*g	EGL	ROW Elevation (ft)	Comments
Basin C	2.30	2.00 (Crown)	4.41	STD	0.24	2.65	0.11	0.35	0.87	OK
	2.30	2.00 (Crown)	3.97	STD	0.25	2.69	0.11	0.36	0.87	OK
	0.98	2.00 (Crown)	4.5	STD	0.29	1.96	0.06	0.35	0.87	OK
	0.60	2.00 (Crown)	4.06	STD	0.30	1.59	0.04	0.34	0.87	OK
Basin F	3.62	2.00 (Crown)	0.78	STD	0.13	2.35	0.09	0.22	0.87	OK
	3.28	2.00 (Crown)	4.46	STD	0.24	3.11	0.15	0.39	0.87	OK
	1.42 (LT)	2.00 (Crown)	1.16	STD	0.18	1.68	0.04	0.22	0.87	OK
	1.42 (RT)	2.00 (Crown)	4.56	STD	0.27	2.25	0.08	0.35	0.87	OK

Country Sage

Drainage Basins & Analysis Points	Roadway Grade (%)	Roadway Cross-Slope (%)	Q(100 YR) in Roadway (cfs) *	Curb Type	Depth of Water in Roadway (ft)	Velocity of Storm Water in Roadway (ft/s)	V ² /2*g	EGL	ROW Elevation (ft)	Comments
Basin D	0.63	2.02 (Crown)	1.34	STD	0.21	1.25	0.02	0.24	0.87	OK
	0.6	2.00 (Crown)	2.15	STD	0.25	1.37	0.03	0.28	0.87	OK
	1.69	2.00 (Crown)	4.09	STD	0.26	2.35	0.09	0.34	0.87	OK
	1.70	2.00 (Crown)	5.71	STD	0.28	2.55	0.10	0.38	0.87	OK
	2.15	2.00 (Crown)	4.54	STD	0.26	2.64	0.11	0.36	0.87	OK







TEMPORARY Pond Size:

- SIZE BASED ON 100YR, 10 DAY RUNOFF VOLUME.
- CALCULATED USING EQUATIONS FROM THE DPM

• EQUATION A-9: $V_{10 \text{ DAYS}} = V_{300} + A_D (P_{10 \text{ DAYS}} - P_{300}) / 12 \text{ in/ft}$

$V_{300} = E \overset{\substack{\uparrow \text{INCHES}}}{A} / 12 \text{ in/ft}$

$E_{\text{PER ZONE 1}} = \frac{0.44 (\text{Area A}) + 0.67 (\text{Area B}) + 0.99 (\text{Area C}) + 1.97 (\text{Area D})}{\text{TOTAL AREA}}$

$A_D = \text{AREA THAT IS IMPERVIOUS}$

$P_{10 \text{ DAYS}} = 10 - (24.9 / (P_{1440})^{1.4}) = \underline{3.67''}$

$P_{1440} = 2.66''$

$P_{300} = 2.2''$

PHASE #1: (FUTURE TRACT 24)

AREA = 19.2 Acres

$\%A = 0$
 $A = 0$

$\%B = 25$
 $A = 4.80 \text{ Ac}$

$\%C = 25$
 $A = 4.80 \text{ Ac}$

$\%D = 50\%$
 $A = 9.6 \text{ Acres}$

$E = \frac{0.44(0) + 0.67(4.80) + 0.99(4.80) + 1.97(9.6)}{19.2}$

$= 1.4$

$V_{300} = 1.4 \text{ in} \times 19.2 \text{ Ac} / 12 \text{ in/ft} = 2.24 \text{ ACRE-FT}$

$V_{10 \text{ DAY}} = 2.24 + 9.6 (3.67 - 2.2) / 12$

$V_{10 \text{ DAY}} = \underline{3.42 \text{ ACRE-FT}}$

Bohannon & Huston



PROJECT NAME

SHEET 1 OF 2

PROJECT NO.

BY ROBERT LACKEY DATE 3/27/02

SUBJECT TEMPORARY Pond VOLUME

CH'D DATE

ENGINEERS PLANNERS PHOTOGRAMMETRISTS
SURVEYORS SOFTWARE DEVELOPERS

D-1

PHASE 2: (TRACT 23 - TRIANA SUBDIVISION)

AREA = 12.54 ACRES

$$\%A = 0 \\ A = 0$$

$$\%B = 25\% \\ A = 3.13 \text{ AC}$$

$$\%C = 25\% \\ A = 3.13 \text{ AC}$$

$$\%D = \\ A =$$

$$E = \frac{0.44(0) + 0.107(3.13) + 0.97(3.13) + 1.97(4.2)}{12.81}$$

$$E = 1.39 \text{ INCHES}$$

$$V_{3000} = 1.39 \text{ IN} \times 12.54 \text{ ACRES} / 12 \text{ IN/FT} = 1.45 \text{ AC-FT}$$

$$V_{10\text{-DAY}} = 1.45 + 0.27(3.107 - 2.2) / 12$$

$$V_{10\text{-DAY}} = 2.22 \text{ AC-FT}$$

PHASE 3: (TRACT 29A - COUNTRY MEADOWS UNIT III)

AREA = 12.87 ACRES

$$\%A = 0 \\ A = 0$$

$$\%B = 25 \\ A = 3.22 \text{ AC}$$

$$\%C = 25 \\ A = 3.22 \text{ AC}$$

$$\%D = \\ A =$$

$$E = \frac{0.44(0) + 0.107(3.22) + 0.97(3.22) + 1.97(6.4)}{12.87}$$

$$E = 1.39 \text{ INCHES}$$

$$V_{3000} = 1.39 \text{ INCHES} \times 12.87 \text{ ACRES} / 12 \text{ IN/FT} = 1.49 \text{ AC-FT}$$

$$V_{10\text{-DAY}} = 1.49 + 0.43(3.107 - 2.2) / 12$$

$$V_{10\text{-DAY}} = 2.28 \text{ AC-FT}$$

TOTAL VOLUME OF 3 DEVELOPED PHASES = 7.92 ACRES

PROJECT NAME

SHEET

OF

2

PROJECT NO.

BY

Robert Larkin

DATE

3/27/02

SUBJECT

TEMPERARY POND CAPACITY

CH'D

DATE



OFFSITE BASIN #1:

AREA = 18.88 ACRES

%A = 90

A = 16.99

%B = 5

A = 0.94

%C = 5%

A = 0.94

%D = ϕ

A = ϕ

$$E = \frac{0.44(16.99) + 0.107(0.94) + 0.97(0.94) + 1.97(\phi)}{18.88}$$

$$E = 0.4'8 \text{ INCHES}$$

$$V_{300} = 0.4'8 \text{ INCHES} \times 18.88 \text{ ACRES} / 12 \text{ IN/FT} = 0.75 \text{ AC-FT}$$

$$V_{10\text{-DAY}} = 0.75 + \phi(3.47 - 2.2) / 12$$

$$V_{10\text{-DAY}} = 0.75 \text{ AC-FT}$$

OFFSITE BASIN #2 (EXISTING TEMPORARY RETENTION POND)

AREA = 4.91 ACRES

%A = 90

AREA = 4.419

%B = 5

AREA = 0.245

%C = 5

AREA = 0.245

%D = ϕ

AREA = ϕ

$$E = \frac{0.44(4.419) + 0.107(0.245) + 0.97(0.245) + 1.97(\phi)}{4.91}$$

$$E = 0.4'8 \text{ INCHES}$$

$$V_{300} = 0.4'8 \text{ INCHES} \times 4.91 \text{ ACRES} / 12 \text{ IN/FT} = 0.20 \text{ AC-FT}$$

$$V_{10\text{-DAY}} = 0.20 \text{ AC-FT} + \phi(3.47 - 2.2) / 12$$

$$V_{10\text{-DAY}} = 0.20 \text{ AC-FT}$$



OFFSITE BASIN #3

AREA = 7.70 ACRES

%A = 90

AREA = 6.93 ACRES

%B = 5

AREA = 0.385 ACRES

%C = 5

AREA = 0.385 ACRES

%D = 0

AREA = 0

$$E = \frac{0.44(6.93) + 0.67(0.385) + 0.97(0.385) + 1.97(0)}{7.70}$$

$$E = 0.48 \text{ INCHES}$$

$$V_{360} = 0.48 \text{ INCHES} \times 7.70 \text{ ACRES} / 12 \text{ IN/FT} = 0.31 \text{ AC-FT}$$

$$V_{10\text{-DAY}} = 0.31 \text{ AC-FT} + 0(3.67 - 2.2) / 12$$

$$\underline{V_{10\text{-DAY}} = 0.31 \text{ AC-FT}}$$

$$\text{TOTAL OFFSITE VOLUME} = 1.24 \text{ ACRE-FT}$$

TOTAL DEVELOPED VOLUME:

• VISTA DE ARREAL (TRACT 24) = 3.42 ACRE-FT

• TRAVILLA SUBDIVISION (TRACT 23) = 2.22 ACRE-FT

• PROPOSED COUNTRY MEADOWS UNIT III = 2.25 ACRE-FT

TOTAL VOLUME TO

$$\underline{\text{BE RETAINED} = 9.18 \text{ ACRE-FT}}$$

Bohannon & Huston



ENGINEERS PLANNERS PHOTOGRAMMETRISTS
SURVEYORS SOFTWARE DEVELOPERS

PROJECT NAME _____ SHEET _____ OF _____
PROJECT NO. _____ BY _____ DATE _____
SUBJECT _____ CH'D _____ DATE _____

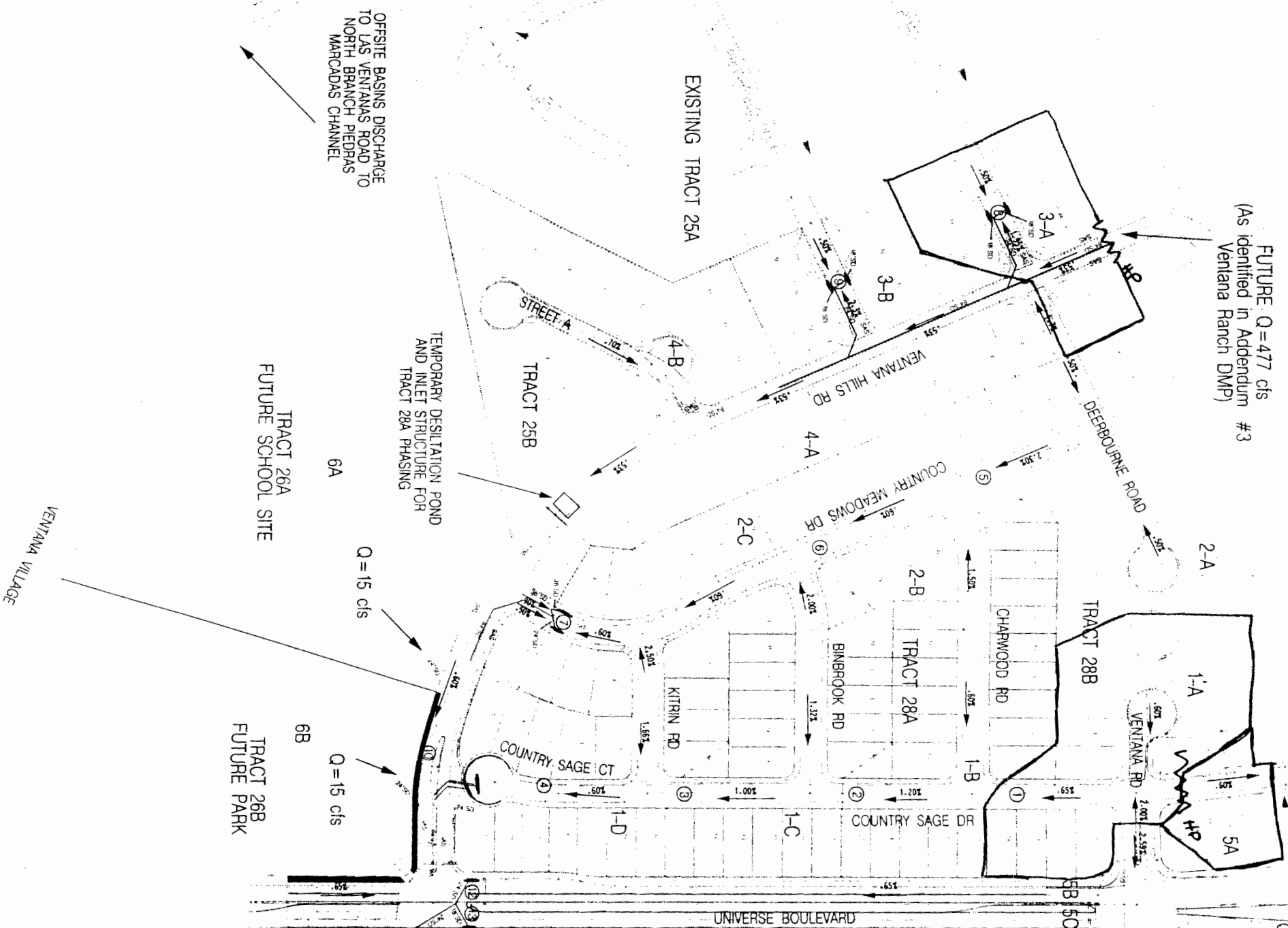
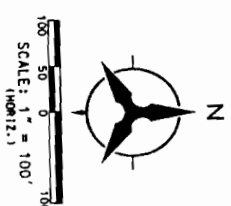
D-4/4

DEVELOPED FLOWS			
BASIN	Q10(CFS)	Q100(CFS)	
A-1a	7.93	12.99	
A-2a	10.51	17.26	
A-3	6.62	10.99	

FUTURE Q=477 cfs
(As identified in Addendum #3
Ventana Ranch DMP)

ITM CHARTER RETENTION FUND W/
DRAINAGE TO FUTURE WEST BRANCH
CAJABACILLAS ARROYO OUTFALL SYSTEM
(As identified in Addendum #3 Ventana
Ranch DMP)

DEVELOPED FLOWS		
BASIN	Q10(CFS)	Q100(CFS)
1-A	5.2	8.8
1-B	4.5	7.6
1-C	4.8	8.2
1-D	5.0	8.6
2-A	6.6	11.2
2-B	4.5	7.6
2-C	4.7	8.0
3-A	2.6	4.5
3-B	2.8	4.8
4-A	6.8	11.5
4-B	8.7	14.7
5A	11	1.9
5B	4.9	7.6
5C	3.5	5.3



VENTANA RANCH TRACT 28A, 28B & 25B DRAINAGE PLAN

PLATE 3

Bohannon & Huston

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INHERITS PLANTS PRODUCEMENTS SURFACES SOFTWARE/ENTRIES

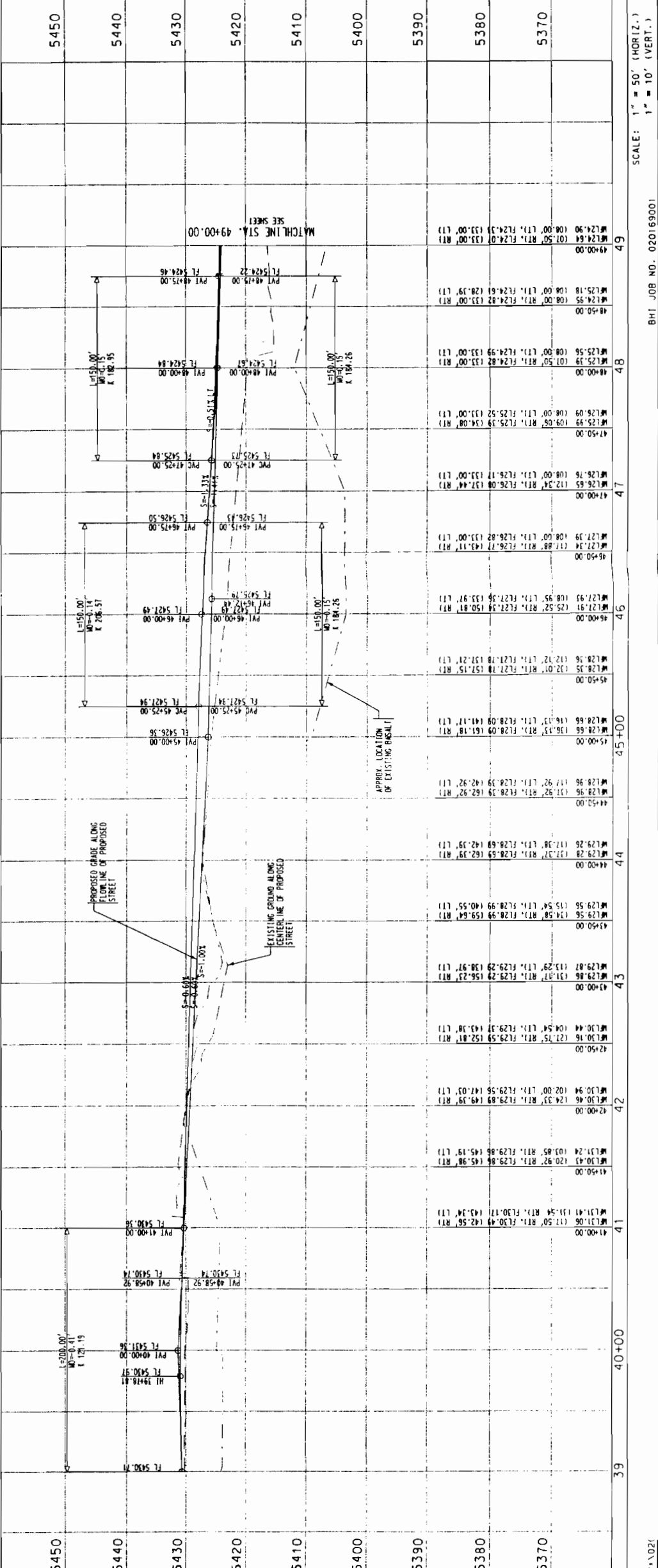
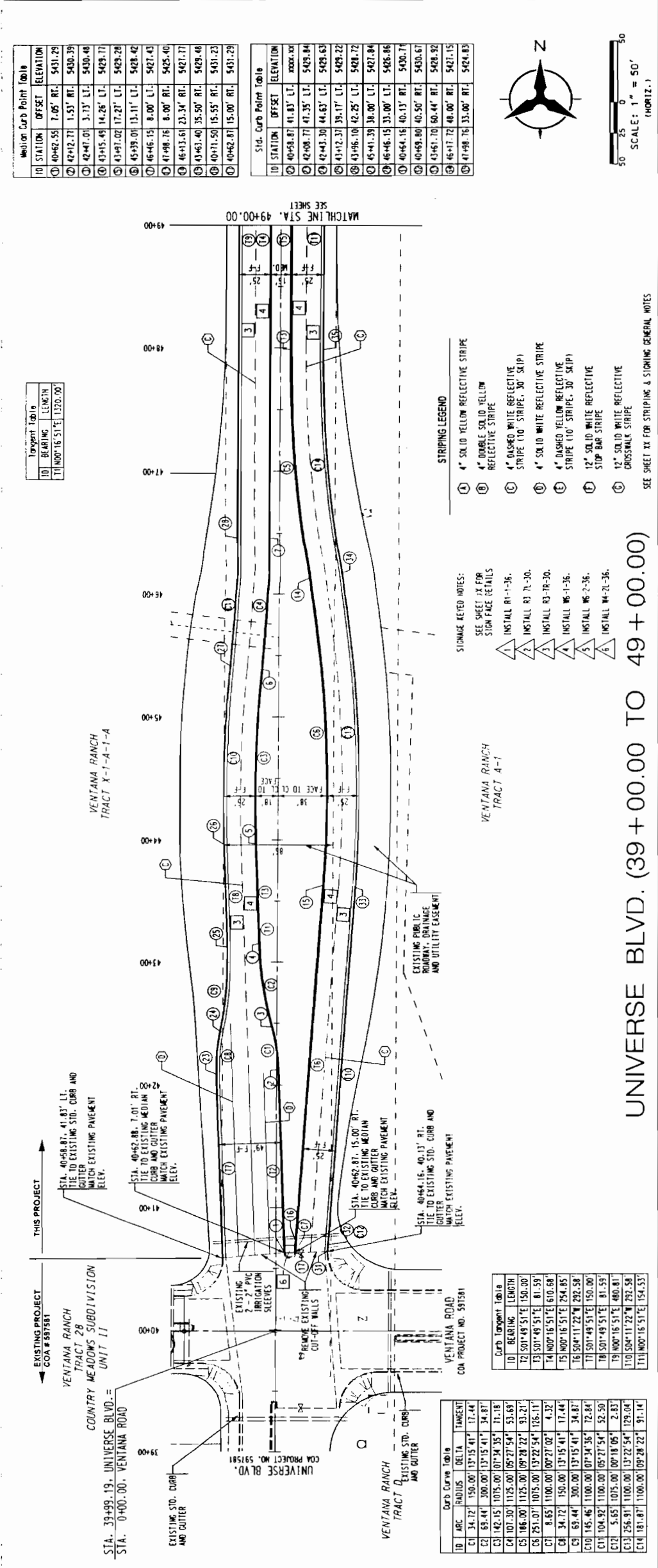


Table with 4 columns: NO., FIELD NOTES, ENGINEER'S SEAL, and AS-BUILT INFORMATION. Includes notes on construction, materials, and surveying.

Project information block including City of Albuquerque logo, project name (UNIVERSE BLVD STREET IMPROVEMENTS), and various approval stamps and signatures.