

CITY OF ALBUQUERQUE

Planning Department
Alan Varela, Director



Mayor Timothy M. Keller

September 11, 2023

Ron Hensley, P.E.
THE Group
300 Branding Iron Rd. SE
Rio Rancho, NM 87124

**RE: Paradise RV Phase II
Conceptual Grading & Drainage Plans and Conceptual Drainage Report
Engineer's Stamp Date: 08/28/23
Hydrology File: K08D003**

Dear Mr. Hensley:

Based upon the information provided in your submittal received 08/30/2023, the Conceptual Grading & Drainage Plans and Conceptual Drainage Report are approved for action by the Development Facilitation Team (DFT) on Site Plan for Building Permit.

PRIOR TO BUILDING PERMIT:

1. Please submit a more detailed Grading & Drainage Plan to Hydrology for review and approval. This digital (.pdf) is emailed to PLNDRS@cabq.gov along with the Drainage Transportation Information Sheet.

As a reminder, if the project total area of disturbance (including the staging area and any work within the adjacent Right-of-Way) is 1 acre or more, then an Erosion and Sediment Control (ESC) Plan and Owner's certified Notice of Intent (NOI) is required to be submitted to the Stormwater Quality Engineer (Doug Hughes, PE, jhughes@cabq.gov, 924-3420) 14 days prior to any earth disturbance.

If you have any questions, please contact me at 924-3995 or rbrissette@cabq.gov.

Sincerely,

Renée C. Brissette, P.E. CFM
Senior Engineer, Hydrology
Planning Department

DATE SUBMITTED: 8/30/23

DRAINAGE REPORT
FOR
PARADISE RV PARK PHASE II
ALBUQUERQUE, NM
August 2023

City of Albuquerque
Planning Department
Development Review Services
HYDROLOGY SECTION
PRELIMINARY APPROVED

DATE: 09/11/23
BY: *Renee C. Brissette*
HydroTrans # K08D003

THESE PLANS AND/OR REPORT ARE
CONCEPTUAL ONLY. MORE INFORMATION MAY
BE NEEDED IN THEM AND SUBMITTED TO
HYDROLOGY FOR BUILDING PERMIT APPROVAL.

Prepared By



The HENSLEY ENGINEERING GROUP

Ron E. Hensley P.E.
300 Branding Iron Road S.E.
Rio Rancho, NM 87124



Table of Contents

I.INTRODUCTION & PROJECT DESCRIPTION.....	1
Legal Description.....	2
Flood Zone	2
Previous Studies.....	2
Methodology.....	2
II.BASIN ANALYSIS	3
Existing Conditions.....	3
Hydrology.....	4
Existing Basin Map	5
Existing Basin Routing	6
Interim Conditions	7
Hydrology.....	7
Interim Basin Map.....	8
Interim Basin Routing	9
Proposed Final Conditions	10
Hydrology.....	10
Proposed Basin Map	11
III.SITE & DRAINAGE IMPROVEMENT ANALYSES	13
Existing Conditions.....	13
Hydrology.....	13
Phase II “Interim” Conditions.....	13
Hydrology.....	13
Hydraulics	14
Interim Storm Drain Layout	16
Interim Storm Drain Summary.....	17
Interim Storm Drain Inlets	18
Storm Drain “Final” Conditions.....	19
Hydrology.....	19
Hydraulics	19
IV.GRADING PLAN	19

V.CONCLUSION	19
VI.Appendix A.....	20
Amole-Hubbell Drainage Management Plan	21
VII.Appendix B – Standard Calculations.....	22
Standard Equations.....	22
Existing Hydrology.....	23
AHYMO Summary	23
AHYMO Input	25
Interim Hydrology	34
AHYMO Summary	34
AHYMO Input	37
Final Hydrology	46
AHYMO Summary	46
AHYMO Input	48
Final Storm Drain Hydraulics.....	58
VIII.EXHIBITS.....	62
EXHIBIT A – Tracts 5 and 6 -Interim Grading and Drainage Plan	63
EXHIBIT B - Paradise RV Park Phase II - Grading and Drainage Plan.....	64
EXHIBIT C - Paradise RV Park Phase I - Grading and Drainage Plan.....	65

I. INTRODUCTION & PROJECT DESCRIPTION

This report is submitted as support for Paradise RV Park Phase II Site Plan. As depicted on Figure 1 Zone Atlas Page K-8 below, the project is the second phase of an RV Park located at Volcano Rd. and 102nd St. This report will revise the interim condition established in the Drainage Report for Paradise RV Park Phase I, dated September 9, 2015.

The project site is within the boundaries of the Amole Hubbell Drainage area. The Amole Hubbell Drainage Master Plan provides the basis for the developed conditions of the area. A two cell pond made up of Pond NE2 and Pond NE3 receives the area's runoff. Proposed conditions and development have added a sub-surface storm drainage system to collect runoff and convey it to basin ponds to prevent excessive street flow.

The runoff from the site will be directed to the depressed landscape areas along the site boundaries and routed to an inlet at the southeast corner of the site. Offsite runoffs to the northwest will be routed to the temporary retention pond west of the site. Offsite runoffs to the west will continue in the existing condition until development requires improvements.

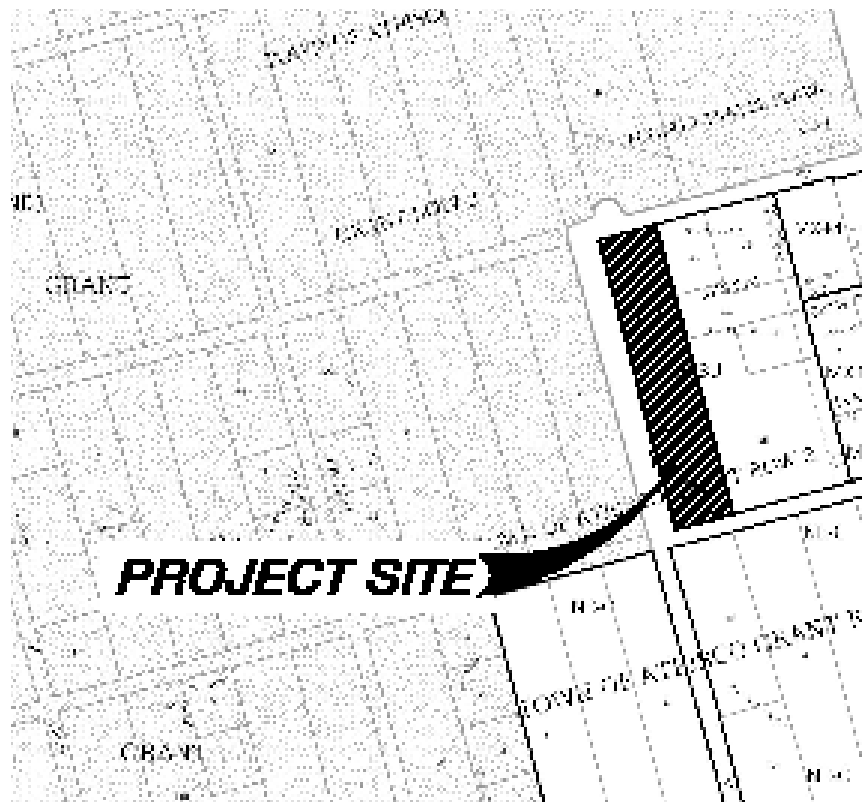


Figure 1 Zone Atlas Page K-8

Legal Description

Tract 3E, ROW A, UNIT A, West of Westland, Town of Atrisco Grant

Flood Zone

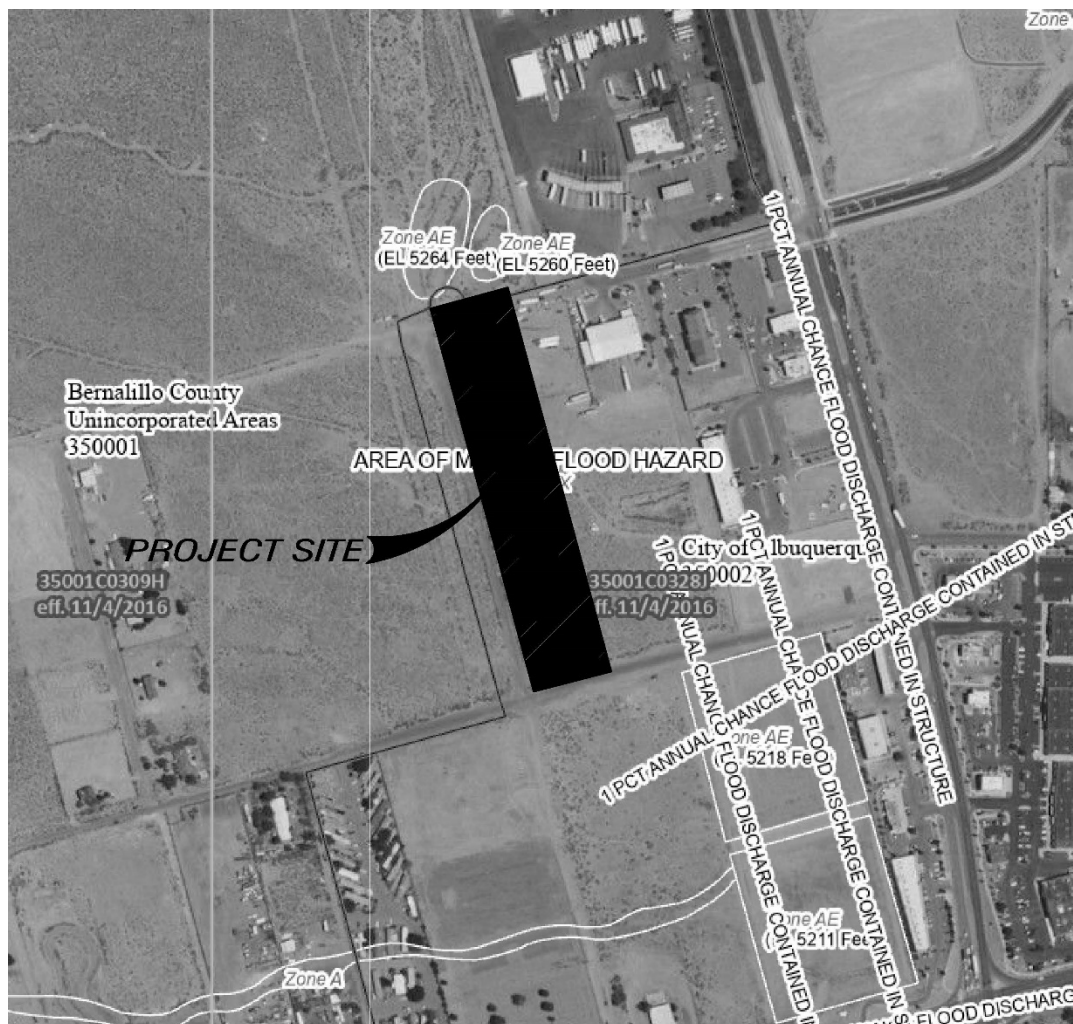


Figure 2 - FEMA's FIRM 35001C0328J

This project, as shown on Figure 2 - FEMA's FIRM 35001C0328J, dated August 16, 2012 is not within a designated 100-year floodplain.

Previous Studies

The "Amole-Hubbell Drainage Master Plan", dated May 2013, (Appendix A) is a drainage master plan for the area that established the drainage infrastructure and design runoff in the vicinity of the site for the allowable developed flows to and from the City's 98th Street Ponds. This study will be the basis for establishing the allowable discharge from this area. The Drainage Report for Paradise RV Park Phase I performed a detailed study of the Basin to determine final conditions, dated September 9, 2015.

Methodology

The drainage plan presented in this report has been prepared in accordance with the City of Albuquerque Drainage Ordinances and Chapter 6 of the Development

Process Manual (DPM). Hydrology for the 100-yr 24-hr duration storm was used as the design storm for this analysis for flow calculations. The site is within zone 1 as identified in the city of Albuquerque Development Process Manual, Section 6.2 for rainfall intensity and quantified utilizing AHYMO software.

Rainfall intensities per this report are as follows:

Zone	<i>P</i>₆₀	<i>P</i>₃₆₀	<i>P</i>₁₄₄₀
1	1.87	2.20	2.66

The proposed storm drain systems included in this report were modeled using hydrology, topographic and planimetric data obtained in the design. The hydraulic analysis for this report was performed to determine capacities and HGL utilizing Hydraflow software.

II. BASIN ANALYSIS

The site is located within the area included in the Amole-Hubbell Drainage Master Plan area. The specific area within the plan is designated as the “98th & Central Basin. The basin boundaries and nomenclature contained in that plan have been continued in this report. The analyses contained in this report address the three conditions of development proposed for the site. The analysis of the existing conditions provides a baseline for the development of future conditions. The interim condition analysis demonstrates the conditions after diversions of existing flows, but prior to construction of storm drain infrastructure. The final conditions provide an analysis of proposed conditions that adhere to the Master Plan. The “98th & Central Basin” is approximately 0.81 sq. mi. This sub-area is generally bounded on the east by 98th Street and north by I-40, while on the south by Central Avenue and the west by the Powerline Channel. A two cell City Pond receives the area’s runoff.

Existing Conditions

The land uses in 98th & Central Area are platted undeveloped, industrial, commercial, and low density residential. Without the conveyance infrastructure in place, developed and undeveloped lots experience large amounts of cross-lot drainage. There are only two storm drain systems in the sub-area, the first begins near the intersection of Volcano Road and 98th Street and runs through Pond 2 with outlet into Pond 3. The second is the network from Leonidas Lane to Volcano Road discharging to Pond 2. The existing condition corresponds to the “Interim Condition” detailed in the Drainage Report for Paradise RV Park Phase I. Since most of the sub-area is not conveyed via a sub-surface drainage system, large amounts of runoff spill directly into the ponds. The two-cell pond outlets into a storm drain system located in the Tierra Bayita Area, which ultimately connects to the Tierra Bayita Channel.

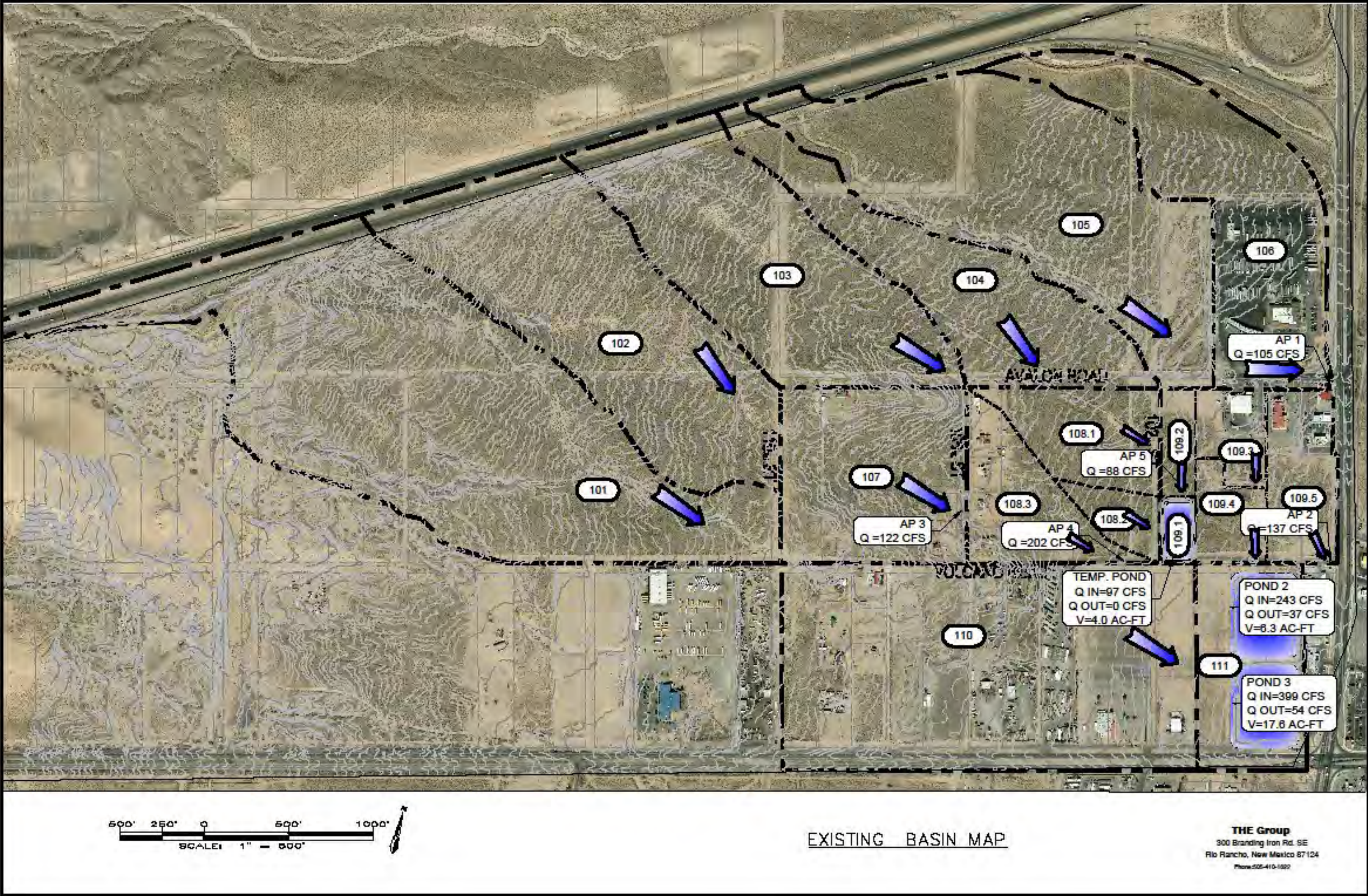
Hydrology

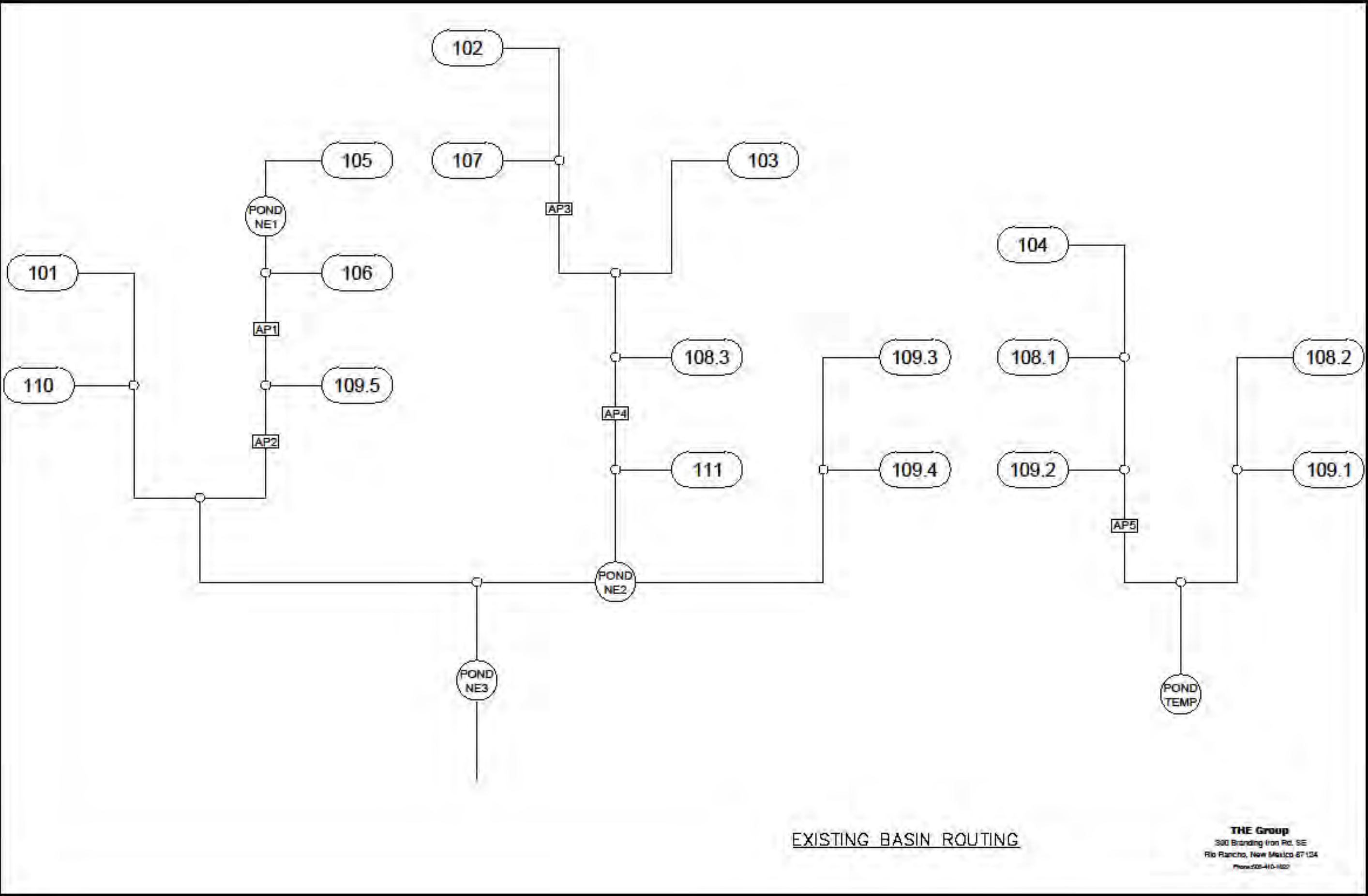
The analysis for the 100-yr 24-hr duration storm was done using AHYMO

Basin	Area (ac.)	Land Treatment				Yield (cfs/ac.)	Q ₁₀₀₋₂₄ (cfs)	V ₁₀₀₋₂₄ (cfs)
		A	B	C	D			
101	92.93	79	8	8	5	1.48	137.71	4.820
102	48.67	79	8	8	5	1.71	82.98	2.507
103	41.22	79	8	8	5	1.68	69.27	2.138
104	26.86	37	8	38	17	2.54	68.29	2.299
105	54.01	79	8	8	5	1.59	85.72	2.801
106	36.74	36	6	6	52	2.82	103.63	4.871
107	27.68	70	12	12	6	1.82	50.43	1.562
108.1	11.35	37	8	38	17	2.54	28.96	0.958
108.2	3.67	37	8	38	17	2.55	9.34	0.309
108.3	13.93	67	13	13	7	1.87	26.03	0.801
109.1	3.11	0	0	100	0	2.98	9.26	0.265
109.2	1.87	0	0	95	5	3.14	5.86	0.175
109.3	5.80	0	0	20	80	4.32	25.06	1.064
109.4	4.47	0	0	20	80	4.32	21.66	0.920
109.5	9.78	65	7	8	20	3.16	30.85	1.243
110	83.10	22	11	21	46	2.49	206.63	10.522
111	15.08	79	8	8	5	3.79	17.18	0.777

software. The land treatments reflect existing conditions of the basins and routing depicted on the following pages. A summary of the result is listed below and the

AHYMO files are detailed in Appendix B.





Interim Conditions

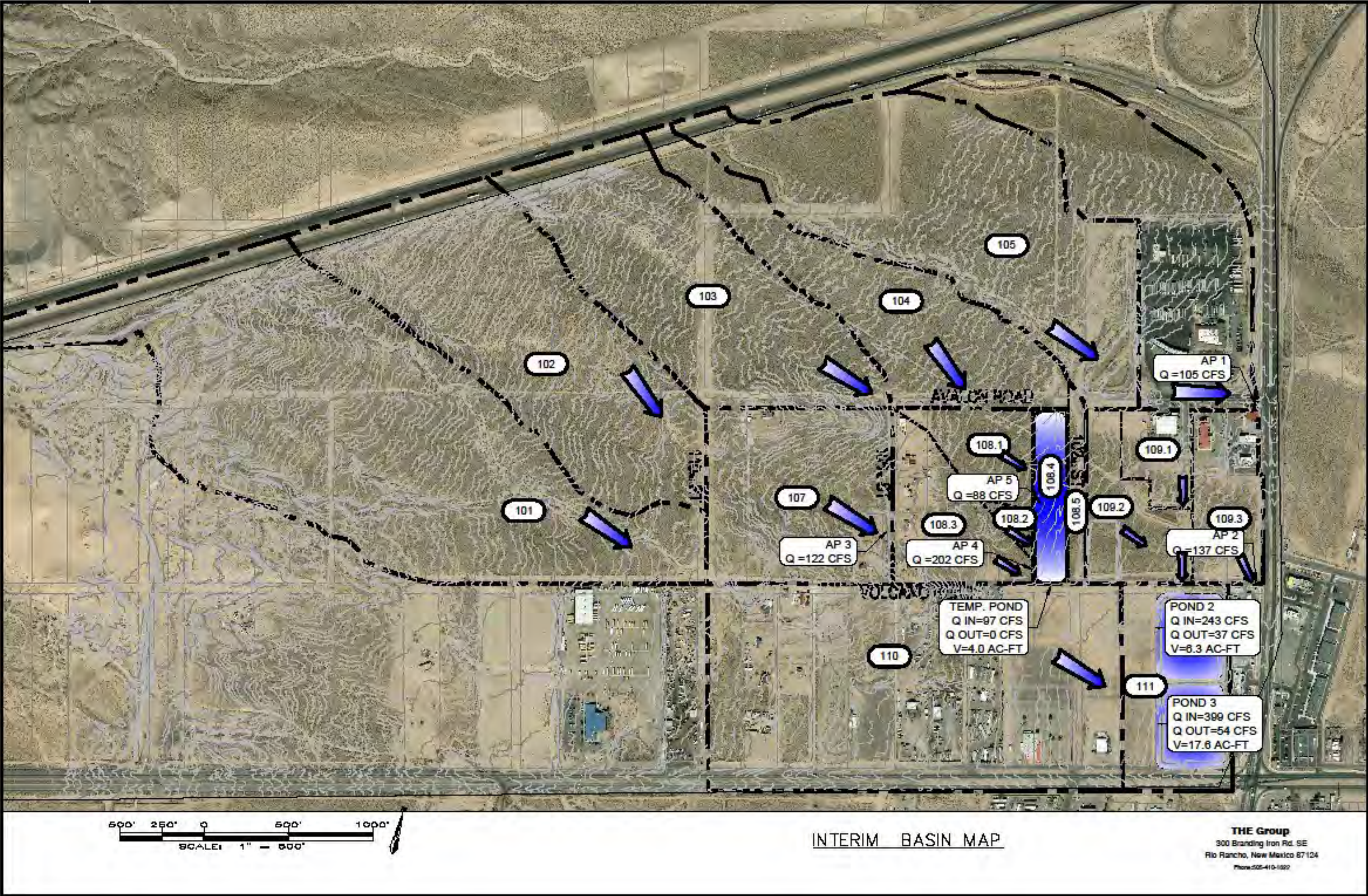
The interim condition provides analyses for the basin modifications due to the development of the Paradise RV Phase II Site. The existing conditions will be modified with the following:

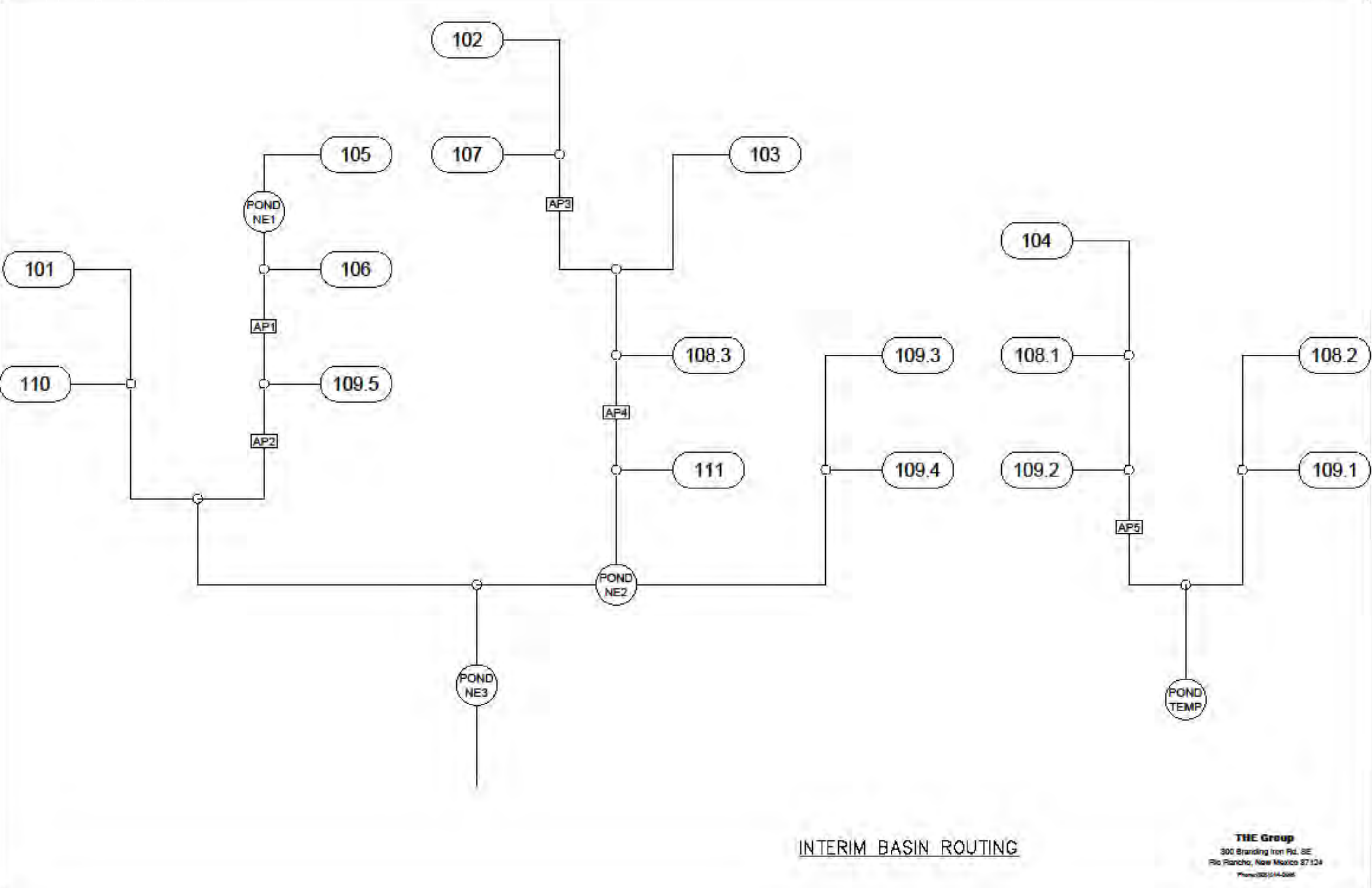
- Modification of sub-basin boundaries and runoff due to the proposed development of Phase II.
- Frontage construction of 102nd Street, Volcano Ave. and Avalon Rd.
- Due to the development of the site, sub-basins upstream from the site will be routed to a retention pond located on the adjacent tract to the west of 102nd Street.

Hydrology

The analysis for the 100-yr 24-hr duration storm was done using AHYMO software. The land treatments reflect existing and the proposed interim conditions of the basins and routing depicted on the following page. If development of the drainage area is developed without drainage improvement, the land treatments for the sub-basins routed to the retention pond have been modified to allow for a development density of 1 DU/AC as per current county zoning. The land treatments in sub-basin 109 have increased impervious area treatment to allow for variances in development. A summary of the result is listed below and the AHYMO files are detailed in the Appendix B.

Basin	Area (ac.)	Land Treatment				Yield (cfs/ac.)	Q ₁₀₀₋₂₄ (cfs)	V ₁₀₀₋₂₄ (cfs)
		A	B	C	D			
101	92.93	79	8	8	5	1.48	137.69	4.787
102	48.67	79	8	8	5	1.71	82.97	2.507
103	41.22	79	8	8	5	1.68	69.26	2.124
104	26.86	37	8	38	17	2.54	68.30	2.267
105	54.01	79	8	8	5	1.59	85.72	2.782
106	36.74	36	6	6	52	2.82	103.63	4.736
107	27.68	70	12	12	6	1.82	50.42	1.550
108.1	6.90	37	8	38	17	2.54	17.54	0.590
108.2	1.10	37	8	38	17	2.56	2.80	0.094
108.3	11.60	67	13	13	7	2.37	27.54	0.863
108.4	5.02	0	0	100	0	2.15	10.79	0.296
108.5	2.46	0	0	10	90	4.48	11.04	0.497
109.1	5.80	0	0	95	5	4.32	25.06	1.064
109.2	10.00	0	0	20	80	4.32	43.15	1.889
109.3	11.95	0	0	20	80	3.15	37.69	1.561
110	83.10	22	11	21	46	2.49	206.63	10.522
111	15.08	79	8	8	5	3.79	17.18	0.777





Proposed Final Conditions

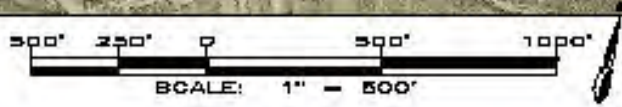
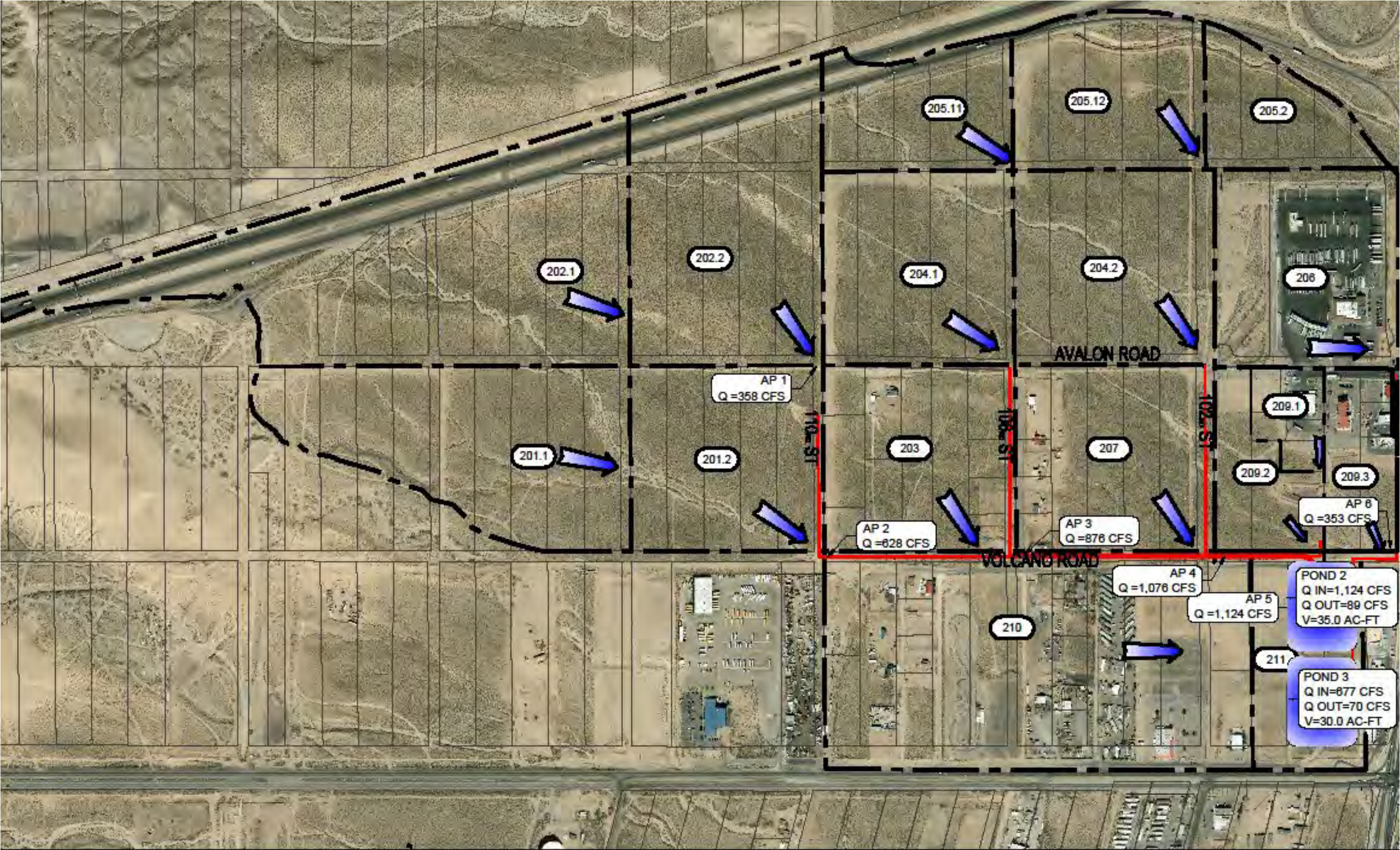
The proposed condition provides analyses for the basin modifications due to the extension of storm drain into the basin. The interim conditions will be modified with the following:

- Modification of sub-basin boundaries and runoff due to future development.
- The runoff analysis includes storm drain extension.

Hydrology

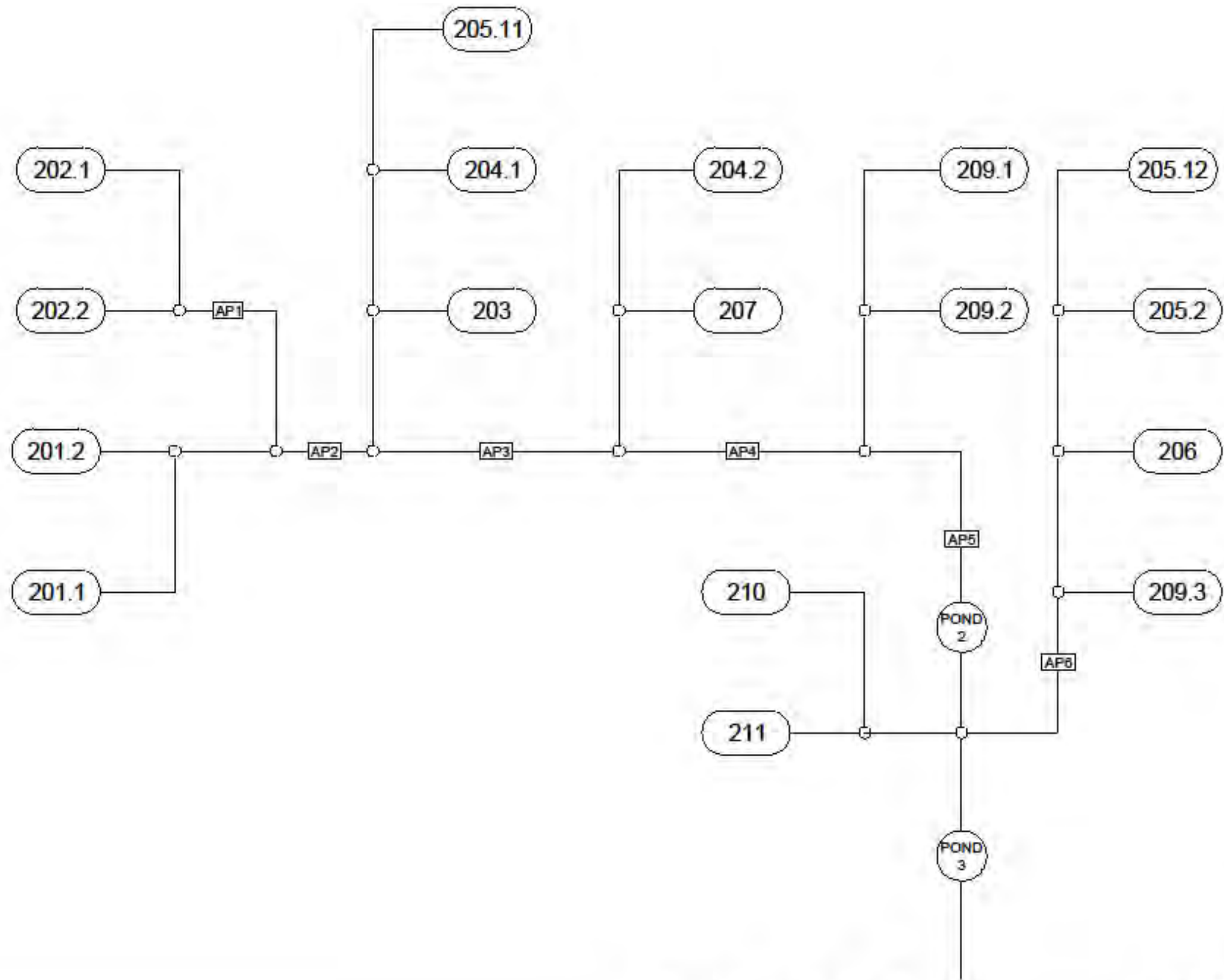
The analysis for the 100-yr 24-hr duration storm was done using AHYMO software. The land treatments reflect existing and the proposed conditions of the basins and routing depicted on the following page. Unless current development is of higher density, the land treatments for the undeveloped sub-basins have been modified to allow for a development density of 1 DU/AC as per current county zoning. The land treatments in other sub-basins will remain equivalent to the interim condition. A summary of the result is listed below and the AHYMO files are detailed in the Appendix.

Basin	Area (ac.)	Land Treatment				Yield (cfs/ac.)	Q ₁₀₀₋₂₄ (cfs)	V ₁₀₀₋₂₄ (cfs)
		A	B	C	D			
201.1	54.16	0	18	19	63	3.88	209.91	8.520
201.2	27.83	0	18	19	63	3.88	107.94	4.378
202.1	54.01	0	18	19	63	3.88	209.31	8.496
202.2	39.58	0	18	19	63	3.88	153.51	6.227
203	32.93	0	18	19	63	3.88	127.70	5.180
204.1	27.72	0	18	19	63	3.88	107.52	4.361
204.2	29.22	0	18	19	63	3.88	113.33	4.597
205.11	16.82	0	41	22	37	3.26	54.79	2.008
205.12	30.95	0	41	22	37	3.26	100.80	3.696
205.2	38.64	0	41	42	17	2.94	113.62	3.688
206	28.15	0	15	16	69	4.00	112.51	4.653
207	32.89	0	18	19	63	3.88	127.55	5.174
209.1	5.80	0	0	20	80	4.32	25.06	1.064
209.2	10.00	0	0	20	80	4.32	43.14	1.832
209.3	11.95	0	0	15	85	4.40	52.51	2.261
210	83.10	0	20	21	59	2.93	243.06	12.612
211	15.08	16	5	21	58	2.76	41.54	2.201



FINAL BASIN MAP

THE Group
300 Branding Iron Rd. SE
Rio Rancho, New Mexico 87124
Phone: (505) 514-2665



FINAL BASIN ROUTING

THE Group
900 Branding Iron Rd. SE
Rio Rancho, New Mexico 87124
Phone: 505/514-0845

III. SITE & DRAINAGE IMPROVEMENT ANALYSES

Existing Conditions

The proposed site is 5 acres located on the north side of Volcano Road. east of 102nd Street as seen on the Figure 1 Zone Atlas Page . The site is Phase II of Paradise RV Park. Phase I of the site is currently developed under an approved site plan and the Paradise RV Park Phase I Grading and Drainage plan attached in Appendix B. Avalon Road is to the north. This site is currently directed to the temporary retention pond with overflow discharge to Volcano Road. The existing temporary retention pond on the site also intercepts existing runoff from upstream undeveloped basins traversing the site.

Hydrology

The analysis for the 100-yr 24-hr duration storm was done using AHYMO software. See the analysis in Section II. BASIN ANALYSIS, Existing Conditions. That analysis establishes the discharge from the site.

Phase II "Interim" Conditions

The proposed development is Phase II of the RV park. The site and adjacent infrastructure were developed for Phase I with a single structure and RV parking. As shown on Exhibit A: Grading and Drainage Plan, the developed runoff from the Phase II site discharges to Phase I and is routed to the storm drain in Volcano Road. Existing runoff from upstream undeveloped basins traversing the site are to be intercepted by the proposed temporary retention pond. The modified interim condition proposed will relocate the existing pond to the west of 102nd Street.

Hydrology

The analysis for the 100-yr 24-hr duration storm was done using AHYMO software. See the analysis in Section II. BASIN ANALYSIS, Interim Conditions. That analysis establishes the offsite flows impacting the site and the site runoff. The following analysis of the drainage depicted on Exhibit A, Grading & Drainage Plan for Phase II, provides the discharge due to the specific site improvements of Phase II, 102nd Street, Volcano Road and Avalon Road. The runoff analysis includes off-site sub-basin 106 a ROW basin for the developed ROW condition of 102nd Street and Volcano Road assumption. The runoff from the roadway sub-basin will be intercepted by inlets in Volcano Road. A summary of the result is listed below and detailed in the Phase II Grading and Drainage Plan.

BASIN	AREA (sf)	TREATMENT A		TREATMENT B		TREATMENT C		TREATMENT D		WEIGHTED E	VOLUME (cu.-ft.)	FLOW (cfs)	ALLOWED (cfs)	CFS/AC (cfs)	ALLOWED (cfs/ac)
PHASE I	195212	0%	0	0%	0	74%	144524	26%	50688	1.2850	20903	14.32	19.09	3.19	4.26
PHASE II	217800	0%	0	0%	0	90%	196020	33%	21780	1.0790	19584	14.98	21.30	3.00	4.26
TOTAL	413012	0%	0	0%	0	82%	340544	18%	72468	1.1763	40487	29.29	40.39	3.09	4.26

Hydraulics

The existing development to the north (sub-basin 109.1), is directed to a storm drain in Leonidas Lane that is routed to Volcano Road. The runoff from Phase II of the site combined with Phase I of the site then discharge to the storm drain in Volcano Road. The storm drain discharges to the existing City Pond south of Volcano Road. The street hydraulics and storm drain analyses are addressed in the following sections.

The runoff from the undeveloped upstream basins (basins 104, 108.1, 108.2, and 108.4) that directly flow to the site are to be contained in a temporary retention pond west of 102nd Street as shown .

The proposed retention pond volume is adequate to accommodate the 100 year 10 day storm per DPM equation 6.5.

For 10-day storms: $V_{10\text{DAYS}} = V_{360} + A_D * (P_{10\text{DAYS}} - P_{360}) / 12 \text{ in/ft}$

$V_{10\text{DAY}} = 3.282 \text{ AC.FT.} = 3.278 \text{ AC.FT.} + 5.93 \text{ AC} * (2.66 - 2.20) \text{ in.} / 12 \text{ in/ft}$

The additional basins that flow to the City pond will be maintained in their current state and point of discharge to the City pond.

Curb Openings - Wier



2' Opening

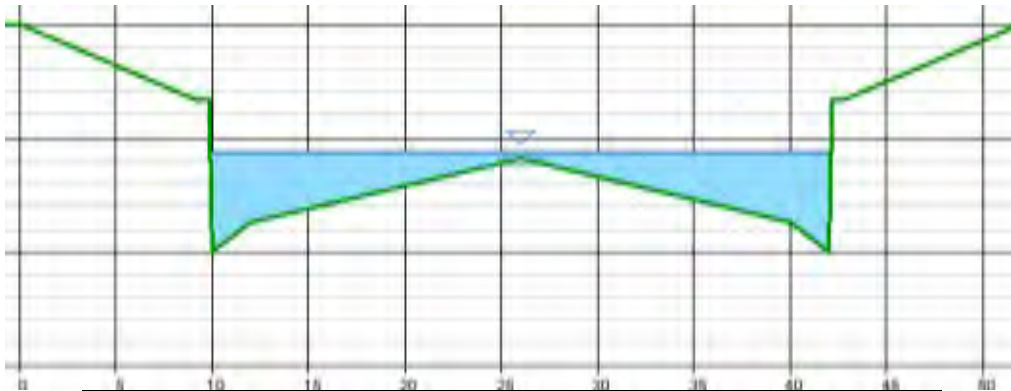
Depth (ft)	Q (cfs)	Area (sqft)	Veloc (ft/s)	Cw (ft)	TopWidth (ft)
0.50	2.36	1.00	2.35	3.33	2.00

4' Opening

Depth (ft)	Q (cfs)	Area (sqft)	Veloc (ft/s)	Cw (ft)	TopWidth (ft)
0.50	4.70	2.00	2.35	3.33	4.00

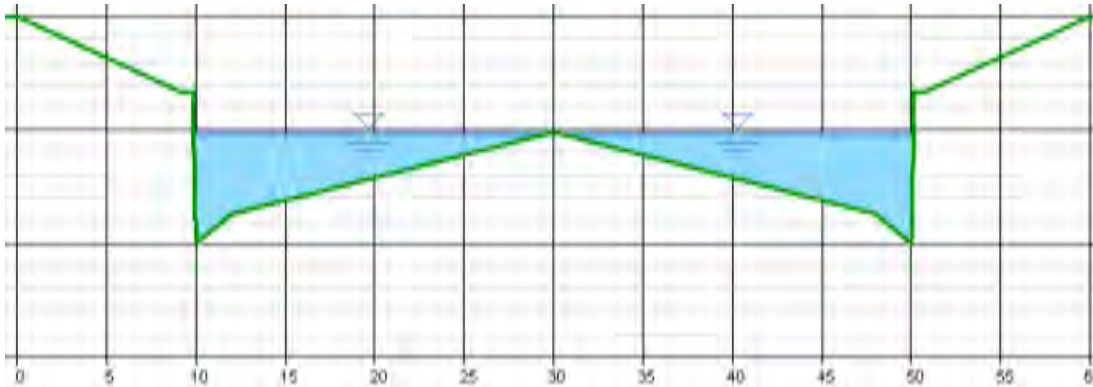
8' Opening

Depth (ft)	Q (cfs)	Area (sqft)	Veloc (ft/s)	Cw (ft)	TopWidth (ft)
0.50	9.42	4.00	2.35	3.33	8.00

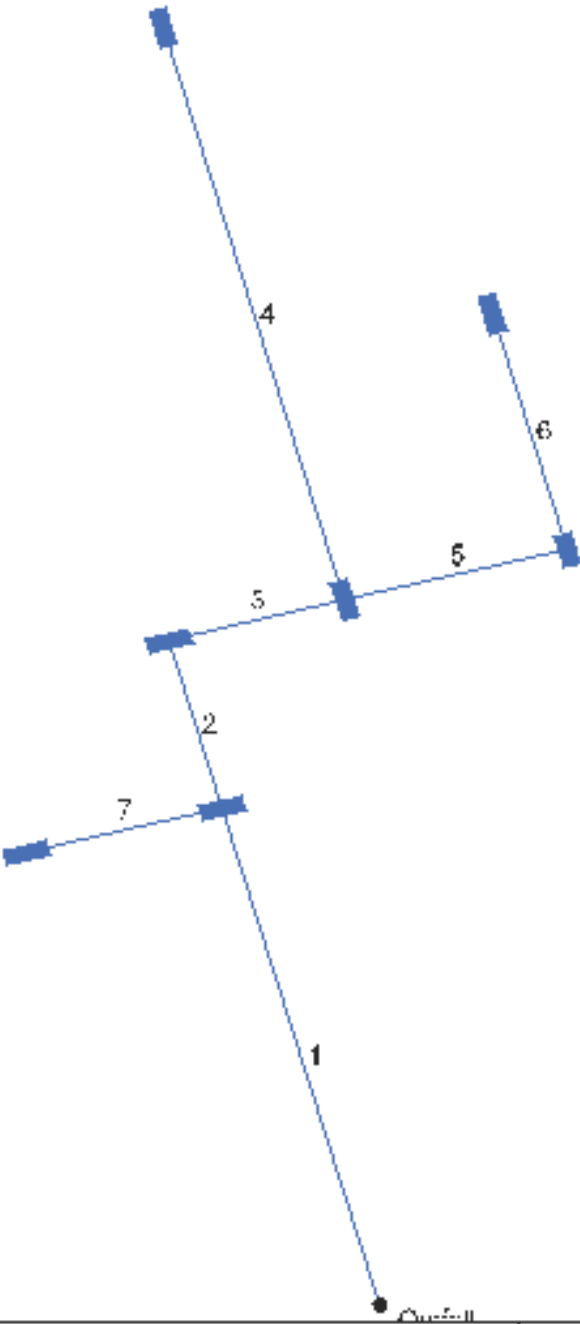
102nd Street

Depth (ft)	Q (cfs)	Area (sqft)	Veloc (ft/s)	Wp (ft)	Yc (ft)	TopWidth (ft)	Energy (ft)
0.44	25.66	6.31	4.07	92.92	0.52	32.22	0.70

Volcano Road



Depth (ft)	Q (cfs)	Area (sqft)	Veloc (ft/s)	Wp (ft)	Yc (ft)	TopWidth (ft)	Energy (ft)
0.48	33.80	7.84	4.31	40.01	0.57	39.24	0.77



DRAINAGE REPORT - PARADISE RV PARK PHASE I

Interim Storm Drain Summary

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL On (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	Pipe - (2)	81.70	42	Cir	77.670	5223.12	5223.71	0.759	5226.00	5226.53	n/a	5229.04 i	End	Combination
2	Pipe - (4)	68.80	42	Cir	26.180	5223.74	5223.98	0.916	5229.04'	5229.14'	1.19	5230.33	1	Grate
3	Pipe - (5)	25.66	42	Cir	23.240	5224.08	5224.12	0.172	5231.02'	5231.03'	0.17	5231.20	2	Combination
4	Pipe - (6)	12.83	18	Cir	89.470	5225.12	5228.73	4.035	5231.20'	5232.33'	0.82	5233.15	3	Combination
5	Pipe - (7)	12.83	36	Cir	29.500	5224.12	5225.68	5.288	5231.25'	5231.26'	0.08	5231.34	3	Combination
6	Pipe - (8)	12.83	18	Cir	36.978	5226.83	5228.47	4.435	5231.34'	5231.81'	0.82	5232.63	5	Combination
7	Pipe - (3)	12.90	18	Cir	26.000	5225.74	5228.14	9.230	5229.04	5229.49	n/a	5231.22 i	1	Combination
Project File: INTERIM.stm									Number of lines: 7 Run Date: 8/21/2023					
NOTES: Return period = 100 Yrs. ; *surcharged (HGL above crown). ; i - Inlet control.														

DRAINAGE REPORT - PARADISE RV PARK PHASE I

Interim Storm Drain Inlets

Line No	Inlet ID	Q (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	June Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	CB2	0.00	4.69	3.94	0.75	Comb	8.0	9.67	0.00	6.00	2.00	0.020	2.00	0.063	0.020	0.013	0.28	9.73	0.33	3.70	2.0	Off
2	CB 7	43.14*	0.00	43.14	0.00	Grate	0.0	0.00	9.81	5.00	2.00	Sag	10.00	0.250	0.250	0.013	1.62	6.47	1.62	6.47	0.0	1
3	CB 3	0.00	4.58	3.39	1.19	Comb	8.0	6.50	0.00	5.00	2.00	0.017	2.00	0.063	0.020	0.013	0.29	9.97	0.36	5.21	2.0	Off
4	CB 5	12.83*	0.00	8.25	4.58	Comb	8.0	9.67	0.00	5.00	2.00	0.017	2.00	0.063	0.020	0.013	0.39	15.25	0.45	9.97	2.0	Off
5	CB4	0.00	4.58	3.39	1.19	Comb	8.0	6.50	0.00	5.00	2.00	0.017	2.00	0.063	0.020	0.013	0.29	9.97	0.36	5.21	2.0	Off
6	CB6	12.83*	0.00	8.25	4.58	Comb	8.0	9.67	0.00	5.00	2.00	0.017	2.00	0.063	0.020	0.013	0.39	15.25	0.45	9.97	2.0	Off
7	CB1	12.90*	0.00	8.21	4.69	Comb	8.0	9.67	0.00	5.00	2.00	0.020	2.00	0.063	0.020	0.013	0.38	14.79	0.45	9.73	2.0	1

Project File: INTERIM.stm

| Number of lines: 7

| Run Date: 8/21/2023

NOTES: Inlet N-Values = 0.016; Intensity= 127.16 / (Inlet time+ 17.80) ^ 0.82; Return period= 100 Yrs.; * Indicates Known Q added. All curb inlets are Horiz throat.

Storm Drain “Final” Conditions

Construction of the storm drain improvements described herein will represent the final condition. The interim conditions will be modified with the following:

- Elimination of the temporary retention pond.
- Development of the roadways and storm drains in Volcano and 102nd Street.

Hydrology

The analysis for the 100-yr 24-hr duration storm was done using AHYMO software. See the analysis in Section II. BASIN ANALYSIS, Storm Drain “Final” Conditions. That analysis establishes the ultimate flow conditions and the allowable discharge rates. The analysis for the Phase II proposed site condition provides the discharge due to the specific site improvements of Phase II.

Hydraulics

As shown in this report, the curb openings and street sections have the capacity to convey the flows indicated, and the analysis of the developed storm drain flows are summarized in the Final Storm Drain Hydraulics in Appendix B:

IV. GRADING PLAN

The Grading and Drainage Plan Phase II included in VIII. EXHIBITS, depicts the developed grading and drainage characteristics of the area affected by Phase II of the project. The plan demonstrates that the runoff from the site is directed to appropriate points of discharge and the proposed facilities are adequate to accommodate the flows impacted by the site.

V. CONCLUSION

As shown, the capacity of the proposed infrastructure is adequate to accommodate the runoff from the site as described. The Grading plan and Drainage Plan included in VIII. EXHIBITS, provides support of the Site Plan and construction of the infrastructure improvements. The flow is contained within the street sections and the downstream drainage infrastructure has adequate capacity to accept the runoff.

VI. Appendix A

Amole-Hubbell Drainage Management Plan



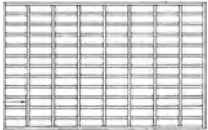
Amole-Hubbell

Drainage Master Plan Update
2013 Report



VII. Appendix B – Standard Calculations

Grate Opening COA STD. DWG 2220



Grate Length	Grate Width	Grate Area	Bar Area	Orifice Area
30"	25"	6.77	1.86	4.91

Standard Equations

Inlet Capacity

Hydraflow Storm Sewers uses methods presented by HEC-22. The interception capacity of combination inlets on grade is essentially equal to that of the grate alone. Hydraflow Storm Sewers computes this capacity by neglecting the curb. The interception capacity of grate inlets on grade is computed using the following equations, as specified in HEC-22:

$$E = R_f E_o + R_s (1 - E_o)$$

Where:

E = Efficiency of the grate

R_f = Ratio of intercepted frontal flow to total gutter flow=1

E_o = Ratio of frontal flow to total gutter flow

R_s = Side flow interception efficiency

$$R_s = \frac{1}{1 + \left(\frac{K_c V^{1.8}}{S_x L^{2.3}} \right)}$$

Where:

K_c = 0.15

V = Velocity of flow in the gutter in ft/s

L = Grate length in ft

Culvert Flow

Per the HDS-5 method, the following inlet control equations are used. If H_w is above the pipe crown, the submerged equation is used. Otherwise the unsubmerged equation is used.

Submerged

$$H_w = D \times \left[c \left(\frac{Q}{A \sqrt{D}} \right)^2 + Y - .5S \right]$$

Where:

H_w = Headwater depth above invert

D = Line Rise, ft

Q = Flow rate, cfs

A = Full cross-sectional area of pipe, sqft

A = Full cross-sectional area of pipe, sqft

K, M, c, Y = Coefficients based on edge configurations

S = Line slope, ft/ft

Submerged

$$H_w = D \times \left[K \left(\frac{Q}{A \sqrt{D}} \right)^M \right]$$

DRAINAGE REPORT - PARADISE RV PARK PHASE I

Existing Hydrology

AHYMO Summary

AHYMO PROGRAM SUMMARY TABLE (AHYMO-S4)

- Ver. S4.02a, Rel: 02a

RUN DATE (MON/DAY/YR) =08/21/2023

INPUT FILE = F:\Adil\RV\RV2\Existing 98th and Central 24hr.HMI

USER NO.= AHYMO-S4TempUser05901704

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1	NOTATION
*S	PARADISE RV PARK										
*S	Drainage Basin Analysis										
*S	"EXISTING" CONDITION MODEL										
START										TIME=	0.00
LOCATION											
			AHYMO_97								
*S	RAINFALL FROM COA DEVELOPMENT PROCESS MANUAL										
*S	*****										
*S	100 YEAR 6HR STORM										
RAINFALL	TYPE=13									RAIN24=	2.660
SEDIMENT BULK										PK BF =	1.06
COMPUTE NM HYD	101.00	-	1	0.14521	137.71	4.820	0.62241	1.567	1.482	PER IMP=	5.00
ROUTE MCUNGE	101RT	1	2	0.14521	133.63	4.781	0.61734	1.766	1.438	CCODE =	0.1
COMPUTE NM HYD	110.00	-	1	0.12985	206.65	10.800	1.55942	1.600	2.487	PER IMP=	45.90
ADD HYD	110SUM	2& 1	10	0.27506	284.08	15.580	1.06207	1.700	1.614		
COMPUTE NM HYD	105.00	-	1	0.08439	85.72	2.801	0.62241	1.533	1.587	PER IMP=	5.00
ROUTE RESERVOIR	POND1	1	2	0.08439	10.34	2.801	0.62241	2.033	0.191	AC-FT=	1.940
ROUTE MCUNGE	POND1RT	2	1	0.08439	10.34	2.801	0.62237	2.066	0.191	CCODE =	0.2
COMPUTE NM HYD	106.00	-	2	0.05741	103.63	4.871	1.59081	1.533	2.820	PER IMP=	51.45
ADD HYD	106SUM	1& 2	1	0.14180	105.27	7.672	1.01445	1.533	1.160		
*S	AP1										
ROUTE MCUNGE	106SUMRT	1	20	0.14180	105.27	7.671	1.01433	1.567	1.160	CCODE =	0.2
COMPUTE NM HYD	109.50	-	2	0.01867	37.69	1.561	1.56800	1.500	3.154	PER IMP=	50.00
ADD HYD	109SUMA	20& 2	20	0.16047	137.42	9.232	1.07874	1.567	1.338		
*S	AP2										
COMPUTE NM HYD	104.00	-	1	0.04197	68.29	2.299	1.02698	1.500	2.543	PER IMP=	17.00
ROUTE MCUNGE	104RT	1	2	0.04197	67.06	2.288	1.02232	1.633	2.497	CCODE =	0.1
COMPUTE NM HYD	108.10	-	1	0.01773	28.86	0.971	1.02698	1.500	2.543	PER IMP=	17.00
ADD HYD	108SUMA	1& 2	1	0.05970	86.11	3.259	1.02369	1.600	2.254		
ROUTE MCUNGE	108.1RT	1	2	0.05970	85.56	3.252	1.02122	1.700	2.239	CCODE =	0.1
COMPUTE NM HYD	109.20	-	1	0.00292	5.86	0.176	1.12989	1.500	3.135	PER IMP=	5.00
ADD HYD	109SUMA	1& 2	2	0.06262	88.18	3.427	1.02628	1.700	2.200		
*S	AP5										
COMPUTE NM HYD	108.20	-	1	0.00573	9.34	0.314	1.02698	1.500	2.546	PER IMP=	17.00
ADD HYD	109SUMB	1& 2	2	0.06835	92.51	3.741	1.02633	1.700	2.115		

DRAINAGE REPORT - PARADISE RV PARK PHASE I

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 2 NOTATION
COMPUTE NM HYD	109.10	-	1	0.00486	9.26	0.265	1.02341	1.500	2.977	PER IMP= 0.00
ADD HYD	POND	1& 2	1	0.07321	96.65	4.007	1.02613	1.700	2.063	
*S TEMP. POND										
COMPUTE NM HYD	109.30	-	1	0.00907	25.06	1.097	2.26717	1.500	4.317	PER IMP= 80.00
ROUTE MCUNGE	109.3RT	1	2	0.00907	24.84	1.097	2.26751	1.533	4.279	CCODE = 0.2
COMPUTE NM HYD	109.40	-	1	0.00784	21.66	0.948	2.26717	1.500	4.317	PER IMP= 80.00
ADD HYD	109SUMC	1& 2	2	0.01691	46.14	2.045	2.26730	1.500	4.263	
ROUTE MCUNGE	POND2SUMA	2	21	0.01691	46.04	2.045	2.26736	1.533	4.254	CCODE = 0.2
*S TO STORM DRAIN										
COMPUTE NM HYD	102.00	-	1	0.07604	82.98	2.524	0.62241	1.533	1.705	PER IMP= 5.00
ROUTE MCUNGE	102RT	1	2	0.07604	82.05	2.513	0.61973	1.600	1.686	CCODE = 0.1
COMPUTE NM HYD	107.00	-	1	0.04325	50.43	1.562	0.67727	1.533	1.822	PER IMP= 6.40
ADD HYD	107SUM	2& 1	1	0.11929	122.38	4.075	0.64058	1.600	1.603	
*S AP3										
ROUTE MCUNGE	107RT	1	2	0.11929	121.15	4.062	0.63848	1.667	1.587	CCODE = 0.1
COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 2 NOTATION
COMPUTE NM HYD	103.00	-	1	0.06441	69.27	2.138	0.62241	1.533	1.680	PER IMP= 5.00
ROUTE MCUNGE	103RT	1	3	0.06441	68.08	2.127	0.61909	1.633	1.651	CCODE = 0.1
ADD HYD	108SUMA	2& 3	1	0.18370	187.41	6.189	0.63167	1.667	1.594	
COMPUTE NM HYD	108.30	-	2	0.02176	26.03	0.808	0.69616	1.533	1.869	PER IMP= 6.80
ADD HYD	108SUMB	1& 2	1	0.20546	201.96	6.997	0.63850	1.667	1.536	
*S AP4										
ROUTE MCUNGE	108SUMBRT	1	2	0.20546	201.21	6.996	0.63847	1.667	1.530	CCODE = 0.2
COMPUTE NM HYD	111.00	-	1	0.02356	17.17	0.782	0.62241	1.600	1.139	PER IMP= 5.00
ADD HYD	POND2SUMB	2& 1	1	0.22902	217.31	7.778	0.63681	1.667	1.483	
ADD HYD	POND2SUM	21& 1	1	0.24593	242.56	9.823	0.74893	1.667	1.541	
ROUTE RESERVOIR	POND2	1	30	0.24593	36.83	9.823	0.74893	2.166	0.234	AC-FT= 6.310
ADD HYD	POND3SUMA	10&20	10	0.43553	375.45	24.813	1.06821	1.667	1.347	
ADD HYD	POND3SUMB	10&30	10	0.68146	399.42	34.636	0.95298	1.700	0.916	
ROUTE RESERVOIR	POND3	10	30	0.68146	54.31	34.636	0.95299	2.900	0.125	AC-FT= 17.594
FINISH										

DRAINAGE REPORT - PARADISE RV PARK PHASE I

AHYMO Input

```
*S  PARADISE RV PARK
*S  Drainage Basin Analysis
*S  "EXISTING" CONDITION MODEL
*
START          TIME=0.0  PUNCH CODE=0  PRINT CODE=0
LOCATION        AHYM097
*
*S  RAINFALL FROM COA DEVELOPMENT PROCESS MANUAL
*S  *****
*S  100 YEAR 6HR STORM
RAINFALL      TYPE=13  RAIN QUARTER=0
              RAIN ONE=1.87 IN  RAIN SIX=2.20 IN
              RAIN DAY=2.66 IN  DT=0.03333 HRS
*
*
***Adding Sediment Bulk Factor to all Basins
SEDIMENT BULK CODE=1 BULK FACTOR=1.06
*
*
*** Sub-BASIN 101 ****
*
COMPUTE LT TP          LCODE=1  UPLAND/LAG TIME METHOD
                      NK=1  ISLOPE=1
                      LENGTH=3653 FT  SLOPE=0.048  K=0.7
COMPUTE NM HYD        ID=1  HYD NO=101  DA=0.14521 SQ MI
                      PER A=79 PER B=8  PER C=8  PER D=5
                      TP=0.0  MASSRAIN=-1
*
PRINT HYD             ID=1  CODE=1
*
*
****Route HYD 101 to Sub-Basin 110
COMPUTE RATING CURVE  CID=1 VS NO=1 NO SEGS=1
                      MIN ELEV=100 FT MAX ELEV=105 FT
                      CH SLP=0.030  FP SLP=0.01 N=0.030
                      DIST=20 FT

                      DIST  ELEV
                          0 105
                          10 100
                          15 100
                          20 105
*
ROUTE MCUNGE          ID=2  HYD NO=101RT  INFLOW ID=1
                      DT=0  HR  LENGTH=3110 FT
                      NS=0  SLOPE=0.030
*
PRINT HYD             ID=2  CODE=1
*
*
*** Sub-BASIN 110 ****
*
COMPUTE LT TP          LCODE=1  UPLAND/LAG TIME METHOD
                      NK=1  ISLOPE=1
                      LENGTH=3483 FT  SLOPE=0.026  K=0.7
COMPUTE NM HYD        ID=1  HYD NO=110  DA=0.12985 SQ MI
                      PER A=22.1 PER B=11  PER C=21  PER D=45.9
```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

TP=0.0    MASSRAIN=-1

*
PRINT HYD          ID=1    CODE=1
*
*
* Total Flow from Basin (101Rt + 110)
ADD HYD            ID=10   HYD NO=110SUM ID I=2    ID II=1
PRINT HYD          ID=10   CODE=1
*
*
*****
*
*
*** Sub-BASIN 105 ****
*
COMPUTE LT TP      LCODE=1    UPLAND/LAG TIME METHOD
                   NK=1      ISLOPE=1
                   LENGTH=2509 FT    SLOPE=0.037    K=0.7
COMPUTE NM HYD     ID=1      HYD NO=105    DA=0.08439 SQ MI
                   PER A=79 PER B=8    PER C=8    PER D=5
                   TP=0.0    MASSRAIN=-1

*
PRINT HYD          ID=1    CODE=1
*
*
****Route Hyd 105 through Pond1
*
ROUTE RESERVOIR    ID=2    HYD NO=POND1    INFLOW ID=1    CODE=10
                   OUTFLOW (CFS)    STORAGE (AC FT)    ELEV
                   0                0                5260
                   5                1.061             5262
                   14               2.542             5264

*
*
****Route HYD POND1 to Sub-Basin 106
COMPUTE RATING CURVE    CID=1 VS NO=1 NO SEGS=1
                       MIN ELEV=100 FT MAX ELEV=105 FT
                       CH SLP=0.026    FP SLP=0.01    N=0.017
                       DIST=20 FT

                       DIST    ELEV
                           0    105
                           10    100
                           15    100
                           20    105

*
ROUTE MCUNGE        ID=1    HYD NO=POND1RT    INFLOW ID=2
                   DT=0 HR    LENGTH=780 FT
                   NS=0    SLOPE=0.026

*
PRINT HYD          ID=1    CODE=1
*
*
*** Sub-BASIN 106 ****
*
COMPUTE LT TP      LCODE=1    UPLAND/LAG TIME METHOD
                   NK=1      ISLOPE=1
                   LENGTH=2718 FT    SLOPE=0.032    K=0.7
COMPUTE NM HYD     ID=2      HYD NO=106    DA=0.05741 SQ MI
                   PER A=35.8 PER B=6.4    PER C=6.4    PER D=51.5

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

TP=0.0    MASSRAIN=-1

*
PRINT HYD          ID=2    CODE=1
*
*
* Total Flow from Basin (POND1RT + 106)
ADD HYD            ID=1    HYD NO=106SUM ID I=1    ID II=2
PRINT HYD          ID=1    CODE=1
*
*S AP1
*
****Route HYD 106SUM to Sub-Basin 109 Through a Pipe
COMPUTE RATING CURVE    CID=1    VS NO=1 CODE=-1    SLP=0.013
                        DIA=42 IN    N=0.013
*
ROUTE MCUNGE        ID=20    HYD NO=106SUMRT    INFLOW ID=1
                        DT=0 HR    LENGTH=1240 FT
                        NS=0    SLOPE=0.013
*
PRINT HYD          ID=20    CODE=1
*
*
*** Sub-BASIN 109.5 ****
*
COMPUTE LT TP        LCODE=1    UPLAND/LAG TIME METHOD
                        NK=1    ISLOPE=1
                        LENGTH=1367 FT    SLOPE=0.030    K=0.7
COMPUTE NM HYD        ID=2    HYD NO=109.5    DA=0.01867 SQ MI
                        PER A=35 PER B=7.5    PER C=7.5    PER D=50
                        TP=0.0    MASSRAIN=-1
*
PRINT HYD          ID=2    CODE=1
*
*
* Total Flow from Basin (106SUMRT + 109.5)
ADD HYD            ID=20    HYD NO=109SUMA ID I=20    ID II=2
PRINT HYD          ID=20    CODE=1
*
*S AP2
*
*
*****
*** Sub-BASIN 104 ****
*
COMPUTE LT TP        LCODE=1    UPLAND/LAG TIME METHOD
                        NK=1    ISLOPE=1
                        LENGTH=1952 FT    SLOPE=0.036    K=0.7
COMPUTE NM HYD        ID=1    HYD NO=104    DA=0.04197 SQ MI
                        PER A=37 PER B=8    PER C=38    PER D=17
                        TP=0.0    MASSRAIN=-1
*
PRINT HYD          ID=1    CODE=1
*
*
****Route HYD 104 to Sub-Basin 108.1
COMPUTE RATING CURVE    CID=1    VS NO=1 NO SEGS=1
                        MIN ELEV=100 FT MAX ELEV=105 FT
                        CH SLP=0.030    FP SLP=0.01    N=0.030
                        DIST=20 FT

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

DIST  ELEV
      0 105
      10 100
      15 100
      20 105
*
ROUTE MCUNGE      ID=2  HYD NO=104RT  INFLOW ID=1
DT=0  HR  LENGTH=1410 FT
NS=0  SLOPE=0.030
*
PRINT HYD          ID=2  CODE=1
*
*
*** Sub-BASIN 108.1 ***
*
COMPUTE LT TP      LCODE=1  UPLAND/LAG TIME METHOD
NK=1  ISLOPE=1
LENGTH=720 FT  SLOPE=0.030  K=0.7
COMPUTE NM HYD      ID=1  HYD NO=108.1  DA=0.01773 SQ MI
PER A=37 PER B=8  PER C=38  PER D=17
TP=0.0  MASSRAIN=-1
*
PRINT HYD          ID=1  CODE=1
*
*
* Total Flow from Basin (104RT + 108.1)
ADD HYD            ID=1  HYD NO=108SUMA ID I=1  ID II=2
PRINT HYD          ID=1  CODE=1
*
*
****Route HYD 108SUMA to Sub-Basin 109.2
COMPUTE RATING CURVE  CID=1 VS NO=1 NO SEGS=1
MIN ELEV=100 FT MAX ELEV=105 FT
CH SLP=0.033  FP SLP=0.01 N=0.030
DIST=20 FT

DIST  ELEV
      0 105
      10 100
      15 100
      20 105
*
ROUTE MCUNGE      ID=2  HYD NO=108.1RT  INFLOW ID=1
DT=0  HR  LENGTH=1100 FT
NS=0  SLOPE=0.033
*
PRINT HYD          ID=2  CODE=1
*
*
*** Sub-BASIN 109.2 ***
*
COMPUTE LT TP      LCODE=1  UPLAND/LAG TIME METHOD
NK=1  ISLOPE=1
LENGTH=275 FT  SLOPE=0.030  K=0.7
COMPUTE NM HYD      ID=1  HYD NO=109.2  DA=0.00292 SQ MI
PER A=0  PER B=0  PER C=95  PER D=5
TP=0.0  MASSRAIN=-1
*
PRINT HYD          ID=1  CODE=1
*

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

*
* Total Flow from Basin (108.1RT + 109.2)
ADD HYD          ID=2  HYD NO=109SUMA ID I=1  ID II=2
PRINT HYD        ID=2  CODE=1
*
*S AP5
*
*** Sub-BASIN 108.2 ****
*
COMPUTE LT TP      LCODE=1  UPLAND/LAG TIME METHOD
                   NK=1    ISLOPE=1
                   LENGTH=370 FT  SLOPE=0.030  K=0.7
COMPUTE NM HYD     ID=1    HYD NO=108.2  DA=0.00573 SQ MI
                   PER A=37 PER B=8  PER C=38  PER D=17
                   TP=0.0  MASSRAIN=-1
*
PRINT HYD          ID=1  CODE=1
*
* Total Flow from Basin (109SUMA + 108.2)
ADD HYD          ID=2  HYD NO=109SUMB ID I=1  ID II=2
PRINT HYD        ID=2  CODE=1
*
*** Sub-BASIN 109.1 ****
*
COMPUTE NM HYD     ID=1    HYD NO=109.1  DA=0.00486 SQ MI
                   PER A=0 PER B=8  PER C=100  PER D=0
                   TP=0.0  MASSRAIN=-1
*
* Total Flow from Basin (109SUMA + 109.1)
ADD HYD          ID=1  HYD NO=POND ID I=1  ID II=2
PRINT HYD        ID=1  CODE=1
*
*S TEMP. POND
*****
*** Sub-BASIN 109.3 ****
*
COMPUTE NM HYD     ID=1    HYD NO=109.3  DA=0.00907 SQ MI
                   PER A=0 PER B=0  PER C=20  PER D=80
                   TP=0.0  MASSRAIN=-1
*
PRINT HYD          ID=1  CODE=1
*
****Route HYD 109.4 to Sub-Basin 109.3
COMPUTE RATING CURVE  CID=1 VS NO=1 NO SEGS=1
                   MIN ELEV=100 FT MAX ELEV=105 FT
                   CH SLP=0.033  FP SLP=0.01 N=0.017
                   DIST=20 FT

                   DIST  ELEV
                   0 105
                   10 100
                   15 100
                   20 105
*
ROUTE MCUNGE       ID=2  HYD NO=109.3RT  INFLOW ID=1
                   DT=0 HR  LENGTH=436 FT
                   NS=0  SLOPE=0.033

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

*
PRINT HYD                      ID=2    CODE=1
*
*** Sub-BASIN 109.4 ***
*
COMPUTE NM HYD                 ID=1    HYD NO=109.4    DA=0.00784 SQ MI
                                PER A=0 PER B=0 PER C=20 PER D=80
                                TP=0.0    MASSRAIN=-1
*
PRINT HYD                      ID=1    CODE=1
*
*
* Total Flow from Basin (109.3RT + 109.4)
ADD HYD                        ID=2    HYD NO=109SUMC ID I=1    ID II=2
PRINT HYD                      ID=2    CODE=1
*
****Route HYD 109SUMC to Sub-Basin 111 Through a Pipe
COMPUTE RATING CURVE          CID=1    VS NO=1 CODE=-1    SLP=0.013
                                DIA=36 IN    N=0.013
*
ROUTE MCUNGE                   ID=21   HYD NO=POND2SUMA INFLOW ID=2
                                DT=0 HR    LENGTH=300 FT
                                NS=0    SLOPE=0.013
*
PRINT HYD                      ID=21   CODE=1
*
*
*S TO STORM DRAIN
*
*****
*** Sub-BASIN 102 ***
*
COMPUTE LT TP                  LCODE=1    UPLAND/LAG TIME METHOD
                                NK=1    ISLOPE=1
                                LENGTH=2025 FT    SLOPE=0.048    K=0.7
COMPUTE NM HYD                 ID=1    HYD NO=102    DA=0.07604 SQ MI
                                PER A=79 PER B=8 PER C=8 PER D=5
                                TP=0.0    MASSRAIN=-1
*
PRINT HYD                      ID=1    CODE=1
*
*
****Route HYD 102 to Sub-Basin 107
COMPUTE RATING CURVE          CID=1    VS NO=1 NO SEGS=1
                                MIN ELEV=100 FT MAX ELEV=105 FT
                                CH SLP=0.033 FP SLP=0.01 N=0.030
                                DIST=20 FT

                                DIST    ELEV
                                    0 105
                                    10 100
                                    15 100
                                    20 105
*
ROUTE MCUNGE                   ID=2    HYD NO=102RT INFLOW ID=1
                                DT=0 HR    LENGTH=1100 FT
                                NS=0    SLOPE=0.033
*
PRINT HYD                      ID=2    CODE=1

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

*
*
*** Sub-BASIN 107 ****
*
COMPUTE LT TP          LCODE=1  UPLAND/LAG TIME METHOD
                        NK=1    ISLOPE=1
                        LENGTH=1285 FT  SLOPE=0.037  K=0.7
COMPUTE NM HYD         ID=1    HYD NO=107  DA=0.04325 SQ MI
                        PER A=70.3 PER B=11.6 PER C=11.7 PER D=6.4
                        TP=0.0  MASSRAIN=-1
*
PRINT HYD              ID=1    CODE=1
*
*
* Total Flow from Basin (102RT + 107)
ADD HYD                ID=1    HYD NO=107SUM ID I=2    ID II=1
PRINT HYD              ID=1    CODE=1
*
*S AP3
*
****Route HYD 107SUM to Sub-Basin 108.3
COMPUTE RATING CURVE  CID=1 VS NO=1 NO SEGS=1
                        MIN ELEV=100 FT MAX ELEV=105 FT
                        CH SLP=0.029  FP SLP=0.01 N=0.030
                        DIST=20 FT

                        DIST  ELEV
                        0 105
                        10 100
                        15 100
                        20 105
*
ROUTE MCUNGE          ID=2  HYD NO=107RT  INFLOW ID=1
                        DT=0  HR  LENGTH=1300 FT
                        NS=0  SLOPE=0.029
*
PRINT HYD              ID=2    CODE=1
*
*
*** Sub-BASIN NE103 ****
*
COMPUTE LT TP          LCODE=1  UPLAND/LAG TIME METHOD
                        NK=1    ISLOPE=1
                        LENGTH=2330 FT  SLOPE=0.041  K=0.7
COMPUTE NM HYD         ID=1    HYD NO=103  DA=0.06441 SQ MI
                        PER A=79 PER B=8 PER C=8 PER D=5
                        TP=0.0  MASSRAIN=-1
*
PRINT HYD              ID=1    CODE=1
*
*
****Route HYD 103 to Sub-Basin 108.3
COMPUTE RATING CURVE  CID=1 VS NO=1 NO SEGS=1
                        MIN ELEV=100 FT MAX ELEV=105 FT
                        CH SLP=0.031  FP SLP=0.01 N=0.030
                        DIST=20 FT

                        DIST  ELEV
                        0 105
                        10 100

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

15      100
20      105
*
ROUTE MCUNGE      ID=3  HYD NO=103RT  INFLOW ID=1
                   DT=0  HR  LENGTH=1490 FT
                   NS=0  SLOPE=0.031
*
PRINT HYD          ID=3  CODE=1
*
*
* Total Flow from Basin (107RT + 103RT)
ADD HYD            ID=1  HYD NO=108SUMA ID I=2  ID II=3
PRINT HYD          ID=1  CODE=1
*
*
*** Sub-BASIN 108.3 ****
*
COMPUTE LT TP      LCODE=1  UPLAND/LAG TIME METHOD
                   NK=1  ISLOPE=1
                   LENGTH=1486 FT  SLOPE=0.030  K=0.7
COMPUTE NM HYD     ID=2  HYD NO=108.3  DA=0.02176 SQ MI
                   PER A=66.9 PER B=13.1 PER C=13.2 PER D=6.8
                   TP=0.0  MASSRAIN=-1
*
PRINT HYD          ID=2  CODE=1
*
*
* Total Flow from Basin (108SUMA + 108)
ADD HYD            ID=1  HYD NO=108SUMB ID I=1  ID II=2
PRINT HYD          ID=1  CODE=1
*
*S AP4
*
****Route HYD 108SUMB to Sub-Basin 111
COMPUTE RATING CURVE  CID=1 VS NO=1 NO SEGS=1
                   MIN ELEV=100 FT MAX ELEV=105 FT
                   CH SLP=0.023  FP SLP=0.005 N=0.030
                   DIST=20 FT

DIST  ELEV
      0 105
      10 100
      15 100
      20 105
*
ROUTE MCUNGE      ID=2  HYD NO=108SUMBRT  INFLOW ID=1
                   DT=0  HR  LENGTH=610 FT
                   NS=0  SLOPE=0.023
*
PRINT HYD          ID=2  CODE=1
*
*
** Sub-BASIN 111 ****
*
COMPUTE LT TP      LCODE=1  UPLAND/LAG TIME METHOD
                   NK=1  ISLOPE=1
                   LENGTH=936 FT  SLOPE=0.005  K=0.7
COMPUTE NM HYD     ID=1  HYD NO=111  DA=0.02356 SQ MI
                   PER A=79 PER B=8 PER C=8 PER D=5
                   TP=0.0  MASSRAIN=-1

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

*
PRINT HYD          ID=1    CODE=1
*
*
* Total Flow from Basin (108SUMBRT + 111)
ADD HYD            ID=1    HYD NO=POND2SUMB ID I=2    ID II=1
PRINT HYD          ID=1    CODE=1
*
*
* Total Flow from Basin (POND2SUMA + POND2SUMB)
ADD HYD            ID=1    HYD NO=POND2SUM ID I=21    ID II=1
PRINT HYD          ID=1    CODE=1
*
*
****Route Hyd 111SUM through Pond2
*
ROUTE RESERVOIR      ID=30  HYD NO=POND2  INFLOW ID=1  CODE=10
      OUTFLOW (CFS)  STORAGE (AC FT)  ELEV
      0              0              5204.21
      3              0.287          5205
      13             1.532          5206
      25             3.486          5207
      42             7.543          5209
      52            11.939          5211
      64            16.689          5213
      72            21.805          5215
      80            27.301          5217
      88            33.189          5219
      90            39.483          5221
      91            46.197          5223
      968            49.715          5224
      2615           53.343          5225
      4809           57.082          5226

* Total Flow from Basin (110SUM + 109SUMA)
ADD HYD            ID=10  HYD NO=POND3SUMA ID I=10    ID II=20
PRINT HYD          ID=10  CODE=1
*
*
* Total Flow from Basin (POND3SUMA + POND2)
ADD HYD            ID=10  HYD NO=POND3SUMB ID I=10    ID II=30
PRINT HYD          ID=10  CODE=1
*
*
****Route Hyd PONDNE3SUMB through PondNE3
*
ROUTE RESERVOIR      ID=30  HYD NO=POND3  INFLOW ID=10  CODE=10
      OUTFLOW (CFS)  STORAGE (AC FT)  ELEV
      0              0              5201
      5              0.934          5202
      6              3.359          5203
      27             6.08           5204
      43            11.813          5206
      55            17.946          5208
      64            24.492          5210
      72            31.465          5212
      1137           35.115          5213
      3122           38.877          5214
      7217           44.733          5215.5

FINISH

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

Interim Hydrology

AHYMO Summary

AHYMO PROGRAM SUMMARY TABLE (AHYMO-S4)

- Ver. S4.02a, Rel: 02a

RUN DATE (MON/DAY/YR) =08/21/2023

INPUT FILE = F:\Adil\RV\RV2\Interim 98th and Central 24hr.HMI

USER NO.= AHYMO-S4TempUser05901704

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
*S	PARADISE RV PARK									
*S	Drainage Basin Analysis									
*S	"INTERIM" CONDITION MODEL									
START										TIME= 0.00
LOCATION										
			AHYMO_97							
*S	RAINFALL FROM COA DEVELOPMENT PROCESS MANUAL									
*S	*****									
*S	100 YEAR 24HR STORM									
RAINFALL	TYPE=13									RAIN24= 2.660
SEDIMENT BULK										PK BF = 1.06
COMPUTE NM HYD	101.00	-	1	0.14521	137.71	4.820	0.62241	1.567	1.482	PER IMP= 5.00
*S***Route	HYD 101 to Sub-Basin 110									
ROUTE MCUNGE	101RT	1	2	0.14521	133.63	4.781	0.61734	1.766	1.438	CCODE = 0.1
COMPUTE NM HYD	110.00	-	1	0.12985	206.65	10.800	1.55942	1.600	2.487	PER IMP= 45.90
ADD HYD	110SUM	2& 1	10	0.27506	284.08	15.580	1.06207	1.700	1.614	
COMPUTE NM HYD	105.00	-	1	0.08439	85.72	2.801	0.62241	1.533	1.587	PER IMP= 5.00
*S***Route	Hyd 105 through Pond1									
ROUTE RESERVOIR	POND1	1	2	0.08439	10.34	2.801	0.62241	2.033	0.191	AC-FT= 1.940
*S***Route	HYD POND1 to Sub-Basin 106									
ROUTE MCUNGE	POND1RT	2	1	0.08439	10.34	2.801	0.62237	2.066	0.191	CCODE = 0.2
COMPUTE NM HYD	106.00	-	2	0.05741	103.63	4.871	1.59081	1.533	2.820	PER IMP= 51.45
ADD HYD	106SUM	1& 2	1	0.14180	105.27	7.672	1.01445	1.533	1.160	
*S	AP1									
*S***Route	HYD 106SUM to Sub-Basin 109 Through a Pipe									
ROUTE MCUNGE	106SUMRT	1	20	0.14180	105.27	7.671	1.01433	1.567	1.160	CCODE = 0.2
COMPUTE NM HYD	109.30	-	2	0.01867	37.69	1.561	1.56800	1.500	3.154	PER IMP= 50.00
*S	Total Flow from Basin (106SUMRT + 109.3)									
ADD HYD	109SUMA	20& 2	20	0.16047	137.42	9.232	1.07874	1.567	1.338	
*S	AP2									
COMPUTE NM HYD	109.10	-	1	0.00907	25.06	1.097	2.26717	1.500	4.317	PER IMP= 80.00
*S***Route	HYD 109.1 to Sub-Basin 109.2									
ROUTE MCUNGE	109.1RT	1	2	0.00907	24.69	1.097	2.26729	1.500	4.254	CCODE = 0.2
COMPUTE NM HYD	109.20	-	1	0.01562	43.15	1.889	2.26717	1.500	4.316	PER IMP= 80.00

DRAINAGE REPORT - PARADISE RV PARK PHASE I

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 2	NOTATION
*S Total Flow from Basin (109.1 + 109.2)											
ADD HYD	109SUM	1& 2	1	0.02469	67.84	2.985	2.26718	1.500	4.293		
COMPUTE NM HYD	108.50	-	2	0.00450	12.90	0.581	2.41880	1.500	4.479	PER IMP=	90.00
*S***Route HYD 108.5 to Sub-Basin 109											
ROUTE MCUNGE	108.5RT	2	1	0.00450	12.92	0.581	2.41928	1.567	4.485	CCODE =	0.2
*S Total Flow from Basin (109SUM + 108.5)											
ADD HYD	PIPE	1& 2	1	0.00900	24.54	1.161	2.41896	1.533	4.260		
*S***Route HYD 109SUMC to Sub-Basin 111 Through a Pipe											
ROUTE MCUNGE	POND2SUMA	2	21	0.00450	12.90	0.580	2.41874	1.500	4.479	CCODE =	0.0
*S TO STORM DRAIN											
COMPUTE NM HYD	102.00	-	1	0.07604	82.98	2.524	0.62241	1.533	1.705	PER IMP=	5.00
*S***Route HYD 102 to Sub-Basin 107											
ROUTE MCUNGE	102RT	1	2	0.07604	82.05	2.513	0.61973	1.600	1.686	CCODE =	0.1
COMPUTE NM HYD	107.00	-	1	0.04325	50.43	1.562	0.67727	1.533	1.822	PER IMP=	6.40
*S Total Flow from Basin (102RT + 107)											
ADD HYD	107SUM	2& 1	1	0.11929	122.38	4.075	0.64058	1.600	1.603		
*S AP3											
ADD HYD	109SUMB	1& 2	2	.06835	92.50	3.688	1.01178	1.700	2.115		
COMPUTE NM HYD	109.10	-	1	.00486	9.26	.265	1.02347	1.500	2.977	PER IMP=	.00
ADD HYD	POND	1& 2	1	.07321	96.64	3.954	1.01255	1.700	2.063		
*S TEMP. POND											
COMPUTE NM HYD	109.30	-	1	.00907	25.06	1.064	2.19950	1.500	4.317	PER IMP=	80.00
ROUTE MCUNGE	109.3RT	1	2	.00907	24.83	1.064	2.19871	1.533	4.278	CCODE =	.2
COMPUTE NM HYD	109.40	-	1	.00784	21.66	.920	2.19951	1.500	4.317	PER IMP=	80.00
ADD HYD	109SUMC	1& 2	2	.01691	46.15	1.983	2.19908	1.500	4.264		
ROUTE MCUNGE	POND2SUMA	2	21	.01691	46.03	1.983	2.19869	1.533	4.253	CCODE =	.2
*S TO STORM DRAIN											
COMPUTE NM HYD	102.00	-	1	.07604	82.97	2.507	.61817	1.533	1.705	PER IMP=	5.00
ROUTE MCUNGE	102RT	1	2	.07604	82.06	2.496	.61537	1.600	1.686	CCODE =	.1
COMPUTE NM HYD	107.00	-	1	.04325	50.42	1.550	.67185	1.533	1.821	PER IMP=	6.40
ADD HYD	107SUM	2& 1	1	.11929	122.36	4.045	.63585	1.600	1.603		
*S AP3											
*S***Route HYD 107SUM to Sub-Basin 108.3											
ROUTE MCUNGE	107RT	1	2	0.11929	121.15	4.062	0.63848	1.667	1.587	CCODE =	0.1
COMPUTE NM HYD	103.00	-	1	0.06441	69.27	2.138	0.62241	1.533	1.680	PER IMP=	5.00
*S***Route HYD 103 to Sub-Basin 108.3											
ROUTE MCUNGE	103RT	1	3	0.06441	68.08	2.127	0.61909	1.633	1.651	CCODE =	0.1
*S Total Flow from Basin (107RT + 103RT)											
ADD HYD	108SUMA	2& 3	1	0.18370	187.41	6.189	0.63167	1.667	1.594		
COMPUTE NM HYD	108.30	-	2	0.01813	27.54	0.863	0.89214	1.500	2.373	PER IMP=	9.83
*S Total Flow from Basin (108SUMA + 108)											

DRAINAGE REPORT - PARADISE RV PARK PHASE I

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 3	NOTATION
ADD HYD	108SUMB	1& 2	1	0.20183	202.66	7.051	0.65507	1.667	1.569		
*S AP4											
*S***Route HYD 108SUMB to Sub-Basin 111											
ROUTE MCUNGE	108SUMBRT	1	2	0.20183	201.88	7.051	0.65500	1.667	1.563	CCODE =	0.2
COMPUTE NM HYD	111.00	-	1	0.02356	17.17	0.782	0.62241	1.600	1.139	PER IMP=	5.00
*S Total Flow from Basin (108SUMBRT + 111)											
ADD HYD	POND2SUMB	2& 1	1	0.22539	217.98	7.833	0.65159	1.667	1.511		
*S Total Flow from Basin (POND2SUMA + POND2SUMB)											
ADD HYD	POND2SUM	21& 1	1	0.22989	224.51	8.413	0.68618	1.667	1.526		
*S***Route Hyd 111SUM through Pond2											
ROUTE RESERVOIR	POND2	1	30	0.22989	33.33	8.413	0.68618	2.133	0.227	AC-FT=	5.474
*S Total Flow from Basin (110SUM + 109SUMA)											
ADD HYD	POND3SUMA	10&20	10	0.43553	375.45	24.813	1.06821	1.667	1.347		
*S Total Flow from Basin (POND3SUMA + POND2)											
ADD HYD	POND3SUMB	10&30	10	0.66542	395.71	33.226	0.93623	1.700	0.929		
*S***Route Hyd PONDNE3SUMB through PondNE3											
ROUTE RESERVOIR	POND3	10	30	0.66542	53.65	33.226	0.93623	2.833	0.126	AC-FT=	17.254
*S TEMP POND BASINS											
COMPUTE NM HYD	104.00	-	1	0.04197	68.29	2.299	1.02698	1.500	2.543	PER IMP=	17.00
*S***Route HYD 104 to Sub-Basin 108.4											
ROUTE MCUNGE	104RT	1	2	0.04197	68.29	2.299	1.02697	1.500	2.543	CCODE =	0.0
COMPUTE NM HYD	108.10	-	1	0.01077	17.54	0.590	1.02698	1.500	2.544	PER IMP=	17.00
*S Total Flow from Basin (104RT + 108.1)											
ADD HYD	108SUMA	1& 2	1	0.05274	85.83	2.889	1.02697	1.500	2.543		
COMPUTE NM HYD	108.20	-	2	0.00171	2.80	0.094	1.02698	1.500	2.557	PER IMP=	17.00
ADD HYD	108SUMB	1& 2	1	0.05445	88.63	2.982	1.02697	1.500	2.543		
*S AP5											
COMPUTE NM HYD	108.40	-	2	0.00784	10.79	0.296	0.70742	1.533	2.150	PER IMP=	0.00
*S Total Flow to pond from BasinS (108SUMC + 108.4)											
ADD HYD	POND	1& 2	1	0.06229	99.37	3.278	0.98675	1.500	2.493		
*S TEMP. POND											

DRAINAGE REPORT - PARADISE RV PARK PHASE I

AHYMO Input

```

*S PARADISE RV PARK
*S Drainage Basin Analysis
*S "INTERIM" CONDITION MODEL
*
START                TIME=0.0  PUNCH CODE=0  PRINT CODE=0
LOCATION              AHYMO97
*
*S RAINFALL FROM COA DEVELOPMENT PROCESS MANUAL
*S*****
*S 100 YEAR 24HR STORM
RAINFALL              TYPE=13  RAIN QUARTER=0
                      RAIN ONE=1.87 IN  RAIN SIX=2.20 IN
                      RAIN DAY=2.66 IN  DT=0.03333 HRS
*
*
****Adding Sediment Bulk Factor to all Basins
SEDIMENT BULKCODE=1 BULK FACTOR=1.06
*
*
*** Sub-BASIN 101 ****
*
COMPUTE LT TP          LCODE=1  UPLAND/LAG TIME METHOD
                      NK=1  ISLOPE=1
                      LENGTH=3653 FT  SLOPE=0.048  K=0.7
COMPUTE NM HYD          ID=1  HYD NO=101  DA=0.14521 SQ MI
                      PER A=79 PER B=8  PER C=8  PER D=5
                      TP=0.0  MASSRAIN=-1
*
PRINT HYD              ID=1  CODE=1
*
*
*S***Route HYD 101 to Sub-Basin 110
COMPUTE RATING CURVE    CID=1 VS NO=1 NO SEGS=1
                      MIN ELEV=100 FT MAX ELEV=105 FT
                      CH SLP=0.030  FP SLP=0.01 N=0.030
                      DIST=20 FT

                      DIST  ELEV
                      0 105
                      10 100
                      15 100
                      20 105
*
ROUTE MCUNGE          ID=2  HYD NO=101RT  INFLOW ID=1
                      DT=0 HR  LENGTH=3110 FT
                      NS=0  SLOPE=0.030
*
PRINT HYD              ID=2  CODE=1
*
*
*** Sub-BASIN 110 ****
*
COMPUTE LT TP          LCODE=1  UPLAND/LAG TIME METHOD
                      NK=1  ISLOPE=1
                      LENGTH=3483 FT  SLOPE=0.026  K=0.7
COMPUTE NM HYD          ID=1  HYD NO=110  DA=0.12985 SQ MI
                      PER A=22.1 PER B=11 PER C=21 PER D=45.9
                      TP=0.0  MASSRAIN=-1

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

*
PRINT HYD                      ID=1    CODE=1
*
*
* Total Flow from Basin (101Rt + 110)
ADD HYD                        ID=10   HYD NO=110SUM ID I=2    ID II=1
PRINT HYD                      ID=10   CODE=1
*
*
*****
*
*** Sub-BASIN 105 ****
*
COMPUTE LT TP                  LCODE=1   UPLAND/LAG TIME METHOD
                                NK=1     ISLOPE=1
                                LENGTH=2509 FT   SLOPE=0.037   K=0.7
COMPUTE NM HYD                 ID=1     HYD NO=105   DA=0.08439 SQ MI
                                PER A=79 PER B=8   PER C=8   PER D=5
                                TP=0.0   MASSRAIN=-1
*
PRINT HYD                      ID=1     CODE=1
*
*
*S***Route Hyd 105 through Pond1
*
ROUTE RESERVOIR                ID=2   HYD NO=POND1   INFLOW ID=1   CODE=10
                                OUTFLOW (CFS)   STORAGE (AC FT)   ELEV
                                0                   0                   5260
                                5                   1.061               5262
                                14                  2.542               5264
*
*
*S***Route HYD POND1 to Sub-Basin 106
COMPUTE RATING CURVE           CID=1   VS NO=1   NO SEGS=1
                                MIN ELEV=100 FT MAX ELEV=105 FT
                                CH SLP=0.026   FP SLP=0.01   N=0.017
                                DIST=20 FT
                                DIST   ELEV
                                0   105
                                10   100
                                15   100
                                20   105
*
ROUTE MCUNGE                    ID=1   HYD NO=POND1RT   INFLOW ID=2
                                DT=0   HR   LENGTH=780 FT
                                NS=0   SLOPE=0.026
*
PRINT HYD                      ID=1     CODE=1
*
*
*** Sub-BASIN 106 ****
*
COMPUTE LT TP                  LCODE=1   UPLAND/LAG TIME METHOD
                                NK=1     ISLOPE=1
                                LENGTH=2718 FT   SLOPE=0.032   K=0.7
COMPUTE NM HYD                 ID=2     HYD NO=106   DA=0.05741 SQ MI
                                PER A=35.8 PER B=6.4   PER C=6.4   PER D=51.5
                                TP=0.0   MASSRAIN=-1

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

*
PRINT HYD                      ID=2    CODE=1
*
*
* Total Flow from Basin (POND1RT + 106)
ADD HYD                        ID=1    HYD NO=106SUM ID I=1    ID II=2
PRINT HYD                      ID=1    CODE=1
*
*S AP1
*
*S***Route HYD 106SUM to Sub-Basin 109 Through a Pipe
COMPUTE RATING CURVE          CID=1    VS NO=1 CODE=-1    SLP=0.013
                                DIA=42 IN    N=0.013
*
ROUTE MCUNGE                   ID=20   HYD NO=106SUMRT INFLOW ID=1
                                DT=0 HR    LENGTH=1240 FT
                                NS=0    SLOPE=0.013
*
PRINT HYD                      ID=20   CODE=1
*
*
*** Sub-BASIN 109.3 ****
*
COMPUTE LT TP                   LCODE=1    UPLAND/LAG TIME METHOD
                                NK=1    ISLOPE=1
                                LENGTH=1367 FT    SLOPE=0.030    K=0.7
COMPUTE NM HYD                 ID=2    HYD NO=109.3    DA=0.01867 SQ MI
                                PER A=35 PER B=7.5 PER C=7.5 PER D=50
                                TP=0.0    MASSRAIN=-1
*
PRINT HYD                      ID=2    CODE=1
*
*
*S Total Flow from Basin (106SUMRT + 109.3)
ADD HYD                        ID=20   HYD NO=109SUMA ID I=20    ID II=2
PRINT HYD                      ID=20   CODE=1
*
*S AP2
*
*
*** Sub-BASIN 109.1 ****
*
COMPUTE NM HYD                 ID=1    HYD NO=109.1    DA=0.00907 SQ MI
                                PER A=0 PER B=0 PER C=20 PER D=80
                                TP=0.0    MASSRAIN=-1
*
PRINT HYD                      ID=1    CODE=1
*
*
*S***Route HYD 109.1 to Sub-Basin 109.2
COMPUTE RATING CURVE          CID=1 VS NO=1 NO SEGS=1
                                MIN ELEV=100 FT MAX ELEV=105 FT
                                CH SLP=0.033 FP SLP=0.02 N=0.017
                                DIST=20 FT

                                DIST  ELEV
                                0 105
                                10 100
                                15 100
                                20 105

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

*
ROUTE MCUNGE          ID=2  HYD NO=109.1RT  INFLOW ID=1
                        DT=0  HR  LENGTH=436 FT
                        NS=0  SLOPE=0.033
*
PRINT HYD              ID=2    CODE=1
*
*** Sub-BASIN 109.2 ****
*
COMPUTE NM HYD          ID=1    HYD NO=109.2    DA=0.01562 SQ MI
                        PER A=0 PER B=0 PER C=20 PER D=80
                        TP=0.0  MASSRAIN=-1
*
PRINT HYD              ID=1    CODE=1
*
*S Total Flow from Basin (109.1 + 109.2)
ADD HYD                 ID=1    HYD NO=109SUM ID I=1    ID II=2
PRINT HYD               ID=1    CODE=1
*
*** Sub-BASIN 108.5 ****
*
COMPUTE NM HYD          ID=2    HYD NO=108.5    DA=0.00450 SQ MI
                        PER A=0 PER B=0 PER C=10 PER D=90
                        TP=0.0  MASSRAIN=-1
*
PRINT HYD              ID=2    CODE=1
*
*S***Route HYD 108.5 to Sub-Basin 109
COMPUTE RATING CURVE    CID=1 VS NO=1 NO SEGS=1
                        MIN ELEV=100 FT MAX ELEV=105 FT
                        CH SLP=0.033 FP SLP=0.01 N=0.017
                        DIST=20 FT

                        DIST  ELEV
                          0 105
                          10 100
                          15 100
                          20 105
*
ROUTE MCUNGE          ID=1  HYD NO=108.5RT  INFLOW ID=2
                        DT=0  HR  LENGTH=1436 FT
                        NS=0  SLOPE=0.033
*
PRINT HYD              ID=1    CODE=1
*
*S Total Flow from Basin (109SUM + 108.5)
ADD HYD                 ID=1    HYD NO=PIPE ID I=1    ID II=2
PRINT HYD               ID=1    CODE=1
*
*S***Route HYD 109SUMC to Sub-Basin 111 Through a Pipe
COMPUTE RATING CURVE    CID=1 VS NO=1 CODE=-1 SLP=0.013
                        DIA=42 IN N=0.013
*
ROUTE MCUNGE          ID=21  HYD NO=POND2SUMA  INFLOW ID=2
                        DT=0  HR  LENGTH=100 FT
                        NS=0  SLOPE=0.013
*

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

PRINT HYD                      ID=21   CODE=1
*
*
*S TO STORM DRAIN
*
*
*****
*** Sub-BASIN 102 ****
*
COMPUTE LT TP                  LCODE=1   UPLAND/LAG TIME METHOD
                                NK=1     ISLOPE=1
                                LENGTH=2025 FT   SLOPE=0.048   K=0.7
COMPUTE NM HYD                 ID=1     HYD NO=102   DA=0.07604 SQ MI
                                PER A=79 PER B=8   PER C=8   PER D=5
                                TP=0.0   MASSRAIN=-1
*
PRINT HYD                      ID=1     CODE=1
*
*
*S***Route HYD 102 to Sub-Basin 107
COMPUTE RATING CURVE          CID=1 VS NO=1 NO SEGS=1
                                MIN ELEV=100 FT MAX ELEV=105 FT
                                CH SLP=0.033 FP SLP=0.01 N=0.030
                                DIST=20 FT

                                DIST  ELEV
                                    0 105
                                    10 100
                                    15 100
                                    20 105
*
ROUTE MCUNGE                   ID=2   HYD NO=102RT   INFLOW ID=1
                                DT=0   HR   LENGTH=1100 FT
                                NS=0   SLOPE=0.033
*
PRINT HYD                      ID=2     CODE=1
*
*
*** Sub-BASIN 107 ****
*
COMPUTE LT TP                  LCODE=1   UPLAND/LAG TIME METHOD
                                NK=1     ISLOPE=1
                                LENGTH=1285 FT   SLOPE=0.037   K=0.7
COMPUTE NM HYD                 ID=1     HYD NO=107   DA=0.04325 SQ MI
                                PER A=70.3 PER B=11.6 PER C=11.7 PER D=6.4
                                TP=0.0   MASSRAIN=-1
*
PRINT HYD                      ID=1     CODE=1
*
*
*S Total Flow from Basin (102RT + 107)
ADD HYD                        ID=1   HYD NO=107SUM ID I=2   ID II=1
PRINT HYD                      ID=1     CODE=1
*
*S AP3
*
*S***Route HYD 107SUM to Sub-Basin 108.3
COMPUTE RATING CURVE          CID=1 VS NO=1 NO SEGS=1
                                MIN ELEV=100 FT MAX ELEV=105 FT
                                CH SLP=0.029 FP SLP=0.01 N=0.030

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

DIST=20 FT

DIST  ELEV
      0 105
      10 100
      15 100
      20 105

*
ROUTE MCUNGE      ID=2  HYD NO=107RT  INFLOW ID=1
DT=0 HR  LENGTH=1300 FT
NS=0  SLOPE=0.029

*
PRINT HYD          ID=2  CODE=1
*
*
*** Sub-BASIN NE103 ****
*
COMPUTE LT TP      LCODE=1  UPLAND/LAG TIME METHOD
                   NK=1  ISLOPE=1
                   LENGTH=2330 FT  SLOPE=0.041  K=0.7
COMPUTE NM HYD     ID=1  HYD NO=103  DA=0.06441 SQ MI
                   PER A=79 PER B=8  PER C=8  PER D=5
                   TP=0.0  MASSRAIN=-1

*
PRINT HYD          ID=1  CODE=1
*
*
*S***Route HYD 103 to Sub-Basin 108.3
COMPUTE RATING CURVE  CID=1 VS NO=1 NO SEGS=1
                   MIN ELEV=100 FT MAX ELEV=105 FT
                   CH SLP=0.031  FP SLP=0.01 N=0.030
                   DIST=20 FT

DIST  ELEV
      0 105
      10 100
      15 100
      20 105

*
ROUTE MCUNGE      ID=3  HYD NO=103RT  INFLOW ID=1
DT=0 HR  LENGTH=1490 FT
NS=0  SLOPE=0.031

*
PRINT HYD          ID=3  CODE=1
*
*
*S Total Flow from Basin (107RT + 103RT)
ADD HYD            ID=1  HYD NO=108SUMA ID I=2  ID II=3
PRINT HYD          ID=1  CODE=1
*
*
*** Sub-BASIN 108.3 ****
*
COMPUTE LT TP      LCODE=1  UPLAND/LAG TIME METHOD
                   NK=1  ISLOPE=1
                   LENGTH=1486 FT  SLOPE=0.030  K=0.7
COMPUTE NM HYD     ID=2  HYD NO=108.3  DA=0.01813 SQ MI
                   PER A=37 PER B=81  PER C=38  PER D=17
                   TP=0.0  MASSRAIN=-1

*

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

PRINT HYD                      ID=2    CODE=1
**
*S Total Flow from Basin (108SUMA + 108)
ADD HYD                        ID=1    HYD NO=108SUMB ID I=1    ID II=2
PRINT HYD                      ID=1    CODE=1
*
*S AP4
*
*
*S***Route HYD 108SUMB to Sub-Basin 111
COMPUTE RATING CURVE          CID=1 VS NO=1 NO SEGS=1
                                MIN ELEV=100 FT MAX ELEV=105 FT
                                CH SLP=0.023  FP SLP=0.005 N=0.030
                                DIST=20 FT

                                DIST  ELEV
                                    0 105
                                    10 100
                                    15 100
                                    20 105
*
ROUTE MCUNGE                   ID=2    HYD NO=108SUMBRT INFLOW ID=1
                                DT=0 HR  LENGTH=610 FT
                                NS=0    SLOPE=0.023
*
PRINT HYD                      ID=2    CODE=1
**
** Sub-BASIN 111 ****
*
COMPUTE LT TP                  LCODE=1  UPLAND/LAG TIME METHOD
                                NK=1    ISLOPE=1
                                LENGTH=936 FT  SLOPE=0.005  K=0.7
COMPUTE NM HYD                 ID=1    HYD NO=111  DA=0.02356 SQ MI
                                PER A=79 PER B=8  PER C=8  PER D=5
                                TP=0.0  MASSRAIN=-1
*
PRINT HYD                      ID=1    CODE=1
*
*
*S Total Flow from Basin (108SUMBRT + 111)
ADD HYD                        ID=1    HYD NO=POND2SUMB ID I=2    ID II=1
PRINT HYD                      ID=1    CODE=1
*
*
*S Total Flow from Basin (POND2SUMA + POND2SUMB)
ADD HYD                        ID=1    HYD NO=POND2SUM ID I=21    ID II=1
PRINT HYD                      ID=1    CODE=1
*
*
*S***Route Hyd 111SUM through Pond2
*
ROUTE RESERVOIR                ID=30  HYD NO=POND2  INFLOW ID=1  CODE=10
                                OUTFLOW (CFS)  STORAGE (AC FT)  ELEV
                                0                0                5204.21
                                3                0.287            5205
                                13               1.532            5206
                                25               3.486            5207
                                42               7.543            5209
                                52              11.939            5211
                                64              16.689            5213

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

72	21.805	5215
80	27.301	5217
88	33.189	5219
90	39.483	5221
91	46.197	5223
968	49.715	5224
2615	53.343	5225
4809	57.082	5226

*S Total Flow from Basin (110SUM + 109SUMA)
 ADD HYD ID=10 HYD NO=POND3SUMA ID I=10 ID II=20
 PRINT HYD ID=10 CODE=1

*

*

*S Total Flow from Basin (POND3SUMA + POND2)
 ADD HYD ID=10 HYD NO=POND3SUMB ID I=10 ID II=30
 PRINT HYD ID=10 CODE=1

*

*

*S***Route Hyd PONDNE3SUMB through PondNE3

*

ROUTE RESERVOIR	ID=30	HYD NO=POND3	INFLOW ID=10	CODE=10
OUTFLOW (CFS)	STORAGE (AC FT)	ELEV		
0	0	5201		
5	0.934	5202		
6	3.359	5203		
27	6.08	5204		
43	11.813	5206		
55	17.946	5208		
64	24.492	5210		
72	31.465	5212		
1137	35.115	5213		
3122	38.877	5214		
7217	44.733	5215.5		

*

*S TEMP POND BASINS

*** Sub-BASIN 104 ***

*

COMPUTE LT TP LCODE=1 UPLAND/LAG TIME METHOD
 NK=1 ISLOPE=1
 LENGTH=1952 FT SLOPE=0.036 K=0.7
 COMPUTE NM HYD ID=1 HYD NO=104 DA=0.04197 SQ MI
 PER A=37 PER B=8 PER C=38 PER D=17
 TP=0.0 MASSRAIN=-1

*

PRINT HYD ID=1 CODE=1

*

*

*S***Route HYD 104 to Sub-Basin 108.4

COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1
 MIN ELEV=100 FT MAX ELEV=105 FT
 CH SLP=0.030 FP SLP=0.01 N=0.030
 DIST=20 FT

DIST	ELEV
0	105
10	100
15	100
20	105

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

*
ROUTE MCUNGE          ID=2  HYD NO=104RT  INFLOW ID=1
                      DT=0  HR  LENGTH=110 FT
                      NS=0  SLOPE=0.030
*
PRINT HYD              ID=2    CODE=1
*
*
*** Sub-BASIN 108.1 ****
*
COMPUTE LT TP          LCODE=1  UPLAND/LAG TIME METHOD
                      NK=1    ISLOPE=1
                      LENGTH=720 FT  SLOPE=0.030  K=0.7
COMPUTE NM HYD          ID=1    HYD NO=108.1  DA=0.01077 SQ MI
                      PER A=37 PER B=8  PER C=38  PER D=17
                      TP=0.0  MASSRAIN=-1
*
PRINT HYD              ID=1    CODE=1
*
*
*S Total Flow from Basin (104RT + 108.1)
ADD HYD                ID=1  HYD NO=108SUMA ID I=1  ID II=2
PRINT HYD              ID=1    CODE=1
*
*
*** Sub-BASIN 108.2 ****
*
COMPUTE LT TP          LCODE=1  UPLAND/LAG TIME METHOD
                      NK=1    ISLOPE=1
                      LENGTH=370 FT  SLOPE=0.030  K=0.7
COMPUTE NM HYD          ID=2  HYD NO=108.2  DA=0.00171 SQ MI
                      PER A=37 PER B=8  PER C=38  PER D=17
                      TP=0.0  MASSRAIN=-1
*
PRINT HYD              ID=2    CODE=1
*
ADD HYD                ID=1  HYD NO=108SUMB ID I=1  ID II=2
PRINT HYD              ID=1    CODE=1
*
*
*S AP5
*** Sub-BASIN 108.4 ****
*
COMPUTE NM HYD          ID=2  HYD NO=108.4  DA=0.00784 SQ MI
                      PER A=0 PER B=100 PER C=0  PER D=0
                      TP=0.0  MASSRAIN=-1
*
PRINT HYD              ID=2    CODE=1
*S Total Flow to pond from Basins (108SUMC + 108.4)
ADD HYD                ID=1  HYD NO=POND ID I=1  ID II=2
PRINT HYD              ID=1    CODE=1
*
*S TEMP. POND
*
*
FINISH

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

Final Hydrology

AHYMO Summary

AHYMO PROGRAM SUMMARY TABLE (AHYMO-S4)

- Ver. S4.02a, Rel: 02a

RUN DATE (MON/DAY/YR) =08/21/2023

INPUT FILE = F:\Adil\RV\RV2\Final 98th and Central 24hr.HMI

USER NO.= AHYMO-S4TempUser05901704

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1	NOTATION
*S	PARADISE RV PARK										
*S	Drainage Basin Analysis										
*S	"PROPOSED" CONDITION MODEL										
START										TIME=	0.00
LOCATION											
*S	RAINFALL FROM COA DEVELOPMENT PROCESS MANUAL										
*S	*****										
*S	100 YEAR 24HR STORM										
START										TIME=	0.00
LOCATION											
RAINFALL TYPE=13										RAIN24=	2.660
SEDIMENT BULK										PK BF =	1.06
COMPUTE NM HYD	202.10	-	1	0.08439	209.31	8.736	1.94095	1.500	3.875	PER IMP=	63.00
ROUTE MCUNGE	202.1RT	1	2	0.08439	207.04	8.735	1.94084	1.533	3.833	CCODE =	0.2
COMPUTE NM HYD	202.20	-	1	0.06185	153.51	6.403	1.94095	1.500	3.878	PER IMP=	63.00
ADD HYD	202.2SUM	2& 1	1	0.14624	358.42	15.138	1.94088	1.500	3.830		
*S	AP1										
ROUTE MCUNGE	202.2SUMRT	1	3	0.14624	336.13	14.988	1.92168	1.567	3.591	CCODE =	0.2
COMPUTE NM HYD	201.10	-	1	0.08463	209.91	8.761	1.94095	1.500	3.875	PER IMP=	63.00
ROUTE MCUNGE	201.1RT	1	2	0.08463	207.99	8.760	1.94080	1.533	3.840	CCODE =	0.2
COMPUTE NM HYD	201.20	-	1	0.04349	107.94	4.502	1.94095	1.500	3.878	PER IMP=	63.00
ADD HYD	201.2SUMA	2& 1	1	0.12812	312.83	13.262	1.94084	1.500	3.815		
ADD HYD	201.2SUMB	1& 3	1	0.27436	638.87	28.250	1.93063	1.533	3.638		
ROUTE MCUNGE	201.2SUMBRT	1	3	0.27436	627.99	28.212	1.92806	1.567	3.576	CCODE =	0.2
*S	AP2										
COMPUTE NM HYD	205.11	-	1	0.02628	54.79	2.052	1.46417	1.500	3.257	PER IMP=	37.00
COMPUTE NM HYD	204.10	-	2	0.04332	107.52	4.484	1.94095	1.500	3.878	PER IMP=	63.00
ADD HYD	204SUMA	2& 1	1	0.06960	162.31	6.537	1.76091	1.500	3.644		
ROUTE MCUNGE	204.1RT	1	2	0.06960	160.96	6.537	1.76107	1.533	3.613	CCODE =	0.2
COMPUTE NM HYD	203.00	-	1	0.05145	127.70	5.326	1.94095	1.500	3.878	PER IMP=	63.00
ADD HYD	203SUMA	2& 1	1	0.12105	286.73	11.863	1.83751	1.500	3.701		
ADD HYD	203SUMB	1& 3	1	0.39541	900.11	40.075	1.90034	1.533	3.557		
ROUTE MCUNGE	203SUMBRT	1	3	0.39541	875.68	40.086	1.90085	1.567	3.460	CCODE =	0.2

DRAINAGE REPORT - PARADISE RV PARK PHASE I

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 2 NOTATION
*S AP3										
COMPUTE NM HYD	204.20	-	1	0.04566	113.33	4.727	1.94095	1.500	3.878	PER IMP= 63.00
ROUTE MCUNGE	204.2RT	1	2	0.04566	112.30	4.727	1.94094	1.533	3.843	CCODE = 0.2
COMPUTE NM HYD	207.00	-	1	0.05139	127.55	5.320	1.94095	1.500	3.878	PER IMP= 63.00
ADD HYD	207SUMA	2& 1	1	0.09705	238.49	10.046	1.94094	1.500	3.840	
ADD HYD	207SUMB	3& 1	1	0.49246	1083.91	50.132	1.90874	1.567	3.439	
ROUTE MCUNGE	207SUMBRT	1	3	0.49246	1075.80	49.930	1.90106	1.600	3.413	CCODE = 0.2
*S AP4										
COMPUTE NM HYD	209.10	-	1	0.00907	25.06	1.097	2.26714	1.500	4.317	PER IMP= 80.00
ROUTE MCUNGE	209.1RT	1	2	0.00907	24.72	1.097	2.26721	1.500	4.259	CCODE = 0.2
COMPUTE NM HYD	209.20	-	1	0.01562	43.14	1.889	2.26714	1.500	4.316	PER IMP= 80.00
ADD HYD	209.2SUMA	2& 1	1	0.02469	67.87	2.985	2.26714	1.500	4.295	
ROUTE MCUNGE	209.2SUMART	2	1	0.02469	67.87	2.985	2.26714	1.500	4.295	CCODE = 0.0
ADD HYD	209.2SUMC	3& 1	10	0.51715	1124.16	52.916	1.91853	1.600	3.397	
*S AP5										
ROUTE RESERVOIR	POND2	10	20	0.51715	88.70	52.916	1.91853	2.300	0.268	AC-FT= 34.998
COMPUTE NM HYD	205.12	-	1	0.04836	100.80	3.776	1.46417	1.500	3.257	PER IMP= 37.00
ROUTE MCUNGE	205.1RT	1	2	0.04836	100.07	3.771	1.46212	1.567	3.233	CCODE = 0.1
COMPUTE NM HYD	205.20	-	1	0.06038	113.62	3.735	1.15969	1.500	2.940	PER IMP= 17.20
ADD HYD	205.2SUM	1& 2	1	0.10874	203.74	7.506	1.29418	1.533	2.928	
ROUTE MCUNGE	205.2SUMRT	1	2	0.10874	203.42	7.505	1.29413	1.567	2.923	CCODE = 0.2
COMPUTE NM HYD	206.00	-	1	0.04398	112.51	4.790	2.04215	1.500	3.997	PER IMP= 69.03
ADD HYD	206SUM	2& 1	1	0.15272	307.47	12.295	1.50954	1.533	3.146	
ROUTE MCUNGE	206SUMRT	1	2	0.15272	304.97	12.296	1.50957	1.567	3.120	CCODE = 0.2
COMPUTE NM HYD	209.30	-	1	0.01867	52.51	2.333	2.34296	1.500	4.395	PER IMP= 85.00
ADD HYD	209.3SUMA	2& 1	3	0.17139	352.90	14.628	1.60035	1.533	3.217	
*S AP6										
COMPUTE NM HYD	210.00	-	1	0.12985	243.06	12.969	1.87272	1.600	2.925	PER IMP= 59.00
ROUTE MCUNGE	210RT	1	2	0.12985	242.01	12.959	1.87118	1.600	2.912	CCODE = 0.1
COMPUTE NM HYD	211.00	-	1	0.02356	41.54	2.265	1.80259	1.600	2.755	PER IMP= 58.00
ADD HYD	POND3SUMA	2& 1	30	0.15341	283.56	15.224	1.86064	1.600	2.888	
ADD HYD	POND3SUMB	3&30	10	0.32480	621.32	29.852	1.72329	1.567	2.989	
ADD HYD	POND3SUMC	10&20	30	0.84195	677.19	82.768	1.84321	1.567	1.257	
ROUTE RESERVOIR	POND3	30	1	0.84195	70.36	82.768	1.84321	5.333	0.131	AC-FT= 30.038
FINISH										

DRAINAGE REPORT - PARADISE RV PARK PHASE I

AHYMO Input

```

*S PARADISE RV PARK
*S Drainage Basin Analysis
*S "PROPOSED" CONDITION MODEL
*
START                TIME=0.0  PUNCH CODE=0 PRINT CODE=0
LOCATION              AHYMO97
*
*S RAINFALL FROM COA DEVELOPMENT PROCESS MANUAL
*S *****
*S 100 YEAR 24HR STORM
*
RAINFALL              TYPE=13
                      QUARTER=1.46 IN
                      HOUR= 1.87 IN
                      SIX HR= 2.20 IN
                      DAY= 2.66 IN    DT=0.033333
*
*
****Adding Sediment Bulk Factor to all Basins
SEDIMENT BULKCODE=1 BULK FACTOR=1.06
*
*
*** Sub-BASIN 202.1 ****
*
COMPUTE LT TP          LCODE=1  UPLAND/LAG TIME METHOD
                      NK=3  ISLOPE=1
                      LENGTH=400 FT  SLOPE=0.053  K=0.7
                      LENGTH=1600 FT  SLOPE=0.056  K=2.0
                      LENGTH=440 FT  SLOPE=0.039  K=3.0
COMPUTE NM HYD          ID=1  HYD NO=202.1  DA=0.08439 SQ MI
                      PER A=0 PER B=18 PER C=19 PER D=63
                      TP=0.0  MASSRAIN=-1
*
PRINT HYD              ID=1  CODE=1
*
*
****Route HYD 202.1 to Sub-Basin 202.2
COMPUTE RATING CURVE    CID=1 VS NO=1 NO SEGS=1
                      MIN ELEV=100 FT MAX ELEV=105 FT
                      CH SLP=0.005  FP SLP=0.02 N=0.013
                      DIST=20 FT

                      DIST  ELEV
                      0      105
                      10     100
                      15     100
                      20     105
*
ROUTE MCUNGE           ID=2  HYD NO=202.1RT  INFLOW ID=1
                      DT=0 HR  LENGTH=1080 FT
                      NS=0  SLOPE=0.005
*
PRINT HYD              ID=2  CODE=1
*
*
*** Sub-BASIN 202.2 ****
*
COMPUTE LT TP          LCODE=1  UPLAND/LAG TIME METHOD

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

                                NK=3    ISLOPE=1
                                LENGTH=400 FT    SLOPE=0.050    K=0.7
                                LENGTH=1100 FT    SLOPE=0.039    K=2.0
                                LENGTH=170 FT    SLOPE=0.029    K=3.0
COMPUTE NM HYD                    ID=1    HYD NO=202.2    DA=0.06185 SQ MI
                                PER A=0 PER B=18 PER C=19 PER D=63
                                TP=0.0    MASSRAIN=-1

*
PRINT HYD                        ID=1    CODE=1
*
*
* Total Flow from Basin (202.1RT + 202.2)
ADD HYD                          ID=1    HYD NO=202.2SUM ID I=2    ID II=1
PRINT HYD                        ID=1    CODE=1
*
*S AP1
*
*
****Route HYD 202.2SUM to Sub-Basin 201.2 Through a Pipe
COMPUTE RATING CURVE            CID=1    VS NO=1 CODE=-1    SLP=0.02
                                DIA=54 IN    N=0.013

*
ROUTE MCUNGE                    ID=3    HYD NO=202.2SUMRT    INFLOW ID=1
                                DT=0 HR    LENGTH=1043 FT
                                NS=0    SLOPE=0.02

*
PRINT HYD                        ID=3    CODE=1
*
*
*****
*** Sub-BASIN 201.1 ****
*
COMPUTE LT TP                    LCODE=1    UPLAND/LAG TIME METHOD
                                NK=2    ISLOPE=1
                                LENGTH=280 FT    SLOPE=0.096    K=0.7
                                LENGTH=2145 FT    SLOPE=0.038    K=2.0
COMPUTE NM HYD                    ID=1    HYD NO=201.1    DA=0.08463 SQ MI
                                PER A=0 PER B=18 PER C=19 PER D=63
                                TP=0.0    MASSRAIN=-1

*
PRINT HYD                        ID=1    CODE=1
*
*
****Route HYD 201.1 to Sub-Basin 201.2
COMPUTE RATING CURVE            CID=1 VS NO=1 NO SEGS=1
                                MIN ELEV=100 FT MAX ELEV=105 FT
                                CH SLP=0.005 FP SLP=0.02 N=0.013
                                DIST=20 FT

                                DIST    ELEV
                                    0    105
                                10    100
                                15    100
                                20    105

*
ROUTE MCUNGE                    ID=2    HYD NO=201.1RT    INFLOW ID=1
                                DT=0 HR    LENGTH=1175 FT
                                NS=0    SLOPE=0.005

*
PRINT HYD                        ID=2    CODE=1

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

*
*
*** Sub-BASIN 201.2 ****
*
COMPUTE LT TP          LCODE=1  UPLAND/LAG TIME METHOD
                        NK=2    ISLOPE=1
                        LENGTH=220 FT  SLOPE=0.050  K=0.7
                        LENGTH=965 FT  SLOPE=0.041  K=2.0
COMPUTE NM HYD          ID=1    HYD NO=201.2  DA=0.04349 SQ MI
                        PER A=0 PER B=18 PER C=19 PER D=63
                        TP=0.0  MASSRAIN=-1
*
PRINT HYD              ID=1    CODE=1
*
*
* Total Flow from Basin (201.1RT + 201.2)
ADD HYD                ID=1    HYD NO=201.2SUMA ID I=2  ID II=1
PRINT HYD              ID=1    CODE=1
*
*
* Total Flow from Basin (201.2SUMA + 202.2SUMRT)
ADD HYD                ID=1    HYD NO=201.2SUMB ID I=1  ID II=3
PRINT HYD              ID=1    CODE=1
*
*
****Route HYD 201.2SUMB to Sub-Basin 203 Through a Pipe
COMPUTE RATING CURVE   CID=1    VS NO=1 CODE=-1  SLP=0.03
                        DIA=66 IN  N=0.013
*
ROUTE MCUNGE           ID=3    HYD NO=201.2SUMBRT  INFLOW ID=1
                        DT=0 HR  LENGTH=1175 FT
                        NS=0    SLOPE=0.03
*
PRINT HYD              ID=3    CODE=1
*
*S AP2
*
*****
*
*** Sub-BASIN 205.11 ****
*
COMPUTE LT TP          LCODE=1  UPLAND/LAG TIME METHOD
                        NK=2    ISLOPE=1
                        LENGTH=250 FT  SLOPE=0.040  K=0.7
                        LENGTH=170 FT  SLOPE=0.037  K=2.0
COMPUTE NM HYD          ID=1    HYD NO=205.11  DA=0.02628 SQ MI
                        PER A=0 PER B=41 PER C=22 PER D=37
                        TP=0.0  MASSRAIN=-1
*
PRINT HYD              ID=1    CODE=1
*
*
*** Sub-BASIN 204.1 ****
*
COMPUTE LT TP          LCODE=1  UPLAND/LAG TIME METHOD
                        NK=1    ISLOPE=1
                        LENGTH=310 FT  SLOPE=0.039  K=0.7
                        LENGTH=730 FT  SLOPE=0.033  K=2.0
COMPUTE NM HYD          ID=2    HYD NO=204.1  DA=0.04332 SQ MI

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

PER A=0 PER B=18 PER C=19 PER D=63
TP=0.0 MASSRAIN=-1
*
PRINT HYD ID=2 CODE=1
*
* Total Flow from Basin (205.11 + 204.1)
ADD HYD ID=1 HYD NO=204SUMA ID I=2 ID II=1
PRINT HYD ID=1 CODE=1
*
****Route HYD 204.SUMA to Sub-Basin 203 Through a Pipe
COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.023
DIA=54 IN N=0.013
*
ROUTE MCUNGE ID=2 HYD NO=204.1RT INFLOW ID=1
DT=0 HR LENGTH=1100 FT
NS=0 SLOPE=0.023
*
PRINT HYD ID=2 CODE=1
*
*** Sub-BASIN 203 ****
*
COMPUTE LT TP LCODE=1 UPLAND/LAG TIME METHOD
NK=1 ISLOPE=1
LENGTH=310 FT SLOPE=0.039 K=0.7
LENGTH=1230 FT SLOPE=0.033 K=2.0
COMPUTE NM HYD ID=1 HYD NO=203 DA=0.05145 SQ MI
PER A=0 PER B=18 PER C=19 PER D=63
TP=0.0 MASSRAIN=-1
*
PRINT HYD ID=1 CODE=1
*
* Total Flow from Basin (204.1RT + 203)
ADD HYD ID=1 HYD NO=203SUMA ID I=2 ID II=1
PRINT HYD ID=1 CODE=1
*
* Total Flow from Basin (203SUMA + 201.2SUMRT)
ADD HYD ID=1 HYD NO=203SUMB ID I=1 ID II=3
PRINT HYD ID=1 CODE=1
*
****Route HYD 203SUMB to Sub-Basin 207 Through a Pipe
COMPUTE RATING CURVE CID=1 VS NO=1 CODE=-1 SLP=0.035
DIA=66 IN N=0.013
*
ROUTE MCUNGE ID=3 HYD NO=203SUMBRT INFLOW ID=1
DT=0 HR LENGTH=1175 FT
NS=0 SLOPE=0.035
*
PRINT HYD ID=3 CODE=1
*
*S AP3
*
*****
*** Sub-BASIN 204.2 ****
*
COMPUTE LT TP LCODE=1 UPLAND/LAG TIME METHOD

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

                                NK=1    ISLOPE=1
                                LENGTH=310 FT    SLOPE=0.039    K=0.7
                                LENGTH=1230 FT    SLOPE=0.033    K=2.0
COMPUTE NM HYD                ID=1    HYD NO=204.2    DA=0.04566 SQ MI
                                PER A=0 PER B=18 PER C=19 PER D=63
                                TP=0.0    MASSRAIN=-1
*
PRINT HYD                      ID=1    CODE=1
*
*
****Route HYD 204.2 to Sub-Basin 207 Through a Pipe
COMPUTE RATING CURVE          CID=1    VS NO=1 CODE=-1    SLP=0.023
                                DIA=54 IN    N=0.013
*
ROUTE MCUNGE                  ID=2    HYD NO=204.2RT    INFLOW ID=1
                                DT=0 HR    LENGTH=1100 FT
                                NS=0    SLOPE=0.023
*
PRINT HYD                      ID=2    CODE=1
*
*
*** Sub-BASIN 207 ****
*
COMPUTE LT TP                  LCODE=1    UPLAND/LAG TIME METHOD
                                NK=1    ISLOPE=1
                                LENGTH=310 FT    SLOPE=0.039    K=0.7
                                LENGTH=1230 FT    SLOPE=0.033    K=2.0
COMPUTE NM HYD                ID=1    HYD NO=207    DA=0.05139 SQ MI
                                PER A=0 PER B=18 PER C=19 PER D=63
                                TP=0.0    MASSRAIN=-1
*
PRINT HYD                      ID=1    CODE=1
*
*
* Total Flow from Basin (204.2RT + 207)
ADD HYD                        ID=1    HYD NO=207SUMA ID I=2    ID II=1
PRINT HYD                      ID=1    CODE=1
*
*
* Total Flow from Basin (203SUMBRT + 207SUMA)
ADD HYD                        ID=1    HYD NO=207SUMB ID I=3    ID II=1
PRINT HYD                      ID=1    CODE=1
*
*
****Route HYD 207SUMB to Sub-Basin 209.2 Through a Pipe
COMPUTE RATING CURVE          CID=1    VS NO=1 CODE=-1    SLP=0.038
                                DIA=72 IN    N=0.013
*
ROUTE MCUNGE                  ID=3    HYD NO=207SUMBRT    INFLOW ID=1
                                DT=0 HR    LENGTH=1695 FT
                                NS=0    SLOPE=0.038
*
PRINT HYD                      ID=3    CODE=1
*
*
*S AP4
*
*
*****
*** Sub-BASIN 209.1 ****
*

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

COMPUTE NM HYD          ID=1  HYD NO=209.1  DA=0.00907 SQ MI
                        PER A=0 PER B=0  PER C=20  PER D=80
                        TP=0.0  MASSRAIN=-1

*
PRINT HYD               ID=1  CODE=1
*
*
****Route HYD 209.1 to Sub-Basin 209.2
COMPUTE RATING CURVE    CID=1  VS NO=1  NO SEGS=1
                        MIN ELEV=100 FT MAX ELEV=105 FT
                        CH SLP=0.005  FP SLP=0.02 N=0.013
                        DIST=20 FT

                        DIST  ELEV
                        0      105
                        10     100
                        15     100
                        20     105

*
ROUTE MCUNGE            ID=2  HYD NO=209.1RT  INFLOW ID=1
                        DT=0 HR  LENGTH=500 FT
                        NS=0  SLOPE=0.005

*
*** Sub-BASIN 209.2 ***
*
COMPUTE NM HYD          ID=1  HYD NO=209.2  DA=0.01562 SQ MI
                        PER A=0 PER B=0  PER C=20  PER D=80
                        TP=0.0  MASSRAIN=-1

*
PRINT HYD               ID=1  CODE=1
*
*
* Total Flow from Basin (209.1RT + 209.2)
ADD HYD                  ID=1  HYD NO=209.2SUMA ID I=2  ID II=1
PRINT HYD                ID=1  CODE=1
*
*
****Route HYD 209.2SUMA to Sub-Basin 209.2SUMB Through a Pipe
COMPUTE RATING CURVE    CID=1  VS NO=1  CODE=-1  SLP=0.03
                        DIA=42 IN  N=0.013

*
ROUTE MCUNGE            ID=1  HYD NO=209.2SUMART  INFLOW ID=1
                        DT=0 HR  LENGTH=150 FT
                        NS=0  SLOPE=0.03

*
PRINT HYD               ID=1  CODE=1
*
*
* Total Flow from Basin (207SUMBRT + 209.2SUMART)
ADD HYD                  ID=10  HYD NO=209.2SUMC ID I=3  ID II=1
PRINT HYD                ID=10  CODE=1
*
*S AP5
*
****Route Hyd 209.2SUMC through Pond2
*
ROUTE RESERVOIR          ID=20  HYD NO=POND2  INFLOW ID=10  CODE=1
                        OUTFLOW (CFS)  STORAGE (AC FT)  ELEV
                        0                0                5204.21
                        3                0.287            5205

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

13	1.565	5206
25	3.402	5207
42	7.394	5209
52	11.731	5211
64	16.428	5213
72	21.498	5215
80	26.955	5217
88	32.809	5219
90	39.075	5221
91	45.767	5223
968	49.276	5224
2615	52.896	5225
4809	56.628	5226

*
 *

 *** Sub-BASIN 205.12 ***
 *
 COMPUTE LT TP LCODE=1 UPLAND/LAG TIME METHOD
 NK=2 ISLOPE=1
 LENGTH=500 FT SLOPE=0.040 K=0.7
 LENGTH=870 FT SLOPE=0.037 K=2.0
 COMPUTE NM HYD ID=1 HYD NO=205.12 DA=0.04836 SQ MI
 PER A=0 PER B=41 PER C=22 PER D=37
 TP=0.0 MASSRAIN=-1
 *
 PRINT HYD ID=1 CODE=1
 *
 *
 ****Route HYD 205.2SUM to Sub-Basin 206
 COMPUTE RATING CURVE CID=1 VS NO=1 NO SEGS=1
 MIN ELEV=100 FT MAX ELEV=105 FT
 CH SLP=0.030 FP SLP=0.02 N=0.013
 DIST=20 FT

 DIST ELEV
 0 105
 10 100
 15 100
 20 105
 *
 ROUTE MCUNGE ID=2 HYD NO=205.1RT INFLOW ID=1
 DT=0 HR LENGTH=1185 FT
 NS=0 SLOPE=0.030
 *
 PRINT HYD ID=2 CODE=1
 *
 *
 *** Sub-BASIN 205.2 ***
 *
 COMPUTE LT TP LCODE=1 UPLAND/LAG TIME METHOD
 NK=3 ISLOPE=1
 LENGTH=425 FT SLOPE=0.049 K=0.7
 LENGTH=840 FT SLOPE=0.021 K=2.0
 LENGTH=440 FT SLOPE=0.023 K=3.0
 COMPUTE NM HYD ID=1 HYD NO=205.2 DA=0.06038 SQ MI
 PER A=0 PER B=40.9 PER C=41.9 PER D=17.2
 TP=0.0 MASSRAIN=-1
 *
 PRINT HYD ID=1 CODE=1

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

*
*
* Total Flow from Basin (205.1sumRT + 205.2)
ADD HYD          ID=1  HYD NO=205.2SUM ID I=1  ID II=2
PRINT HYD        ID=1  CODE=1
*
*
****Route HYD 205.2SUM to Sub-Basin 206
COMPUTE RATING CURVE  CID=1 VS NO=1 NO SEGS=1
                      MIN ELEV=100 FT MAX ELEV=105 FT
                      CH SLP=0.005  FP SLP=0.02 N=0.013
                      DIST=20 FT

                      DIST  ELEV
                          0    105
                      10    100
                      15    100
                      20    105
*
ROUTE MCUNGE      ID=2  HYD NO=205.2SUMRT  INFLOW ID=1
                  DT=0  HR  LENGTH=1075 FT
                  NS=0  SLOPE=0.005
*
PRINT HYD          ID=2  CODE=1
*
*
*** Sub-BASIN 206 ****
*
COMPUTE LT TP      LCODE=1  UPLAND/LAG TIME METHOD
                  NK=2  ISLOPE=1
                  LENGTH=445 FT  SLOPE=0.040  K=0.7
                  LENGTH=880 FT  SLOPE=0.020  K=3.0
COMPUTE NM HYD     ID=1  HYD NO=206  DA=0.04398 SQ MI
                  PER A=0.1 PER B=15.3 PER C=15.6 PER D=69.1
                  TP=0.0  MASSRAIN=-1
*
PRINT HYD          ID=1  CODE=1
*
*
* Total Flow from Basin (205.2SUMRT+ 206)
ADD HYD          ID=1  HYD NO=206SUM ID I=2  ID II=1
PRINT HYD        ID=1  CODE=1
*
*
****Route HYD 206SUM to Sub-Basin 209.3 Through a Pipe
COMPUTE RATING CURVE  CID=1 VS NO=1 CODE=-1 SLP=0.03
                      DIA=54 IN  N=0.013
*
ROUTE MCUNGE      ID=2  HYD NO=206SUMRT  INFLOW ID=1
                  DT=0  HR  LENGTH=1240 FT
                  NS=0  SLOPE=0.03
*
PRINT HYD          ID=2  CODE=1
*
*
*** Sub-BASIN 209.3 ****
*
COMPUTE LT TP      LCODE=1  UPLAND/LAG TIME METHOD
                  NK=1  ISLOPE=1
                  LENGTH=675 FT  SLOPE=0.030  K=0.7

```

DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

COMPUTE NM HYD          ID=1  HYD NO=209.3  DA=0.01867 SQ MI
                          PER A=0 PER B=0  PER C=15  PER D=85
                          TP=0.0  MASSRAIN=-1

*
PRINT HYD               ID=1  CODE=1
*
*
* Total Flow from Basin (206SUMRT + 209.3)
ADD HYD                 ID=3  HYD NO=209.3SUMA ID I=2  ID II=1
PRINT HYD               ID=3  CODE=1
*
*S AP6
*
*
*****
*** Sub-BASIN 210 ****
*
COMPUTE LT TP           LCODE=1  UPLAND/LAG TIME METHOD
                          NK=1  ISLOPE=1
                          LENGTH=3483 FT  SLOPE=0.026  K=0.7
COMPUTE NM HYD          ID=1  HYD NO=210  DA=0.12985 SQ MI
                          PER A=0 PER B=20  PER C=21  PER D=59
                          TP=0.0  MASSRAIN=-1

*
PRINT HYD               ID=1  CODE=1
*
*
****Route HYD 210 to Sub-Basin 211
COMPUTE RATING CURVE    CID=1 VS NO=1 NO SEGS=1
                          MIN ELEV=100 FT MAX ELEV=105 FT
                          CH SLP=0.005  FP SLP=0.02 N=0.013
                          DIST=20 FT

                          DIST  ELEV
                              0    105
                          10    100
                          15    100
                          20    105

*
ROUTE MCUNGE            ID=2  HYD NO=210RT  INFLOW ID=1
                          DT=0 HR  LENGTH=450 FT
                          NS=0  SLOPE=0.005

*
PRINT HYD               ID=2  CODE=1
*
*
*** Sub-BASIN 211 ****
*
COMPUTE LT TP           LCODE=1  UPLAND/LAG TIME METHOD
                          NK=1  ISLOPE=1
                          LENGTH=936 FT  SLOPE=0.005  K=0.7
COMPUTE NM HYD          ID=1  HYD NO=211  DA=0.02356 SQ MI
                          PER A=16 PER B=5  PER C=21  PER D=58
                          TP=0.0  MASSRAIN=-1

*
PRINT HYD               ID=1  CODE=1
*
*
* Total Flow from Basin (210RT + 211)
ADD HYD                 ID=30  HYD NO=POND3SUMA ID I=2  ID II=1

```

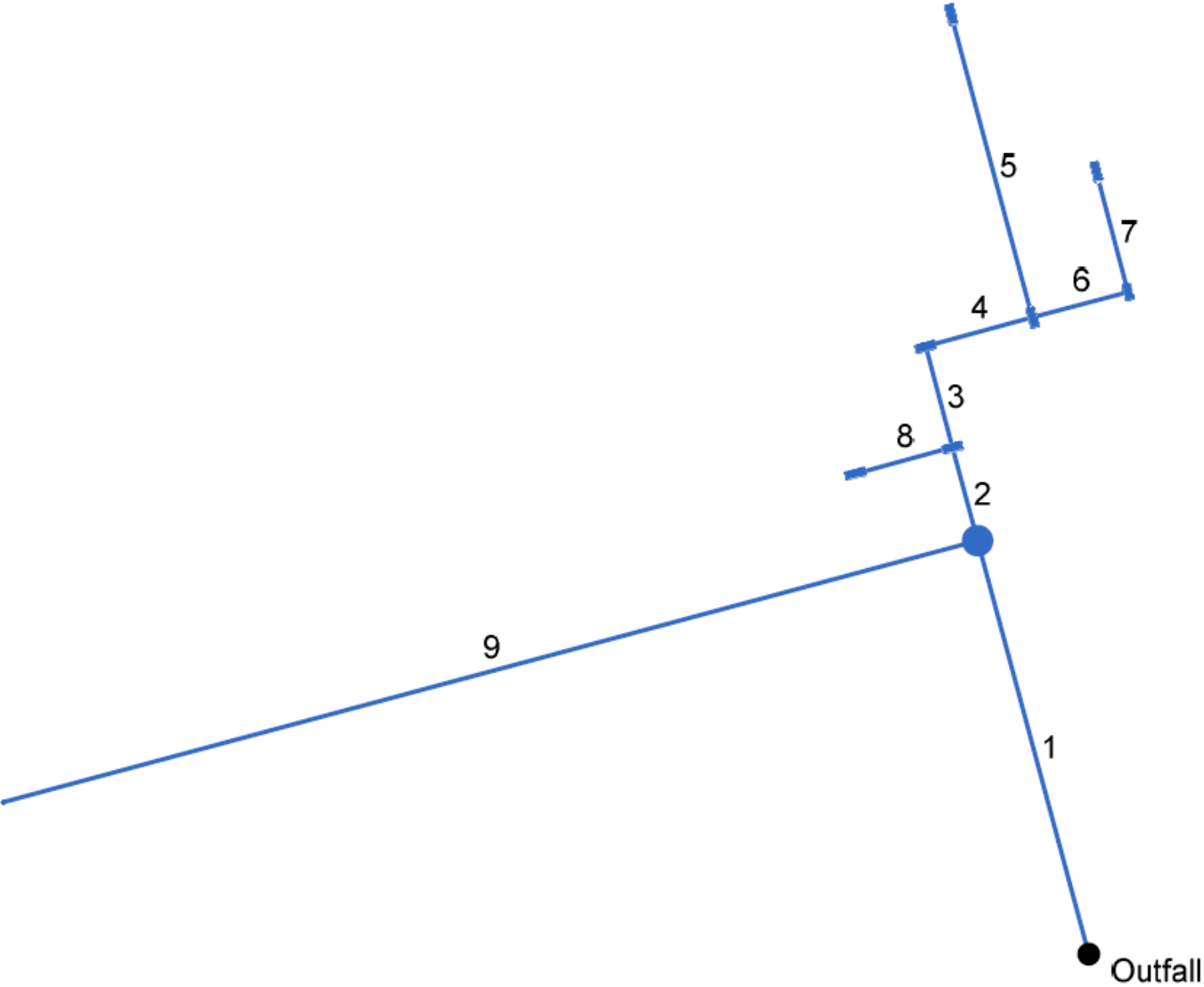
DRAINAGE REPORT - PARADISE RV PARK PHASE I

```

PRINT HYD                      ID=30  CODE=1
*
*
* Total Flow from Basin (209.3SUMA + 211)
ADD HYD                        ID=10  HYD NO=POND3SUMB ID I=3    ID II=30
PRINT HYD                      ID=10  CODE=1
*
*
*****
* Total Flow from Basin (POND3SUMB + POND2)
ADD HYD                        ID=30  HYD NO=POND3SUMC ID I=10    ID II=20
PRINT HYD                      ID=30  CODE=1
*
*
****Route Hyd POND3SUMB through Pond3
*
ROUTE RESERVOIR                ID=1  HYD NO=POND3  INFLOW ID=30  CODE=1
                                OUTFLOW (CFS)  STORAGE (AC FT)  ELEV
                                0                0                5201
                                5                0.934            5202
                                6                3.359            5203
                                27               6.08             5204
                                43              11.813            5206
                                55              17.946            5208
                                64              24.492            5210
                                72              31.465            5212
                                1137            35.115            5213
                                3122            38.877            5214
                                7217            44.733            5215.5
*
FINISH

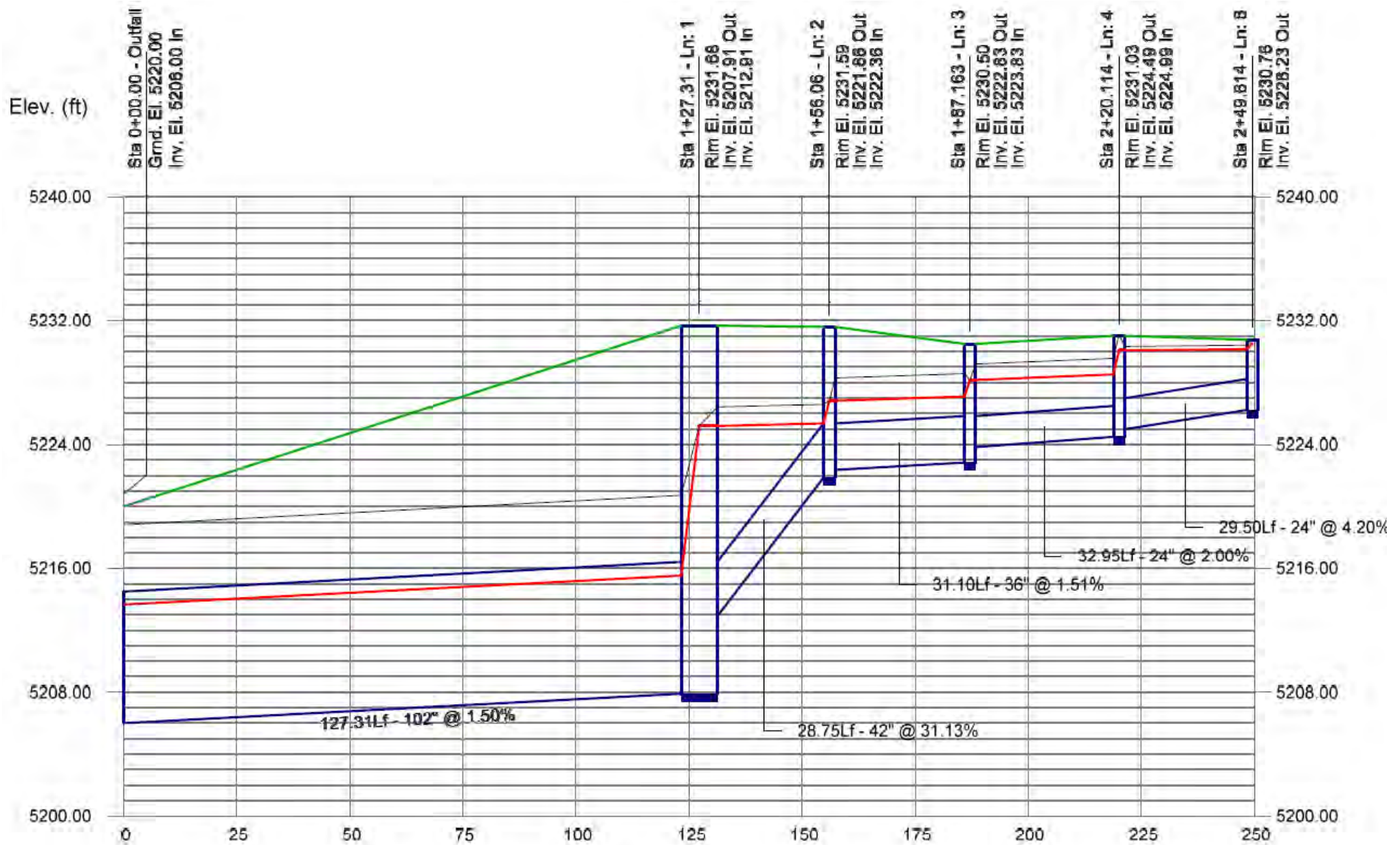
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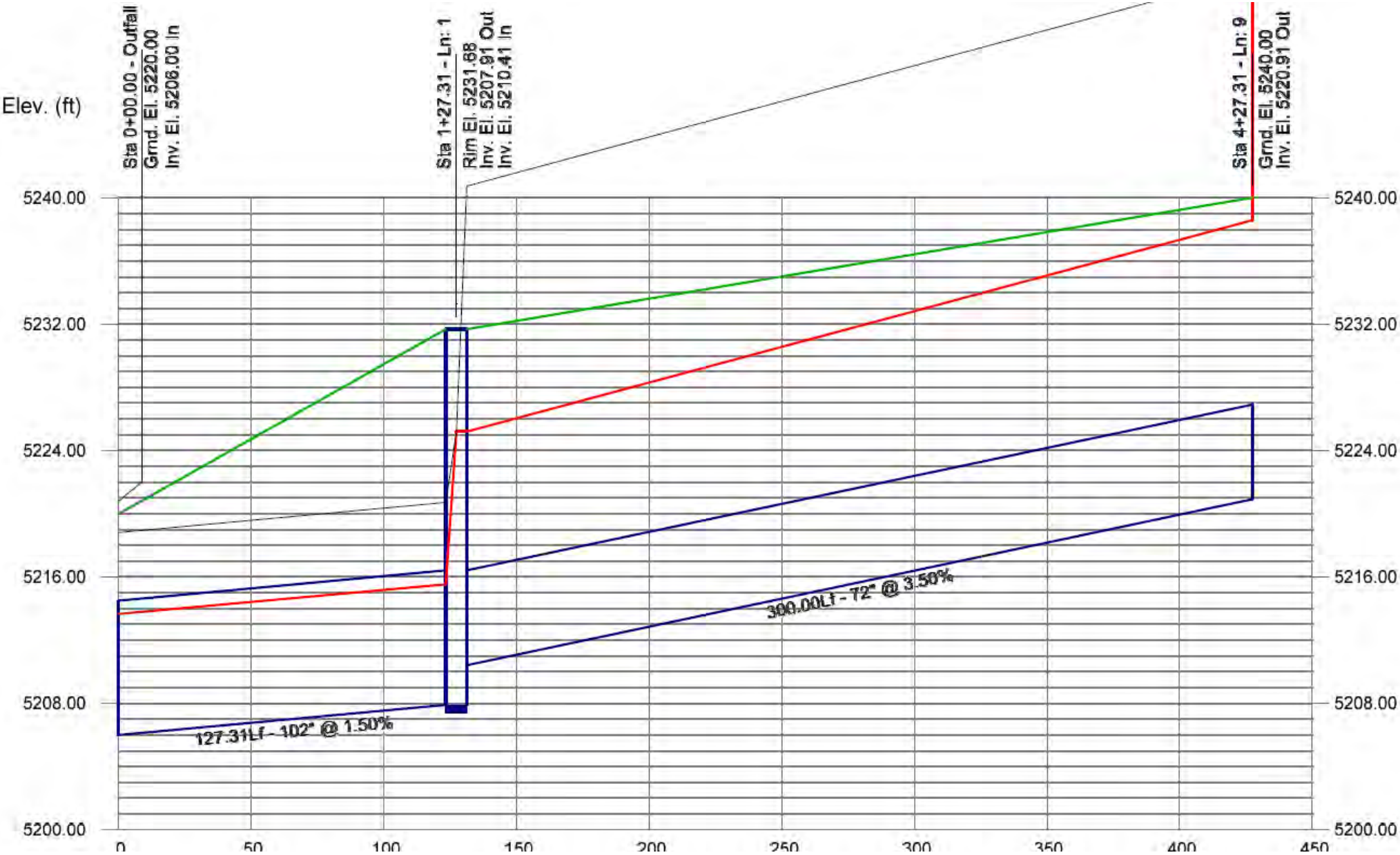
Final Storm Drain Hydraulics



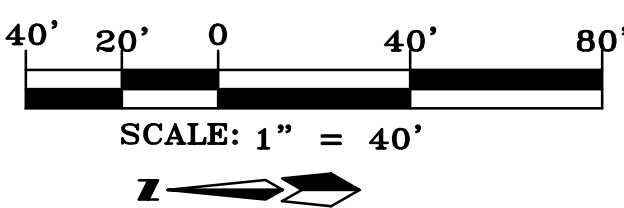
Hydraulic Grade Line Computations

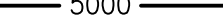
Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
1	108	1134.8	5206.00	5214.09	8.09	60.26	18.83	5.51	5219.61	n/a	127.31	5207.91	5216.00	8.09**	60.26	18.83	5.51	5221.52i	n/a	n/a	-3.603	1.00	n/a
2	48	85.70	5218.94	5226.30	4.00	12.56	6.82	0.72	5227.02	0.303	28.75	5221.37	5226.39	4.00	12.57	6.82	0.72	5227.11	0.303	0.303	0.087	1.50	1.08
3	36	68.80	5222.36	5227.47	3.00	7.07	9.74	1.47	5228.95	n/a	31.10	5222.86	5227.75	3.00	7.07	9.73	1.47	5229.23i	n/a	n/a	-1.191	1.50	n/a
4	24	25.66	5223.83	5228.19	2.00	3.14	8.17	1.04	5229.23	1.097	32.95	5224.49	5228.55	2.00	3.14	8.17	1.04	5229.59	1.097	1.097	0.361	1.50	1.56
5	18	12.83	5224.99	5230.33	1.50	1.77	7.26	0.82	5231.15	n/a	93.41	5229.95	5231.40	1.45	1.75	7.33	0.84	5232.24i	n/a	n/a	0.256	1.00	n/a
6	24	12.83	5224.99	5230.89	2.00	3.14	4.08	0.26	5231.15	0.274	29.50	5226.23	5230.97	2.00	3.14	4.08	0.26	5231.23	0.274	0.274	0.081	1.50	0.39
7	18	12.83	5226.83	5231.36	1.50	1.77	7.26	0.82	5232.18	1.272	36.98	5228.47	5231.83	1.50	1.77	7.26	0.82	5232.65	1.272	1.272	0.470	1.00	0.82
8	18	16.90	5223.87	5227.47	1.50	1.74	9.57	1.42	5228.89	n/a	30.00	5228.29	5229.73 j	1.44**	1.74	9.69	1.46	5231.19i	n/a	n/a	0.836	1.00	n/a
9	84	1049.1	5209.91	5226.30	7.00	38.48	27.27	11.56	5237.86	2.697	300.00	5220.41	5234.39	7.00	38.48	27.26	11.55	5245.95	2.696	2.697	8.090	1.00	11.55
Project File: FINAL.stm														Number of lines: 9						Run Date: 9/9/2015			
Notes: ; ** Critical depth.; j-Line contains hyd. jump. ; c = cir e = ellip b = box																							





VIII. EXHIBITS



- | | |
|---|--------------------|
|  | SLOPE/FLOW ARROW |
|  | PROPOSED ELEVATION |
|  | EXISTING ELEVATION |
|  | GRADE BREAK |
|  | EXISTING CONTOUR |
|  | EXISTING CONTOUR |
|  | PROPOSED EASEMENT |
|  | EXISTING WALL |
|  | PROPOSED WALL |

CITY OF ALBUQUERQUE PUBLIC WORKS DEPARTMENT ENGINEERING DEVELOPMENT GROUP <u>PARADISE RV PARK PHASE 2</u> TRACTS 5 AND 6 CONCEPTUAL INTERIM GRADING AND DRAINAGE PLAN			
DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	LAST DESIGN UPDATE	Mo./DAY/YR.
CITY PROJECT No.	ZONE MAP No.		SHEET OF

ENGINEER'S SEAL		SURVEY INFORMATION		BENCH MARKS		AS BUILT INFORMATION	
		FIELD NOTES					
		NO.	BY	DATE			
						CONTRACTOR	
						WORK	
						STARTED BY	
						DATE	
						ACCEPTANCE BY	
						DATE	
						FIELD VERIFICATION BY	
						DATE	
						DRAWINGS	
						CORRECTED BY	
						DATE	
						MICRO-FILM INFORMATION	
						RECORDED BY	
						DATE	
						NO.	

RON E. HENSLEY
NEW MEXICO
21850
LICENSED PROFESSIONAL ENGINEER

[Signature]
8/28/23

REVISIONS		DESIGN	
DESIGNED BY	REH	DATE	7/20/23
DRAWN BY	REH	DATE	7/20/23
CHECKED BY	REH	DATE	7/20/23

LOCATION & DESCRIPTION

THE PROPOSED SITE IS AN UNDEVELOPED TRACT AT THE INTERSECTION OF VOLCANO ROAD AND 102ND STREET. THAT HAS BEEN PREVIOUSLY GRADED WITH A TEMPORARY RETENTION POND.

FLOODPLAIN STATUS

THIS PROJECT, AS SHOWN ON FEMA'S FLOOD INSURANCE RATE MAP 35001C0103H, DATED AUGUST 16, 2012 IS NOT WITHIN A DESIGNATED 100-YEAR FLOODPLAIN.

EXISTING DRAINAGE.

THE SITE DRAINS TO VOLCANO RD. AND IS WITHIN THE AREA OF THE AMOLE HUBBEL MASTER DRAINAGE PLAN AND IS RESTRICTED TO THE DISCHARGE RATES DEFINED IN THAT REPORT. BASIN NE 211 OF THE REPORT CONTAINS THE SITE AND HAS AN ALLOWABLE DISCHARGE OF 4.26 CFS/ACRE. THE ALLOWABLE DISCHARGE FROM THE SITE IS THEREFORE $4.26 \text{ CFS} \times 5.00 = 21.40$ COMBINED WITH PHASE I $4.26 \text{ CFS} \times 4.48 = 19.08$ CFS WITH A COMBINED ALLOWABLE DISCHARGE OF 41.48 CFS.

DEVELOPED CONDITION

THE SITE WILL BE IMPROVED WITH PHASE II OF AN RV PARK. PER THE MASTER DRAINAGE PLAN, THE SITE RUNOFF WILL DRAIN TO THE SOUTHEAST AS DEPICTED CROSSING PHASE I TO THE STORM DRAIN INLET TO THE POND OUTFALL.

METHODOLOGY

THE HYDROLOGY FOR THIS PROJECT WAS ANALYZED USING THE WEIGHTED E METHOD..

PRECIPITATION

THE 100-YR 6-HR DURATION STORM WAS USED AS THE DESIGN STORM FOR THIS ANALYSIS. THIS SITE IS WITHIN ZONE 1 AS IDENTIFIED IN THE CITY OF ALBUQUERQUE DEVELOPMENT PROCESS MANUAL, CHAPTER 6.

EQUATIONS:

$$\text{WEIGHTED } E = \frac{E_a \cdot A_a + E_b \cdot A_b + E_c \cdot A_c + E_d \cdot A_d}{\text{Total Area}}$$
 WHERE FOR 100-YEAR, 6-HOUR STORM(ZONE 1)

$$\text{FLOW} = Q_a * A_a + Q_b * A_b + Q_c * A_c + Q_d * A_d$$

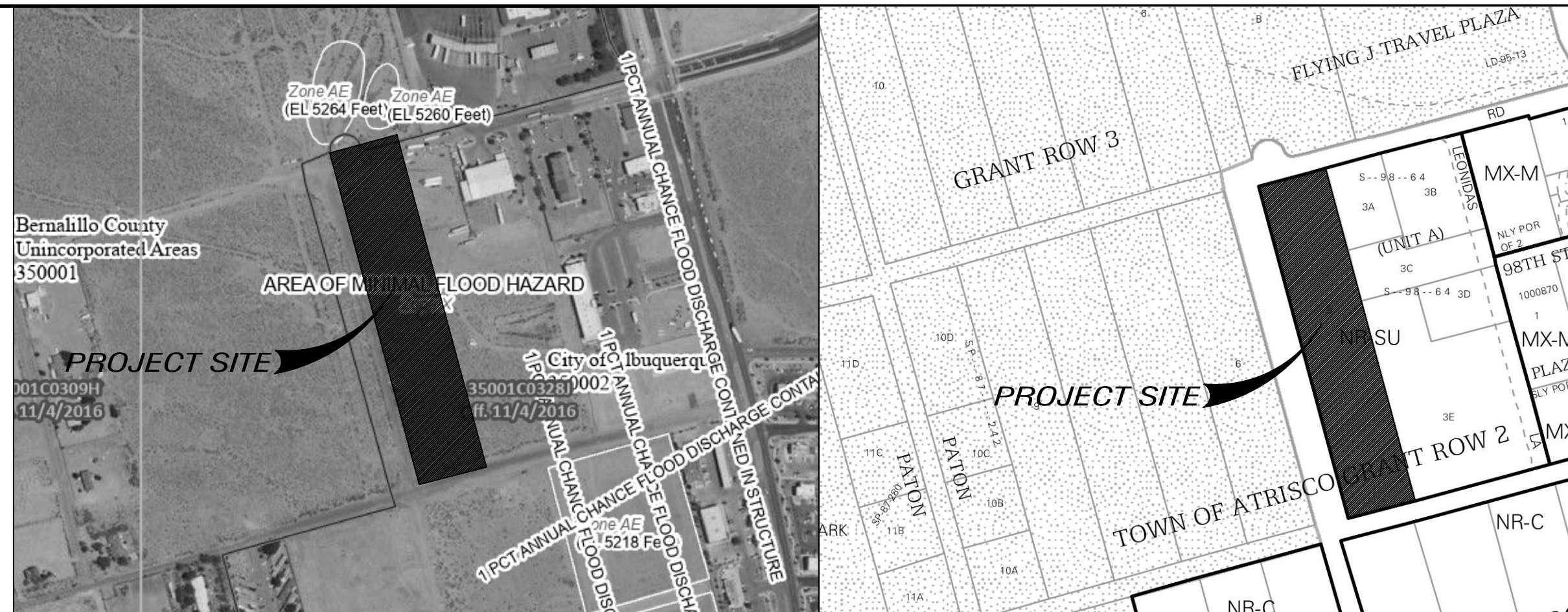
BASIN	AREA	TREATMENT A		TREATMENT B		TREATMENT C		TREATMENT D		WEIGHTED E	VOLUME (cu.-ft.)	FLOW (cfs)	ALLOWED (cfs)	CFS/CAC (cfs)	ALLOWED (cfs/cac)
	(sq-ft)	%	sf	%	sf	%	sf	%	sf						
PHASE I	19521	0%	0	0%	0	74%	144524	26%	50688	1.2850	20903	14.32	19.09	3.19	4.26
PHASE II	217800	0%	0	0%	0	90%	196050	10%	21780	1.0790	19584	14.98	21.30	3.00	4.26
TOTAL	413012	0%	0	0%	0	82%	340424	18%	72468	1.1763	40487	29.29	40.39	3.00	4.26

REQUIRED WATER QUALITY VOLUME

SITE DRAINAGE AS DEPICTED ON THIS PLAN SHALL BE MAINTAINED.

SITE DEPICTED HEREON SHALL BE RESPONSIBLE FOR MAINTAINING WATER QUALITY RUNOFF RETENTION ON THE SITE IMMEDIATELY PRIOR TO DISCHARGE. THE VOLUME SHALL BE EQUAL TO: IMPERVIOUS AREA * 0.42/12 IN CUBIC FEET.

IMPERVIOUS AREA = 50,688 SQ.FT.
REQUIRED VOLUME = 50,688 * 0.42/12 = 1,774 CU.FT.
VOLUME PROVIDED = 939 + 2076 = 3,015 CU.FT.



FIRM MAP NO. 35001C0141G

VICINITY MAP K-8-Z

NOTES

THE ENGINEER HAS UNDERTAKEN LIMITED FIELD VERIFICATION OF THE LOCATION, DEPTH, SIZE, OR TYPE OF EXISTING UNDERGROUND UTILITY LINES, MAKES NO REPRESENTATION PERTAINING THERETO AND ASSUMES NO RESPONSIBILITY OR LIABILITY THEREFORE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY INFORMATION CONCERNING THE AREA OF THE WORK IN ADVANCE OF AND DURING EXCAVATION WORK. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE CAUSED BY ITS FAILURE TO LOCATE, IDENTIFY, AND PRESERVE ANY AND ALL EXISTING UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY INFORMATION CONCERNING ALL APPLICABLE STATUTES, ORDINANCES, REGULATIONS, AND LOCAL ORDINANCES, RULES AND REGULATIONS PERTAINING TO THE LOCATION OF THESE LINES AND FACILITIES IN PLANNING AND CONDUCTING EXCAVATION, WHETHER BY CALLING OR NOTIFYING THE UTILITIES, COMPLYING WITH "BLUE STAKES" PROCEDURES, OR OTHERWISE.

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GENERAL NOTES:

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2. THE EROSION PROTECTION SPECIFIED ON THIS PLAN IS THE MINIMUM RECOMMENDED. THE OWNER IS ENCOURAGED TO INCORPORATE EROSION RESISTANT LANDSCAPING ON AREAS WHERE EROSION MAY OCCUR SUCH AS SLOPES AND SWALES. THE OWNER IS RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL EROSION CONTROL FEATURES NECESSARY TO PRESERVE THE DESIGN INTENT OF THE GRADING PLAN.

3. THE DRAINAGE INFRASTRUCTURE SHOWN ON THIS PLAN IS THE RESPONSIBILITY OF THE PROPERTY OWNER.

4. ALL DISTURBED AREAS OUTSIDE THE BUILDING PAD MUST BE RESEED OR LANDSCAPED

5. TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE, (260-1990) FOR LOCATION OF EXISTING UTILITIES.

6. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL OBSTRUCTIONS AND EXISTING PAVEMENT. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER OR SURVEYOR SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM OF DELAY.

LEGEND

	SLOPE/FLOW ARROW
	PROPOSED ELEVATION
	EXISTING ELEVATION
	GRADE BREAK
	EXISTING CONTOUR
	EXISTING CONTOUR
	PROPOSED EASEMENT
	EXISTING WALL
	PROPOSED WALL

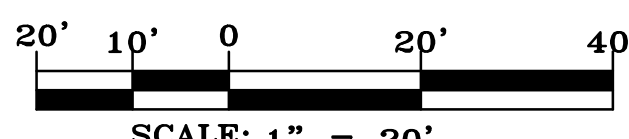
CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING DEVELOPMENT GROUP
PARADISE RV PARK PHASE 2

TRACT 5
GRADING AND DRAINAGE PLAN

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	LAST DESIGN UPDATE	Mo./DAY/YR.	Mo./DAY/YR.
CITY PROJECT No.	ZONE MAP NO. K-8	SHEET 1 OF 2		

EROSION CONTROL NOTES

1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TOPSOIL DISTURBANCE PERMIT PRIOR TO BEGINNING WORK.
2. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING RUN-OFF ON SITE DURING CONSTRUCTION.
3. CONTRACTOR IS RESPONSIBLE FOR CLEANING ALL SEDIMENT THAT GETS INTO EXISTING RIGHT-OF-WAY.
4. REPAIR OF DAMAGED FACILITIES AND CLEANUP OF SEDIMENT ACCUMULATIONS ON ADJACENT PROPERTIES AND IN PUBLIC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.
5. ALL EXPOSED EARTH SURFACES MUST BE PROTECTED FROM WIND AND WATER EROSION PRIOR TO FINAL (CITY) ACCEPTANCE OF ANY PROJECT.



PARADISE RV PARK
TRACT 5, ROW A, UNIT A, WEST OF WESTLAND,
TOWN OF ATRISCO GRANT, CITY OF ALBUQUERQUE BERNALILLO
COUNTY, NEW MEXICO

THE
group

THE HENSLEY ENGINEERING GROUP
300 BRANDING IRON RD. SE
RIO RANCHO, NEW MEXICO 87124
Phone: (505) 410-1622

DRAINAGE INFORMATION

LOCATION & DESCRIPTION

THE PROPOSED SITE IS AN UNDEVELOPED TRACT AT THE INTERSECTION OF IRVING BLVD. AND VENTANA RD. THAT HAS BEEN PREVIOUSLY GRADED.

FLOODPLAIN STATUS

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EQUATIONS:

WEIGHTED E = E_a*A_a + E_b*A_b + E_c*A_c + E_d*A_d / (Total Area) WHERE FOR 100-YEAR, 6-HOUR STORM(ZONE 1)

FLOW = Q_a * A_a + Q_b * A_b + Q_c * A_c + Q_d * A_d

E_a= 0.55 Q_a= 1.54

E_b= 0.73 Q_b= 2.16

E_c= 0.95 Q_c= 2.87

E_d= 2.24 Q_d= 4.12

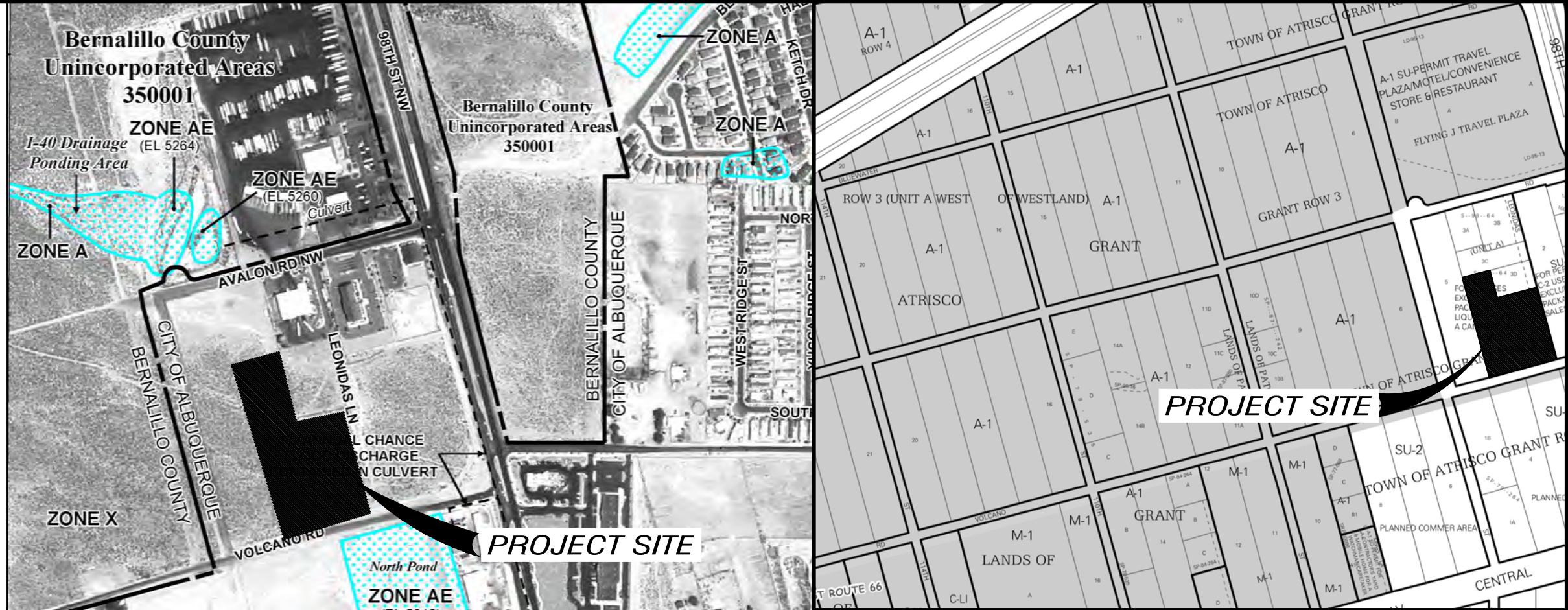
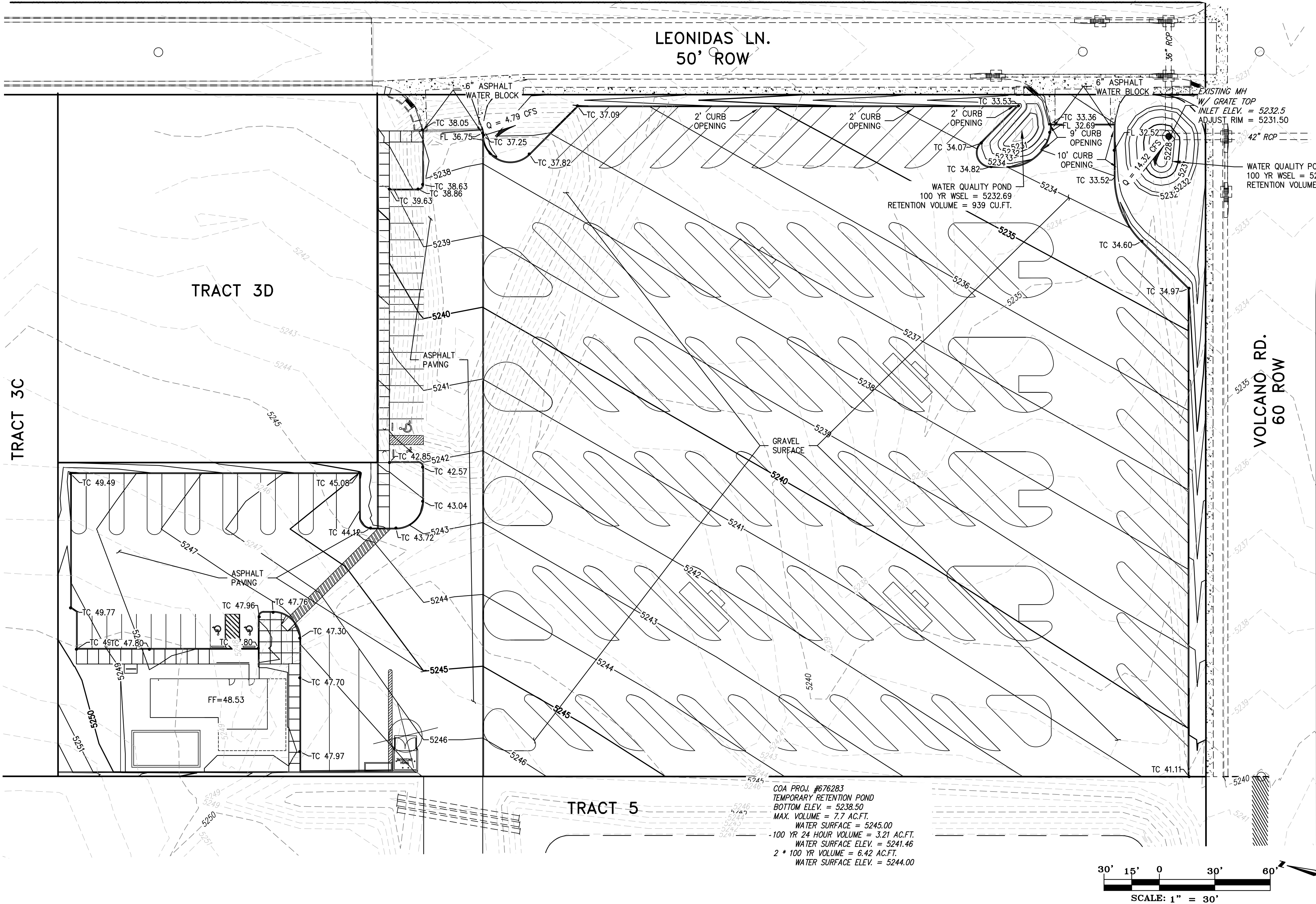
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VOLUME PROVIDED = 939 + 2076 = 3,015 CU.FT.

BASIN	AREA (sf)	TREATMENT A %	TREATMENT B %	TREATMENT C %	TREATMENT D %	WEIGHTED E	VOLUME (cu.-ft.)	FLOW (cfs)	ALLOWED (cfs)	CFS/AC	ALLOWED (cfs/ac)
EXISTING	195212	100%	195212	0%	0	0%	0	0.5500	8947	6.90	19.09
PROPOSED	195212	0%	0	0%	0	74%	144524	26%	50688	1.2850	20903



FIRM MAP NO. 35001C0328H

VICINITY MAP K-8-Z

EROSION CONTROL NOTES

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- ALL DISTURBED AREAS OUTSIDE THE BUILDING PAD MUST BE RESEDED OR LANDSCAPED
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GRADING AND DRAINAGE PLAN

PARADISE RV PARK
TRACT 3E, ROW A, UNIT A, WEST OF WESTLAND,
TOWN OF ATRISCO GRANT CITY OF ALBUQUERQUE BERNALILLO
COUNTY, NEW MEXICO

LEGEND

- FLOW ARROW
- SLOPE ARROW
- PROPOSED ELEVATION
- EXISTING ELEVATION
- GRADE BREAK
- EXISTING CONTOUR
- EXISTING CONTOUR
- PROPOSED EASEMENT
- PROPOSED GRADE
- EXISTING WALL
- PROPOSED WALL



Afra Construction & Design

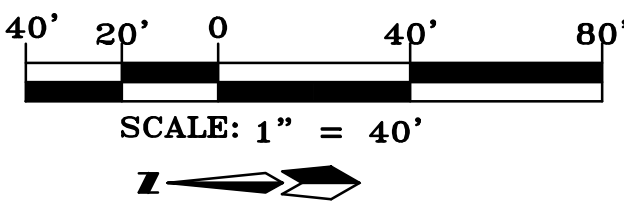
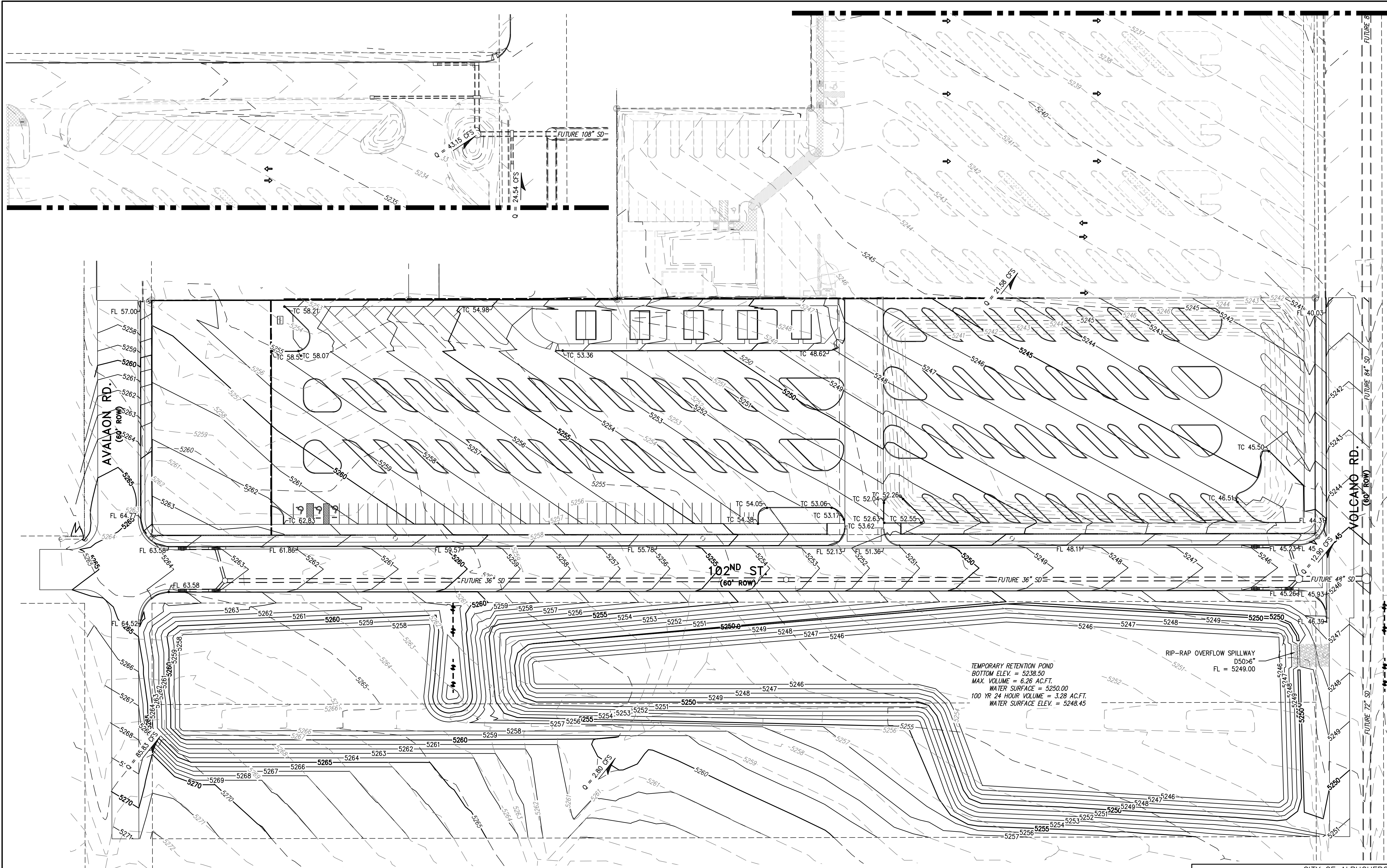
2501 Yale Blvd SE Suite 102
Albuquerque, New Mexico 87106
Tel 505.242.1745
Fax 505.242.1737

Paradise RV Park

Avalon Rd/ Leonidas Ln, NW
ALBUQUERQUE, NEW MEXICO 87120

REV	DATE	DESCRIPTION	APVD

\$100
1/8



City of Albuquerque
Planning Department
Development Review Services
HYDROLOGY SECTION
PRELIMINARY APPROVED
DATE: 09/11/23
BY: *Renee C. Brissette*
HydroTeam # K08D003

THESE PLANS AND/OR REPORT ARE
CONCEPTUAL ONLY. MORE INFORMATION MAY
BE NEEDED BY THEM AND SUBMITTED TO
HYDROLOGY FOR BUILDING PERMIT APPROVAL.

LEGEND

- SLOPE/FLOW ARROW
- EL=11.28 PROPOSED ELEVATION
- 66.33 EXISTING ELEVATION
- GRADE BREAK
- 5000 EXISTING CONTOUR
- 5000 EXISTING CONTOUR
- PROPOSED EASEMENT
- EXISTING WALL
- PROPOSED WALL

THE group

THE HENSLEY ENGINEERING GROUP
300 BRANDING IRON RD. SE
RIO RANCHO, NEW MEXICO 87124
Phone: (505) 410-1622

CITY OF ALBUQUERQUE PUBLIC WORKS DEPARTMENT ENGINEERING DEVELOPMENT GROUP PARADISE RV PARK PHASE 2 TRACTS 5 AND 6 CONCEPTUAL INTERIM GRADING AND DRAINAGE PLAN			
DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	Mo./DAY/YR.	Mo./DAY/YR.
CITY PROJECT No.		ZONE MAP NO.	SHEET OF

LAST DESIGN UPDATE	REVISIONS	DESIGNED BY	DATE
	REH	REH	7/20/23
	REH	REH	7/20/23
	REH	REH	7/20/23

SURVEY INFORMATION		BENCH MARKS		AS BUILT INFORMATION	
FIELD NOTES					
NO.	BY	DATE		CONTRACTOR	DATE
				INSPECTOR'S	DATE
				ACCEPTANCE BY	DATE
				FIELD	DATE
				VERIFICATION BY	DATE
				DRAWINGS	DATE
				CORRECTED BY	DATE
				MICRO—FILM INFORMATION	
				RECORDED BY	DATE
				NO.	

DRAINAGE INFORMATION

LOCATION & DESCRIPTION

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$E_a = 0.55$ $Q_a = 1.54$
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BASIN	AREA (sf)	TREATMENT A %	TREATMENT A sf	TREATMENT B %	TREATMENT B sf	TREATMENT C %	TREATMENT C sf	TREATMENT D %	TREATMENT D sf	WEIGHTED E	VOLUME (cu.-ft.)	FLOW (cfs)	ALLOWED (cfs)	CFS/AC (cfs)	ALLOWED (cfs/ac)
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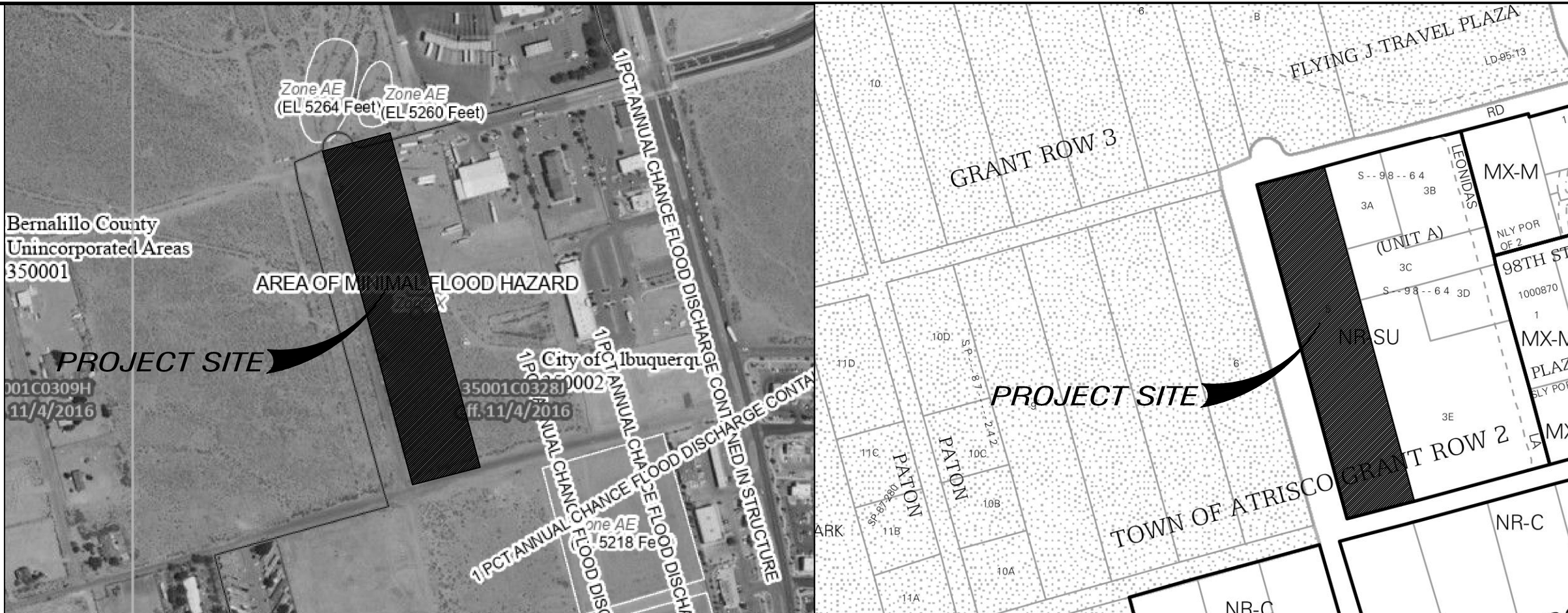


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FIRM MAP NO. 35001C0141G

VICINITY MAP K-8-Z

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LEGEND

- SLOPE/FLOW ARROW
- PROPOSED ELEVATION
- EXISTING ELEVATION
- GRADE BREAK
- EXISTING CONTOUR
- EXISTING CONTOUR
- PROPOSED EASEMENT
- EXISTING WALL
- PROPOSED WALL

