

CITY OF ALBUQUERQUE

Planning Department
David Campbell, Director



Mayor Timothy M. Keller

July 24, 2018

Vince Carrica, P.E.
Tierra West, LLC
5571 Midway Park Place, NE
Albuquerque, NM 87109

**RE: Utility Trailer Sales
8201 Daytona Rd NW
Grading Plan Stamp Date: 7/12/18
Drainage Report Stamp Date: 7/11/18
Hydrology File: K09D026B**

Dear Mr. Carrica,

PO Box 1293
Based on the submittal received on 7/16/18, the grading plan and drainage report are approved for Building Permit.

Prior to Certificate of Occupancy (For Information):

Albuquerque

1. Engineer's Certification, per the DPM Chapter 22.7: *Engineer's Certification Checklist For Non-Subdivision* is required.
2. The Drainage Covenant will need to be recorded with Bernalillo County and a copy included with the drainage certification.
3. Either a recorded SIA with financial guarantee or close-out of the public work order is required prior to issuing C.O.

NM 87103

www.cabq.gov

If you have any questions, please contact me at 924-3695 or dpeterson@cabq.gov.

Sincerely,

Dana Peterson, P.E.
Senior Engineer, Planning Dept.
Development Review Services

DRAINAGE REPORT

For

**8201 Daytona Rd.
ALBUQUERQUE, NEW MEXICO**

Prepared by

Tierra West, LLC
5571 Midway Park Place NE
Albuquerque, New Mexico 87109

Prepared for

Utility Trailer Sales
Albuquerque, NM

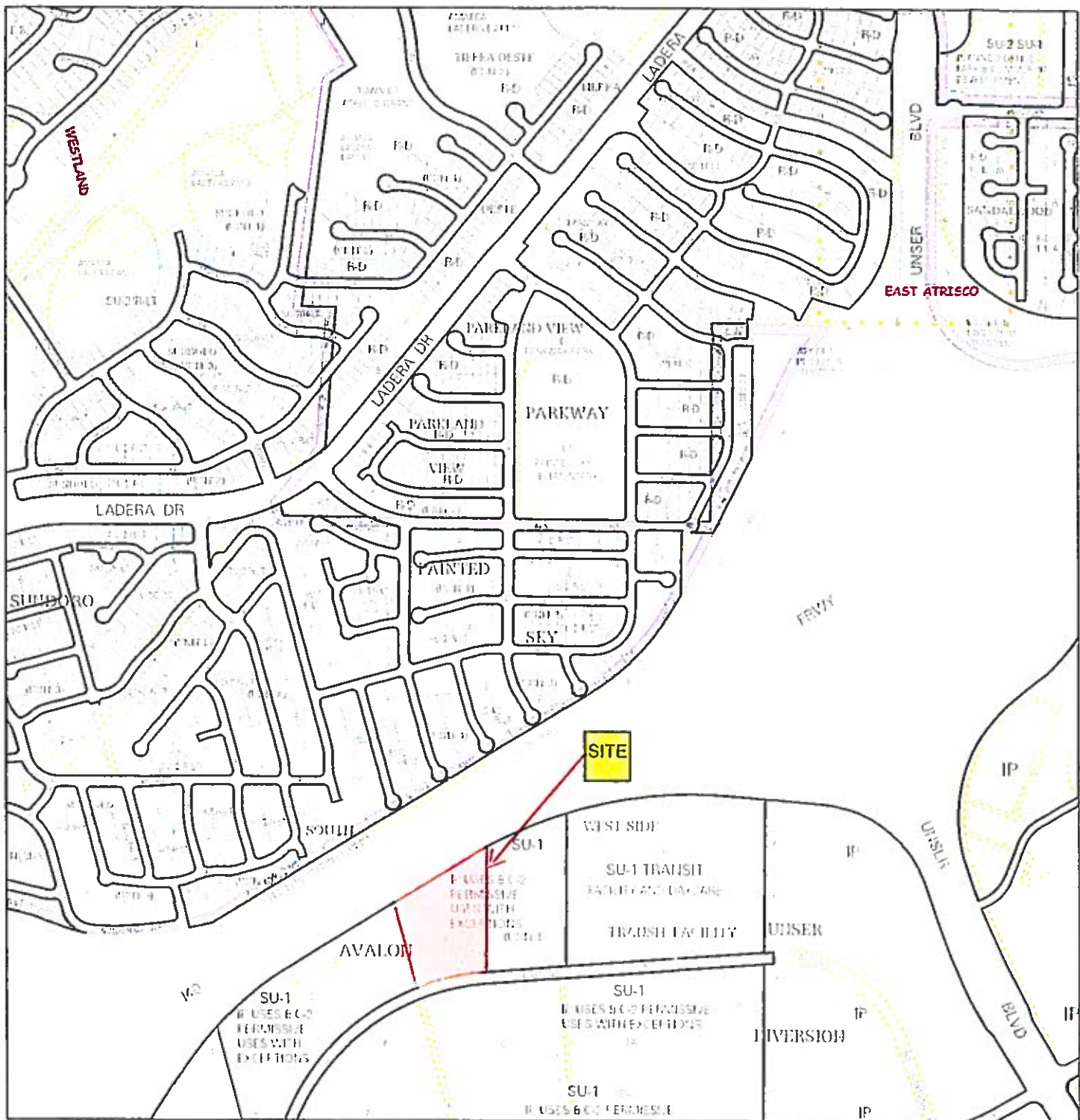
July 11, 2018



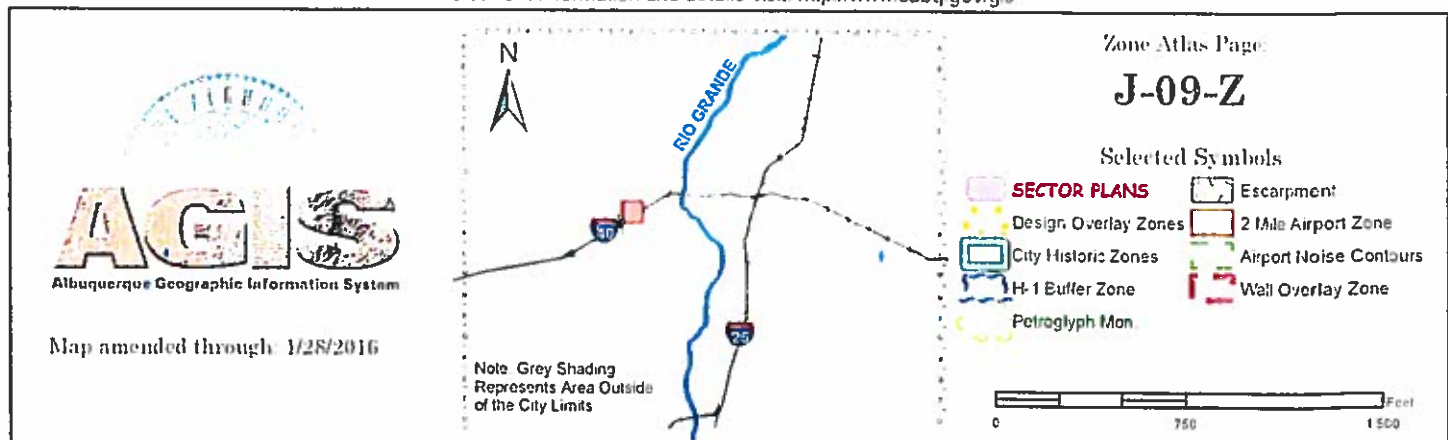
 7-11-18
VINCENT CARRICA, PE #16212

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GRADING AND DRAINAGE PLAN	MAP POCKET



For more current information and details visit: <http://www.cabq.gov/gis>



LOCATION

The proposed commercial development is located off Daytona Rd south of Interstate 40 and west of Unser Blvd in southwest Albuquerque. It is comprised of approximately 5.52 acres zoned SU-1 for IP uses. This report represents a drainage management and grading plan for approval by the City of Albuquerque, for grading and Building Permit submittal.

DRAINAGE BASIN DESIGNATION

The drainage basins for proposed conditions are as indicated on the BASIN MAP included in this report. The site is broken into nine onsite drainage basins.

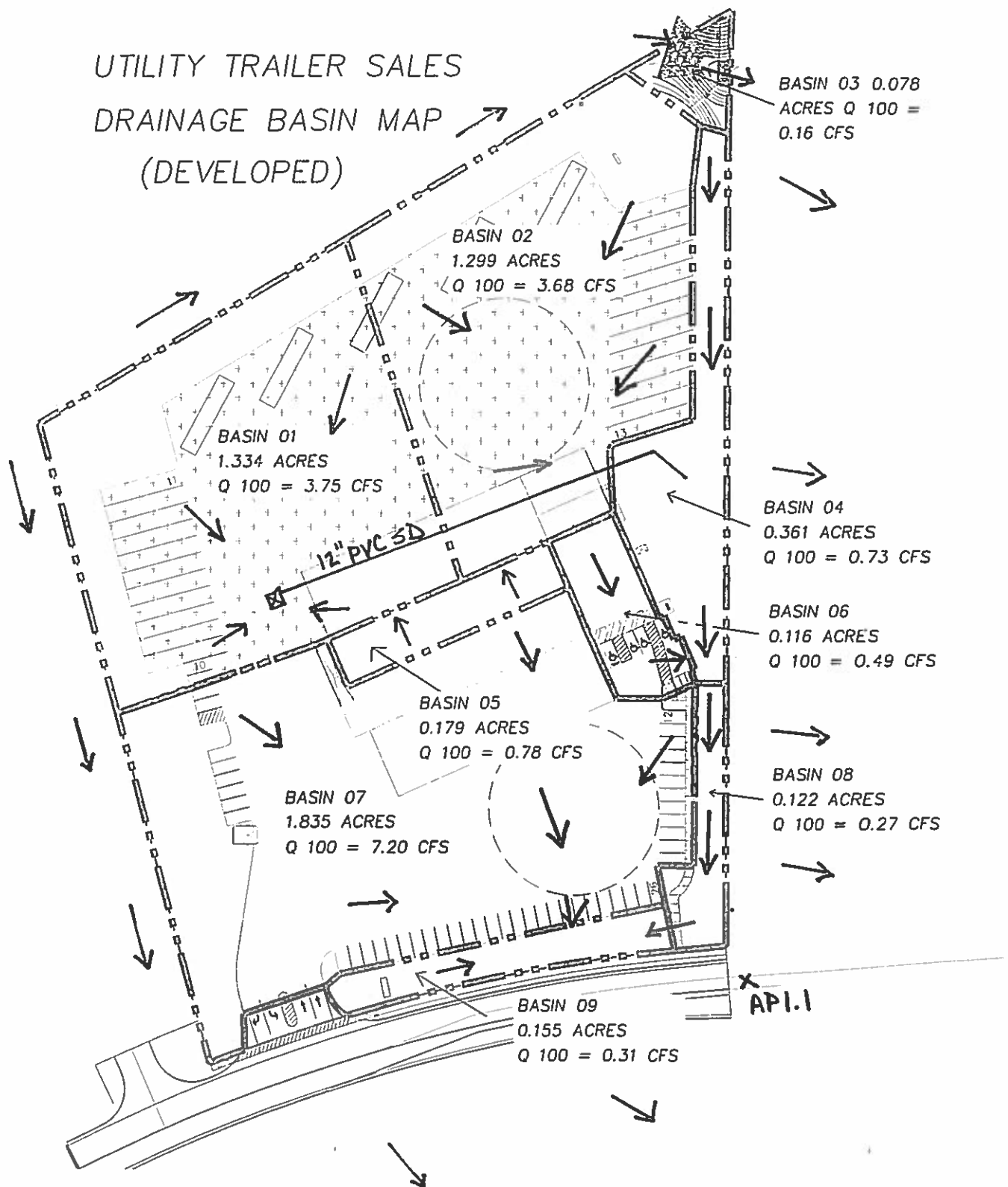
EXISTING DRAINAGE CONDITIONS

The site is currently vacant with the exception of a roadway turnaround. It drains predominantly northwest to southeast and is elevated approximately eight feet above the developed property to the east. An existing drainage way and desilting pond exists in the northeast corner of the site that channels runoff from the Interstate to an existing storm drain in the adjacent property. Runoff from north of the upland is captured in the AMAFCA North I-40 Diversion system. That diversion system removes the bulk of the contributing area to the two arroyos that run diagonally through the site from northwest to south east. Runoff from the existing site is conveyed to the Unser Diversion Pond system via street flow and an existing storm drain in Daytona Rd.

FIRM MAP

AMAFCA completed a LOMR to adjust the FEMA mapping for this area (LOMR 17-06-0267P Effective 11/28/2016). The site is no longer located in a designated Flood Hazard Zone Map No. 35001C0328J dated 11/4/2016.

UTILITY TRAILER SALES
DRAINAGE BASIN MAP
(DEVELOPED)



Utility Trailer Sales Upland Basins

Write a description for your map.

Legend

SITE

OS-1
2.267 ACRES
Q100=6.41 CFS

OS-2
5.798 ACRES
Q100=9.27 CFS

OS-2
3.744 ACRES
Q100=10.58 CFS

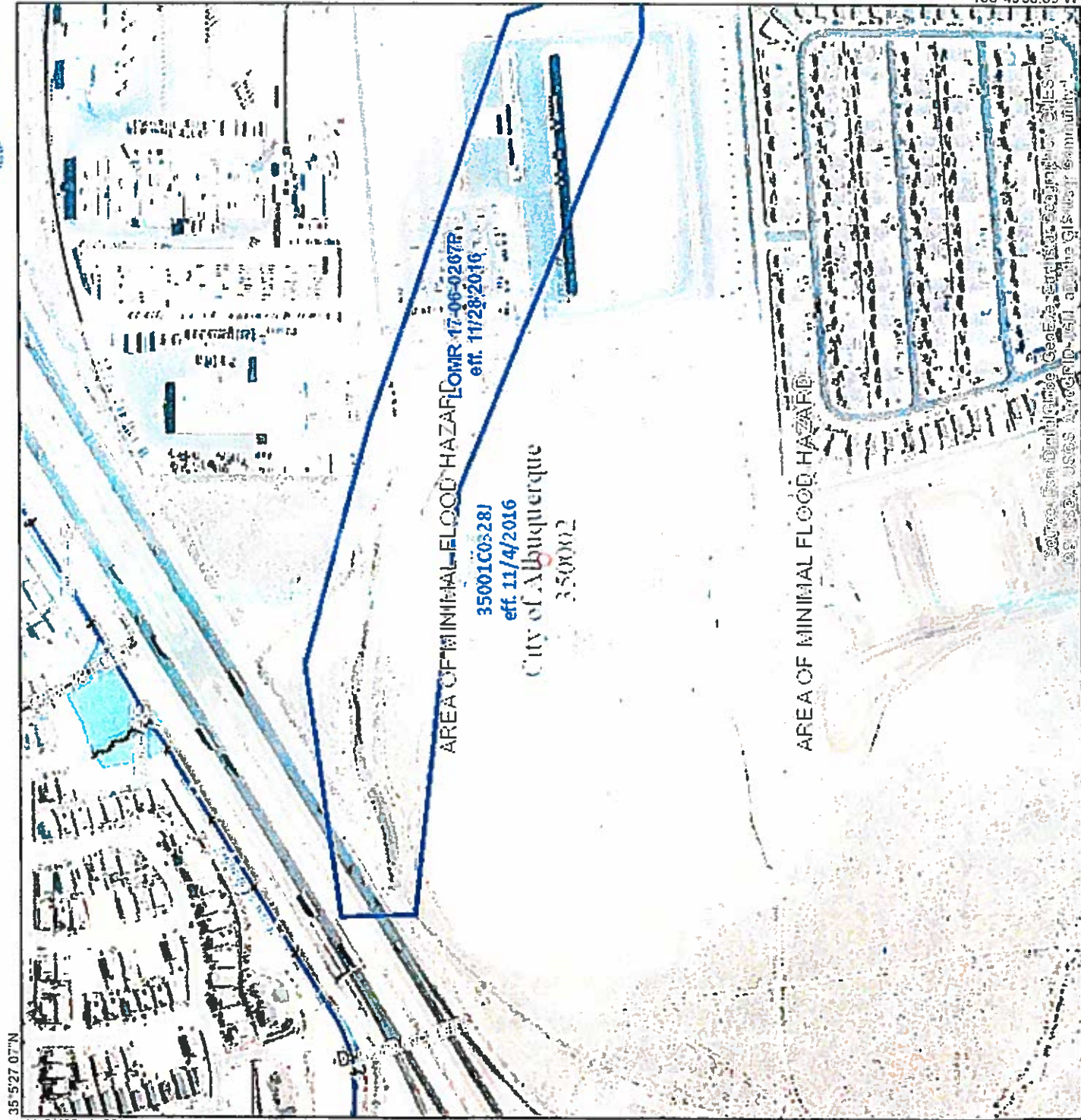
Google Earth

© 2016 Google

National Flood Hazard Layer FIRMette



35°5'27.0"N



0 250 500 1,000 1,500 2,000 Feet

106°43'58.69"W

Legend

SEE THIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

	Without Base Flood Elevation (BFE)
	With BFE or Depth
	Regulatory Floodway
SPECIAL FLOOD HAZARD AREAS	
0.2% Annual Chance Flood Hazard, Area of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile	
Future Conditions 1% Annual Chance Flood Hazard	
Area with Reduced Flood Risk due to Levee. See Notes.	
Area with Flood Risk due to Levee	
OTHER AREAS OF FLOOD HAZARD	
	Area of Minimal Flood Hazard
	Effective LOMRs
OTHER AREAS	
Area of Undetermined Flood Hazard	
GENERAL STRUCTURES	
	Channel, Culvert, or Storm Sewer
	Levee, Dike, or Floodwall
Cross Sections with 1% Annual Chance	
	Water Surface Elevation
	Coastal Transect
	Base Flood Elevation Line (BFE)
	Limit of Study
	Jurisdiction Boundary
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
OTHER FEATURES	
	Digital Data Available
	No Digital Data Available
	Unmapped
MAP PANELS	

This map complies with FEMA's standards for the use of digital flood maps if it is not valid as described below. The base map shown complies with FEMA's base map accuracy standards.

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **3/27/2018 at 10:17:25 AM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is valid if the one or more of the following map elements do not appear: base map imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

DESIGN-CRITERIA

The drainage plan presented in this report was prepared in accordance with the City of Albuquerque Drainage Ordinances and Chapter 22 of the Development Process Manual DPM. The hydrological analysis is based on the 100-year frequency, 6-hour duration storm, as Represented in Section 22, Part A, Hydrology, of the Development Process Manual. The plan will also include retention of the first flush in on-site landscaped areas. See attached Weighted E Table for excess precipitation values calculated for this site.

DEVELOPED-DRAINAGE CONDITIONS

The site is proposed to be developed with a single user, Utility Trailer Sales. In coordination with the landowner to the west, a drainage swale will be constructed to intercept undeveloped upland flows to the west prior to them entering the site. Also, no offsite drainage will enter the site from the north, east and south. The site will free discharge to Daytona roadway and existing storm drain and will be conveyed to the Unser Diversion Pond system located east of the site. Flows will be conveyed through the site via surface flows and a small onsite storm drain located north of the proposed building facility. Drainage swales will then channel flows to shallow first flush retention ponds before exiting the site.

Refer to enclosed Weighted E computation spreadsheet for existing and developed. Storm drain capacities are listed in a table in the appendix.

SUMMARY

The proposed grading and drainage plan for the proposed development of the existing undeveloped property includes surface flows and an onsite storm drain to convey runoff to drainage swales along the south and east property lines. The flows will be routed through first flush pond located in landscaped areas prior to the flows exiting the site to the Daytona right of way. Once in the right of way, flows will be routed to the Unser Diversion Pond system via street flow and an existing storm drain channel located in Daytona Rd. The storm drain capacity through the site and downstream of the site is sufficient to carry the ultimate developed runoff of

66.5 cfs outlined in the I-40 South and Unser Diversion Mini DMP (see attached Plate 2 from the plan).

Utility Tracer Sales

Weighted E Method

Zone #1

Developed Basins

Basin	Area (sf)	Area (acres)	Area (sq miles)	Treatment A		Treatment B		Treatment C		Treatment D		100-Year		10-Year		2-Year	
				%	(acres)	%	(acres)	%	(acres)	%	(acres)	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs
1	58551.00	1.344	0.00210	0%	0	27%	0.363	63%	0.840812	10%	0.134	1.002	0.112	3.75	0.461	0.052	1.93
2	56799.00	1.299	0.00203	0%	0	19%	0.247	73%	0.948514	8%	0.104	1.008	0.109	3.68	0.462	0.050	1.90
3	3494.00	0.078	0.00012	0%	0	100%	0.078	0%	0	0%	0.000	0.670	0.004	0.16	0.220	0.001	0.06
4	15746.00	0.361	0.00056	0%	0	100%	0.361	0%	0	0%	0.000	0.670	0.030	0.73	0.220	0.007	0.27
5	7780.00	0.179	0.00028	0%	0	0%	0.000	0%	0	100%	0.179	1.970	0.029	0.78	1.240	0.018	0.52
6	3910.00	0.113	0.00018	0%	0	0%	0.000	0%	0	100%	0.113	1.970	0.019	0.49	1.240	0.012	0.33
7	79924.00	1.835	0.00287	0%	0	19%	0.349	0%	0	81%	1.486	1.723	0.263	7.20	1.046	0.160	4.56
8	5311.00	0.122	0.00019	0%	0	93%	0.113	0%	0	7%	0.009	0.761	0.008	0.27	0.291	0.003	0.11
9	6350.00	0.150	0.00023	0%	0	100%	0.150	0%	0	0%	0.000	0.670	0.008	0.31	0.220	0.003	0.11
Total	238772.00	5.481	0.00856										0.573	17.37		0.305	9.79
																0.141	4.31

Equations:

$$\text{Weighted E} = E_a \cdot A_a + E_b \cdot A_b + E_c \cdot A_c + E_d \cdot A_d / (\text{Total Area})$$

$$\text{Volume} = \text{Weighted D} \cdot \text{Total Area}$$

$$\text{Flow} = Q_a \cdot A_a + Q_b \cdot A_b + Q_c \cdot A_c + Q_d \cdot A_d$$

Pipe Capacity Check

D (in)	Slope (%)	Area (ft^2)	R	Q Provided (cfs)	Velocity (ft/s)	Q Required (cfs)
12	2	0.79	0.25	5.05	6.43	4.14
18	2	1.77	0.375	14.90	8.43	9.7
18	20.5	1.77	0.375	47.69	26.99	17.3
18	11.5	1.77	0.375	35.72	20.21	26.3
36	3.23	7.07	0.75	120.19	17.00	66.5
36	4.1	7.07	0.75	135.42	19.16	66.5
36	1.38	7.07	0.75	78.56	11.11	66.5
36	1.06	7.07	0.75	68.86	9.74	66.5



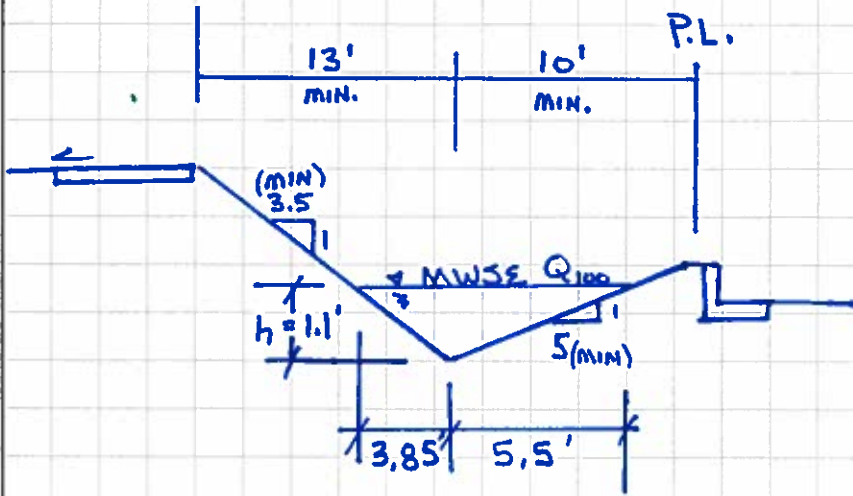
TIERRA WEST, LLC

Project UTILITY TRAILER SALES Date _____

Project No. JN 2017041

Meeting Purpose EAST SWALE CALC Sheet No. ____ of ____

Attendees _____



$$h = 1.1 \text{ ft}$$

$$A = 5.14$$

$$WP = 9.61$$

$$n = .029$$

$$S = 0.0039$$

$$Q_{CAPACITY} = 10.87 \text{ cfs}, V = 2.1 \text{ ft/s}$$

$$Q_{REQUIRED} = 9.7 \text{ cfs}$$

EAST SWALE CROSS SECTION





TIERRA WEST, LLC

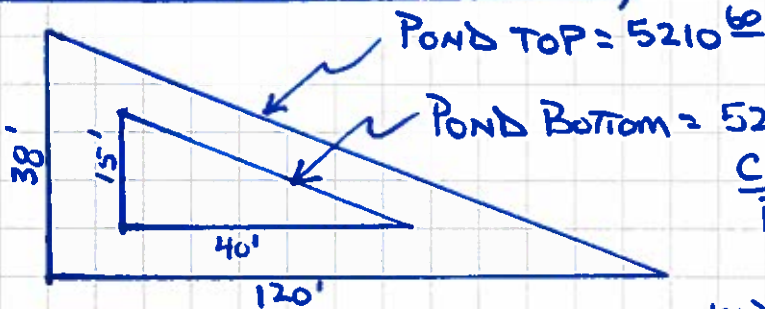
Project UTILITY TRAILER SALES Date _____

Project No. JN 2017041

Meeting Purpose POND (FIRST FLUSH) Sheet No. _____ of _____

Attendees CALCS

POND "A" (EAST of BUILDING)



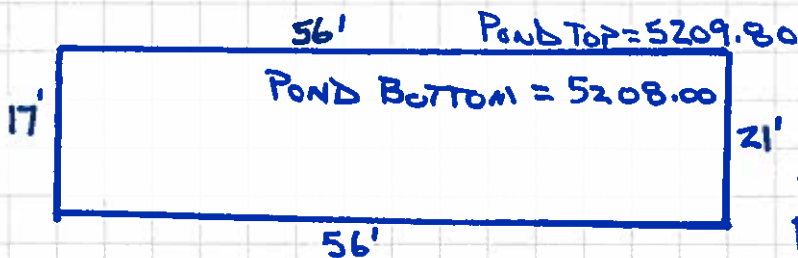
$$\frac{\text{CAPACITY}}{\text{POND VOL}} = \left[\frac{15(40)}{2} + \frac{120(38)}{2} \right] \frac{2}{2} = 2,580 \text{ ft}^3$$

IMPERVIOUS AREA = 19,600 sf

$$\text{REQUIRED VOL} = 19,600 \left(\frac{.34}{12} \right) = 540 \text{ ft}^3$$

CAP ≥ REQ ✓

POND "B" (ADJACENT TO DAYTONA RD.)



$$\frac{\text{CAPACITY}}{\text{POND VOL}} = \left(\frac{17+21}{2} \right) 56 (1.8) = 1,915 \text{ ft}^3$$

IMPERVIOUS AREA = 67,070 sf

$$\text{REQUIRED VOL} = 67,000 \left(\frac{.34}{12} \right) = 1,900 \text{ ft}^3$$

CAP ≥ REQ ✓

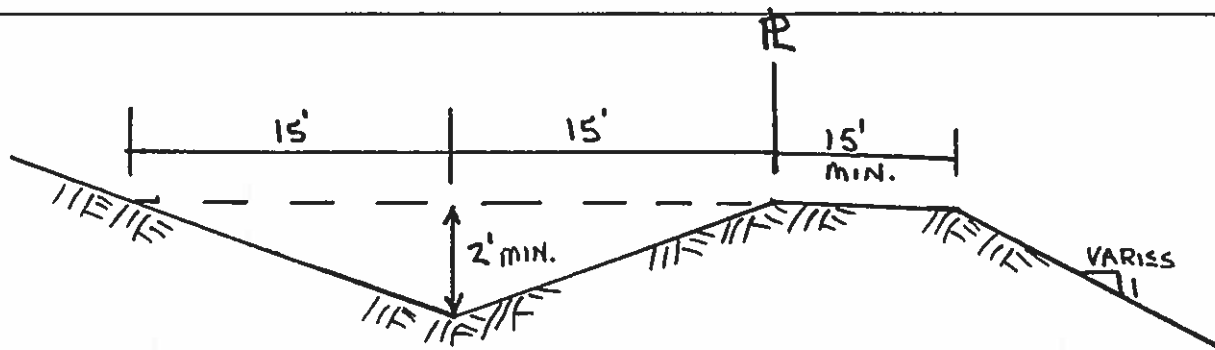


JW



TIERRA WEST, LLC

Project UTILITY/TRAILER SALES Date 5-14-18
 Project No. UPLAND SWALE DIVERSION
 Meeting Purpose CAPACITY CALC. Sheet No 1 of 1
 Attendees _____



$$A = 30.26 \text{ ft}^2$$

$$WP = 30 \text{ ft}$$

$$S = 0.9\%$$

$$K = 1.49$$

$$n = 0.025$$

$$V = \frac{K}{n} \left(\frac{A}{P} \right)^{2/3} S^{1/2} = 5.62 \text{ ft/s}$$

$$Q = VA = 168.6 \text{ cfs} \geq Q_{\text{REQUIRED}} = 6.41 \text{ cfs TO } 26.26 \text{ cfs}$$

JW

Worksheet for Irregular Section - 3.81%

Project Description

Friction Method Manning Formula
Solve For Discharge

Input Data

Channel Slope 0.03810 ft/ft
Normal Depth 0.49 ft
Section Definitions

Station (ft)	Elevation (ft)
0+00	100.67
0+00	100.00
0+02	100.13
0+20	100.48
0+38	100.13
0+40	100.00
0+40	100.67

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 100.67)	(0+40, 100.67)	0.016

Options

Current Roughness Weighting Method Pavlovskii's Method
Open Channel Weighting Method Pavlovskii's Method
Closed Channel Weighting Method Pavlovskii's Method

Results

Discharge 52.41 ft³/s
Elevation Range 100.00 to 100.67 ft
Flow Area 8.35 ft²
Wetted Perimeter 40.99 ft
Hydraulic Radius 0.20 ft
Top Width 40.00 ft

Worksheet for Irregular Section - 3.81%

Results

Normal Depth	0.49	ft
Critical Depth	0.66	ft
Critical Slope	0.00540	ft/ft
Velocity	6.28	ft/s
Velocity Head	0.61	ft
Specific Energy	1.10	ft
Froude Number	2.42	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.49	ft
Critical Depth	0.66	ft
Channel Slope	0.03810	ft/ft
Critical Slope	0.00540	ft/ft

Worksheet for Irregular Section - Full Width

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.04050	ft/ft
Normal Depth	0.49	ft
Section Definitions		

Station (ft)	Elevation (ft)
0+00	100.67
0+00	100.00
0+02	100.13
0+20	100.48
0+38	100.13
0+40	100.00
0+40	100.67

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 100.67) *	(0+40, 100.67)	0.016

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Discharge	55.22	ft ³ /s
Elevation Range	100.00 to 100.67	ft
Flow Area	8.46	ft ²
Wetted Perimeter	40.99	ft
Hydraulic Radius	0.21	ft
Top Width	40.00	ft

Worksheet for Irregular Section - Full Width

Results

Normal Depth	0.49	ft
Critical Depth	0.67	ft
Critical Slope	0.00534	ft/ft
Velocity	6.53	ft/s
Velocity Head	0.66	ft
Specific Energy	1.15	ft
Froude Number	2.50	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.49	ft
Critical Depth	0.67	ft
Channel Slope	0.04050	ft/ft
Critical Slope	0.00534	ft/ft

Worksheet for Irregular Section - 4.29%

Project Description

Friction Method Manning Formula
Solve For Discharge

Input Data

Channel Slope 0.04290 ft/ft
Normal Depth 0.49 ft
Section Definitions

Station (ft)	Elevation (ft)
0+00	100.67
0+00	100.00
0+02	100.13
0+20	100.48
0+38	100.13
0+40	100.00
0+40	100.67

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 100.67)	(0+40, 100.67)	0.016

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Discharge	55.61	ft ³ /s
Elevation Range	100.00 to 100.67	ft
Flow Area	8.35	ft ²
Wetted Perimeter	40.99	ft
Hydraulic Radius	0.20	ft
Top Width	40.00	ft

Worksheet for Irregular Section - 4.29%

Results

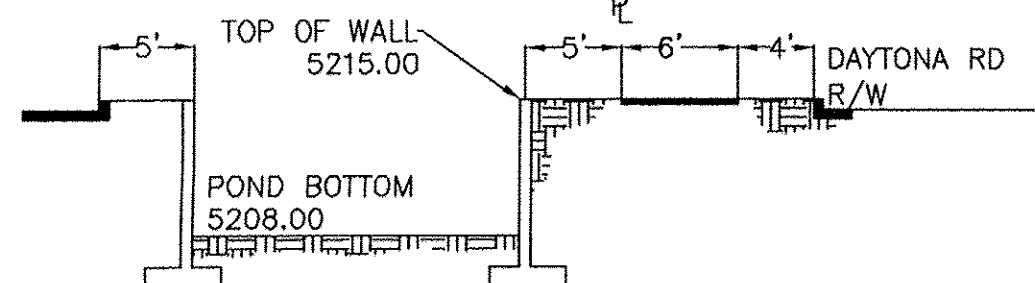
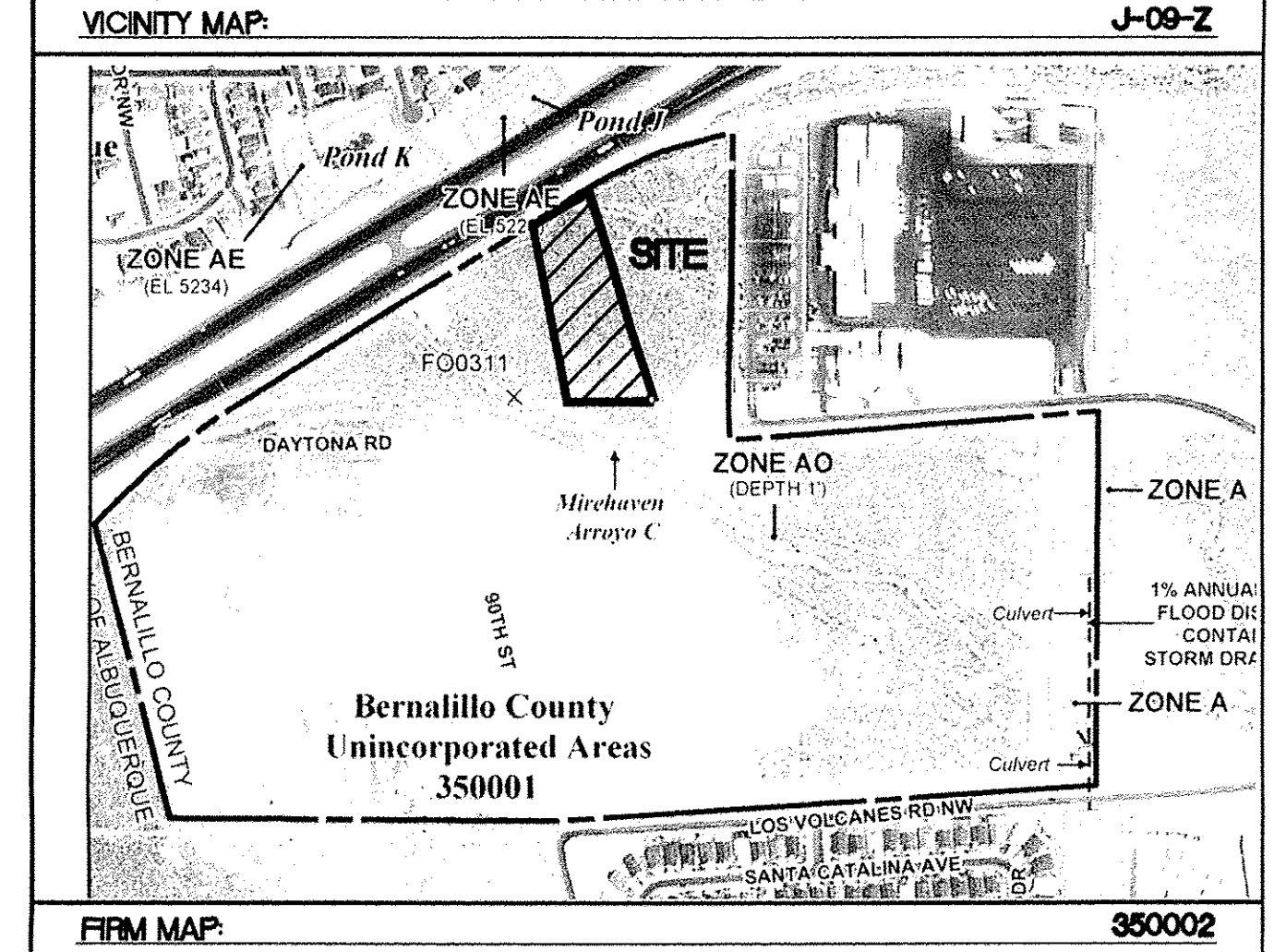
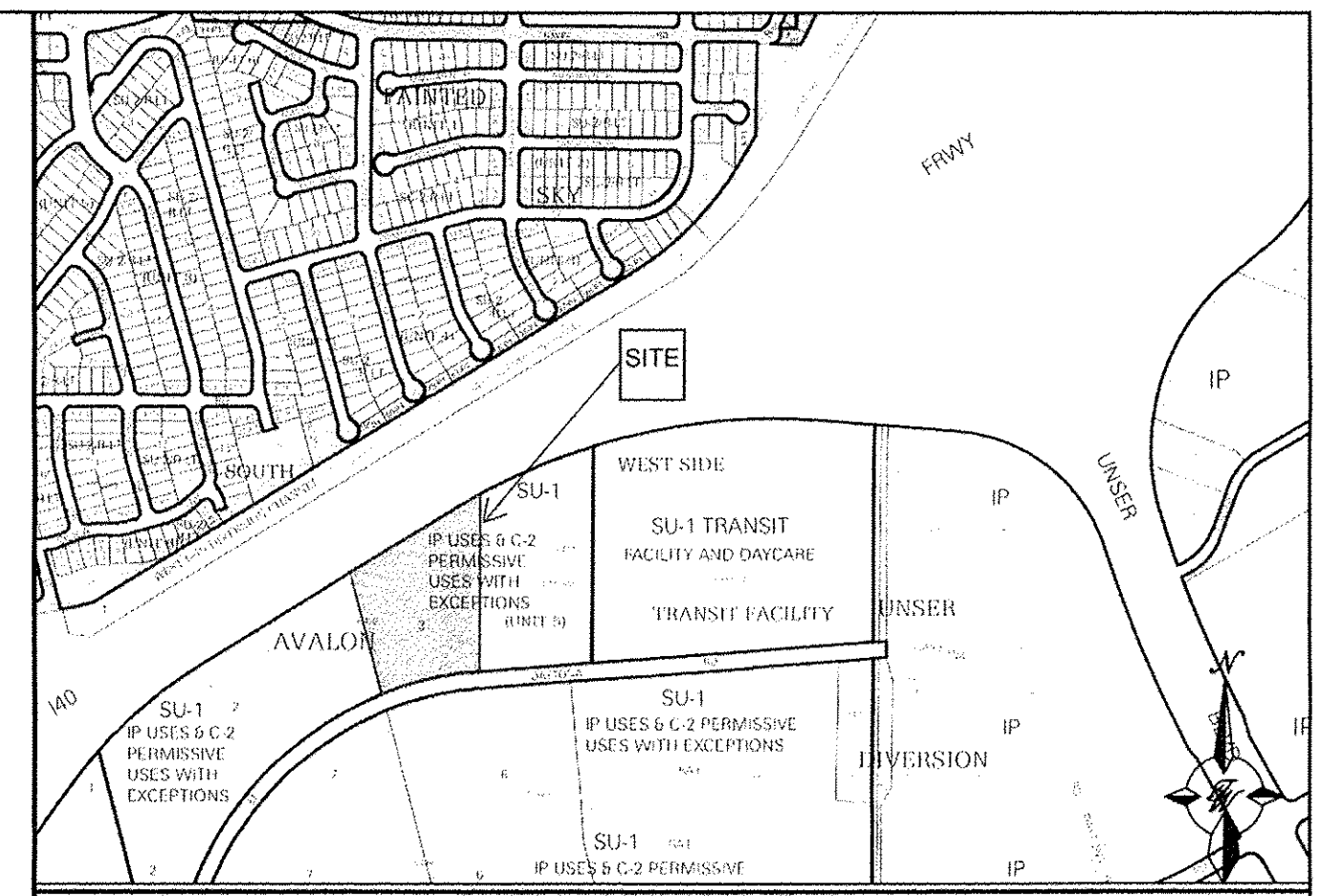
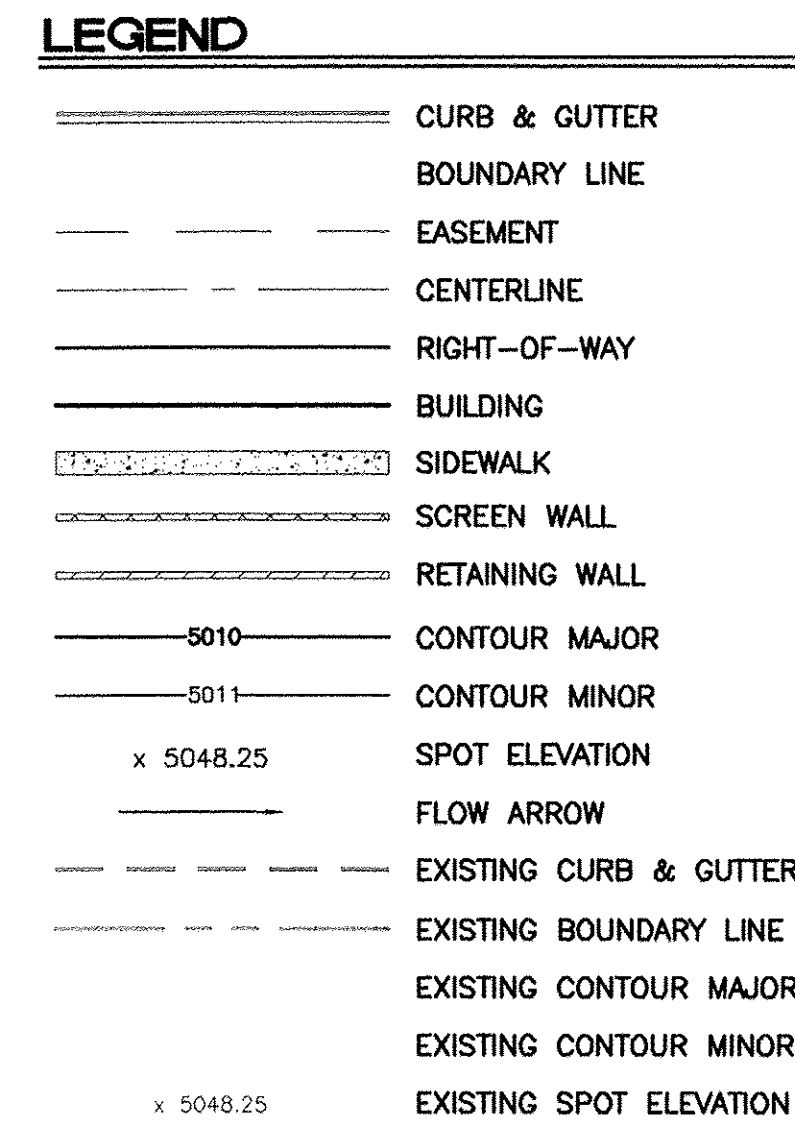
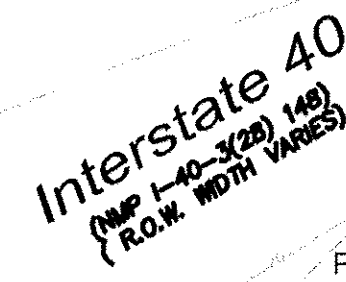
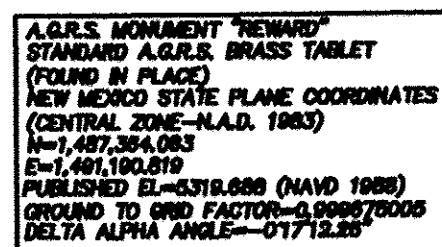
Normal Depth	0.49	ft
Critical Depth	0.67	ft
Critical Slope	0.00533	ft/ft
Velocity	6.66	ft/s
Velocity Head	0.69	ft
Specific Energy	1.18	ft
Froude Number	2.57	
Flow Type	Supercritical	

GVF Input Data

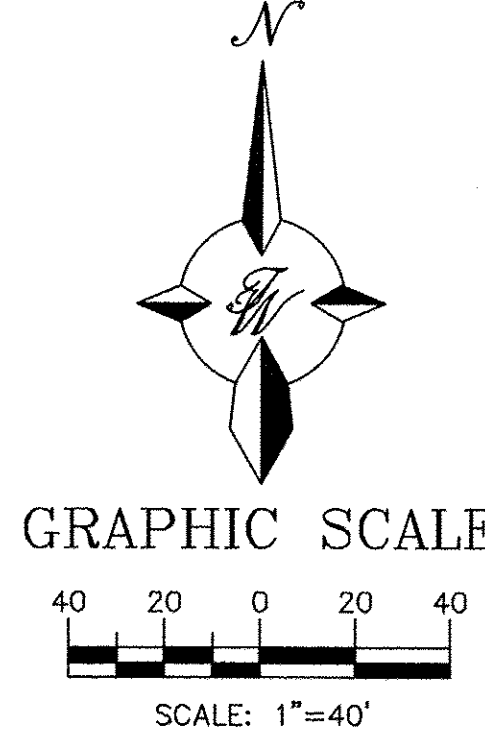
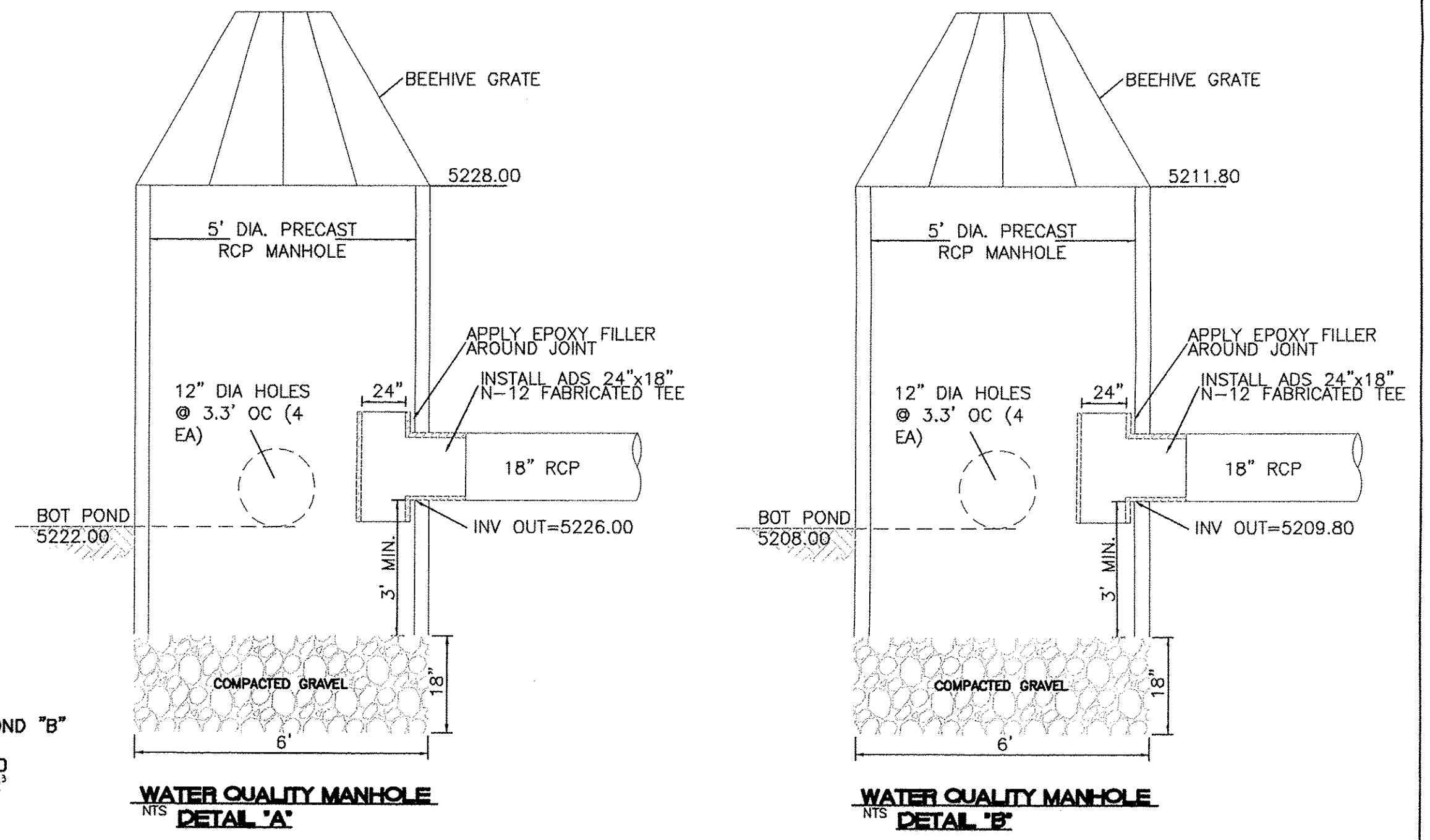
Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	



GVF Output Data

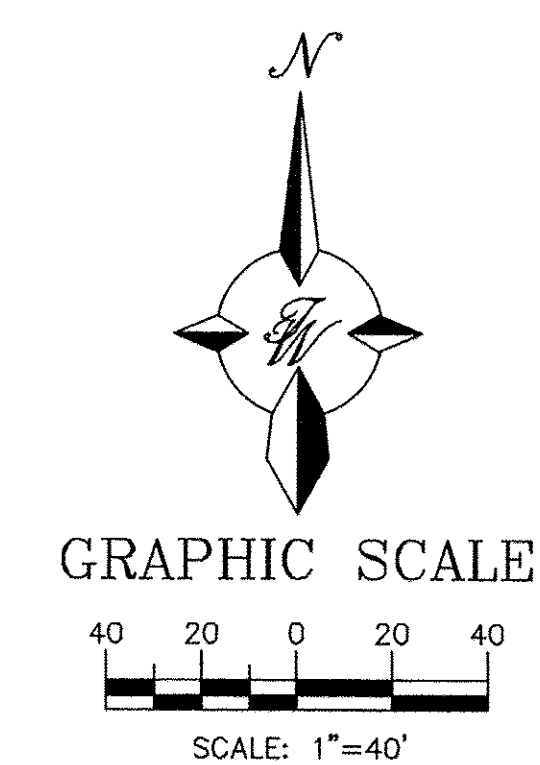
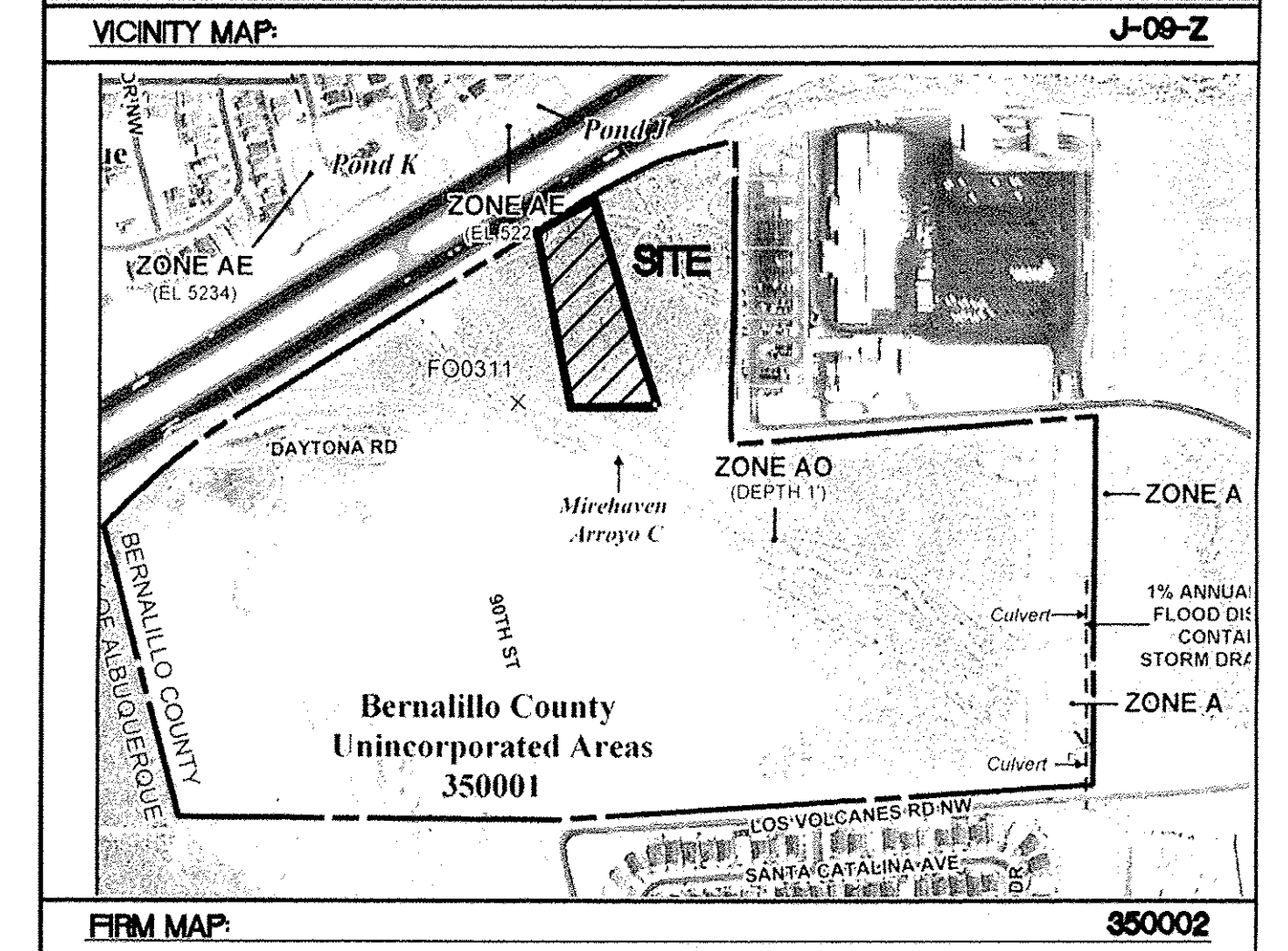
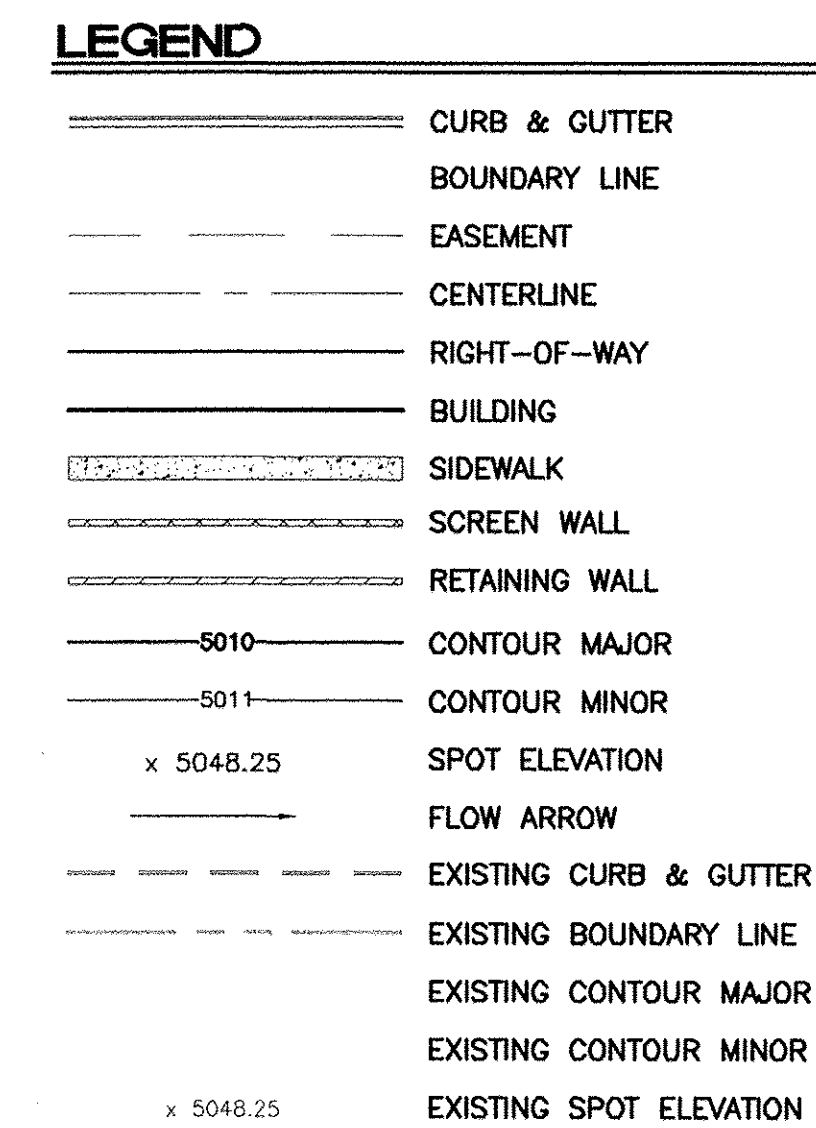
Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.49	ft
Critical Depth	0.67	ft
Channel Slope	0.04290	ft/ft
Critical Slope	0.00533	ft/ft





SECTION B-B



<p>ENGINEER'S SEAL</p> 	<p>UTILITY TRAILER SALES ALBUQUURQUE NM</p>	<p>DRAWN BY LA</p>
	<p>GRADING AND DRAINAGE PLAN</p>	<p>DATE 07/12/2018</p>
	 <p><i>TIERRA WEST, LLC</i></p> <p>5571 MIDWAY PARK PLACE NE ALBUQUERQUE, NM 87109 (505) 858-3100 www.tierrawestllc.com</p>	<p>2017041-GRADING 2</p>
<p>VINCENT P. CARRICA P.E. #16212</p>		<p>SHEET # C2</p>
		<p>JOB # 2017041</p>



<p>ENGINEER'S SEAL</p> 	<p>UTILITY TRAILER SALES ALBUQUERQUE NM</p>	<p>DRAWN BY LA</p>
	<p>GRADING AND DRAINAGE PLAN</p>	<p>DATE 07/12/2018</p>
	 <p><i>TERRA WEST, LLC</i> 5571 MIDWAY PARK PLACE NE ALBUQUERQUE, NM 87109 (505) 858-3100 www.terrawestllc.com</p>	<p>2017041-GRADING 2</p> <p>SHEET # C2-A</p>
<p>VINCENT P. CARRICA P.E. #16212</p>		<p>JOB # 2017041</p>