CITY COPY

BELLISSIMA ESTATES

NW QUARTER SECTION 20

TOWNSHIP 3 NORTH, RANGE 5 EAST

GILA & SALT RIVER BASE AND MERIDIAN

MARICOPA COUNTY, ARIZONA

APN 217-26-985

PRELIMINARY DRAINAGE REPORT

Registered Professional Engineer (Civil)
CERTIFICATE NO.
24718
PHILLIP W.
ROSENDAHL
3-17-17
Date Signed
ARIZONA U.S.A.

EXP: 3-31-19

Plan # _____

Case # 4-PP-2016

Q-S # _____

☑ Accepted

☐ Corrections

N. Baronas 4-4-17

Reviewed By Date

4-PP-2016
3/20/2017

TABLE OF CONTENTS

1. INTRODUCTION

Bellissima Estates is anticipated to be a 6 lot subdivision located in the NW quadrant of E. Jenan Drive and N. 98th Street, being a portion of the NW quarter of Section 20, Township 3 North, Range 5 East of the Gila and Salt River Base and Meridian. It is described as Lot 2 of the Minor Land Division-Lot Line Adjustment of Bellissima Farms. The property is a 5.79 acre parcel on property that has been used as a horse property for breeding and training horses. Due to the recent demolition of out buildings and corrals the site is relatively void of vegetation except for the bushes around the perimeter of the property. It is mild sloping at slightly less than 1% from North to South. N. 98th Street is paved without curb and gutter and E. Jenan Drive is paved on the South side of the street with a 4 inch rolled curb.

The purpose of this preliminary drainage report is to investigate and address the site drainage conditions and provide the necessary storm retention for the difference between the pre-development runoff and the post-development runoff and not overflow the basin during the peak flow of the 100-yr storm.

2. DESCRIPTION OF EXISTING DRAINAGE CONDITIONS AND CHARACTERISTICS

This site is gently sloping from North to South at 0.81% runoff currently sheets across the property draining onto E. Jenan Drive and continuing West to the intersection with 98th St., where it flows South. There is no significant offsite flow onto the site other than the sheet flow from the property adjacent to the North, then across this development in the same manner and onto E. Jenan Drive. This offsite runoff will be brought onto the site in a drainage swale along the North boundary and turned into another swale running South in the 8' PUE and be released in the SW corner of the site where it has historically flowed. The retention basins along the N. 98th Street frontage will be moved to the East allowing room for the drainage swale, enabling the offsite runoff to be kept separate from the onsite. The calculated peak flow of the offsite flow is 7.4 cfs.

The FEMA Flood Insurance Rate Map No. 04013C1780L revised on October 16, 2013 shows the site in a Zone "X" designated flood zone, this zone being defined as an area of minimal flood potential.

3. PROPOSED DRAINAGE PLAN

In developing the 6 lots for single family residences the existing drainage pattern will be maintained, providing for overflow at the southwest corner of the property. Privacy walls separating the lots will be constructed to allow the sheet flow to pass from one lot to the next as it historically has, however we have opted to retain the runoff from Lots 1 & 2 separately from Lots 3 – 6.

These two lots will drain from the East boundary to the N. 98th St. frontage retention basin, which will be covered by a drainage easement. Lots' 3 – 6 runoff will be contained in a retention basin provided on Lots 5 and 6. We have estimated a 15,000 square foot area of building and hardscape to establish the runoff coefficient for the developed site, which turns out to be very close to the value of Figure 4.1-4 of the City DSPM. To better facilitate the lot sizes that are anticipated by the developer, as mentioned, we are providing storm retention in a basin located in conjunction with the southerly two lots of the development, being Lots 5 and 6 and a smaller basin located on Lots 1 and 2. We will calculate the size of the retention basins being the difference between the pre-development runoff and the post-development runoff. When the difference in the volume of runoff is calculated per the Maricopa County Flood Control Drainage Design Manual and considering the half streets of both 98th Street and Jenan Drive, we show a volume of 5,614 ft.^{3}, however when the peak flow of the developed site is calculated for the site time of concentration, T_c that volume will be exceeded upon reaching the peak runoff of the storm hydrograph. Therefore we have analyzed the pre-development and post-development hydrographs overlain on each other to determine the size of a retention basins that will retain the runoff past the peak flow of the 100-yr. storm event. This analysis is shown below.

A. Pre-development Peak Runoff Analysis Lots 1 & 2:

Per City of Scottsdale Design Standards & Policy's Manual and
Per Maricopa County Flood Control Drainage Design Manual;

DA-1 = 76,028 ft.^{2} / 1.75 ac (See Pre-Development Drainage Area Fig.1, Pg. 6)
Calculate T_c of DA-1 using: $T_c = 11.4 \times L^{0.5} \times K_b^{0.52} \times S^{-0.31} \times i^{-0.38}$ = 5 min.

Where: L = length of longest flow path in miles = 0.11 mi.
K_b = flow resistance coefficient = 0.038
S = slope in ft./mi. = 26.3 ft./mi.
i = rainfall intensity in in./hr. = 9 in./hr. by iteration.

DA-1 Peak Runoff; $Q = C \times I \times A$ = 6.3 ft.^{3}/sec.

Where: C = runoff coefficient = 0.40 this being determined from Figure 4.1-4 lying between "undisturbed natural desert and "agricultural areas, more heavily toward the former.
i = rainfall intensity from the T_c iteration = 9 in./hr.
A = drainage basin area in acres = 1.75 ac., as a portion of Lots 1 and 2 does not reach the point of concentration for this consideration.

B. Post-development Peak Runoff Analysis Lots 1 & 2:

(See Post-Development Drainage Area Fig. 2. Pg. 7)

Calculating T_c of DA-1 by similar iteration of the above equation; L = 0.11, K_b = 0.037, S = 26.3 ft./mi. we find that T_c = 5 min. giving i = 9.0 in./hr., the Area of Post-Development DA-1 is 2.25 ac.

Post-Development DA-1 Peak Runoff; Q = C x i x A = 12.55 $ft.^3$ /sec.

Retention volume required for this basin: is 3,290 $ft.^3$, calculated from analysis of the hydrograph of the pre-development and the post-development runoff's, shown as Figure 3, Pg 8. In sizing the basin for the potential development of a circular drive on each of the lots we have also provided for the displacement of available retention volume for those driveways, being 12 feet wide with 4:1 slopes to the bottom of retention and the maximum depth being 1 foot. This displacement added 1224 $ft.^3$ to the calculated 3,290 $ft.^3$, for a total volume of 4,514 $ft.^3$. The volume provided on the Preliminary Grading & Drainage Plan is 4,622 $ft.^3$. A drainage easement covering this retention basin is provided on the Preliminary Plat Site Plan.

C. Pre-development Peak Runoff Analysis Lots 3-6:

(See Pre-Development Drainage Area Fig. 1, Pg. 6)

DA-2 = 80,900 $ft.^2$ / 1.86 ac

Calculate T_c of DA-2 using: $T_c = 11.4 \times L^{0.5} \times K_b^{0.52} \times S^{-0.31} \times i^{-0.38}$ = 7 min.

Where: L = length of longest flow path in miles = 0.14 mi.
K_b = flow resistance coefficient = 0.038
S = slope in ft./mi. = 36.1 ft./mi.
i = rainfall intensity in in./hr. = 8.0 in./hr. by iteration.

DA-2 Peak Runoff; Q = C x I x A = 5.95 $ft.^3$/sec.

Where: C = runoff coefficient = 0.40
i = rainfall intensity from the T_c iteration = 8.0 in./hr.
A = drainage basin area in acres = 1.86 ac.

DA-3 = 115,117 $ft.^2$ / 2.65 ac

Calculate T_c of DA-2 using: $T_c = 11.4 \times L^{0.5} \times K_b^{0.52} \times S^{-0.31} \times i^{-0.38}$ = 8 min.

Where: L = length of longest flow path in miles = 0.19 mi.
K_b = flow resistance coefficient = 0.037
S = slope in ft./mi. = 39.0 ft./mi.
i = rainfall intensity in in./hr. = 7.3 in./hr. by iteration.

DA-3 Peak Runoff; $Q = C \times I \times A = 7.74$ ft.^{3}/sec.

Where: C = runoff coefficient = 0.40

i = rainfall intensity from the T_c iteration = 7.3 in./hr.

A = drainage basin area in acres = 2.65 ac.

Total Pre-Development Peak Runoff = 13.69 ft^3/sec.

D. Post-development Peak Runoff Analysis Lots 3-6:

(See Post-Development Drainage Area Fig. 2, Pg. 7)

Calculating T_c of DA-2 by similar iteration of the above equation; L = 0.20, K_b = 0.035, S = 32.0 ft./mi. we find that T_c = 10 min. giving i = 6.9 in./hr., the Area of Post-Development DA-1 is 4.17 ac.

Post-Development DA-2 Peak Runoff; $Q = C \times i \times A = 17.84$ t.^{3} /sec.

Retention volume required for this basin: is 7,547ft.^{3}, calculated from analysis of the hydrograph of the pre-development and the post-development runoff's, shown as Figure 4, Pg. 9. Similarly to the retention provided on Lots 1 and 2, we will have to provide for the displacement for a circular driveway on Lots 5 and 6, adding 1,224 ft.^{3} to the computed volume bringing the required volume to 8,771 ft.^{3}, the volume provided on the Preliminary Grading and Drainage Plan is 8,965 ft.^{3}, this basin is also covered by a drainage easement on the Preliminary Plat Site Plan.

4. SPECIAL CONDITIONS:

This site has no special project stipulations, no 401 and 404 Permit requirements and no AZPDES requirements.

5. DATA ANALYSIS METHODS:

See Section 3. above "Proposed Drainage Plan" for hydrologic procedures and storm water storage calculation.

6. CONCLUSIONS:

This site has small offsite runoff contribution, being the sheet flow from the property to the North, that property in turn has been cut off from the N-S sheet flow of the area by the E. Cactus Road street improvements. The flow from the adjacent property to the North is not going to be comingled with the runoff from the developed site. This will be facilitated by creating a drainage swale Inside the North boundary that will intercept the portion of that runoff that has historically come onto the site and direct it to another swale which will carry the offsite flow South to the location where it has historically discharged from the site.

The offsite flow from the East onto Lot 1 is cut off by the CMU wall existing on the property to the East, South of the CMU wall begins the pilaster and wrought iron fence on the Bellissima Estates property, which has historically allowed any sheet flow that may exist flow onto the site from the East. It appears that this may occur in some locations and not in others but will be minimal in those instances where flow may come from the East.

When the wrought iron is replaced with CMU the bottom course of CMU will allow for sheet flow by turning blocks on their side to accommodate it. The objective of this report has been to size the site storm retention for the 100-yr. storm event, retaining the difference between the pre-development and post-development runoff volumes. Important to the design was to assure that the peak runoff from the developed site would not overflow the retention basin designed. The basin volume has been calculated to accommodate that excess volume, per the discussion in Section 3 of this report. Given this analysis it can be determined that there will be no adverse impact upstream or downstream upon any of the adjacent residents.

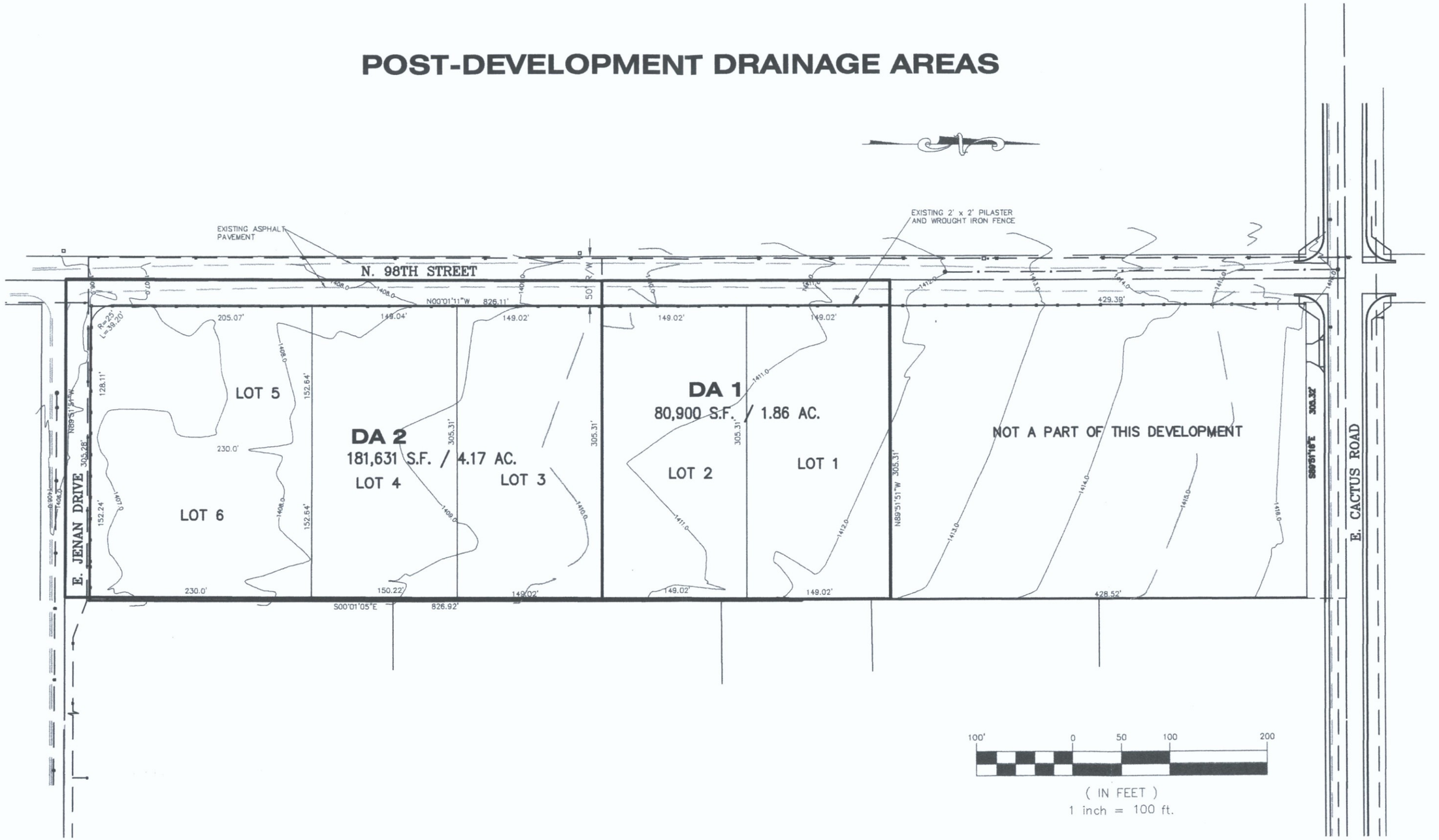
7. WARNING AND DISCLAIMER OF LIABILITY:

The "Warning and Disclaimer of Liability" document located in the City Design Standards & Policies Manual has been signed and included in the Appendix.

8. REFERENCES:

Maricopa County Flood Control "Drainage Design Manual" (Volume 1 Hydrology)
City of Scottsdale "Design Standards & Policies Manual"

POST-DEVELOPMENT DRAINAGE AREAS



ROSENDAHL ENGINEERING
857 N. BARKLEY ST. (480) 599-1263 TEL
MESA, ARIZONA 85203 (480) 834-2163 FAX

BELLISSIMA ESTATES

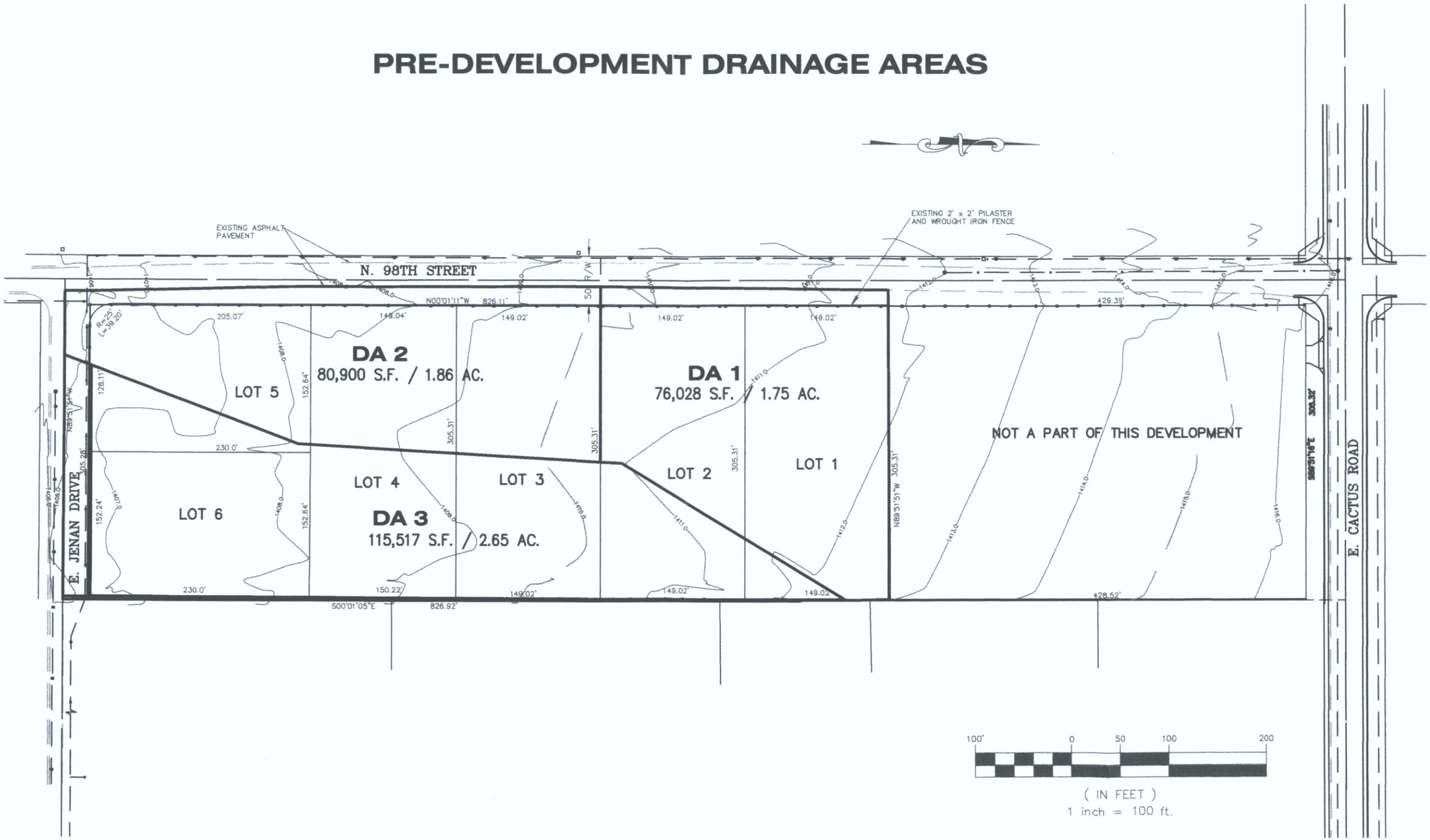
PROJECT NO. 160489	
DATE 1/23/17	SHEET 1 OF 1

FIGURE 2 PG. 7

C:\ROSENDAHL ENGINEERING\160489 Francis-Bellissima\Hydrology\ Post-Dev DA's.dwg — Feb 01,2017 12:46pm

C:\ROSENDAHL ENGINEERING\160489 Francis-Bellissima\Hydrology\ Pre-Dev DA's.dwg - Feb 01,2017 12:41pm

PRE-DEVELOPMENT DRAINAGE AREAS



ROSENDAHL ENGINEERING		BELLISSIMA ESTATES	PROJECT NO. 160489	
857 N. BARKLEY ST.	(480) 599-1263 TEL		DATE 1/30/17	SHEET 1 OF 1
MESA, ARIZONA 85203	(480) 834-2163 FAX			

FIGURE 1 PG. 6

ROSENDAHL

Project: Bellissima Estates
Job No. 160489
Date 1-31-17
Personal PWR

Retention Volume Lots 1 & 2

Area under hydrograph = Volume of runoff ($ft.^3$)

Volume to be retained:

$V_{Total} = A_1 + A_2 + A_3$

$A_1 = \frac{5 \times 12.55 \times 60}{2} = 1{,}882\ ft.^3$

$A_2 = \frac{2.49 \times 6.25 \times 60}{2} = 467\ ft.^3$

$A_3 = 2.49 \times 6.3 \times 60 = 941\ ft.^3$

$V_{Total} = 3{,}290\ ft.^3$

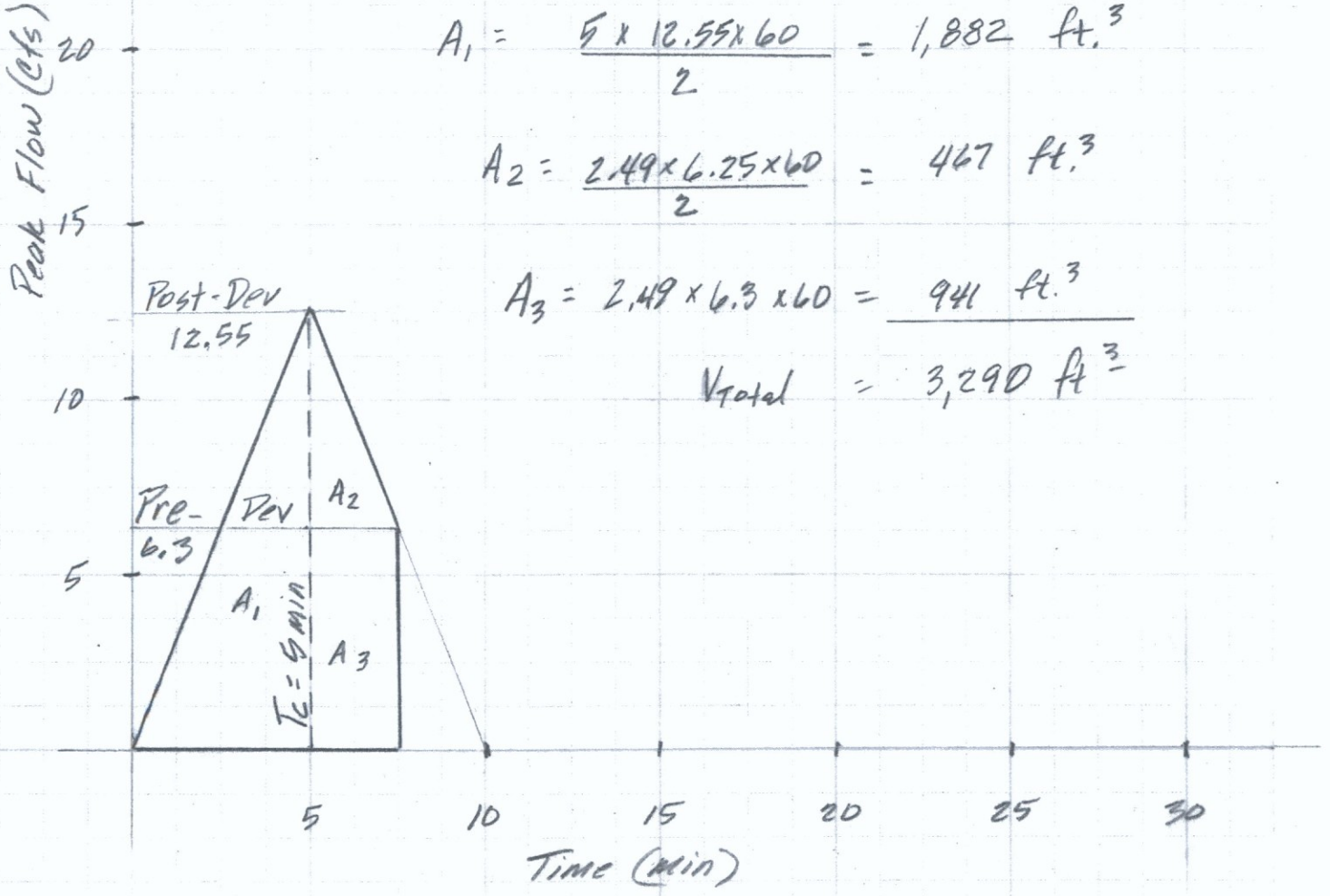


Figure 3.

ROSENDAHL

Project: Bellissima Estates
Job No. 160489
Date 1-31-17
Personal PWR

Retention Volume Lots 3-6:

Area under hydrograph = Volume of runoff (ft^3)

Volume to be retained:

$V_{Total} = A_1 + A_2 + A_3$

$A_1 = \frac{10 \times 17.84 \times 60}{2} = 5,352\ ft^3$

$A_2 = \frac{2.32 \times 4.15 \times 60}{2} = 289\ ft^3$

$A_3 = 2.32 \times 13.69 \times 60 = 1906\ ft^3$

$V_{Total} = 7,547\ ft^3$

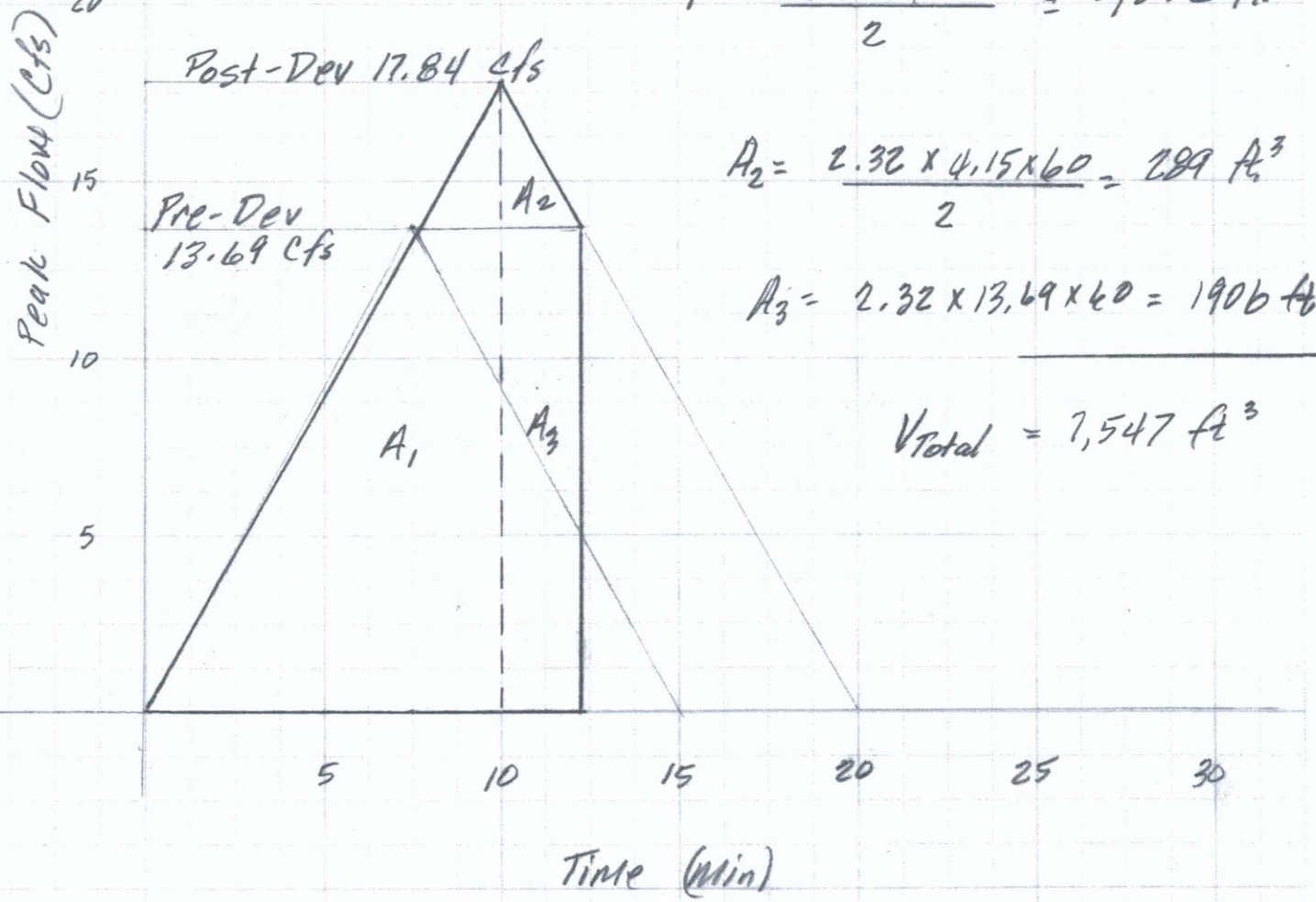


Figure 4

APPENDIX AND EXHIBITS

Warning and Disclaimer of Liability

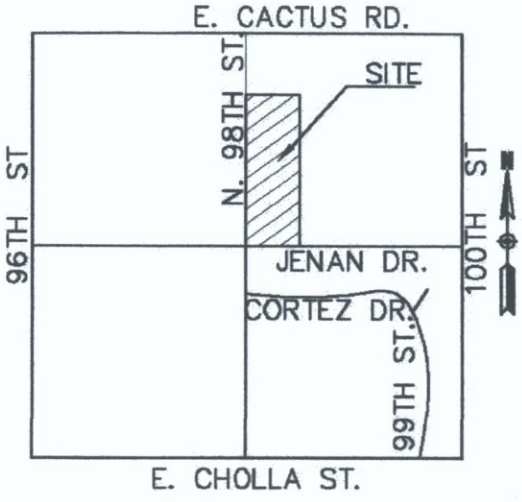
Location Map

Existing Conditions Aerial Photograph

NOAA Atlas 14 Information

Preliminary Site Grading & Drainage Plan

Preliminary Plat Site Plan



LOCATION MAP

NW 1/4 SEC. 20, T. 3N, R. 5E

(NOT TO SCALE)

Appendix 4-1C

WARNING & DISCLAIMER OF LIABILITY

The Drainage and Floodplain Regulations and Ordinances of the City of Scottsdale are intended to "minimize the occurrence of losses, hazards and conditions adversely affecting the public health, safety and general welfare which might result from flooding caused by the surface runoff of rainfall" (Scottsdale Revised Code §37-16).

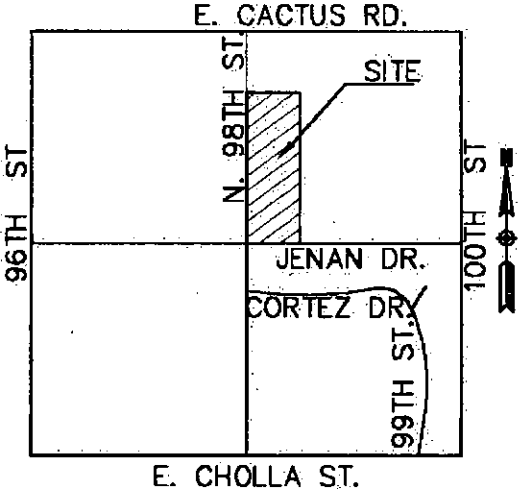
As defined in S.R.C. §37-17, a flood plain or "*Special flood hazard* area means an area having flood and/or flood related erosion hazards as shown on a FHBM or FIRM as zone A, AO, A1-30, AE, A99, AH, or E, and those areas identified as such by the floodplain administrator, delineated in accordance with subsection 37-18(b) and adopted by the floodplain board." It is possible that a property could be inundated by greater frequency flood events or by a flood greater in magnitude than a 100-year flood. Additionally, much of the Scottsdale area is a dynamic flood area; that is, the floodplains may shift from one location to another, over time, due to natural processes.

WARNING AND DISCLAIMER OF LIABILITY PURSUANT TO S.R.C §37-22
"The degree of flood protection provided by the requirements in this article is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Floods larger than the base flood can and will occur on rare occasions. Floodwater heights may be increased by man-made or natural causes. This article (Chapter 37, Article II) shall not create liability on the part of the city, any officer or employee thereof, or the federal government for any flood damages that result from reliance on this article or any administrative decision lawfully made thereunder."

Compliance with Drainage and Floodplain Regulations and Ordinances does not insure complete protection from flooding. The Floodplain Regulations and Ordinances meet established local and federal standards for floodplain management, but neither this review nor the Regulations and Ordinances take into account such flood related problems as natural erosion, streambed meander or man-made obstructions and diversions, all of which may have an adverse affect in the event of a flood. You are advised to consult your own engineer or other expert regarding these considerations.

I have read and understand the above. If I am an agent for an owner I have made the owner aware of and explained this disclaimer.

576-PA-2015		9-8-16	
Plan Check No.	Owner or Agent	Date	



LOCATION MAP

NW 1/4 SEC. 20, T. 3N, R. 5E

(NOT TO SCALE)

NOAA Atlas 14, Volume 1, Version 5
Location name: Scottsdale, Arizona, USA*
Latitude: 33.5947°, Longitude: -111.8691°
Elevation: 1410.52 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.192 (0.159–0.236)	0.251 (0.209–0.308)	0.339 (0.280–0.415)	0.406 (0.334–0.496)	0.498 (0.402–0.605)	0.568 (0.453–0.686)	0.640 (0.502–0.771)	0.712 (0.549–0.857)	0.809 (0.609–0.975)	0.883 (0.651–1.07)
10-min	0.292 (0.242–0.359)	0.381 (0.318–0.469)	0.516 (0.426–0.632)	0.619 (0.508–0.756)	0.757 (0.612–0.922)	0.864 (0.690–1.04)	0.974 (0.764–1.17)	1.08 (0.836–1.30)	1.23 (0.926–1.48)	1.34 (0.990–1.62)
15-min	0.362 (0.300–0.445)	0.473 (0.395–0.582)	0.639 (0.528–0.784)	0.767 (0.630–0.937)	0.939 (0.758–1.14)	1.07 (0.855–1.29)	1.21 (0.947–1.46)	1.34 (1.04–1.62)	1.53 (1.15–1.84)	1.67 (1.23–2.01)
30-min	0.487 (0.404–0.600)	0.637 (0.532–0.784)	0.860 (0.711–1.05)	1.03 (0.848–1.26)	1.26 (1.02–1.54)	1.44 (1.15–1.74)	1.63 (1.27–1.96)	1.81 (1.40–2.18)	2.06 (1.55–2.48)	2.25 (1.65–2.71)
60-min	0.603 (0.500–0.742)	0.788 (0.658–0.970)	1.06 (0.880–1.31)	1.28 (1.05–1.56)	1.56 (1.26–1.90)	1.78 (1.43–2.16)	2.01 (1.58–2.43)	2.24 (1.73–2.69)	2.54 (1.91–3.07)	2.78 (2.05–3.35)
2-hr	0.706 (0.593–0.848)	0.913 (0.770–1.10)	1.22 (1.02–1.46)	1.45 (1.20–1.74)	1.77 (1.45–2.10)	2.00 (1.63–2.38)	2.25 (1.79–2.67)	2.50 (1.96–2.96)	2.84 (2.17–3.37)	3.10 (2.32–3.69)
3-hr	0.780 (0.655–0.956)	0.999 (0.842–1.23)	1.31 (1.09–1.60)	1.55 (1.28–1.89)	1.89 (1.54–2.29)	2.16 (1.74–2.60)	2.44 (1.93–2.94)	2.74 (2.13–3.28)	3.14 (2.37–3.77)	3.47 (2.56–4.16)
6-hr	0.938 (0.804–1.12)	1.18 (1.02–1.41)	1.51 (1.29–1.79)	1.77 (1.50–2.09)	2.13 (1.78–2.50)	2.41 (1.98–2.82)	2.70 (2.18–3.15)	2.99 (2.38–3.51)	3.40 (2.63–3.97)	3.71 (2.81–4.35)
12-hr	1.05 (0.905–1.23)	1.32 (1.14–1.55)	1.67 (1.44–1.95)	1.94 (1.66–2.26)	2.31 (1.95–2.69)	2.59 (2.16–3.01)	2.88 (2.37–3.34)	3.18 (2.58–3.68)	3.57 (2.83–4.16)	3.88 (3.01–4.54)
24-hr	1.23 (1.08–1.40)	1.55 (1.38–1.78)	2.01 (1.77–2.31)	2.37 (2.08–2.71)	2.87 (2.51–3.28)	3.27 (2.83–3.72)	3.68 (3.16–4.20)	4.11 (3.50–4.68)	4.70 (3.94–5.35)	5.16 (4.28–5.91)
2-day	1.33 (1.17–1.52)	1.70 (1.49–1.95)	2.23 (1.95–2.54)	2.65 (2.31–3.02)	3.23 (2.81–3.69)	3.70 (3.19–4.21)	4.19 (3.58–4.78)	4.70 (3.99–5.38)	5.42 (4.54–6.20)	5.99 (4.95–6.88)
3-day	1.43 (1.26–1.63)	1.82 (1.61–2.08)	2.40 (2.11–2.74)	2.87 (2.51–3.27)	3.53 (3.07–4.01)	4.05 (3.50–4.60)	4.62 (3.96–5.25)	5.21 (4.43–5.93)	6.04 (5.06–6.88)	6.71 (5.57–7.67)
4-day	1.52 (1.35–1.74)	1.95 (1.72–2.22)	2.58 (2.27–2.93)	3.09 (2.71–3.51)	3.82 (3.33–4.33)	4.41 (3.82–4.99)	5.04 (4.33–5.71)	5.71 (4.86–6.48)	6.65 (5.59–7.56)	7.43 (6.18–8.46)
7-day	1.71 (1.50–1.96)	2.19 (1.93–2.51)	2.90 (2.54–3.32)	3.48 (3.04–3.98)	4.30 (3.74–4.91)	4.97 (4.29–5.66)	5.68 (4.86–6.47)	6.43 (5.46–7.34)	7.50 (6.29–8.57)	8.37 (6.94–9.59)
10-day	1.86 (1.64–2.12)	2.38 (2.10–2.71)	3.15 (2.77–3.58)	3.77 (3.30–4.28)	4.64 (4.04–5.26)	5.35 (4.63–6.05)	6.09 (5.24–6.91)	6.88 (5.87–7.81)	8.00 (6.73–9.09)	8.89 (7.40–10.1)
20-day	2.29 (2.03–2.61)	2.96 (2.61–3.35)	3.91 (3.45–4.43)	4.63 (4.07–5.24)	5.61 (4.91–6.35)	6.36 (5.55–7.20)	7.14 (6.19–8.09)	7.92 (6.83–8.99)	8.99 (7.68–10.2)	9.81 (8.31–11.2)
30-day	2.69 (2.37–3.05)	3.47 (3.06–3.93)	4.58 (4.04–5.18)	5.43 (4.78–6.12)	6.57 (5.75–7.41)	7.45 (6.50–8.40)	8.36 (7.25–9.41)	9.28 (8.00–10.5)	10.5 (9.00–11.9)	11.5 (9.75–13.0)
45-day	3.15 (2.79–3.56)	4.06 (3.60–4.59)	5.36 (4.74–6.05)	6.33 (5.58–7.14)	7.61 (6.69–8.59)	8.58 (7.51–9.69)	9.57 (8.33–10.8)	10.6 (9.14–12.0)	11.9 (10.2–13.5)	12.9 (11.0–14.7)
60-day	3.50 (3.11–3.94)	4.52 (4.02–5.09)	5.96 (5.29–6.71)	7.01 (6.20–7.89)	8.38 (7.39–9.44)	9.40 (8.26–10.6)	10.4 (9.12–11.8)	11.4 (9.96–12.9)	12.8 (11.1–14.5)	13.8 (11.8–15.7)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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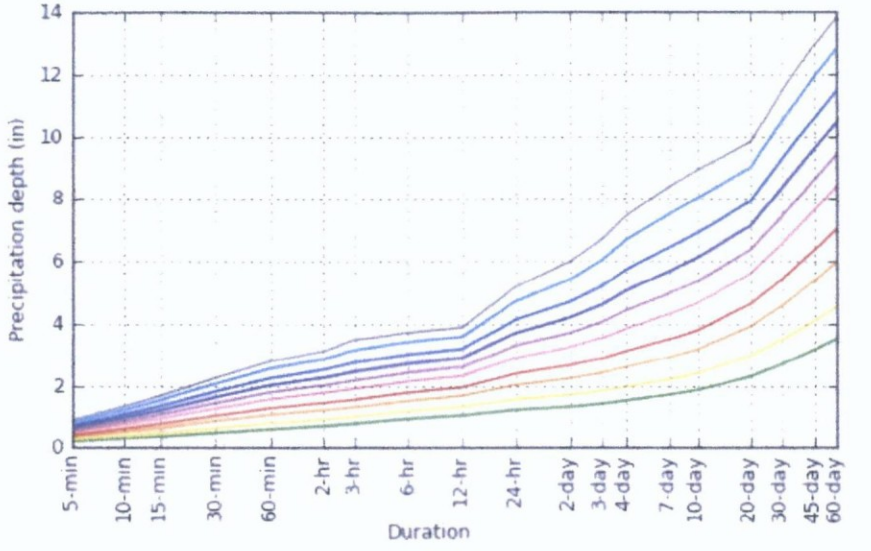
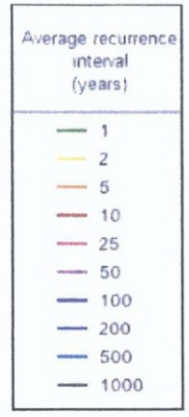
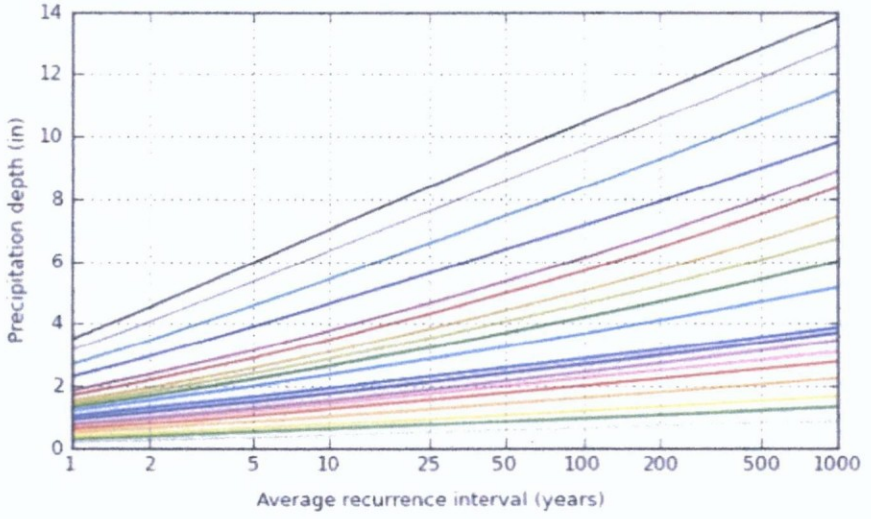
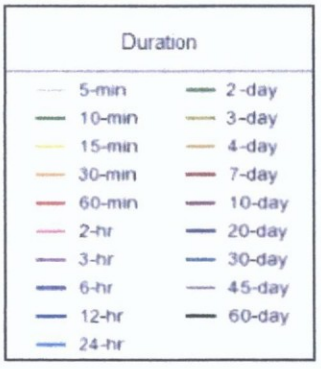
PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 33.5947°, Longitude: -111.8691°









NOAA Atlas 14, Volume 1, Version 5 Created (GMT): Thu Nov 10 00:20:14 2016

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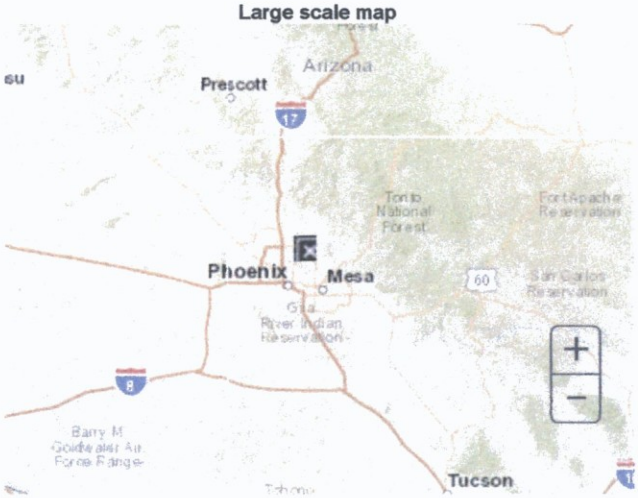
Maps & aerials

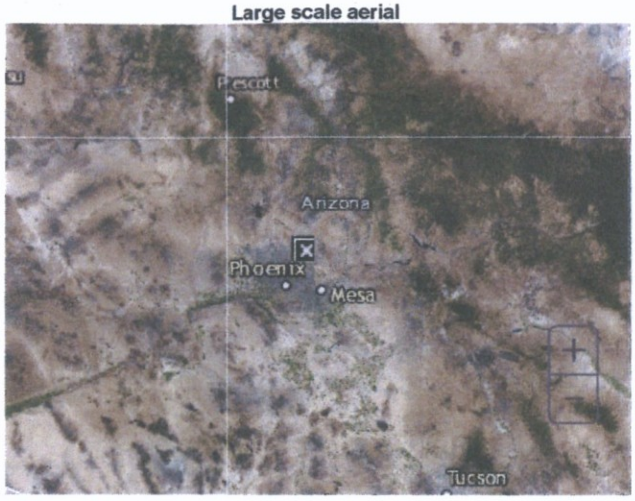
Small scale terrain

Large scale terrain

Large scale map



Large scale aerial



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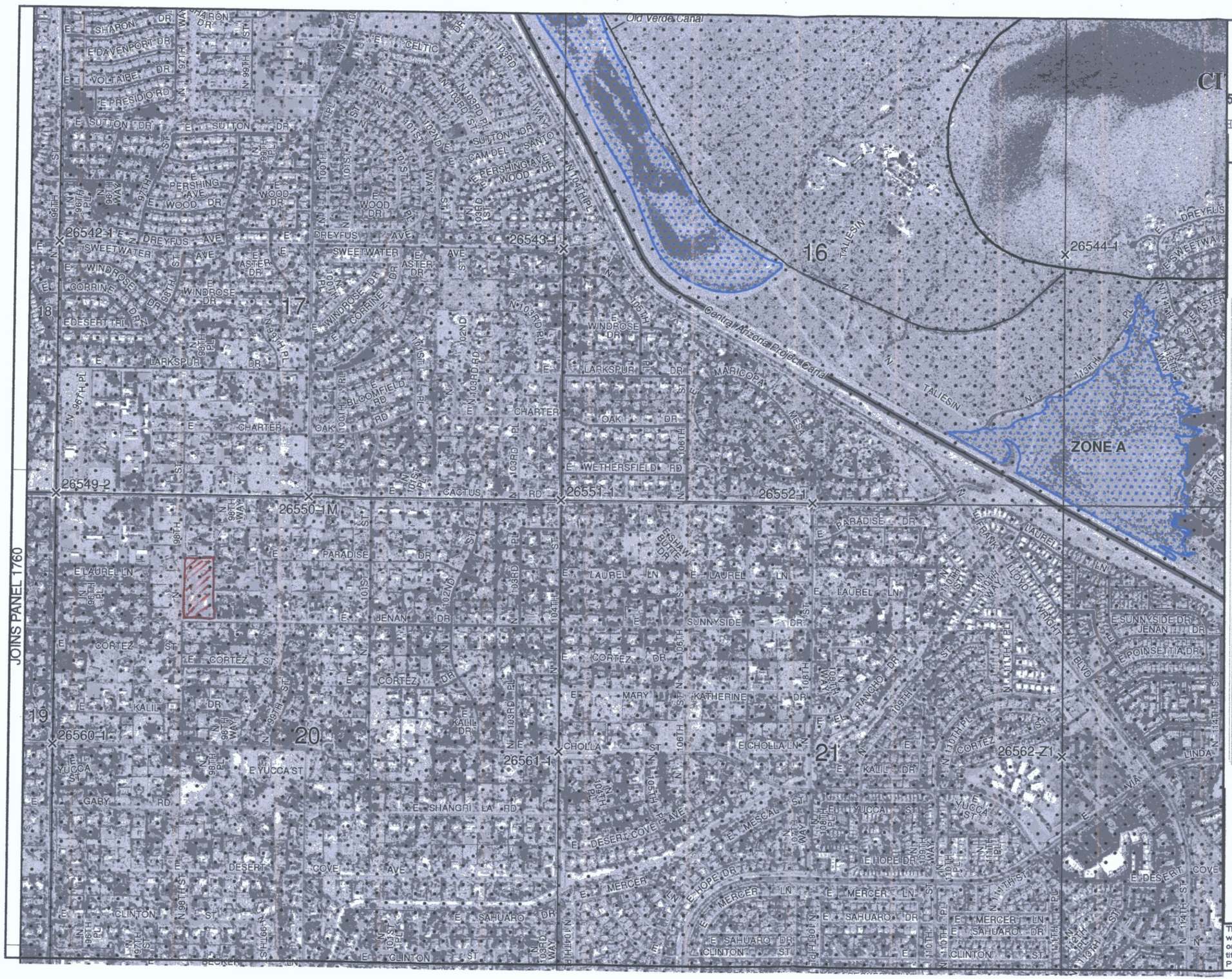
US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer



MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

METE

PANEL 1780L

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

MARICOPA COUNTY, ARIZONA

AND INCORPORATED AREAS

PANEL 1780 OF 4425

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MARICOPA COUNTY	040037	1780	L
SCOTTSDALE, CITY OF	045012	1780	L

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
04013C1780L

MAP REVISED
OCTOBER 16, 2013

Federal Emergency Management Agency

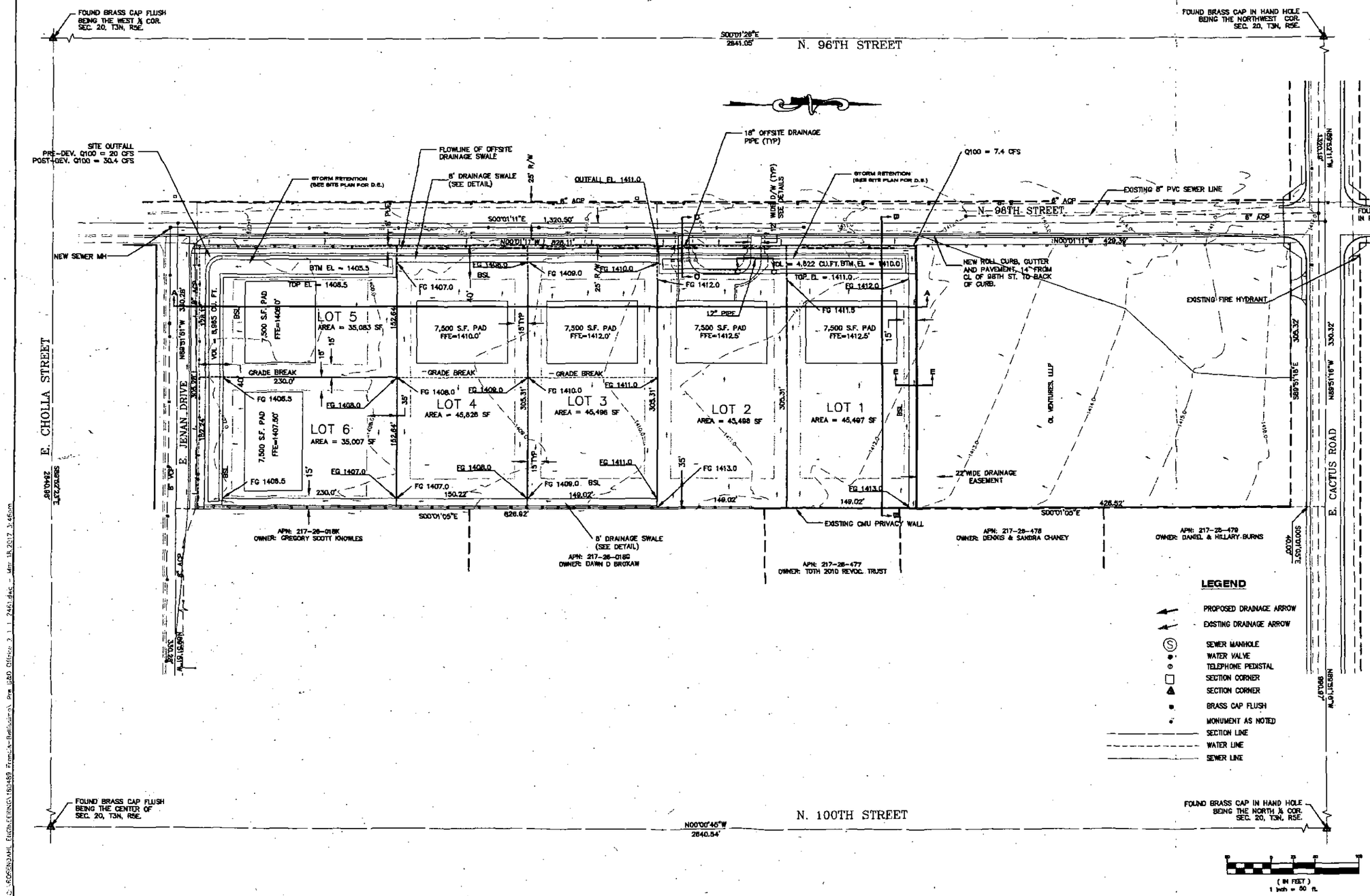
150 0 300 Feet

kwheeler
8/25/2016 11:54:55 AM

AERIAL PHOTO
Note: Buildings, canopies and fences have been cleared from the site.

CITY OF SCOTTSDALE
City of Scottsdale GIS

PRELIMINARY GRADING & DRAINAGE PLAN
BELLISSIMA ESTATES



LEGEND

- PROPOSED DRAINAGE ARROW
- EXISTING DRAINAGE ARROW
- SEWER MANHOLE
- WATER VALVE
- TELEPHONE PEDISTAL
- SECTION CORNER
- SECTION CORNER
- BRASS CAP FLUSH
- MONUMENT AS NOTED
- SECTION LINE
- WATER LINE
- SEWER LINE

REV. NO.	DESCRIPTION

ROSENDAHL ENGINEERING
• ENGINEERING • URBAN DESIGN
• SURVEYING • COMMERCIAL / RESIDENTIAL
8574 N. BARKLEY ST. MESA, ARIZONA 85203 (480) 396-2268 FAX
wayne@rosendahlengineering.com

BELLISSIMA ESTATES
PRELIMINARY G & D PLAN
9830 E. JENAN DRIVE
LOT 2,
BELLISSIMA FARMS MINOR LAND DIVISION

OWNER
DeAcerlar-Francis Custom Homes, Inc.
12678 N. 113th Way
Scottsdale, AZ 85259

CALL 2 WORKING DAYS BEFORE YOU DIG
ARIZONA BLUE STAKE, INC.
1-800-STAKE-IT

DESIGN: PWR
DRAWN: MD

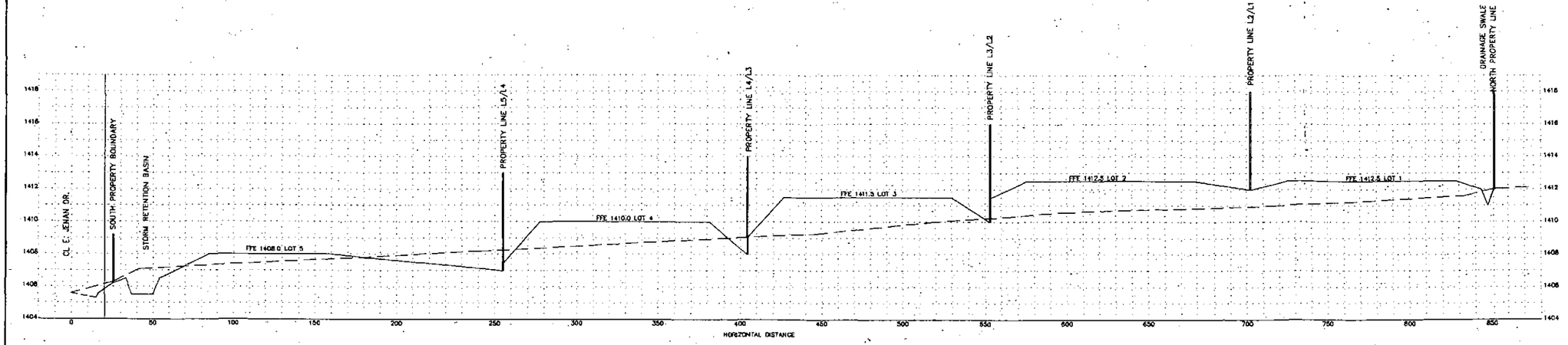
21718 PHILIP W. ROSENDAHL 3/14/17 REGISTERED PROFESSIONAL ENGINEER
EXP: 3/31/19

PROJECT NO. 160459
DATE: 8/15/18

SHEET 1 OF 2

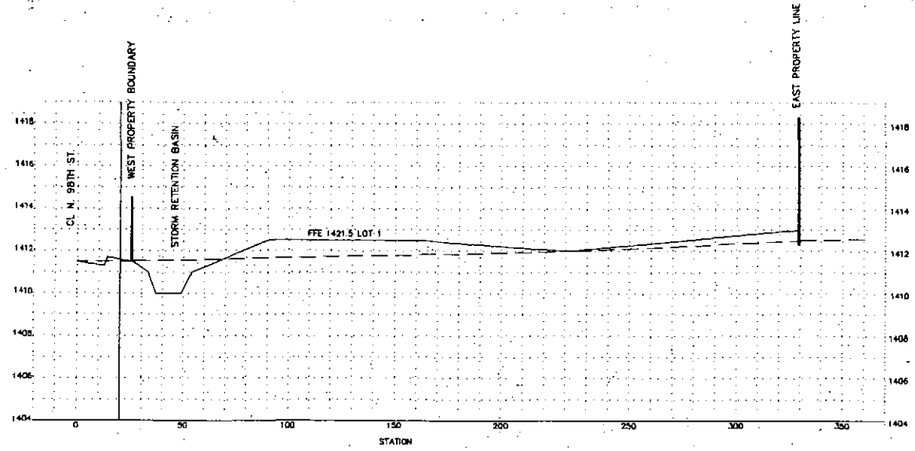
4-PP-2016

C:\ROSENDAHL ENGINEERING\160459 Francis-Bellissima\ Pre 1320 Offsite 2 1 1 2401.dwg - Mar 15, 2017 3:46pm



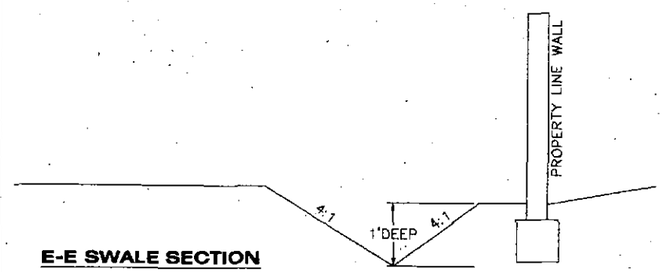
A - A CROSS-SECTION

SCALE: VERT: 1"=1'
HORZ: 1"=30'



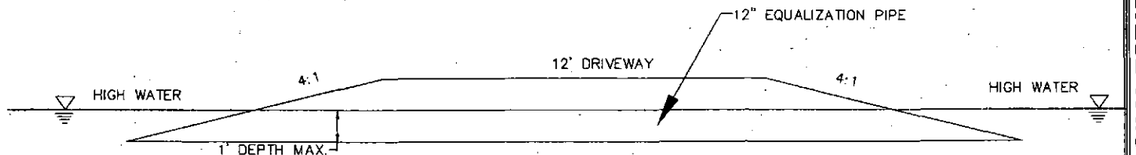
B - B CROSS-SECTION

SCALE: VERT: 1"=1'
HORZ: 1"=30'



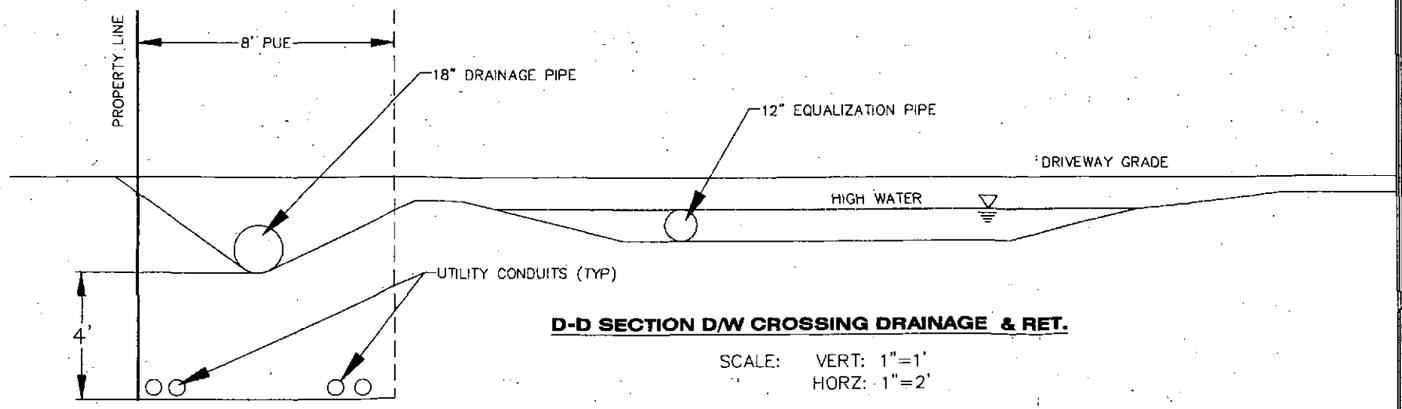
E-E SWALE SECTION

SCALE: VERT: 1"=1'
HORZ: 1"=2'



C-C SECTION D/W THROUGH RET.

SCALE: VERT: 1"=1'
HORZ: 1"=2'



D-D SECTION D/W CROSSING DRAINAGE & RET.

SCALE: VERT: 1"=1'
HORZ: 1"=2'

REV. NO.	DESCRIPTION

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857 N. BARKLEY ST. MESA, ARIZONA 85203
(480) 994-1263 TEL www.rosendahlengineering.com

BELLISSIMA ESTATES
VARIOUS CROSS-SECTIONS

9830 E. JENAN DRIVE
LOT 2,
BELLISSIMA FARMS MINOR LAND DIVISION

OWNER
DiAcatis—Fronio's Custom Homes, Inc.
12378 N. 115th Way
Scottsdale, AZ. 85259

CALL 2 WORKING DAYS BEFORE YOU DIG GRADE
1-800-STAKE-IT

DESIGN: PWR
DRAWN: MD

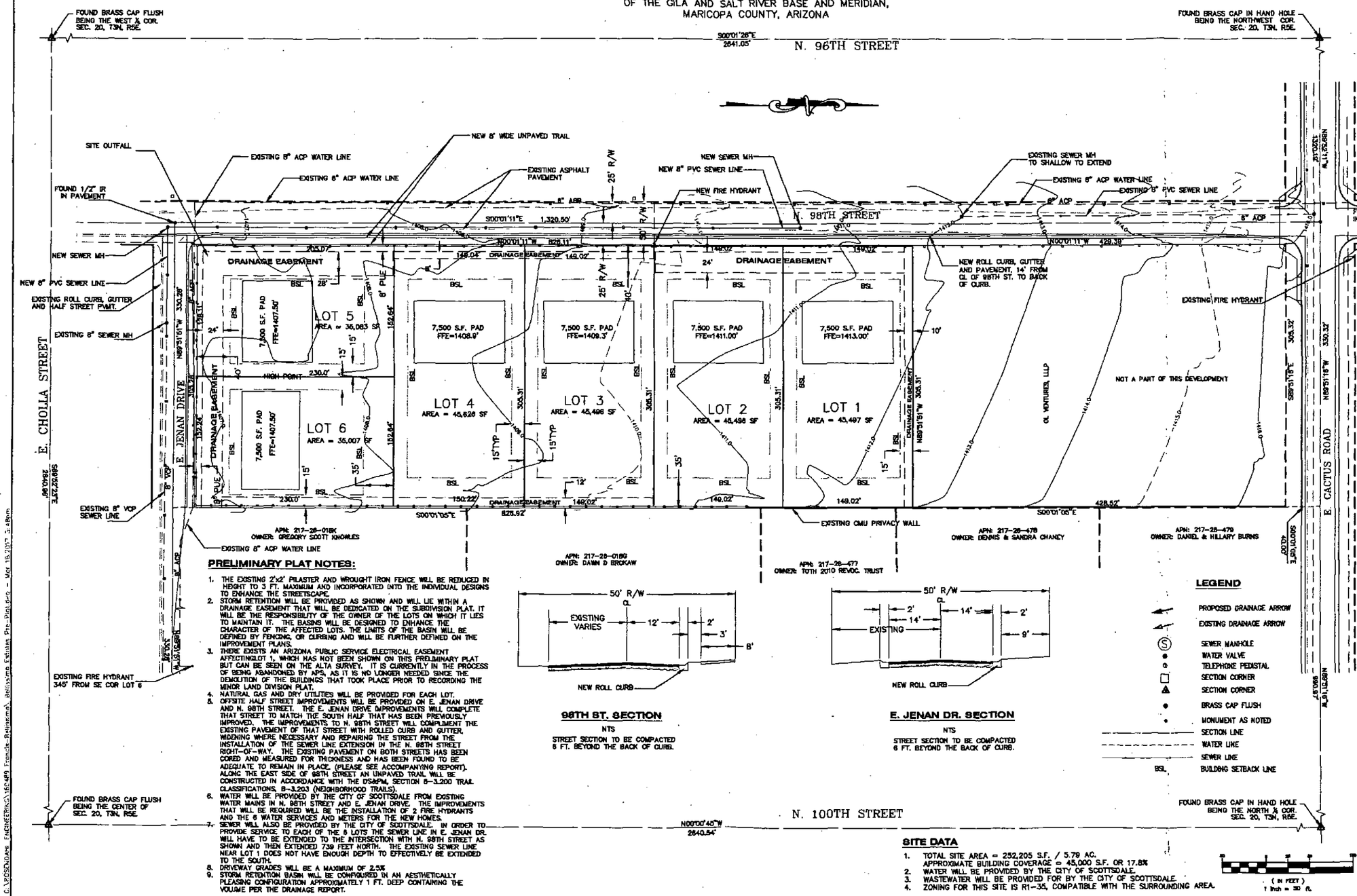
CERTIFICATE NO. 24718 PHILLIP W. ROSENDAHL
EXP: 3/31/19

PROJECT NO. 160489
DATE: 8/15/18
SHEET 2 OF 2

4-PP-2016

PRELIMINARY PLAT SITE PLAN
BELLISSIMA ESTATES

BEING A PORTION OF THE NORTHWEST QUARTER
SECTION 20, TOWNSHIP 3 SOUTH, RANGE 5 EAST
OF THE GILA AND SALT RIVER BASE AND MERIDIAN,
MARICOPA COUNTY, ARIZONA



PRELIMINARY PLAT NOTES:

1. THE EXISTING 2'x2' PILASTER AND WROUGHT IRON FENCE WILL BE REDUCED IN HEIGHT TO 3 FT. MAXIMUM AND INCORPORATED INTO THE INDIVIDUAL DESIGNS TO ENHANCE THE STREETSCAPE.
2. STORM RETENTION WILL BE PROVIDED AS SHOWN AND WILL LIE WITHIN A DRAINAGE EASEMENT THAT WILL BE DEDICATED ON THE SUBDIVISION PLAT. IT WILL BE THE RESPONSIBILITY OF THE OWNER OF THE LOTS ON WHICH IT LIES TO MAINTAIN IT. THE BASINS WILL BE DESIGNED TO ENHANCE THE CHARACTER OF THE AFFECTED LOTS. THE LIMITS OF THE BASIN WILL BE DEFINED BY FENCING, OR CURBING AND WILL BE FURTHER DEFINED ON THE IMPROVEMENT PLANS.
3. THERE EXISTS AN ARIZONA PUBLIC SERVICE ELECTRICAL EASEMENT AFFECTING LOT 1, WHICH HAS NOT BEEN SHOWN ON THIS PRELIMINARY PLAT BUT CAN BE SEEN ON THE ALTA SURVEY. IT IS CURRENTLY IN THE PROCESS OF BEING ABANDONED BY APS, AS IT IS NO LONGER NEEDED SINCE THE DEMOLITION OF THE BUILDINGS THAT TOOK PLACE PRIOR TO RECORDING THE MINOR LAND DIVISION PLAT.
4. NATURAL GAS AND DRY UTILITIES WILL BE PROVIDED FOR EACH LOT.
5. OFFSITE HALF STREET IMPROVEMENTS WILL BE PROVIDED ON E. JENAN DRIVE AND N. 98TH STREET. THE E. JENAN DRIVE IMPROVEMENTS WILL COMPLETE THAT STREET TO MATCH THE SOUTH HALF THAT HAS BEEN PREVIOUSLY IMPROVED. THE IMPROVEMENTS TO N. 98TH STREET WILL COMPLIMENT THE EXISTING PAVEMENT OF THAT STREET WITH ROLLED CURB AND GUTTER, WIDENING WHERE NECESSARY AND REPAIRING THE STREET FROM THE INSTALLATION OF THE SEWER LINE EXTENSION IN THE N. 98TH STREET RIGHT-OF-WAY. THE EXISTING PAVEMENT ON BOTH STREETS HAS BEEN CORED AND MEASURED FOR THICKNESS AND HAS BEEN FOUND TO BE ADEQUATE TO REMAIN IN PLACE. (PLEASE SEE ACCOMPANYING REPORT). ALONG THE EAST SIDE OF 98TH STREET AN UNPAVED TRAIL WILL BE CONSTRUCTED IN ACCORDANCE WITH THE DSAPM, SECTION 8-3.200 TRAIL CLASSIFICATIONS, B-3.203 (NEIGHBORHOOD TRAILS).
6. WATER WILL BE PROVIDED BY THE CITY OF SCOTTSDALE FROM EXISTING WATER MAINS IN N. 98TH STREET AND E. JENAN DRIVE. THE IMPROVEMENTS THAT WILL BE REQUIRED WILL BE THE INSTALLATION OF 2 FIRE HYDRANTS AND THE 6 WATER SERVICES AND METERS FOR THE NEW HOMES.
7. SEWER WILL ALSO BE PROVIDED BY THE CITY OF SCOTTSDALE. IN ORDER TO PROVIDE SERVICE TO EACH OF THE 6 LOTS THE SEWER LINE IN E. JENAN DR. WILL HAVE TO BE EXTENDED TO THE INTERSECTION WITH N. 98TH STREET AS SHOWN AND THEN EXTENDED 739 FEET NORTH. THE EXISTING SEWER LINE NEAR LOT 1 DOES NOT HAVE ENOUGH DEPTH TO EFFECTIVELY BE EXTENDED TO THE SOUTH.
8. DRIVEWAY GRADES WILL BE A MAXIMUM OF 2.5%
9. STORM RETENTION BASIN WILL BE CONFIGURED IN AN AESTHETICALLY PLEASING CONFIGURATION APPROXIMATELY 1 FT. DEEP CONTAINING THE VOLUME PER THE DRAINAGE REPORT.

98TH ST. SECTION

NTS

STREET SECTION TO BE COMPACTED 6 FT. BEYOND THE BACK OF CURB.

E. JENAN DR. SECTION

NTS

STREET SECTION TO BE COMPACTED 6 FT. BEYOND THE BACK OF CURB.

LEGEND

- PROPOSED DRAINAGE ARROW
- EXISTING DRAINAGE ARROW
- SEWER MANHOLE
- WATER VALVE
- TELEPHONE PEDESTAL
- SECTION CORNER
- SECTION CORNER
- BRASS CAP FLUSH
- MONUMENT AS NOTED
- SECTION LINE
- WATER LINE
- SEWER LINE
- BSL BUILDING SETBACK LINE

SITE DATA

1. TOTAL SITE AREA = 252,205 S.F. / 5.79 AC.
   APPROXIMATE BUILDING COVERAGE = 45,000 S.F. OR 17.8%
2. WATER WILL BE PROVIDED BY THE CITY OF SCOTTSDALE.
3. WASTEWATER WILL BE PROVIDED FOR BY THE CITY OF SCOTTSDALE.
4. ZONING FOR THIS SITE IS R1-35, COMPATIBLE WITH THE SURROUNDING AREA.

(IN FEET)
1 inch = 30 ft.

REV. NO.	DESCRIPTION

ROSENDAHL ENGINEERING
• ENGINEERING • URBAN DESIGN
• SURVEYING • COMMERCIAL / RESIDENTIAL
857 N. BARKLEY ST. (480) 599-1263 TEL
MESA, ARIZONA 85203 wayne@rosendahlengineering.com

BELLISSIMA ESTATES
PRE-PLAT SITE PLAN
9830 E. JENAN DRIVE
LOT 2,
BELLISSIMA FARMS MINOR LAND DIVISION

OWNER
DeAcetis-Francis Custom Homes, Inc.
12878 N. 113th Way
Scottsdale, AZ 85259

CALL 2 WORKING DAYS BEFORE YOU DIG
1-800-STAKE-IT

DESIGN: PHR
DRAWN: MD

PROJECT NO. 160489
DATE: 1/24/17
SHEET 1 OF 1

4-PP-2016

C:\POSENDAHL ENGINEERING\160489 Francis-Belissima Estates\Pre-Plat\Pre-Plat Site - Mar 15 2017 3:48pm