

# PRELIMINARY DRAINAGE REPORT

**SCOTTSDALE CITY CENTER**  
7201 E. CAMELBACK ROAD, SCOTTSDALE, AZ 85251

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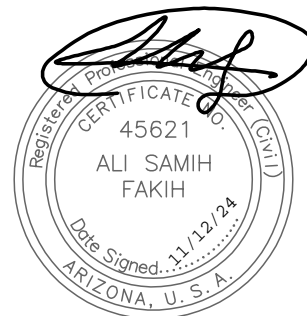


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Project Number: 221117

1<sup>st</sup> Submittal Date: June 22, 2023 (DRB)  
2<sup>nd</sup> Submittal Date: November 12, 2024 (DRB)

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## 1. INTRODUCTION

This Preliminary Drainage Report represents the storm water analysis for the City Center residential development proposed in Scottsdale, Arizona. The purpose of this preliminary report is to provide the hydrologic and hydraulic analysis required by the City of Scottsdale for DRB submittal. This report includes discussions and calculations defining the storm water management concepts for the collection and conveyance necessary to comply with the drainage requirements of the City of Scottsdale and Maricopa County. Preparation of this report has been done in accordance with the requirements of the City of Scottsdale Design Standards & Policies Manual (DS&PM) 2018 <sup>1</sup>, and the Drainage Design Manuals for Maricopa County, Arizona, Volumes I<sup>2</sup> and Volume II<sup>3</sup>.

## 2. LOCATION AND PROJECT DESCRIPTION

### 2.1. LOCATION:

The subject property consists of land located in Scottsdale, AZ:

- A portion of the Northwest Quarter of Section 23, Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian, Maricopa County, Arizona.
- Parcel ID Numbers: 173-41-015A, 173-41-016B, 173-41-017A, 173-41-021A, 173-41-006A, 173-41-005 and 173-41-004.
- Address: 7201 E. Camelback Road, Scottsdale, AZ 85251.

Refer to **FIGURE 1 - Vicinity Map** for the project’s location with respect to major cross streets.

### 2.2. EXISTING AND PROPOSED DEVELOPMENTS SURROUNDING THE SITE:

Existing site context related to surrounding developments is as follows:

- West: Across N. Scottsdale Road
  - The Arizona Canal Trail.
  - Parcel 173-42-385A; Commercial development; Zoning is D/RCO-2.
  - Parcel 173-42-345A; Residential development; Zoning is D/RCO-2.
  - Parcel 173-42-007B; Park site; Zoning is C-2.
- North: Across E. Camelback Road
  - The Arizona Canal Trail.
  - Parcel 173-38-073D; Salt River Project building; Zoning is D/OR-2.
- South: Across E. Shoeman Lane.
  - Parcel 173-41-271; Parking lot; Zoning unknown.
- East: Across N Brown Ave. W Hotel development consisting of the following parcels:
  - Parcel 173-41-233B.

### **2.3. EXISTING SITE DESCRIPTION:**

The project area includes approximately 131,786 sq. ft. (3.03 acres) of land designated as D/DMU-3 per COS Parcel Information Map. The site is currently developed as an existing commercial site. Three drywells exist on the site but a retention system has not been found. Therefore, the existing retention calculation will be performed with the areas draining to the drywells. Based on the existing slope, the land slopes away from the existing building towards the existing dry wells and adjacent roads.

Refer to **FIGURE 2 – Aerial Map** for an aerial image of the site.

### **2.4. EXISTING STUDIES:**

There is an existing conditionally approved city drainage report prepared by Sustainability Engineering Group dated July 27, 2020<sup>4</sup> for a Master Plan where the site is included. However, the master drainage report is no longer relevant to the actual project.

### **2.5. PROPOSED SITE DEVELOPMENT:**

Site development includes the demolition of the existing structures and their designated parking lots, and construction of a new 14 floor residential development with amenities areas and 3 levels of underground parking. The proposed development contains four points of access from the surrounding roads, three from Brown Avenue, and one from E. Shoeman Lane.

Refer to **APPENDIX III – Preliminary Grading and Drainage Plan** for site layout.

### **2.6. FLOOD HAZARD ZONE:**

FIRM Map Number 04013C1770M dated September 18, 2020 indicates the site has a Zone X (No Screen) which is further described as areas of minimal flood hazard.

Refer to **FIGURE 3** for the FIRM.

## **3. EXISTING DRAINAGE CONDITIONS**

### **3.1. OFF-SITE:**

The city quarter section maps for Storm Water and Contour as well as obtained Flo-2D Maps from the Lower Indian Bend Wash were obtained and provide the following information for offsite drainage:

- There is a 144” R.C.P. storm drain running east along Camelback Road.
- There is an existing 18” H.D.P.E. pipe running from north to south along Brown Avenue and an existing catch basin, EX-CB-1, located at the northeast corner of the Shoeman Lane and Brown avenue intersection.

- According to the Flo-2D Map, flow patterns adjacent to the proposed City Center site are the following:
  - North: the north portion of the site drains onto Camelback Road and is conveyed west to east via curb and gutter to the nearest catch basins at the Miller Road intersection.
  - East: flow arrows illustrate offsite flow from Brown Avenue entering the site. However, based on the topographic survey, flow from Brown Avenue does not enter the site and is conveyed through curb and gutter to EX-CB-1.
  - South: all runoff along Shoeman Lane drains west- east past Brown Avenue
  - West: Scottsdale Road drains north to south via curb and gutter without entering the site.

Refer to **FIGURE 4** for the **Flo-2D Exhibit**.

### **3.2. ON-SITE:**

The existing site is fully developed with minor landscape areas. There are three existing drywells to which the site drains to. The majority of the site drains to existing drywells, EX-DW-1 & EX-DW-2, located within the south parking area. A portion of the northern parking lot drains to existing drywell, EX-DW-3, located at the northeast corner of the parking lot. The remainder of the parking lot drains to Camelback Road. The as-builts do not provide the retention volumes provided under existing condition. Based on the drainage area map, a calculation of the existing required retention volume is provided in section 3.3.

Refer to **APPENDIX II** for Drywells locations.

**HYDROLOGIC ANALYSIS:** The hydrologic analysis is determined using the procedures in the City of Scottsdale Design Standards & Policies Manual and the Drainage Design Manual for Maricopa County, Arizona, Volume I. The Rational Method was utilized to compute the on-site peak discharges. The Rational Method equation is displayed as shown below:

$$Q=C_{wt}IA$$

Where:  $C_{wt}$  = The runoff coefficient relating runoff to rainfall

$I$  = Average rainfall intensity in inches/hour, lasting for  $T_c$ .

$T_c$  = The time of concentration (Using Five minutes for the developed areas).

$A$  = The contributing drainage area in acres.

Refer to section 4.3 for land characteristics.

Table 1 below is a summary of existing conditions runoff calculations:

**Table 1**

EXISTING SITE DISCHARGES									
	TOTAL AREA	Cwt	Intensity 10 yr	Q 10	Intensity 100 yr	Q 100	Concentration Point	Total flows Q10	Total flows Q100
	(ac)	(-)	(in/hr)	(cfs)	(in/hr)	(cfs)	CP#	(cfs)	(cfs)
	3.03	0.86	4.72	-	7.46	-	-	13.91	19.50
EX-A1	0.38	0.95	4.72	1.70	7.46	2.69	CP-2	1.70	2.69
EX-B1	0.69	0.95	4.72	3.09	7.46	4.89	EX DW-1 & EX DW-2	9.44	12.44
EX-B2	1.17	0.86	4.72	4.77	7.46	7.55			
EX-C1	0.30	0.45	4.72	0.64	7.46	1.01	CP-3	1.51	2.39
EX-C2	0.20	0.93	4.72	0.87	7.46	1.38			
EX-D1	0.17	0.89	4.72	0.72	7.46	1.13	CP-1	0.72	1.13
EX-E1	0.12	0.95	4.72	0.54	7.46	0.85	EX DW-3	0.54	0.85

Overall project area includes **3.03 Acres at C<sub>w</sub>t = 0.86** (Existing Conditions).

Refer to the **Existing Cwt Exhibit** and **Existing Conditions Drainage Area Map** in **Appendix II**.

**3.3. STORMWATER RETENTION:**

There appears to be three existing dry wells associated with the current development, none are registered with the AZDEQ. This indicates there may be retention provided however, there is no record of existing volumes or locations. Therefore, this project will provide retention for the 100-yr, 2-hr storm event in proposed conditions, see section 4.4.

**4. PROPOSED STORM WATER MANAGEMENT**

**4.1. DESIGN INTENT:**

On-site drainage will be directed to underground retention basins via catch basins and the roof flows will be directed to the storm network via roof drains. The design intent for this preliminary drainage report is to provide the retention required for the redeveloped site and to attenuate any excess stormwater runoff to historical outlets, where needed. The site proposed impervious surfaces result in increased runoff compared to existing conditions.

Refer to **Appendix II** for **Proposed Conditions Drainage Area Map**.

**4.2. DESIGN STORM REQUIREMENTS:**

In accordance with City of Scottsdale requirements, stormwater storage for the 100-year 2-hour storm event will be provided.

**4.3. LAND CHARACTERISTICS:**

The proposed project sites consist mainly of a commercial building with access drives to adjacent streets and minor landscape areas along the west and north boundaries. Based on the DS&PM, runoff coefficients for the 100-year storm event used are as follows:

- C=0.95 for building or concrete and paved surface
- C=0.45 for natural desert or desert landscape

**HYDROLOGIC ANALYSIS:** The hydrologic analysis is determined using the procedures in the City of Scottsdale Design Standards & Policies Manual and the Drainage Design Manual for Maricopa County, Arizona, Volume I. The Rational Method was utilized to compute the on-site peak discharges. The Rational Method equation is displayed as shown below:

$$Q=C_{wt}IA$$

Where:  $C_{wt}$  = The runoff coefficient relating runoff to rainfall

I = Average rainfall intensity in inches/hour, lasting for  $T_c$ .

$T_c$  = The time of concentration (Using Five minutes for the developed areas).

A = The contributing drainage area in acres.

Table 3 below is a summary of proposed conditions runoff calculations:

**Table 3**

PROPOSED SITE DISCHARGES									
	TOTAL AREA	Cwt	Intensity 10 yr	Q 10	Intensity 100 yr	Q 100	Concentration Point	Total flows Q10	Total flows Q100
	(ac)	(-)	(in/hr)	(cfs)	(in/hr)	(cfs)	CP#	(cfs)	(cfs)
	3.03	0.91	4.72	-	7.46	-	-	13.16	20.79
DA-A1	0.30	0.95	4.72	1.35	7.46	2.13	BASIN A	10.55	16.67
DA-A2	0.07	0.95	4.72	0.32	7.46	0.50			
DA-A3	0.10	0.73	4.72	0.35	7.46	0.55			
DA-A4	0.13	0.89	4.72	0.55	7.46	0.87			
DA-A5	0.01	0.81	4.72	0.02	7.46	0.03			
DA-A6	0.04	0.90	4.72	0.17	7.46	0.27			
DA-R1	0.15	0.95	4.72	0.68	7.46	1.08			
DA-R2	1.59	0.95	4.72	7.11	7.46	11.23			
DA-B1	0.03	0.95	4.72	0.15	7.46	0.24	BASIN B	1.79	2.82
DA-B2	0.11	0.91	4.72	0.46	7.46	0.72			
DA-B3	0.08	0.71	4.72	0.28	7.46	0.44			
DA-R3	0.20	0.95	4.72	0.90	7.46	1.42			
DA-C1	0.05	0.74	4.72	0.17	7.46	0.26	CP-3	0.17	0.26
DA-D1	0.18	0.79	4.72	0.66	7.46	1.04	CP-1	0.66	1.04

Overall project area includes **3.03 Acres at  $C_{wt} = 0.91$**  (Proposed Conditions).

Refer to the **Proposed Cwt Exhibit** and **Proposed Conditions Drainage Area Map** in **Appendix II**.

Pre vs Post onsite flows to historic outfalls are presented in the table below:

**Table 4 – Pre vs. Post Flows**

Outfall	Q10 (cfs)			Q100 (cfs)		
	Existing	Proposed	Δ	Existing	Proposed	Δ
CP-1	0.72	0.66	-0.06	1.13	1.04	-0.09
CP-2	1.70	0.00	-1.70	2.69	0.00	-2.69
CP-3	1.51	0.17	-1.34	2.39	0.26	-2.13

Flows to the historical outfalls are reduced. Consequently, the proposed conditions are favorable.

Refer to **APPENDIX II** for more information.

**4.4. STORMWATER RETENTION:**

Since the existing retention locations and volumes cannot be defined, the required retention volume will be designed for the 100-year, 2-hour storm event calculated as follows:

Per City of Scottsdale DS&PM 4-1.201, development storage requirements for the 100-yr, 2-hr storm event are calculated as follows:

$$V_r = C \left( \frac{P}{12} \right) A$$

where:

$V_r$  = Required storage (cf)

$C$  = Weighted average runoff coefficient

$P$  = Precipitation amount =2.17 in per NOAA Atlas 14 Precipitation Frequency Estimates

$A$  = Total area of subbasin (sf)

Based on the C-values identified in section 4.3 above, the required volume is computed and shown in Table 5 below:

**Table 5**

<b>Proposed City Center Required Storage Volume Calculations</b>					
					$V_r = 1 * (P/12) * C_w * A$
					P=100-yr, 2-hr=2.17 in.
Drainage	Area	$C_w$	Depth	Volume Req.	Volume Req.
<u>Area ID</u>	<u>(acres)</u>	<u>(-)</u>	<u>(in)</u>	<u>(acre-ft)</u>	<u>(CF)</u>
<b>ON-SITE RETENTION - BASIN A - UG Storage</b>					
DA-A1	0.30	0.95	2.17	0.052	2,248.05
DA-A2	0.07	0.95	2.17	0.012	526.65
DA-A3	0.10	0.73	2.17	0.013	581.97
DA-A4	0.13	0.89	2.17	0.021	920.77
DA-A5	0.01	0.81	2.17	0.001	36.89
DA-A6	0.04	0.90	2.17	0.007	287.23
DA-R1	0.15	0.95	2.17	0.026	1,136.21
DA-R2	1.59	0.95	2.17	0.272	11,862.86
<b>TOTALS:</b>	<b>2.39</b>	<b>0.94</b>	<b>2.17</b>	<b>0.404</b>	<b>17,600.61</b>
<b>ON-SITE RETENTION - BASIN B - UG Storage</b>					
DA-B1	0.03	0.95	2.17	0.006	255.04
DA-B2	0.11	0.91	2.17	0.018	765.32
DA-B3	0.08	0.71	2.17	0.011	461.12
DA-R3	0.20	0.95	2.17	0.034	1,500.86
<b>TOTALS:</b>	<b>0.42</b>	<b>0.89</b>	<b>2.17</b>	<b>0.068</b>	<b>2,982.34</b>

**4.5. STORAGE PROVIDED:**
**Retention Basin A:**

The storage volume of underground rectangular vault is calculated using  $V = L \times W \times H$ .

- Proposed 58' X 16' X 19' Rectangular Vault = **17,632CF**.

**Retention Basin B:**

The storage volume of underground rectangular vault is calculated using  $V = L \times W \times H$ .

- Proposed 20' X 12' X 13' Rectangular Vault = **3,120 CF**.

Table 6 below presents a summary of the storage volume calculations:

**Table 6**

<b>Proposed Retention Basin Summary</b>			
Basin (ID)	TYPE (--)	Vp (CF)	Vr (CF)
Basin A	UG	17,632	17,601
Basin B	UG	3,120	2,982
<b>Total:</b>		<b>20,752</b>	<b>20,583</b>

**4.6. STORMWATER DISCHARGE**

The storage volume must be discharged within 36 hours in accordance with agency requirements. Drywells are proposed in the on-site storage facilities to dispose of stormwater within thirty-six (36) hours. The calculation is as follows:

- Minimum percolating rate of a drywell (for planning purposes) = 0.1 cfs
- Volume to be drained in 36 hours = 0.1 cfs \* 36 hours \* 3600 sec/hour = 12,960 cf.
- The number of drywells will be reduced if geotechnical testing for percolation rates determines adequate infiltration is available in the native soils at lower depths. If the percolation rate of the drywells is less than 0.1 cfs the number of drywells may have to be increased.

**Basin A** Provided storage = 17,493 CF.  
 17,493 CF /12,960 CF per drywell = 1.35 = 2 drywells required.

**Basin B** Provided storage = 3,120 CF.  
 3,254 CF /12,960 CF per drywell = 0.24 = 1 drywell required.

**4.7. PIPE CAPACITY CALCULATIONS:**

Pipes capacity calculations will be discussed at a later stage of the project.

**4.8. STORM DRAIN INLET CALCULATIONS:**

Storm drains inlet calculations will be discussed at a later stage of the project.

**4.9. ADEQ WATER QUALITY REQUIREMENTS**

The total disturbed area of this site is approximately 3.03 acres. The Arizona Department of Environmental Quality requires that any site disturbance over an acre is required to submit a NOI. An NOI will be submitted to ADEQ for this site after the first submittal of the construction documents as this site disturbance is over one acre.

## **5. FLOOD SAFETY FOR DWELLINGS**

### **5.1. FINISHED FLOOR ELEVATIONS**

This project lies in an “X” Flood Zone. Therefore, the proposed building finished floor elevations will be set a minimum of 12 inches above the 100-year high-water elevation of any adjacent streets and drainage paths.

## **6. CONCLUSIONS**

### **6.1. OVERALL PROJECT:**

1. The finish floor elevations will be designed a minimum of 12 inches above 100-year high-water elevation of any adjacent streets and drainage paths.
2. Total flows to historical outfalls will be reduced.
3. On-site storage facilities will be provided to account for the 100-year, 2hr event.

## **7. REFERENCES**

1. *Design Standards & Policies Manual, City of Scottsdale – January 2018*
2. *Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology, Flood Control District of Maricopa County, Fourth Edition, December 14, 2018*
3. *Drainage Design Manual for Maricopa County, Arizona, Volume II, Hydraulics, Flood Control District of Maricopa County, December 14, 2018*
4. *Drainage Master Plan: Scottsdale Collective per Sustainability Engineering Group, 2020*

## *FIGURES*

1. Vicinity Map
2. Aerial
3. FIRM
4. FLO2D Exhibit

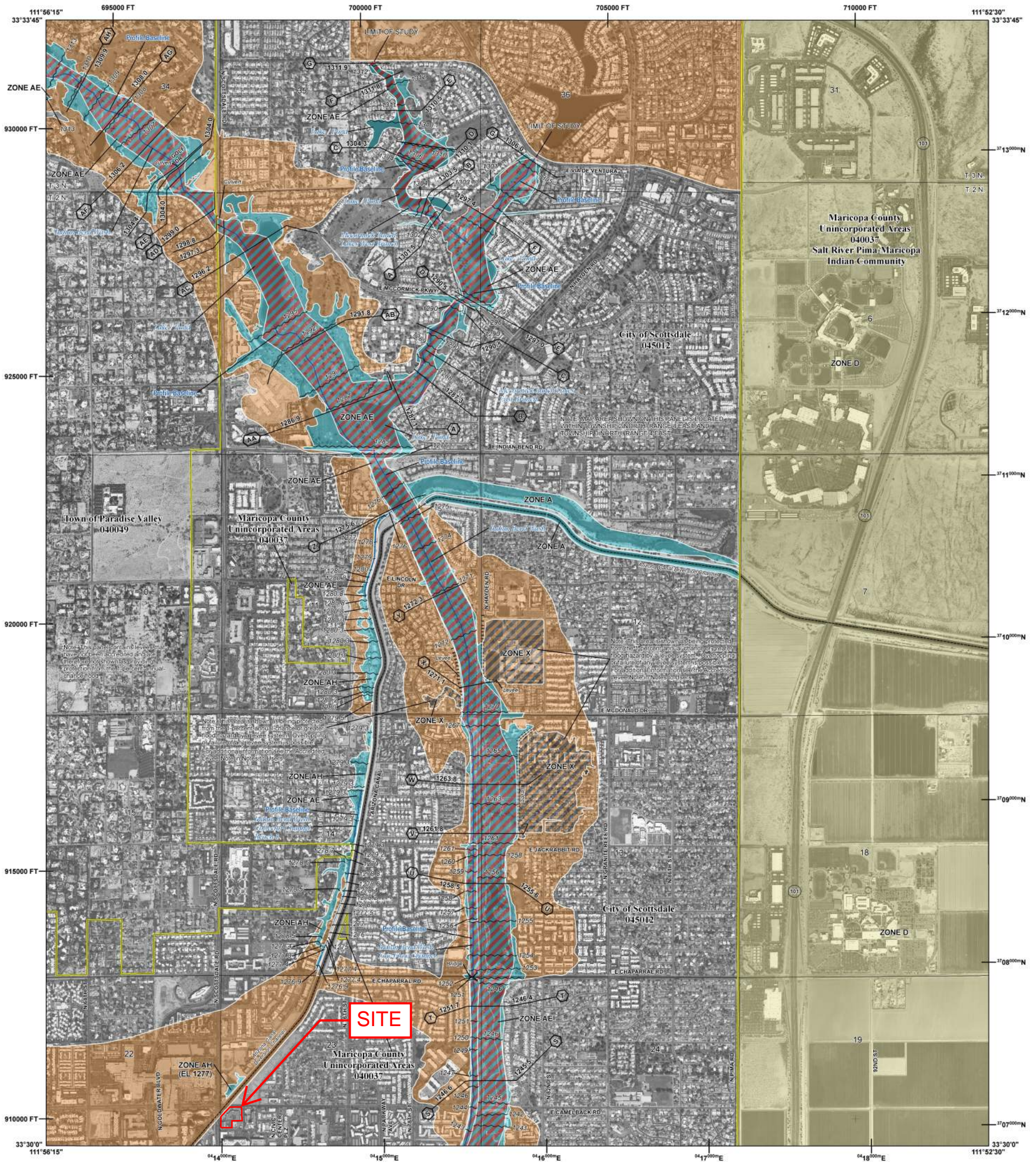
FIGURE 1. VICINITY MAP



FIGURE 2. AERIAL



# 3. FIRM



## FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT  
 THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING  
 DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT  
[HTTPS://MSC.FEMA.GOV](https://MSC.FEMA.GOV)

	Without Base Flood Elevation (BFE) Zone A.V, A99
	With BFE or Depth Zone AE, AO, AH, VE, AR
	Regulatory Floodway
	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
	Future Conditions 1% Annual Chance Flood Hazard Zone X
	Area with Reduced Flood Risk due to Levee See Notes, Zone X
	Area with Flood Risk due to Levee Zone D
	NO SCREEN Area of Minimal Flood Hazard Zone X
	Area of Undetermined Flood Hazard Zone D
	Channel, Culvert, or Storm Sewer
	Levee, Dike, or Floodwall
	Cross Sections with 1% Annual Chance Water Surface Elevation
	Coastal Transect
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature
	Base Flood Elevation Line (BFE)
	Limit of Study
	Jurisdiction Boundary

## NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with the FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at <https://msc.fema.gov>. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

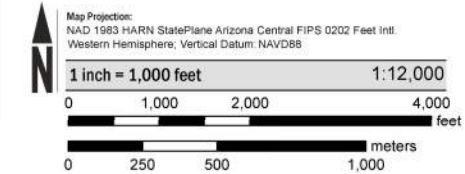
For community and countywide map dates refer to the Flood Insurance Study Report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was derived from U.S. Census Bureau TIGER files, dated 2014, and digital data provided by the Flood Control District of Maricopa County. Digital orthophotography was provided by the Flood Control District of Maricopa County. The imagery was flown in Fall 2013 and was produced with a 0.8 foot ground sample distance.

**ACCREDITED LEVEE NOTES TO USERS:** Check with your local community to obtain more information, such as the estimated level of protection provided (which may exceed the 1-percent-annual-chance level) and Emergency Action Plan, on the levee system(s) shown as providing protection for areas on this panel. To mitigate flood risk in residual risk areas, property owners and residents are encouraged to consider flood insurance and floodproofing or other protective measures. For more information on flood insurance, interested parties should visit the FEMA Website at <http://www.fema.gov/national-flood-insurance-program>.

## SCALE



## PANEL LOCATOR

MARICOPA COUNTY				
	1760	1780	1785	
1745	1765	1770	1790*	1795
2210	2230	2235	2255	2260

\* PANEL NOT PRINTED



## NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAP

MARICOPA COUNTY, ARIZONA  
and Incorporated Areas  
PANEL 1770 OF 4425



Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
MARICOPA COUNTY	040037	1770	M
PARADISE VALLEY, TOWN OF	040049	1770	M
SCOTTSDALE, CITY OF	045012	1770	M

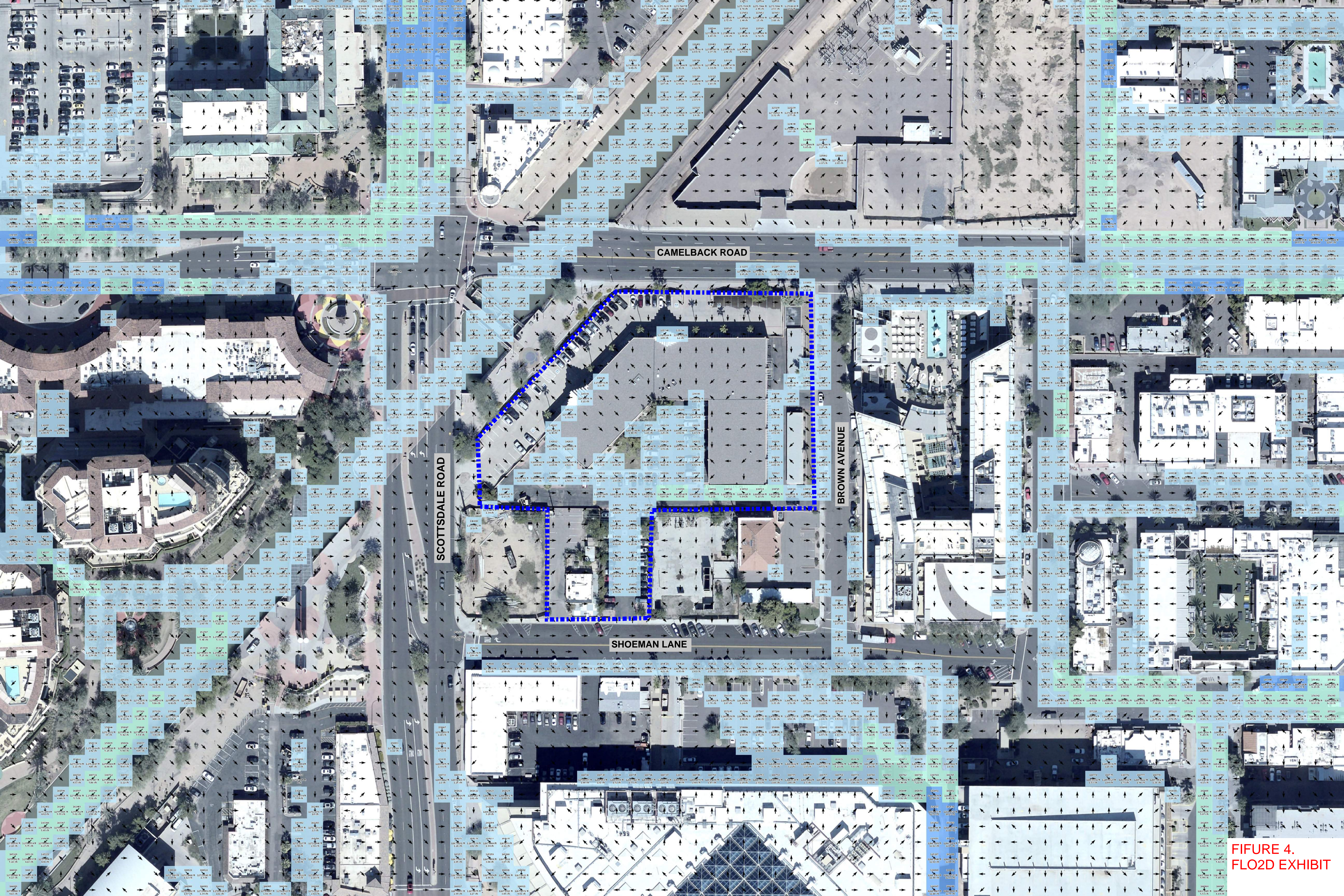


FIGURE 4.  
FLO2D EXHIBIT



*“LEED®ing and Developing Smart Projects”*

# *APPENDIX I*

## *RAINFALL DATA*



**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**

<b>PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)<sup>1</sup></b>										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	2.21 (1.85-2.69)	2.88 (2.42-3.52)	3.92 (3.28-4.76)	4.72 (3.91-5.70)	5.78 (4.73-6.96)	6.62 (5.34-7.92)	7.46 (5.90-8.90)	8.33 (6.48-9.92)	9.48 (7.18-11.3)	10.4 (7.69-12.4)
10-min	1.68 (1.40-2.05)	2.20 (1.85-2.68)	2.98 (2.49-3.62)	3.59 (2.98-4.33)	4.40 (3.59-5.30)	5.03 (4.06-6.02)	5.68 (4.49-6.78)	6.34 (4.93-7.55)	7.22 (5.47-8.62)	7.89 (5.86-9.43)
15-min	1.39 (1.16-1.69)	1.81 (1.53-2.21)	2.46 (2.06-2.99)	2.96 (2.46-3.58)	3.64 (2.97-4.38)	4.16 (3.36-4.98)	4.70 (3.71-5.60)	5.24 (4.07-6.24)	5.96 (4.52-7.12)	6.52 (4.84-7.80)
30-min	0.934 (0.782-1.14)	1.22 (1.03-1.49)	1.66 (1.39-2.01)	2.00 (1.66-2.41)	2.45 (2.00-2.95)	2.80 (2.26-3.35)	3.16 (2.50-3.77)	3.53 (2.74-4.20)	4.02 (3.04-4.79)	4.39 (3.26-5.25)
60-min	0.578 (0.484-0.704)	0.755 (0.636-0.921)	1.03 (0.858-1.25)	1.24 (1.02-1.49)	1.52 (1.24-1.82)	1.73 (1.40-2.08)	1.96 (1.55-2.33)	2.18 (1.70-2.60)	2.48 (1.88-2.97)	2.72 (2.02-3.25)
2-hr	0.335 (0.285-0.400)	0.433 (0.369-0.519)	0.580 (0.492-0.691)	0.692 (0.580-0.823)	0.845 (0.701-0.998)	0.962 (0.788-1.13)	1.08 (0.873-1.28)	1.21 (0.954-1.42)	1.37 (1.06-1.61)	1.50 (1.13-1.78)
3-hr	0.243 (0.205-0.293)	0.312 (0.265-0.377)	0.409 (0.346-0.493)	0.487 (0.408-0.583)	0.595 (0.492-0.708)	0.682 (0.555-0.809)	0.772 (0.618-0.916)	0.867 (0.681-1.03)	0.997 (0.760-1.18)	1.10 (0.820-1.31)
6-hr	0.146 (0.126-0.172)	0.185 (0.161-0.218)	0.238 (0.205-0.279)	0.280 (0.239-0.327)	0.337 (0.284-0.391)	0.381 (0.317-0.441)	0.428 (0.350-0.495)	0.475 (0.382-0.551)	0.541 (0.423-0.628)	0.592 (0.453-0.689)
12-hr	0.081 (0.071-0.094)	0.103 (0.089-0.119)	0.130 (0.113-0.151)	0.152 (0.131-0.175)	0.181 (0.154-0.208)	0.203 (0.171-0.234)	0.226 (0.188-0.260)	0.249 (0.205-0.287)	0.281 (0.225-0.325)	0.305 (0.240-0.356)
24-hr	0.048 (0.043-0.055)	0.061 (0.055-0.070)	0.080 (0.071-0.090)	0.094 (0.084-0.107)	0.115 (0.101-0.129)	0.130 (0.114-0.147)	0.147 (0.127-0.165)	0.164 (0.141-0.185)	0.188 (0.160-0.212)	0.207 (0.174-0.233)
2-day	0.026 (0.023-0.029)	0.033 (0.030-0.038)	0.044 (0.039-0.049)	0.052 (0.046-0.059)	0.064 (0.056-0.072)	0.073 (0.064-0.083)	0.083 (0.072-0.094)	0.093 (0.081-0.105)	0.108 (0.092-0.122)	0.119 (0.101-0.135)
3-day	0.018 (0.016-0.021)	0.023 (0.021-0.026)	0.031 (0.027-0.035)	0.037 (0.033-0.042)	0.045 (0.040-0.051)	0.052 (0.046-0.059)	0.059 (0.052-0.067)	0.067 (0.058-0.076)	0.078 (0.066-0.088)	0.087 (0.073-0.098)
4-day	0.014 (0.013-0.016)	0.018 (0.016-0.021)	0.024 (0.021-0.027)	0.029 (0.026-0.033)	0.036 (0.032-0.041)	0.042 (0.036-0.047)	0.048 (0.041-0.054)	0.054 (0.046-0.061)	0.063 (0.053-0.071)	0.070 (0.059-0.079)
7-day	0.009 (0.008-0.010)	0.011 (0.010-0.013)	0.015 (0.013-0.017)	0.018 (0.016-0.021)	0.023 (0.020-0.026)	0.026 (0.023-0.030)	0.030 (0.026-0.034)	0.034 (0.029-0.038)	0.040 (0.034-0.045)	0.044 (0.037-0.050)
10-day	0.007 (0.006-0.008)	0.009 (0.008-0.010)	0.011 (0.010-0.013)	0.014 (0.012-0.016)	0.017 (0.015-0.019)	0.020 (0.017-0.022)	0.023 (0.019-0.025)	0.025 (0.022-0.029)	0.030 (0.025-0.033)	0.033 (0.028-0.037)
20-day	0.004 (0.003-0.004)	0.005 (0.005-0.006)	0.007 (0.006-0.008)	0.008 (0.007-0.009)	0.010 (0.009-0.011)	0.012 (0.010-0.013)	0.013 (0.011-0.015)	0.014 (0.012-0.016)	0.016 (0.014-0.018)	0.018 (0.015-0.020)
30-day	0.003 (0.003-0.003)	0.004 (0.003-0.004)	0.005 (0.005-0.006)	0.006 (0.006-0.007)	0.008 (0.007-0.009)	0.009 (0.008-0.010)	0.010 (0.009-0.011)	0.011 (0.010-0.012)	0.013 (0.011-0.014)	0.014 (0.012-0.016)
45-day	0.002 (0.002-0.002)	0.003 (0.003-0.003)	0.004 (0.003-0.004)	0.005 (0.004-0.005)	0.006 (0.005-0.007)	0.007 (0.006-0.007)	0.007 (0.006-0.008)	0.008 (0.007-0.009)	0.009 (0.008-0.010)	0.010 (0.009-0.011)
60-day	0.002 (0.001-0.002)	0.002 (0.002-0.003)	0.003 (0.003-0.004)	0.004 (0.003-0.004)	0.005 (0.004-0.005)	0.005 (0.005-0.006)	0.006 (0.005-0.007)	0.007 (0.006-0.007)	0.007 (0.006-0.008)	0.008 (0.007-0.009)

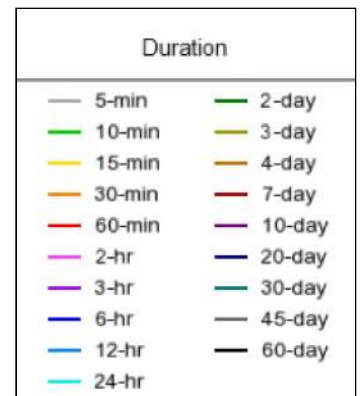
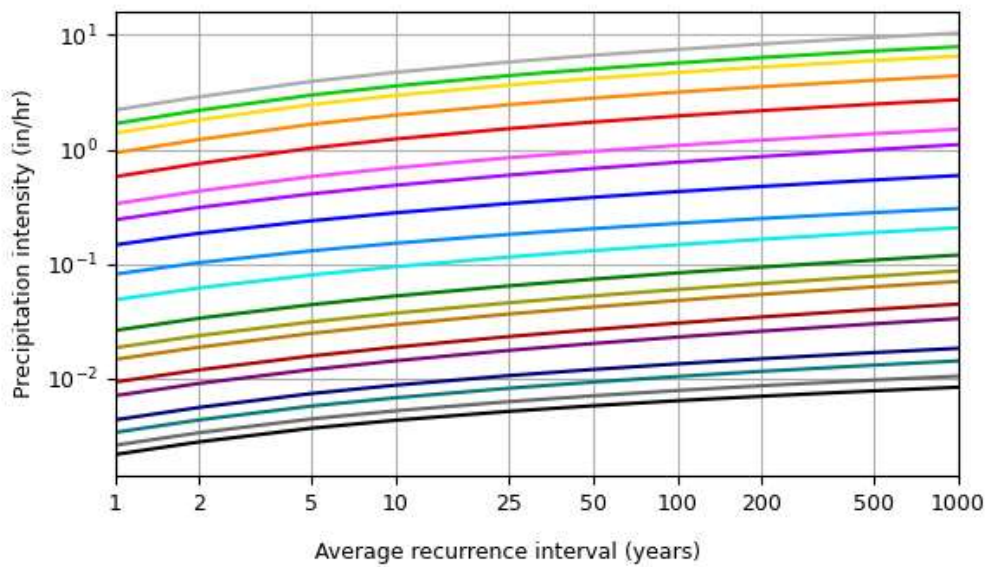
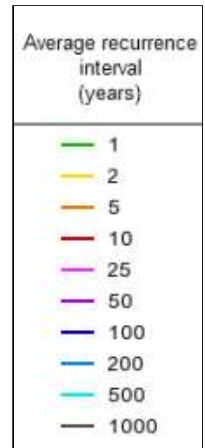
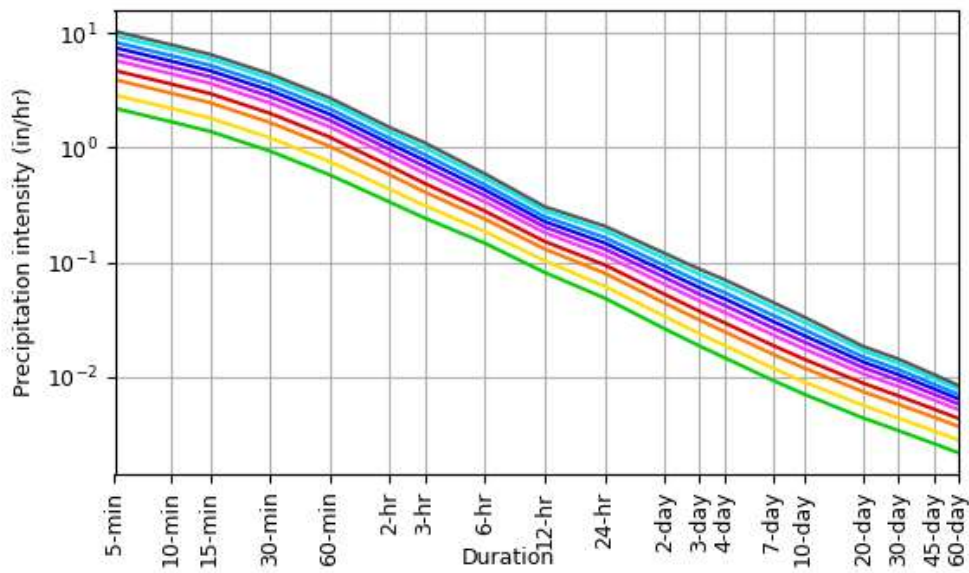
<sup>1</sup> Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).  
 Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given 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 intensity-duration-frequency (IDF) curves

Latitude: 33.5017°, Longitude: -111.9253°



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**Maps & aerials**

**Small scale terrain**



**NOAA Atlas 14, Volume 1, Version 5**  
**Location name: Scottsdale, Arizona, USA\***  
**Latitude: 33.5017°, Longitude: -111.9253°**  
**Elevation: 1269 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**

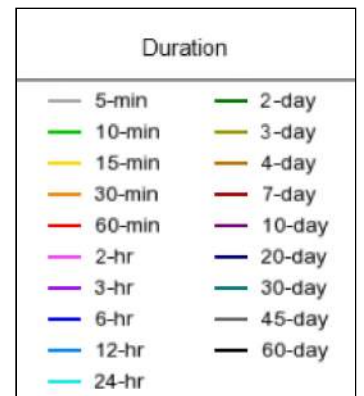
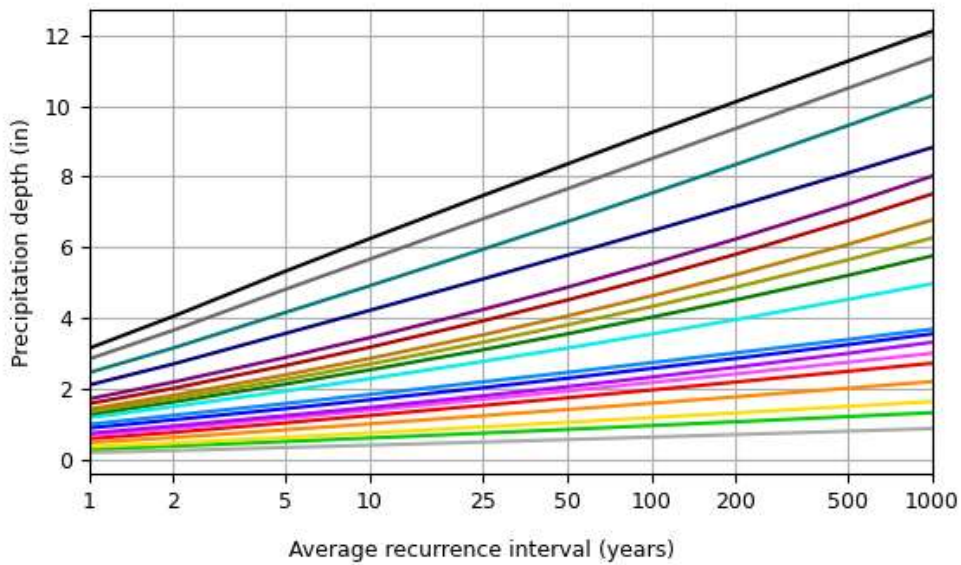
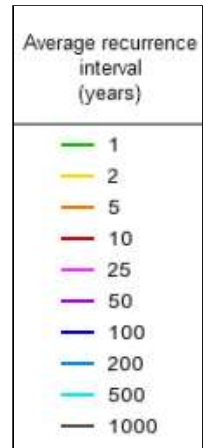
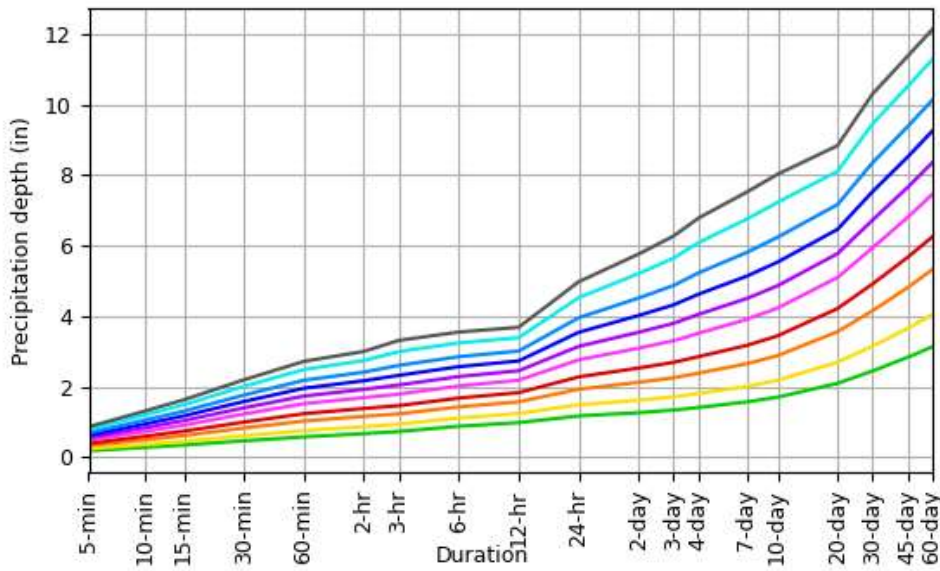
<b>PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)<sup>1</sup></b>										
<b>Duration</b>	<b>Average recurrence interval (years)</b>									
	<b>1</b>	<b>2</b>	<b>5</b>	<b>10</b>	<b>25</b>	<b>50</b>	<b>100</b>	<b>200</b>	<b>500</b>	<b>1000</b>
<b>5-min</b>	<b>0.184</b> (0.154-0.224)	<b>0.240</b> (0.202-0.293)	<b>0.327</b> (0.273-0.397)	<b>0.393</b> (0.326-0.475)	<b>0.482</b> (0.394-0.580)	<b>0.552</b> (0.445-0.660)	<b>0.622</b> (0.492-0.742)	<b>0.694</b> (0.540-0.827)	<b>0.790</b> (0.598-0.943)	<b>0.864</b> (0.641-1.03)
<b>10-min</b>	<b>0.280</b> (0.234-0.341)	<b>0.366</b> (0.308-0.446)	<b>0.497</b> (0.415-0.604)	<b>0.598</b> (0.496-0.722)	<b>0.734</b> (0.599-0.883)	<b>0.839</b> (0.677-1.00)	<b>0.947</b> (0.749-1.13)	<b>1.06</b> (0.821-1.26)	<b>1.20</b> (0.911-1.44)	<b>1.32</b> (0.976-1.57)
<b>15-min</b>	<b>0.347</b> (0.290-0.423)	<b>0.453</b> (0.382-0.553)	<b>0.616</b> (0.515-0.748)	<b>0.741</b> (0.615-0.895)	<b>0.910</b> (0.743-1.09)	<b>1.04</b> (0.839-1.24)	<b>1.17</b> (0.928-1.40)	<b>1.31</b> (1.02-1.56)	<b>1.49</b> (1.13-1.78)	<b>1.63</b> (1.21-1.95)
<b>30-min</b>	<b>0.467</b> (0.391-0.569)	<b>0.610</b> (0.514-0.744)	<b>0.829</b> (0.693-1.01)	<b>0.998</b> (0.828-1.21)	<b>1.23</b> (1.00-1.47)	<b>1.40</b> (1.13-1.68)	<b>1.58</b> (1.25-1.89)	<b>1.76</b> (1.37-2.10)	<b>2.01</b> (1.52-2.40)	<b>2.20</b> (1.63-2.62)
<b>60-min</b>	<b>0.578</b> (0.484-0.704)	<b>0.755</b> (0.636-0.921)	<b>1.03</b> (0.858-1.25)	<b>1.24</b> (1.02-1.49)	<b>1.52</b> (1.24-1.82)	<b>1.73</b> (1.40-2.08)	<b>1.96</b> (1.55-2.33)	<b>2.18</b> (1.70-2.60)	<b>2.48</b> (1.88-2.97)	<b>2.72</b> (2.02-3.25)
<b>2-hr</b>	<b>0.670</b> (0.571-0.800)	<b>0.867</b> (0.739-1.04)	<b>1.16</b> (0.984-1.38)	<b>1.38</b> (1.16-1.65)	<b>1.69</b> (1.40-2.00)	<b>1.92</b> (1.58-2.27)	<b>2.17</b> (1.75-2.55)	<b>2.41</b> (1.91-2.84)	<b>2.74</b> (2.12-3.23)	<b>3.00</b> (2.27-3.55)
<b>3-hr</b>	<b>0.730</b> (0.618-0.880)	<b>0.937</b> (0.797-1.13)	<b>1.23</b> (1.04-1.48)	<b>1.46</b> (1.23-1.75)	<b>1.79</b> (1.48-2.13)	<b>2.05</b> (1.67-2.43)	<b>2.32</b> (1.86-2.75)	<b>2.60</b> (2.05-3.08)	<b>2.99</b> (2.28-3.55)	<b>3.31</b> (2.46-3.93)
<b>6-hr</b>	<b>0.879</b> (0.760-1.04)	<b>1.11</b> (0.967-1.31)	<b>1.43</b> (1.23-1.68)	<b>1.68</b> (1.44-1.96)	<b>2.02</b> (1.70-2.34)	<b>2.29</b> (1.90-2.65)	<b>2.57</b> (2.10-2.97)	<b>2.85</b> (2.29-3.30)	<b>3.24</b> (2.54-3.76)	<b>3.55</b> (2.71-4.13)
<b>12-hr</b>	<b>0.982</b> (0.859-1.14)	<b>1.24</b> (1.08-1.44)	<b>1.57</b> (1.37-1.82)	<b>1.83</b> (1.58-2.12)	<b>2.18</b> (1.87-2.52)	<b>2.45</b> (2.07-2.82)	<b>2.73</b> (2.27-3.14)	<b>3.01</b> (2.47-3.47)	<b>3.39</b> (2.71-3.92)	<b>3.68</b> (2.90-4.29)
<b>24-hr</b>	<b>1.17</b> (1.04-1.32)	<b>1.49</b> (1.32-1.68)	<b>1.93</b> (1.71-2.18)	<b>2.28</b> (2.02-2.57)	<b>2.76</b> (2.43-3.11)	<b>3.14</b> (2.74-3.53)	<b>3.54</b> (3.07-3.98)	<b>3.95</b> (3.40-4.45)	<b>4.52</b> (3.85-5.09)	<b>4.97</b> (4.19-5.61)
<b>2-day</b>	<b>1.26</b> (1.13-1.43)	<b>1.62</b> (1.44-1.83)	<b>2.12</b> (1.89-2.40)	<b>2.53</b> (2.24-2.85)	<b>3.09</b> (2.72-3.48)	<b>3.54</b> (3.10-3.99)	<b>4.02</b> (3.50-4.53)	<b>4.51</b> (3.90-5.09)	<b>5.20</b> (4.44-5.88)	<b>5.76</b> (4.87-6.53)
<b>3-day</b>	<b>1.34</b> (1.19-1.51)	<b>1.71</b> (1.52-1.94)	<b>2.25</b> (2.00-2.54)	<b>2.69</b> (2.38-3.03)	<b>3.30</b> (2.90-3.72)	<b>3.80</b> (3.32-4.27)	<b>4.32</b> (3.75-4.86)	<b>4.87</b> (4.19-5.48)	<b>5.64</b> (4.80-6.36)	<b>6.27</b> (5.28-7.08)
<b>4-day</b>	<b>1.41</b> (1.25-1.60)	<b>1.81</b> (1.60-2.04)	<b>2.38</b> (2.11-2.69)	<b>2.85</b> (2.52-3.21)	<b>3.51</b> (3.08-3.95)	<b>4.05</b> (3.53-4.55)	<b>4.62</b> (4.00-5.19)	<b>5.22</b> (4.48-5.88)	<b>6.08</b> (5.15-6.84)	<b>6.78</b> (5.68-7.64)
<b>7-day</b>	<b>1.57</b> (1.39-1.78)	<b>2.00</b> (1.78-2.27)	<b>2.65</b> (2.34-2.99)	<b>3.17</b> (2.80-3.58)	<b>3.91</b> (3.43-4.40)	<b>4.50</b> (3.93-5.06)	<b>5.13</b> (4.44-5.78)	<b>5.80</b> (4.98-6.54)	<b>6.75</b> (5.72-7.61)	<b>7.51</b> (6.30-8.49)
<b>10-day</b>	<b>1.70</b> (1.51-1.92)	<b>2.18</b> (1.94-2.46)	<b>2.88</b> (2.55-3.24)	<b>3.44</b> (3.04-3.87)	<b>4.23</b> (3.71-4.74)	<b>4.86</b> (4.24-5.44)	<b>5.53</b> (4.80-6.20)	<b>6.24</b> (5.37-7.00)	<b>7.22</b> (6.14-8.11)	<b>8.02</b> (6.75-9.02)
<b>20-day</b>	<b>2.10</b> (1.87-2.35)	<b>2.70</b> (2.40-3.02)	<b>3.56</b> (3.17-3.98)	<b>4.21</b> (3.74-4.71)	<b>5.09</b> (4.50-5.69)	<b>5.77</b> (5.08-6.45)	<b>6.46</b> (5.66-7.23)	<b>7.16</b> (6.24-8.02)	<b>8.10</b> (7.00-9.10)	<b>8.83</b> (7.57-9.92)
<b>30-day</b>	<b>2.45</b> (2.17-2.75)	<b>3.15</b> (2.80-3.53)	<b>4.15</b> (3.68-4.65)	<b>4.91</b> (4.35-5.49)	<b>5.93</b> (5.23-6.63)	<b>6.72</b> (5.90-7.50)	<b>7.53</b> (6.58-8.40)	<b>8.35</b> (7.26-9.31)	<b>9.45</b> (8.15-10.6)	<b>10.3</b> (8.82-11.5)
<b>45-day</b>	<b>2.83</b> (2.53-3.17)	<b>3.65</b> (3.26-4.09)	<b>4.81</b> (4.29-5.38)	<b>5.66</b> (5.04-6.34)	<b>6.80</b> (6.03-7.60)	<b>7.65</b> (6.76-8.55)	<b>8.51</b> (7.49-9.52)	<b>9.37</b> (8.21-10.5)	<b>10.5</b> (9.14-11.8)	<b>11.4</b> (9.82-12.8)
<b>60-day</b>	<b>3.13</b> (2.81-3.50)	<b>4.05</b> (3.62-4.52)	<b>5.32</b> (4.76-5.94)	<b>6.25</b> (5.58-6.97)	<b>7.46</b> (6.64-8.31)	<b>8.35</b> (7.41-9.31)	<b>9.25</b> (8.17-10.3)	<b>10.1</b> (8.91-11.3)	<b>11.3</b> (9.86-12.6)	<b>12.1</b> (10.6-13.6)

<sup>1</sup> 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**

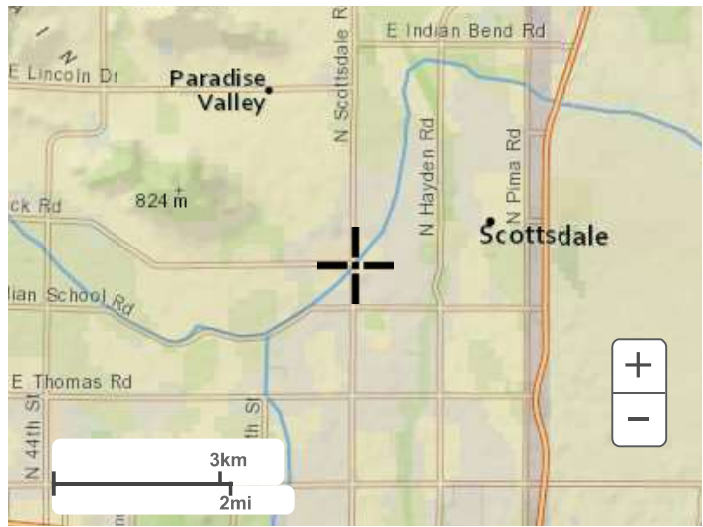
PDS-based depth-duration-frequency (DDF) curves  
 Latitude: 33.5017°, Longitude: -111.9253°



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**Maps & aerials**

**Small scale terrain**



Large scale terrain



Large scale map



Large scale aerial

# *APPENDIX II*

## Calculations

# SCOTTSDALE CITY CENTER

## EXISTING CONDITIONS CWT

7201 E. CAMELBACK ROAD, SCOTTSDALE, AZ 85251  
 A PORTION OF THE NORTHWEST QUARTER OF SECTION 23, TOWNSHIP 2 NORTH, RANGE 4  
 EAST OF THE GILA AND SALT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA.

### VICINITY MAP



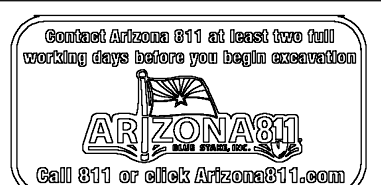
PRELIMINARY  
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CONSTRUCTION

SUSTAINABILITY  
ENGINEERING  
GROUP



5240 N. 16TH STREET SUITE 105, PHOENIX, ARIZONA 85016  
 WWW.AZSEG.COM TEL. 480.688.7226 FAX. 480.259.3534

SMITHGROUP



PROJECT: SCOTTSDALE CITY CENTER  
 LOCATION: 7201 E. CAMELBACK ROAD, SCOTTSDALE, AZ, 85251

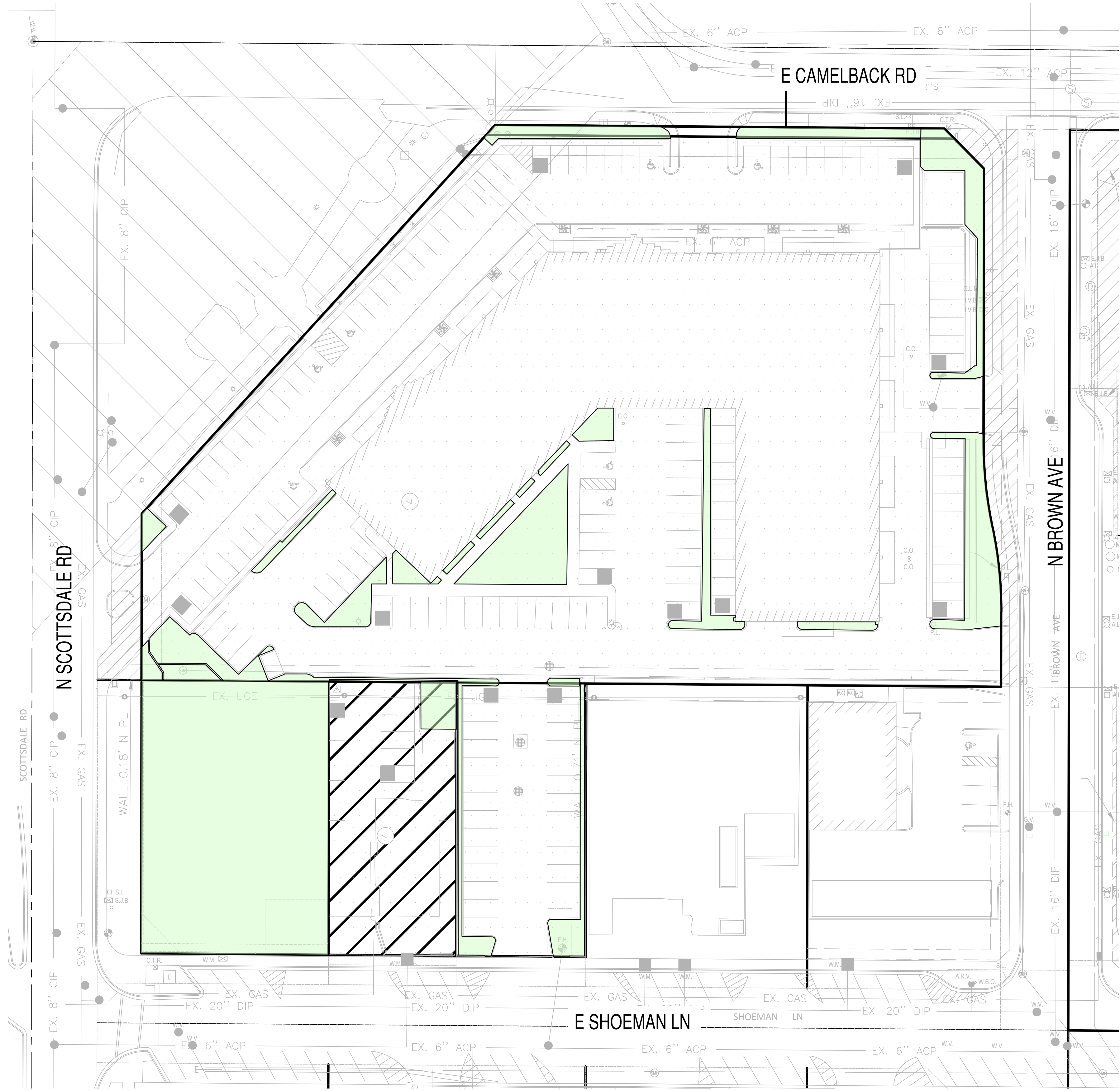
DATE: 11/12/2024  
 ISSUED FOR: DRB

REVISION NO.:	DATE:

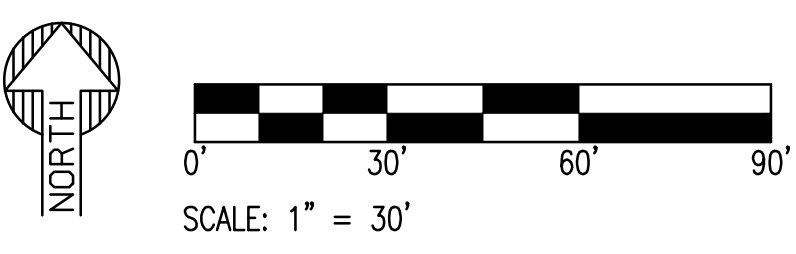
JOB NO.: 221117

SHEET TITLE:  
**EXISTING CONDITIONS CWT**

PAGE NO.: 1 OF 1  
 SHEET NO.: **EX-CWT**



--- PROPERTY LINE			
[White Box] BUILDING/PAVED SURFACE =	108,652 SF (2.50 AC)	⊙ CWT=0.95	
[Green Box] NATURAL DESERT/LANDSCAPE =	23,134 SF (0.53 AC)	⊙ CWT=0.45	
	<b>TOTAL DISTURBED AREA = 131,786 SF (3.03 AC)</b>	⊙ CWT=0.86	

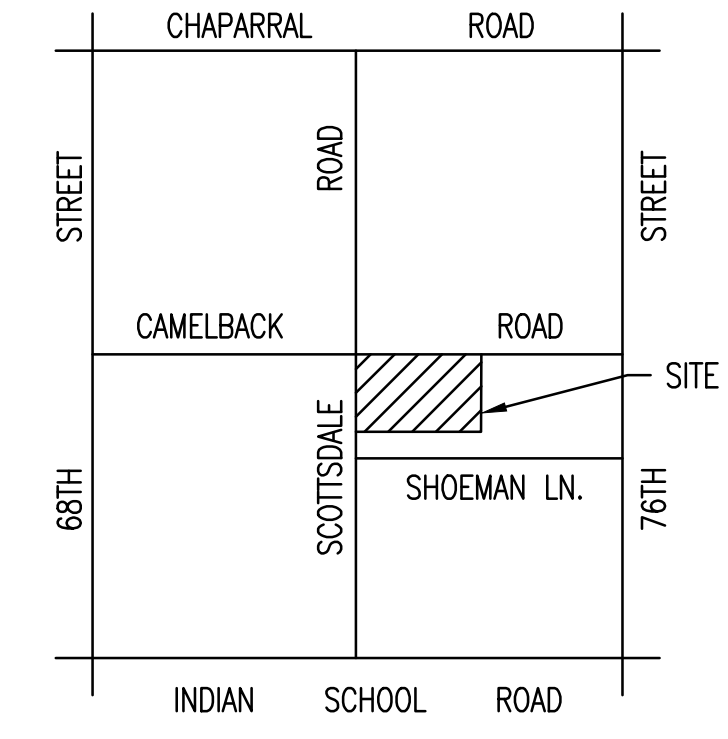


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# SCOTTSDALE CITY CENTER

## PROPOSED CONDITIONS C<sub>WT</sub>

7201 E. CAMELBACK ROAD, SCOTTSDALE, AZ 85251  
 A PORTION OF THE NORTHWEST QUARTER OF SECTION 23, TOWNSHIP 2 NORTH, RANGE 4  
 EAST OF THE GILA AND SALT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA.



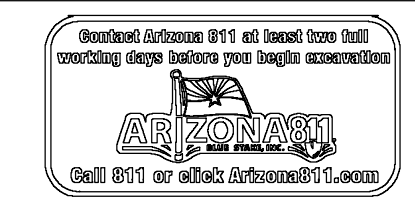
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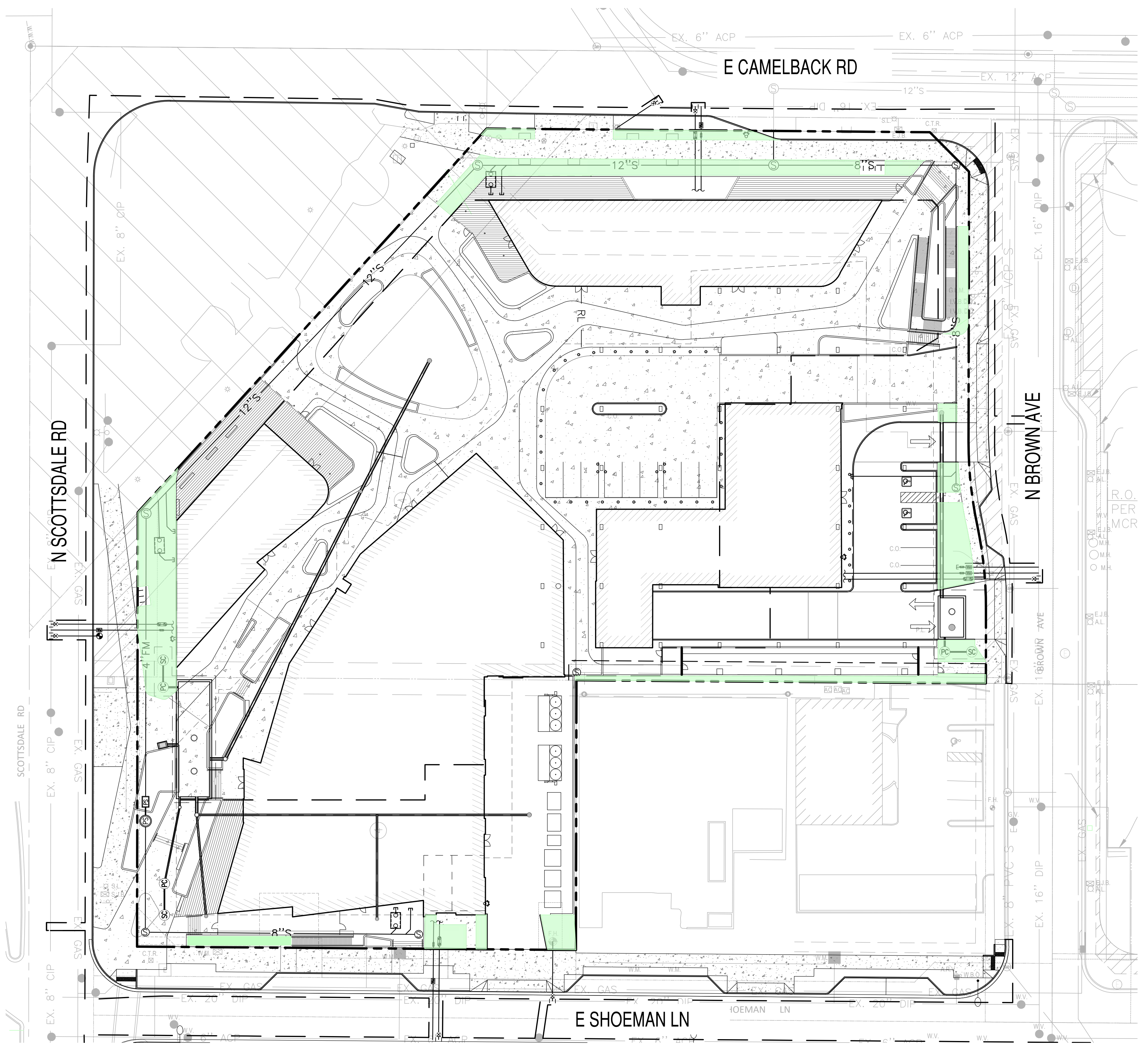
PROJECT SCOTTSDALE CITY CENTER	LOCATION 7201 E. CAMELBACK ROAD, SCOTTSDALE, AZ, 85251.
DRAWN: MM	11/05/2024
DESIGNED: MM	11/12/2024
CHECKED: AK	11/12/2024
FINAL DC: SC	11/11/2024
PROJ. MGR: AK	11/12/2024

DATE: 11/12/2024  
 ISSUED FOR: DRB

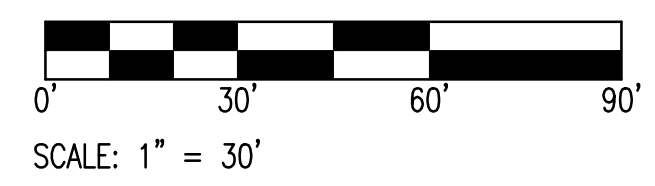
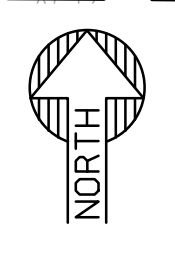
REVISION NO.:	DATE:
JOB NO.:	221117

SHEET TITLE:  
**PROPOSED CONDITIONS  
 P-C<sub>WT</sub>**

PAGE NO.: 1 OF 1  
 SHEET NO.: P-C<sub>WT</sub>



--- PROPERTY LINE			
▭ BUILDING/PAVED SURFACE =	123,584 SF (2.84 AC)	⊙ CWT=0.95	
▭ NATURAL DESERT =	8,202 SF (0.19 AC)	⊙ CWT=0.45	
	<b>TOTAL ON-SITE CWT =</b>	<b>131,786 SF (3.03 AC)</b>	<b>⊙ CWT=0.91</b>

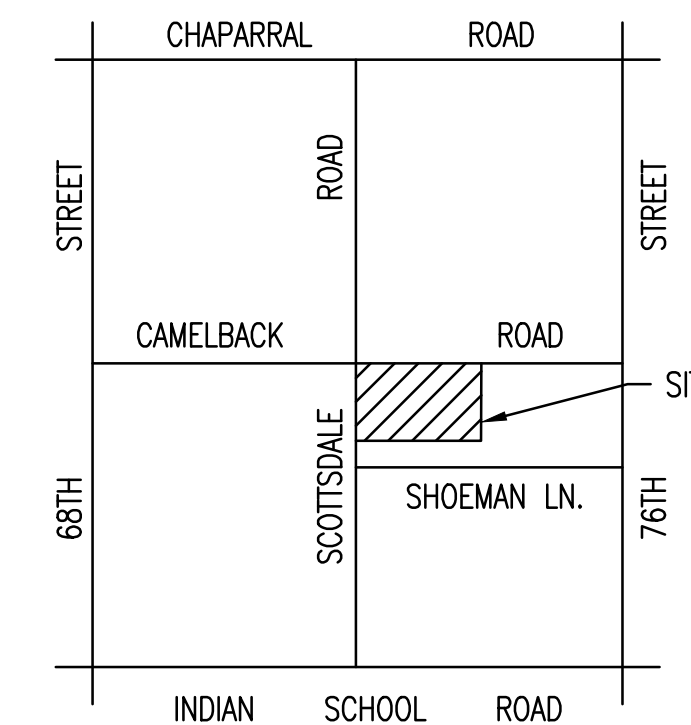


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# SCOTTSDALE CITY CENTER

## EXISTING CONDITIONS DRAINAGE AREA MAP

7201 E. CAMELBACK ROAD, SCOTTSDALE, AZ 85251  
 A PORTION OF THE NORTHWEST QUARTER OF SECTION 23, TOWNSHIP 2 NORTH, RANGE 4  
 EAST OF THE GILA AND SALT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA.



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PROJECT: SCOTTSDALE CITY CENTER  
 LOCATION: 7201 E. CAMELBACK ROAD, SCOTTSDALE, AZ, 85251

DATE: 11/12/2024  
 ISSUED FOR: DRB

REVISION NO.: DATE:


JOB NO.: 221117

SHEET TITLE:

EXISTING CONDITIONS  
DRAINAGE AREA MAP

PAGE NO.: 1 OF 1

SHEET NO.: EX-DAM

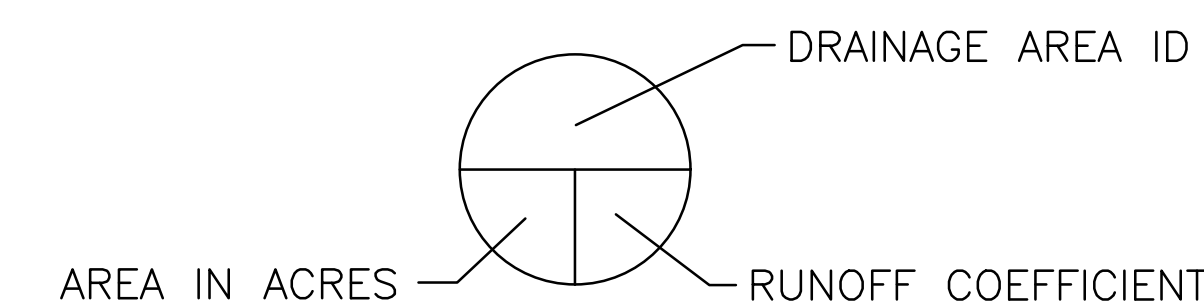
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EXISTING SITE DISCHARGES									
	TOTAL AREA	Cwt	Intensity 10 yr	Q 10	Intensity 100 yr	Q 100	Control Point	Total flows Q10	Total flows Q100
	(ac)	(-)	(in/hr)	(cfs)	(in/hr)	(cfs)	CP#	(cfs)	(cfs)
	3.03	0.86	4.72	-	7.46	-	-	13.91	19.50
EX-A1	0.38	0.95	4.72	1.70	7.46	2.69	CP-2	1.70	2.69
EX-B1	0.69	0.95	4.72	3.09	7.46	4.89	ON-SITE RETENTION	9.44	12.44
EX-B2	1.17	0.86	4.72	4.77	7.46	7.55			
EX-C1	0.30	0.45	4.72	0.64	7.46	1.01	CP-3	1.51	2.39
EX-C2	0.20	0.93	4.72	0.87	7.46	1.38			
EX-D1	0.17	0.89	4.72	0.72	7.46	1.13	CP-1	0.72	1.13
EX-E1	0.12	0.95	4.72	0.54	7.46	0.85	EX DW-3	0.54	0.85

### LEGEND

- DRAINAGE AREAS DRAINING TO ONSITE DRYWELLS 1 & 2
- DRAINAGE AREAS DRAINING TO ONSITE DRYWELL 3
- DRAINAGE AREAS DRAINING TO E CAMELBACK ROAD
- DRAINAGE AREAS DRAINING TO N SCOTTSDALE ROAD
- DRAINAGE AREAS DRAINING TO E SHOEMAN LANE
- FLOW ARROW



### DRAINAGE AREA KEY

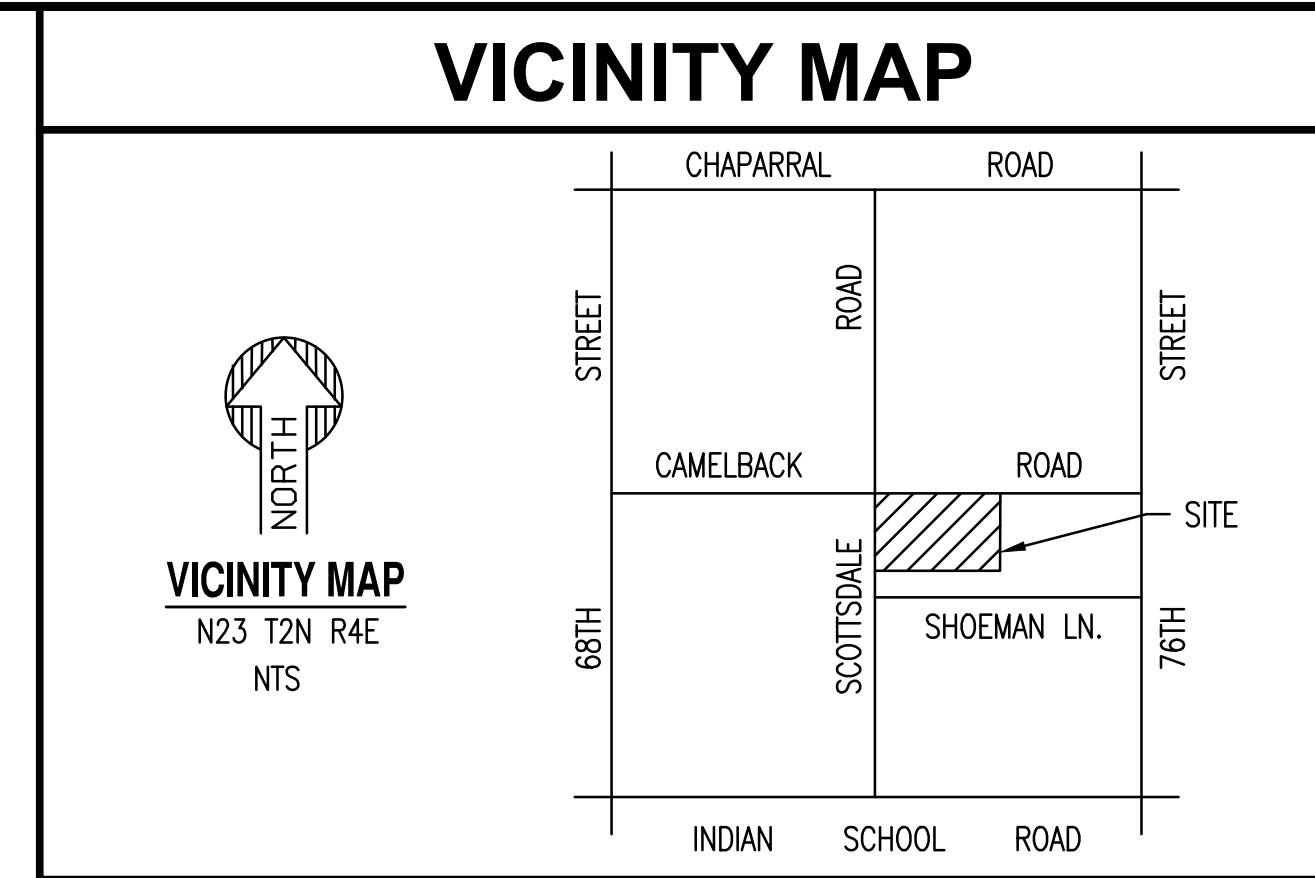


SCALE: 1" = 30'

# SCOTTSDALE CITY CENTER

## PROPOSED CONDITIONS DRAINAGE AREA MAP

7201 E. CAMELBACK ROAD, SCOTTSDALE, AZ 85251  
 A PORTION OF THE NORTHWEST QUARTER OF SECTION 23, TOWNSHIP 2 NORTH, RANGE 4  
 EAST OF THE GILA AND SALT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA.

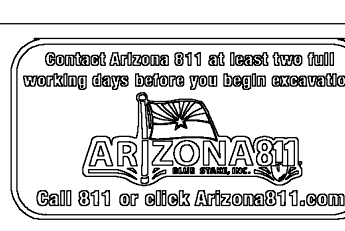


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PROJECT: SCOTTSDALE CITY CENTER  
 LOCATION: 7201 E. CAMELBACK ROAD, SCOTTSDALE, AZ, 85251

DATE: 11/12/2024

ISSUED FOR: DRB

REVISION NO.: DATE:

JOB NO.: 221117

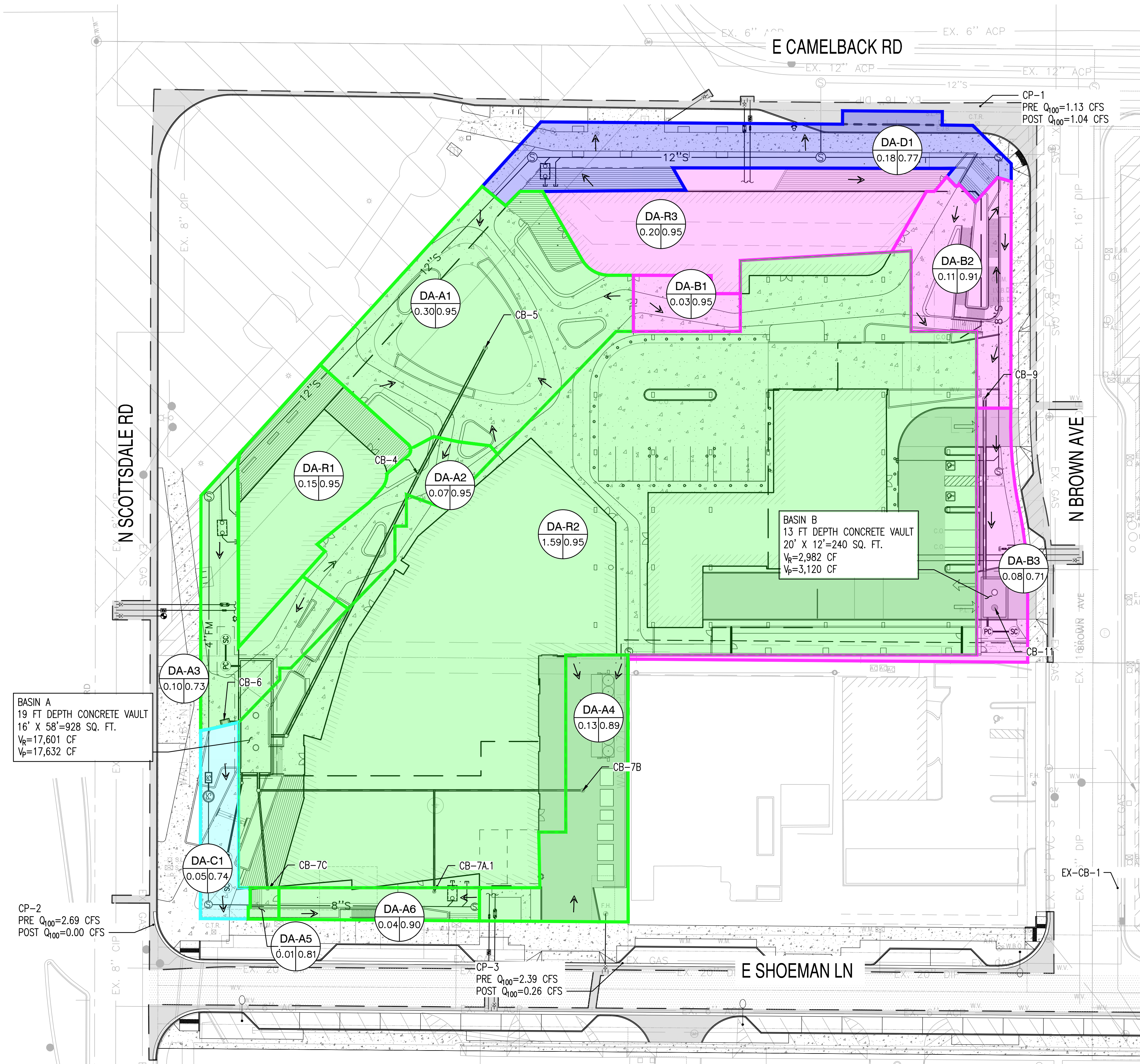
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PROPOSED CONDITIONS  
DRAINAGE AREA MAP

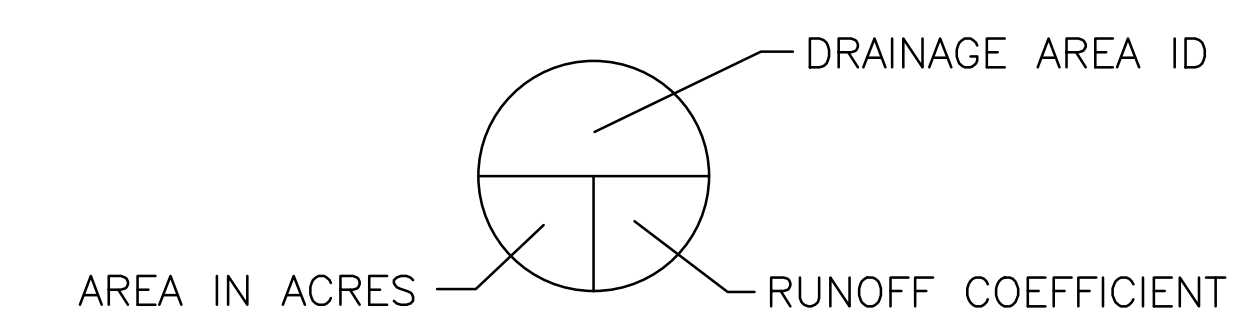
PAGE NO.: 1 OF 1

SHEET NO.: P-DAM

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- LEGEND**
- DRAINAGE AREAS CONTRIBUTING TO RETENTION BASIN A
  - DRAINAGE AREAS CONTRIBUTING TO RETENTION BASIN B
  - DRAINAGE AREAS DRAINING TO E SHOEMAN LINE
  - DRAINAGE AREAS DRAINING TO E CAMELBACK ROAD
  - FLOW ARROW

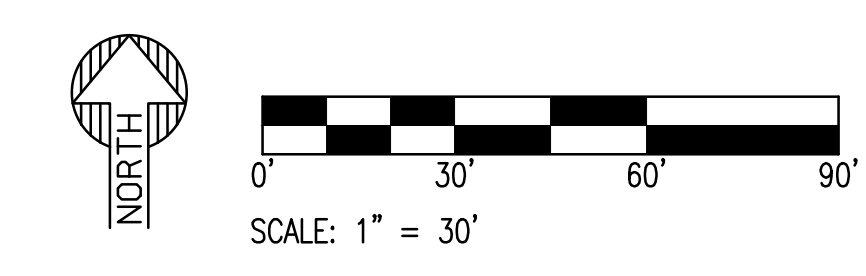


**DRAINAGE AREA KEY**

PROPOSED SITE DISCHARGES									
	TOTAL AREA	Cwt	Intensity 10 yr	Q 10	Intensity 100 yr	Q 100	Concentration Point CP#	Total flows Q10	Total flows Q100
	(ac)	(-)	(in/hr)	(cfs)	(in/hr)	(cfs)		(cfs)	(cfs)
	3.03	0.91	4.72	-	7.46	-	-	13.16	20.79
DA-A1	0.30	0.95	4.72	1.35	7.46	2.13	BASIN A	10.55	16.67
DA-A2	0.07	0.95	4.72	0.32	7.46	0.50			
DA-A3	0.10	0.73	4.72	0.35	7.46	0.55			
DA-A4	0.13	0.89	4.72	0.55	7.46	0.87			
DA-A5	0.01	0.81	4.72	0.02	7.46	0.03			
DA-A6	0.04	0.90	4.72	0.17	7.46	0.27			
DA-R1	0.15	0.95	4.72	0.68	7.46	1.08	BASIN B	1.79	2.82
DA-R2	1.59	0.95	4.72	7.11	7.46	11.23			
DA-B1	0.03	0.95	4.72	0.15	7.46	0.24			
DA-B2	0.11	0.91	4.72	0.46	7.46	0.72			
DA-B3	0.08	0.71	4.72	0.28	7.46	0.44			
DA-R3	0.20	0.95	4.72	0.90	7.46	1.42			
DA-C1	0.05	0.74	4.72	0.17	7.46	0.26	CP-3	0.17	0.26
DA-D1	0.18	0.79	4.72	0.66	7.46	1.04	CP-1	0.66	1.04

Outfall	Q10 (cfs)				Q100 (cfs)			
	Existing	Proposed	Δ	Existing	Proposed	Δ		
CP-1	0.72	0.66	-0.06	1.13	1.04	-0.09		
CP-2	1.70	0.00	-1.70	2.69	0.00	-2.69		
CP-3	1.51	0.17	-1.34	2.39	0.26	-2.13		

Proposed City Center Required Storage Volume Calculations						
						$V_r = 1 * (P/12) * C_w * A$
						$P = 100\text{-yr}, 2\text{-hr} = 2.17\text{ in.}$
Drainage Area ID	Area (acres)	$C_w$ (-)	Depth (in)	Volume Req. (acre-ft)	Volume Req. (CF)	
<b>ON-SITE RETENTION - BASIN A - UG Storage</b>						
DA-A1	0.30	0.95	2.17	0.052	2,248.05	
DA-A2	0.07	0.95	2.17	0.012	526.65	
DA-A3	0.10	0.73	2.17	0.013	581.97	
DA-A4	0.13	0.89	2.17	0.021	920.77	
DA-A5	0.01	0.81	2.17	0.001	36.89	
DA-A6	0.04	0.90	2.17	0.007	287.23	
DA-R1	0.15	0.95	2.17	0.026	1,136.21	
DA-R2	1.59	0.95	2.17	0.272	11,862.86	
<b>TOTALS:</b>	<b>2.39</b>	<b>0.94</b>	<b>2.17</b>	<b>0.404</b>	<b>17,600.61</b>	
<b>ON-SITE RETENTION - BASIN B - UG Storage</b>						
DA-B1	0.03	0.95	2.17	0.006	255.04	
DA-B2	0.11	0.91	2.17	0.018	765.32	
DA-B3	0.08	0.71	2.17	0.011	461.12	
DA-R3	0.20	0.95	2.17	0.034	1,500.86	
<b>TOTALS:</b>	<b>0.42</b>	<b>0.89</b>	<b>2.17</b>	<b>0.068</b>	<b>2,982.34</b>	



**BASIN A**  
 19 FT DEPTH CONCRETE VAULT  
 16' X 58' = 928 SQ. FT.  
 $V_p = 17,601$  CF  
 $V_r = 17,632$  CF

**BASIN B**  
 13 FT DEPTH CONCRETE VAULT  
 20' X 12' = 240 SQ. FT.  
 $V_p = 2,982$  CF  
 $V_r = 3,120$  CF

CP-2  
 PRE  $Q_{100} = 2.69$  CFS  
 POST  $Q_{100} = 0.00$  CFS

CP-3  
 PRE  $Q_{100} = 2.39$  CFS  
 POST  $Q_{100} = 0.26$  CFS

CP-1  
 PRE  $Q_{100} = 1.13$  CFS  
 POST  $Q_{100} = 1.04$  CFS

EXISTING OVERALL SITE C <sub>w</sub>				
	BUILDING/PAVED AREA	DESERT LANDSCAPE	TOTAL AREA	Cwt
C-VALUE	0.95	0.45	<b>3.03</b>	<b>0.86</b>
AREA (ac)	2.50	0.53		
EX-A1	0.38	0.00	0.38	0.95
EX-B1	0.69	0.00	0.69	0.95
EX-B2	0.97	0.20	1.17	0.86
EX-C1	0.00	0.30	0.30	0.45
EX-C2	0.19	0.01	0.20	0.93
EX-D1	0.15	0.02	0.17	0.89
EX-E1	0.12	0.00	0.12	0.95

PROPOSED OVERALL SITE C <sub>w</sub>				
	BUILDING/PAVED AREA	DESERT LANDSCAPE	TOTAL AREA	Cwt
C-VALUE	0.95	0.45	<b>3.03</b>	<b>0.91</b>
AREA (ac)	2.84	0.19		
DA-A1	0.29	0.00	0.29	0.95
DA-A2	0.07	0.00	0.07	0.95
DA-A3	0.06	0.04	0.10	0.73
DA-A4	0.12	0.01	0.13	0.89
DA-A5	0.00	0.00	0.01	0.81
DA-A6	0.04	0.00	0.04	0.90
DA-B1	0.03	0.00	0.03	0.95
DA-B2	0.10	0.01	0.11	0.91
DA-B3	0.04	0.04	0.08	0.71
DA-C1	0.03	0.02	0.05	0.74
DA-D1	0.10	0.06	0.15	0.77
DA-R1	0.15	0.00	0.15	0.95
DA-R2	1.59	0.00	1.59	0.95
DA-R3	0.24	0.00	0.24	0.95

*APPENDIX III*  
PRELIMINARY GRADING & DRAINAGE  
PLAN

# SCOTTSDALE CITY CENTER

## PRELIMINARY GRADING AND DRAINAGE PLAN

7201 E. CAMELBACK ROAD, SCOTTSDALE, AZ 85251  
 A PORTION OF THE SOUTHWEST QUARTER OF SECTION 23, TOWNSHIP 2 NORTH, RANGE 4 EAST OF THE GILA AND SALT RIVER BASE AND MERIDIAN, MARICOPA COUNTY, ARIZONA.

**CIVIL ENGINEER**  
 SUSTAINABILITY ENGINEERING GROUP  
 5240 N. 16TH STREET, SUITE 105  
 PHOENIX, ARIZONA 85016  
 PHONE: 480-237-2507  
 ATTN: ALI FAKIH  
 EMAIL: ALI@AZSEG.COM

**CLIENT:**  
 SMITH GROUP  
 455 N. 3RD STREET, SUITE 250  
 PHOENIX, AZ 85004  
 PHONE: 602-265-2200  
 ATTN: OZ WAGNER  
 EMAIL: OZ.WAGNER@SMITHGROUP.COM



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 ENGINEERING  
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SMITHGROUP



PROJECT: SCOTTSDALE CITY CENTER  
 LOCATION: 7201 E. CAMELBACK ROAD, SCOTTSDALE, AZ, 85251

DATE: 11/12/2024

ISSUED FOR: DRB

REVISION NO.: DATE:

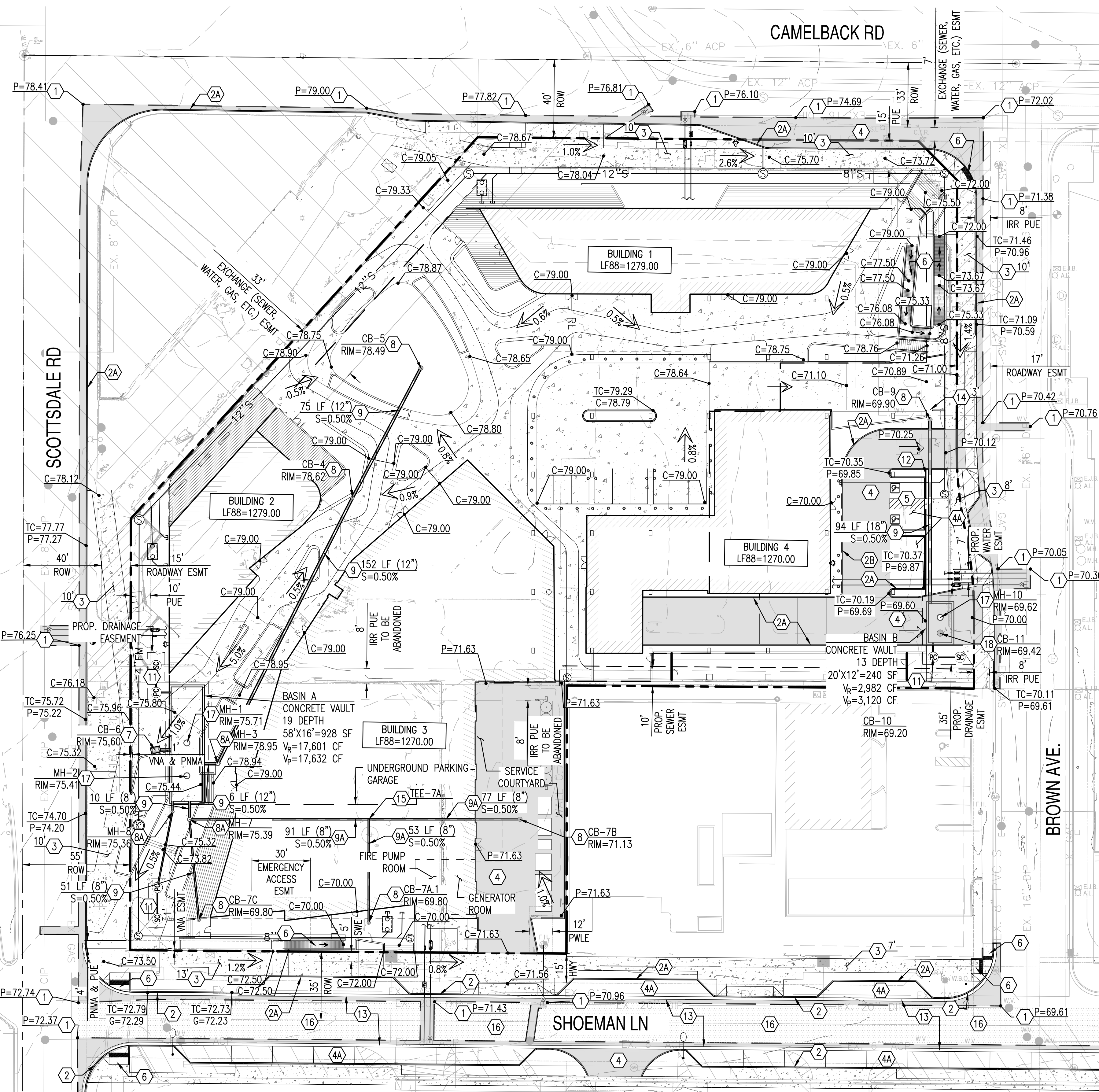
1	
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JOB NO.: 221117

SHEET TITLE:

PRELIMINARY GRADING  
 AND DRAINAGE PLAN

PAGE NO.: 1 OF 1  
 SHEET NO.: C3.00



### PRELIMINARY GRADING NOTES

- 1 MATCH EXISTING GRADE.
- 2 6" VERTICAL CURB AND GUTTER.
- 2A 6" VERTICAL CURB
- 2B FLUSH CURB
- 3 PROPOSED CONCRETE SIDEWALK. WIDTH PER PLAN.
- 4 HEAVY DUTY PAVEMENT.
- 4A LIGHT DUTY PAVEMENT.
- 5 PAVEMENT WITH 2% MAXIMUM SLOPE IN ANY DIRECTION AT ACCESSIBLE PARKING STALLS AND 2% MAXIMUM CROSS SLOPE AT ADA ACCESSIBLE ROUTE.
- 6 PROPOSED ACCESSIBLE RAMP
- 7 PROPOSED NYLOPLAST DRAIN BASIN WITH 30" RISER AND 2'X3' STEEL GRADE
- 8 PROPOSED NYLOPLAST DRAIN BASIN WITH STANDARD GRATE LID.
- 8A PROPOSED NYLOPLAST DRAIN BASIN WITH STANDARD SOLID LID.
- 9 PROPOSED HDPE PIPE.
- 9A PROPOSED PVC PIPE, BY BLDG CONTRACTOR.
- 11 PROPOSED MAXWELL PLUS DRYWELL.
- 12 3' SCREEN WALL
- 13 PROPOSED CONCRETE VALLEY GUTTER
- 14 PROPOSED CURB OPENING, LENGTH PER PLAN.
- 15 PROPOSED TEE.
- 16 PROPOSED MILL AND REPAVE.
- 17 PROPOSED PRECAST MANHOLE RISER, INCLUDING CONCRETE COLLAR.
- 18 PROPOSED PRECAST MANHOLE RISER WITH STANDARD GRATE, INCLUDING CONCRETE COLLAR.

### PARCEL DESCRIPTION:

HIGH-DENSITY, MULTI-USE DEVELOPMENT INCLUDING RETAIL, RESTAURANTS, AND UNDERGROUND PARKING.

### SITE DATA:

APN: 173-41-016B, 173-41-017A, 173-41-006A, 173-41-005 AND 173-41-004.  
 ZONING: C-2-DO/C-3-DO  
 LOT SIZE: 3.03 ACRES (131,786 SF)  
 FLOOD ZONE: ZONE X (MINIMAL FLOOD HAZARD)  
 QS: 17-45

### EXISTING LEGEND:

--- XXXX ---	EX. MAJOR CONTOURS	EX. S	SEWER LINE	CB	STORM DRAIN LINE	SIGN
--- XXXX ---	EX. MINOR CONTOURS	S	SEWER MANHOLE	CB	STORM CATCH BASIN	STREET LIGHT
TC=XX.XX	EX. TOP OF CURB ELEV.	EX. W	WATER LINE	⊙	STORM MANHOLE	ROAD CENTERLINE
GE=XX.XX	EX. GUTTER ELEV.	WV	WATER VALVE	---	GAS LINE	
---	EASEMENT LINE AS NOTED	FH	FIRE HYDRANT	X X	FENCE	

### PROPOSED GRADING LEGEND:

G=XX.XX	GUTTER ELEVATION	---	PROPERTY LINE	---	SETBACK
P=XX.XX	PAVEMENT ELEVATION	---	RIGHT OF WAY	→	FLOW ARROW
C=XX.XX	CONCRETE ELEVATION	---	CURB AND GUTTER	▭	CATCH BASIN
		---	RIDGELINE	---	STORM PIPE
W	WATER METER	---	CONCRETE PAVEMENT	⊙	DRYWELL
⊗	GATE VALVE	---	HEAVY DUTY PAVEMENT	○	NYLOPLAST BASIN
⊙	FIRE HYDRANT	---	LIGHT DUTY PAVEMENT		
S	SEWER MANHOLE	---	MILL AND PAVE		

### C.O.S. GENERAL NOTES FOR PUBLIC WORKS CONSTRUCTION

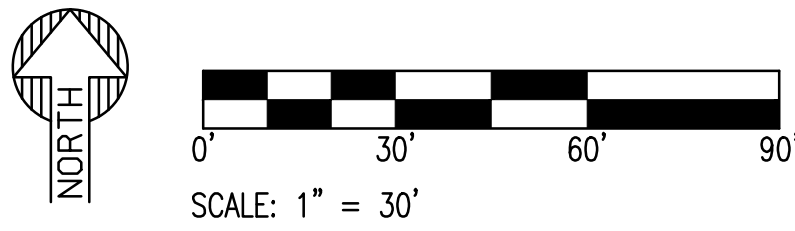
1. ALL CONSTRUCTION IN THE PUBLIC RIGHTS-OF-WAY OR IN EASEMENTS GRANTED FOR PUBLIC USE MUST CONFORM TO THE LATEST MAG UNIFORM STANDARD SPECIFICATIONS AND UNIFORM STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION AS AMENDED BY THE LATEST VERSION OF THE CITY OF SCOTTSDALE SUPPLEMENTAL STANDARD SPECIFICATIONS AND SUPPLEMENTAL STANDARD DETAILS. IF THERE IS A CONFLICT, THE CITY'S SUPPLEMENTAL STANDARD DETAILS WILL GOVERN.
2. THE CITY ONLY APPROVES THE SCOPE, NOT THE DETAIL, OF ENGINEERING DESIGNS; THEREFORE, IF CONSTRUCTION QUANTITIES ARE SHOWN ON THESE PLANS, THEY ARE NOT VERIFIED BY THE CITY.
3. THE APPROVAL OF PLANS IS VALID FOR SIX (6) MONTHS. IF A RIGHT-OF-WAY PERMIT FOR THE CONSTRUCTION HAS NOT BEEN ISSUED WITHIN SIX MONTHS, THE PLANS MUST BE RESUBMITTED TO THE CITY FOR REAPPROVAL.
4. A PUBLIC WORKS INSPECTOR WILL INSPECT ALL WORKS WITHIN THE CITY RIGHTS-OF-WAY AND IN EASEMENTS GRANTED FOR PUBLIC PURPOSES. 24 HOURS PRIOR TO BEGINNING CONSTRUCTION BY CALLING 480-312-5750.
5. WHENEVER EXCAVATION IS NECESSARY, CALL THE BLUE STAKE CENTER, 811, TWO WORKING DAYS BEFORE EXCAVATION BEGINS. THE CENTER WILL SEE THAT THE LOCATION OF THE UNDERGROUND UTILITY LINES IS IDENTIFIED FOR THE PROJECT.
6. RIGHT-OF-WAY PERMITS ARE REQUIRED FOR ALL WORK IN PUBLIC RIGHTS-OF-WAY AND EASEMENTS GRANTED FOR PUBLIC PURPOSES. A RIGHT-OF-WAY PERMIT WILL BE ISSUED BY THE CITY ONLY AFTER THE REGISTRANT HAS PAID A BASE FEE PLUS A FEE FOR INSPECTION SERVICES. COPIES OF ALL PERMITS MUST BE RETAINED ON-SITE AND BE AVAILABLE FOR INSPECTION AT ALL TIMES. FAILURE TO PRODUCE THE REQUIRED PERMITS WILL RESULT IN IMMEDIATE SUSPENSION OF ALL WORK UNTIL THE PROPER PERMIT DOCUMENTATION IS OBTAINED.
7. ALL EXCAVATION AND GRADING THAT IS NOT IN THE PUBLIC RIGHTS-OF-WAY OR NOT IN EASEMENTS GRANTED FOR PUBLIC USE MUST CONFORM TO APPENDIX J, GRADING, OF THE LATEST EDITION OF THE INTERNATIONAL BUILDING CODE. A PERMIT FOR THIS GRADING MUST BE SECURED FROM THE CITY FOR A FEE ESTABLISHED BY THE CITY.

### BASIS OF BEARING:

THE MONUMENT LINE OF CAMELBACK RD FROM THE WEST QUARTER CORNER TO THE CENTER OF SECTION 23 WHICH BEARS SOUTH 89 DEGREES 31 MINUTES 36 SECONDS EAST.

### BENCHMARK:

FOUND BRASS CAP IN HAND HOLE WEST QUARTER CORNER OF SECTION 23 TOWNSHIP 2 N RANGE 4 EAST AT INTERSECTION OF CAMELBACK RD. & SCOTTSDALE RD. ELEV=1,277.52 NAVD 88.



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