

PRELIMINARY DRAINAGE INVESTIGATION

Case #: 3-ZN-2021

Review Cycle: 2/3

Status: Accepted

Reviewed By: GA

Date: 11/15/2021

ARTISAN SCOTTSDALE

SWC Indian School Rd. & Marshall Way
Scottsdale, AZ 85251

Prepared For:

Jackson Dearborn

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Chicago, IL 60607
Phone: 312-878-7362**

Drainage
case review
background

47. 1st Review Comments:

Review comments are included in a correction file that is saved to the project folder in CDS and will be shared on the city Internet File Exchange folder, under file name "3-ZN-2021_V1_CORR-DRAINAGE-Drainage Report BOUND 2-2-2021" Report forwarded to applicant in 1st review letter. BC 5/20/21.

48. 2nd Review Comments:

Comments of 1st review have been mostly addressed. One item to address at a future submittal is the site's net delta volume required presented in Table 4. The purpose of providing a post vs pre stormwater storage is to figure out the required storage at each concentration point to mitigate the increase of post-development flow at that concentration point by providing a corresponding storage volume. Looking at the net from the site as a whole does not meet the intent of the requirements. Since the available capacity in the stormdrain along Indian School Road is feasible to utilize, as discussed in the report, it is recommended, to the extent possible, to maintain the pre-existing conditions by grading the site accordingly, Table 4, and corresponding report text, should be revised to properly reflect requirements per this discussion.

49. 3rd Review Comments:

This case was "Ready to be Determined" for drainage on cycle 2 review with the comment shown above. No updated drainage report or grading and drainage plans have been submitted for 3rd cycle review. Accordingly, the case is still "Ready to be Determined" for drainage and the comment above still valid.

Prepared by:



Sustainability Engineering Group

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Project Number: 200708

Submittal Date: February 2, 2021 (Rezoning)

Revision date: June 18, 2021

Case No. 3-ZN-2021

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1. INTRODUCTION

This Preliminary Drainage Report represents the storm water analysis for the proposed multifamily residential development located on the SWC of E. Indian School Rd (ISR) and Marshall Way in Scottsdale, Arizona. The purpose of this preliminary report is to provide the hydrologic and hydraulic analysis, required by the City of Scottsdale, to support the proposed rezoning for said development. 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 ¹, and the Drainage Design Manuals for Maricopa County, Arizona, Volumes I² and Volume II³.

2. LOCATION AND PROJECT DESCRIPTION

2.1 LOCATION:

The subject property consists of land located on the SWC of E. Indian School Road and Marshall Way in Scottsdale, AZ:

- A portion of the NE 1/4 of Section 27, Township 2 North, Range 4 East of the Gila and Salt River Base and Meridian, Maricopa County, Scottsdale, Arizona.
- Parcel ID: (North Lot) Parcel 130-12-031B, 032B & 033B; Parking Lot, Zoning C-2
(South Lot) Parcel 130-12-045, 046B & 047A; Vacant Lot, Zoning C-2
- Address: 7033/7029 E. Indian School 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:

North Parcels:

- West: Parcel 130-12-035B; Coach House Entertainment; Zoning is C-2
- East: Across Marshall Way: Parcels 130-12-027; city park, Zoning C-2
- North: Across Indian School Road are parcels:
Parcel 173-50-092; commercial shops; Zoning is D/RS-1
Parcel 173-50-081; commercial shops; Zoning is D/OC-2
- South: 14" Alley and propose south parcels

South:

- West: Parcels 130-12-044; David Miller Associates; Zoning is C-2
- East: Across Marshall Way: Parcels 130-12-026 ; city park, Zoning C-2
- North: 14" Alley and propose north parcels
- South: Across 1st Avenue are parcels:
Parcel 130-12-054, -053, -052; Retail stores; Zoning is C-2.

2.3 EXISTING SITE DESCRIPTION:

The project area includes approximately 35,705 sf. ft. (0.82 acres) of land designated as C-2 per the City of Scottsdale. The northern parcels of the site are currently developed as a parking lot, with a paved westerly portion and a gravel easterly portion. The southern parcels are currently a gravel parking lot. The sections are separated by an alley.

Per Topographic Survey prepared by AW Land Surveying LLC, the site slopes from northwest to southeast at approximately 1.00%. Elevation varies from approximately 1265.39 at the northwest corner to approximately 1261.39 at the southeast corner. The site drains to the adjacent streets and alley. Ultimate outfall is at the intersection of Marshall Way and 1st Avenue at an elevation of 1260.80.

Refer to **FIGURE 2** attached for an aerial of the site.

2.4 PROPOSED SITE DEVELOPMENT:

Site development includes demolition of existing parking lot and the construction of two new residential buildings with underground parking. Both existing curb openings at 1st Avenue will be removed as the development will include a proposed driveway access to the underground parking on the south side to this street, pedestrian access through all adjacent streets will also be provided. The project will require the abandonment of a portion of the existing alley where the proposed underground parking crosses the alley, abandoning current water and sewer lines. However, drainage patterns will be maintained in the alley, where minor stormwater contributions flow from west to east and drain to N. Marshall Way.

Refer to **Appendix III** - Preliminary Grading Plan for site layout.

2.5 FLOOD HAZARD ZONE:

FIRM Map Number 04013C2235L dated September 18, 2020 indicates this site is designated as Zone "X". As such, it is defined as areas outside of the 0.2% annual chance of flooding. A small portion of the northwest corner is designated as Zone "X" shaded, it is defined as areas determined to be an area of 0.2% annual chance flooding with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance. Refer to **FIGURE 3** for the FIRM.

3. EXISTING DRAINAGE CONDITIONS

3.1 OFF-SITE DRAINAGE PATTERNS

The topographic survey provides the following information for offsite drainage:

- There is an approximately 14 ft wide (plus a 3ft road easement, approx. 17 ft long) existing alley running between the northern and southern portions of the development. The alley conveys drainage from the proposed northern site and adjacent lots onto Marshall Way.
- Based on the Flo-2D map from the 679 South Lower Indian Bend Wash Study for the 100-yr, 6-hour event (Figure 4), there are minor offsite flows from the alley entering the site but ultimately outfall to 1st Avenue and Marshall Way.

- At the north of the property, half of the street run-off from E. Indian School Road flows towards the site but is intercepted and conveyed via curb & gutter from west to east at an average slope of 0.80%. No off-site flows affect the property from this direction.
- South of the property, half of the street run-off from 1st Avenue flows north towards the property. Flows are intercepted and conveyed by existing curb & gutter at an average slope of 0.72% from west to east. No off-site flows affect the property from this direction.
- Southwest of the property, the majority of the adjacent site drains to 1st Avenue. A decorative wall separates the neighbor lot from the property and blocks any stormwater inflows from this direction. A small portion of the lot drains north to the alley.
- Per the Flo-2D map from the 679 South Lower Indian Bend Wash Study for the 100-yr, 6-hour event (Figure 4), the adjacent lot northwest of the property drains most of its flows west to N. Goldwater Blvd. The rest of the run-off is directed south towards the alley.
- The property is bounded by Marshall Way to the east. Run-off from this street is conveyed from north to south through curb & gutter at an average slope of 0.70%. The alley discharges to Marshall Way at approximately the middle section of the block. No off-site flows affect the property from this direction.

3.2 ON-SITE DRAINAGE

Based on the topographic information, drainage area EX-1., which encompasses the north portion of the north parcel, drains towards Indian School Road and is conveyed through curb and gutter to existing catch basin, EX. CB-1. According to the Lower Indian Bend Wash Area Drainage Master Study Hydrology and Hydraulics Report, Contract No.: FCD 2011C019, dated December 2017, the catch basin captures a peak flow of 2.70 cfs for the 100-yr, 6-hr storm event under existing conditions. Refer to Appendix IV for **Existing LIBW Study Pipe Capacity Excerpt**.

Drainage area EX-2 drains to the alley where flow is ultimately conveyed to Marshall Way. The entire south parcel, existing drainage area EX-3, directs flows to 1st Avenue. Along 1st Avenue, where flows exit the site via driveway entrances and are then conveyed easterly through curb and gutter before continuing south along Marshall Way. Refer to Appendix II for **Existing Conditions Drainage Area Map (Exhibit C)**.

The Rational Method was utilized to compute the on-site peak discharges. In order to assume a conservative approach, and given the size and existing slope of the project area, a time of concentration of 5 minutes was used for each of the analyzed drainage areas. The intensity for the 100-year, 5-min storm was retrieved from NOAA Atlas 14. Refer to **Appendix I** for Rainfall Data. The Rational Method equation is calculated as shown below, refer to Section 4.3 for land characteristics and rational method criteria, and Appendix II for C_{wt} calculations:

TABLE 1:

Existing Conditions Rational Runoff Calculations (100 yr-5 min storm)				
Drainage	Area	C_{wt}	Intensity	Q
<u>Area ID</u>	<u>(acres)</u>	<u>(-)</u>	<u>(in/hr)</u>	<u>(cfs)</u>
Outfall: Indian School Road				
EX-1	0.10	0.88	7.44	0.65
Total:	0.10	0.87		0.65

Outfall: Marshall Way				
EX-2	0.34	0.88	7.44	2.23
Total:	0.34	0.88		2.23
Outfall: 1st Street				
EX-3	0.38	0.88	7.44	2.49
Total:	0.38	0.88		2.49

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

4. PROPOSED STORM WATER MANAGEMENT

4.1 DESIGN INTENT:

On-site drainage will be directed off-site via overland flow to the historical outlets. This is a re-development of existing commercial land; therefore, the City of Scottsdale specifies that on-site retention shall be provided as described in Section 4.2 below. Minor run-off contributions entering the site from the alley will be conveyed from west to east in the alley, matching existing conditions, and ultimately discharged at Marshall Way.

The majority of the site is proposed impervious with minor increases in runoff compared to existing conditions. There is no retention under existing conditions; however, onsite retention will be provided under proposed conditions.

Refer to **Appendix II** for **Proposed Conditions Drainage Area Map (Exhibit D)**.

4.2 DESIGN STORM REQUIREMENTS:

In accordance with City of Scottsdale requirements, stormwater storage for the 100-year 2-hour storm event is required based on maintaining existing retention volume plus the difference between the pre vs. post development runoff for the 100-year 2-hour storm event if increased. When first flush mitigation is required through storing the first flush volume in retention basins, the higher of the existing retention plus the pre vs. post volume and first flush is required.

4.3 LAND CHARACTERISTICS:

The proposed project site consists mainly of roofs and covered gathering areas, pedestrian walkways, and parking areas. Based on the DS&PM, runoff coefficients for the 100-year storm event used are as follows:

- C=0.95 for building or concrete
- C=0.45 for desert landscape
- C=0.88 for parking and compacted gravel (FCDMC Drainage Policies and Standards Table 6.3)

Refer to **Appendix II** for C_{wt} Calculations.

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 5 minutes)

A = The contributing drainage area in acres

Table 2 below is a summary of Proposed Q_{100} runoff :

TABLE 2:

Proposed Conditions Rational Runoff Calculations (100 yr-5 min storm)				
Drainage	Area	C_{wt}	Intensity	Q
Area ID	(acres)	(-)	(in/hr)	(cfs)
Outfall: Indian School Road				
DA-1	0.41	0.93	7.44	2.84
Total:	0.41	0.93		2.84
Outfall: Marshall Way				
DA-2A	0.02	0.95	7.44	0.14
DA-2B	0.08	0.95	7.44	0.57
Total:	0.10	0.95		0.71
Outfall: 1st Street				
DA-3	0.29	0.93	7.44	2.01
DA-4	0.02	0.95	7.44	0.14
Total:	0.31	0.93		2.15

Refer to the **Proposed Conditions Cwt Exhibit (Exhibit B)**, **Proposed Conditions Drainage Area Map (Exhibit D)** and Calculations in **Appendix II**.

Table 3 summarizes the calculated onsite peak flows for the 100-yr storm event under proposed and existing conditions.

TABLE 3:

Runoff Calculations 100-yr, 5-min				
Outfall	Post	Pre	Difference	
	(cfs)	(cfs)	(cfs)	-
Indian School Road	2.84	0.65	2.19	Increase
Marshall Way	0.71	2.23	1.52	Decrease
1st Street	2.15	2.49	0.34	Decrease

4.4 STORMWATER RETENTION:

PRE VS POST: Based on topographic survey there is no retention provided on the existing development. Following the performed calculations above, existing condition and proposed development storage requirements for the 100-yr, 2-hr storm event are calculated with a precipitation depth of 2.16 in per NOAA Atlas 14. Per DSPM Chapter 4-C1b, the pre vs post volume is calculated with the total disturbed area attributable to the development. Table 4 summarizes the associated required volumes of the site for the 100-year, 2-hour event at existing and proposed conditions. Refer to **Appendix I** for Rainfall Data.

TABLE 4:

Pre vs. Post Required Storage Volume Calculation Summary									
P=2.16 in (NOAA Atlas 14)									
$\Delta V = [A * (C_{wpost}) * D/12] - [A * (C_{wpre}) * D/12]$									
	<i>Post Conditions</i>				<i>Pre Conditions</i>				
Outfall	Area ID	Area	C _{wpost}	Volume Req.	Area ID	Area	C _{wpre}	Volume Req.	Δ Volume
	(-)	(acres)	(-)	(CF)	(-)	(acres)	(-)	(CF)	(CF)
Indian School Road	DA-1	0.41	0.93	2,989.70	EX-1	0.10	0.88	689.99	<u>2,300</u>
Marshall Way	DA-2A	0.02	0.95	148.98	EX-2	0.34	0.88	2,345.97	<u>-1,601</u>
	DA-2B	0.08	0.95	595.90					
1st Street	DA-3	0.29	0.93	2,114.66	EX-3	0.38	0.88	2,621.96	<u>-358</u>
	DA-4	0.02	0.95	148.98					
Site's net Δ									340

FIRST FLUSH: First Flush storage required is calculated in accordance with COS– DS&PM. According to the DS&PM, sites not likely to contribute stormwater contaminants with areas less than 1 acre may be waived from the First Flush requirement with approval from staff. The area considered in the first flush calculation is the disturbed area minus any true roof top area and landscape. Since most of the project site will be rooftop, the total area to be considered for first flush calculations is 0.11 acres, this is the surface that may contribute pollutants to the site’s runoff. Since this area (0.06 acres) is less than 1 acre, no major contaminants will be generated by the project; as such, the entire site could be considered exempt from the first flush requirement.

Refer to **Proposed Conditions Cwt Exhibit (Exhibit B)** for the types of surfaces within the development including roof areas.

TABLE 5:

Proposed Conditions Required Volume Summary		
Outfall	Pre vs. Post	First Flush
	(cf)	(cf)
Indian School Road	2300	N/A
Marshall Way	-1601	N/A
1st Street	-358	N/A
Net	340	N/A

The previous calculations in Table 5 indicate the Pre vs Post storage is required for the outfall of Indian School Road. (2,300 CF). The net pre vs. post calculation for the entire site is 340 CF, which is the overall increase in stormwater flows by the project at proposed conditions.

4.5 STORMWATER RETENTION WAIVER

Runoff to the east (Marshall Way) is reduced by 1.52 cfs and runoff to the south (1st Street) is reduced by 0.34 cfs. The total increase to the north (Indian School Road) is 2.19 cfs and the street and storm drains have capacity to accommodate the project flows based on projected peak flows in Table 3 and offsite flows presented in section 4.6. The required retention volume associated to the 100-yr, 2-hour event per the pre vs. post analysis is 2,300 CF for this outfall. The proposed development includes an underground parking structure to the limits of the property, thereby eliminating potential open or underground retention areas. As described in section 4.4, first flush treatment is not required. Therefore, a Request for Stormwater Storage Waiver will be applied for based on section 4-1.203 DS&PM as described in Section 4.6. Refer to **Appendix IV** for Stormwater Retention Waiver.

4.6 OFFSITE STORM SYSTEM ANALYSIS

The additional runoff will be conveyed to the existing storm system in Indian School Road. Storm drains in the Indian Bend Wash Area were oversized to increase their interception capacity and mitigate flooding issues in the City, as such, the capacity of the existing storm structures will be evaluated to accommodate the additional stormwater flows generated from the site. For the purpose of this report, the calculated onsite peak flows for the 100-yr storm event were used to compare to the existing peak flows presented in the Lower Indian Bend Wash Area Drainage Master Study Hydrology and Hydraulics Report, Contract No.: FCD 2011C019, dated December 2017.

The hydraulic grade line and capacity was analyzed for the existing RGRCP reach along E. Indian School Road. The reach begins at the upstream manhole, MJ8W2STEISRL, located north the E. Indian School Road and Marshall Way intersection and continues east to N Scottsdale Road at manhole MJ23W2STSRL, refer to Appendix IV for an excerpt of the Lower Indian Bend Wash ADMP corresponding to the analyzed reach along Indian School Road.

The onsite peak flows from Table 5 were calculated through the use of the Rational Method and indicate that there is a 2.19 cfs increase to Indian School Road and no increase in runoff at the Alley and 1ST Avenue. The hydraulic analysis was performed for the existing 24" storm drain (upstream) and the 48"

(downstream) to verify the capacity of the existing system in respect to the additional flow. The analysis was performed using Flowmaster to analyze the existing 24" and 48" RGRCP reach based on the existing peak flow of 9.4 cfs and 71.5 cfs at pipes **C8W2STEISRL** and **C1W2STEISRL**, respectively, obtained from the Lower Indian Bend Wash ADMP, and the additional 2.19 cfs obtained from the calculated peak flow. Refer to **Appendix V** for Inlet Summary Table and Pipe Discharge Tables in the Lower Indian Bend Wash ADMP.

24" Pipe C8W2STEISRL: 9.4 cfs (Existing) + 2.19cfs (Post) = **11.59 cfs**

48" Pipe C1W2STEISRL: 71.5 cfs (Existing) + 2.19 cfs (Post) = **73.69 cfs**

Hydraulic calculations indicate that 25.19 cfs is available for the existing 24" RGRCP (S=0.12%) at full capacity and 114.01 cfs available for the existing 48" RGRCP (S=0.63%) at full capacity. The existing 24" and 48" RGRCP storm drains are capable of conveying the total post conditions flow increase of 2.19 cfs.

Refer to **Appendix II** for pipe capacity calculations.

A storm pipe is proposed to convey drainage from DA-1 directly into EX-CB1-1. Since the surface of this area is mainly roof, a storm pipe will be installed connecting the roof drain to the public drain system. This reduces the amount of flow load intake for inlet EX-CB-1 and ensures adequate drainage without affecting existing conditions at the inlet.

Refer to **Appendix III** for Grading and Drainage plans.

4.7 ADEQ WATER QUALITY REQUIREMENTS

The total disturbed area of this site is approximately 0.93 acres, including the portion where the underground parking crosses the alley and improvements to the R.O.W. The Arizona Department of Environmental Quality requires that any site disturbance over an acre is required to submit an NOI. A NOI will not be submitted to ADEQ for this site as the site disturbance is under 1 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 and a minimum of 14 inches above the lowest top of curb of the lot. This will ensure that each building will be well above the 100-year water level.

6. CONCLUSIONS

6.1 OVERALL PROJECT:

1. The finish floor elevations will be designed a minimum of 12 inches above the 100-year water surface in adjacent streets and drainage paths and a minimum of 14 inches above the lowest top of curb of the lot.
2. In accordance to the performed drainage analysis, a request for Stormwater Storage Waiver will be applied for based on section 4-1.203 DS&PM.

6.2 PROJECT PHASING:

This project will be constructed in a single phase.

7. WARNING AND DISCLAIMER OF LIABILITY

RE: following page.

8. 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. *Flood Control District of Maricopa County Lower Indian Bend Wash Area Drainage Study, December, 2017*

GRADING & DRAINAGE LANGUAGE

WARNING AND DISCLAIMER OF LIABILITY

The City’s Stormwater and Floodplain Management Ordinance is intended to minimize the occurrence of losses, hazards and conditions adversely affecting the public health, safety and general welfare which might result from flooding. The Stormwater and Floodplain Management Ordinance identifies floodplains, floodways, flood fringes and special flood hazard areas. However, a property outside these areas could be inundated by floods. Also, much of the city is a dynamic flood area; floodways, floodplains, flood fringes and special flood hazard areas may shift from one location to another, over time, due to natural processes.

WARNING AND DISCLAIMER OF LIABILITY

The flood protection provided by the Stormwater and Floodplain Management Ordinance 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 constructed or natural causes. The Stormwater and Floodplain Management Ordinance does not create liability on the part of the city, any officer or employee thereof, or the federal, state or county government for any flood damages that result from reliance on the Ordinance or any administrative decision lawfully made thereunder.

Compliance with the Stormwater and Floodplain Management Ordinance does not ensure complete protection from flooding. Flood-related problems such as natural erosion, streambed meander, or constructed obstructions and diversions may occur and have an adverse effect 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.

Plan Check #	Owner	Date
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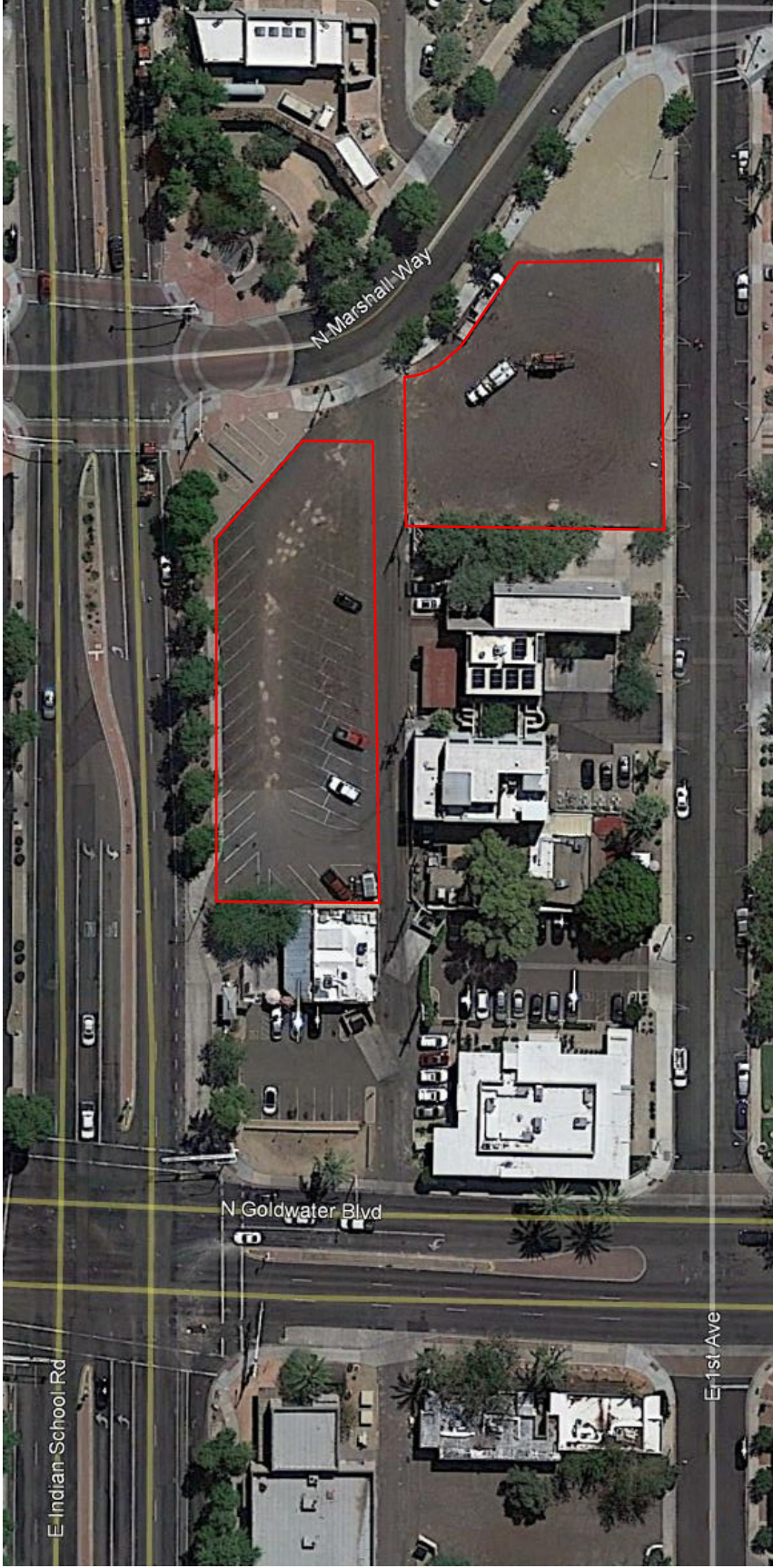
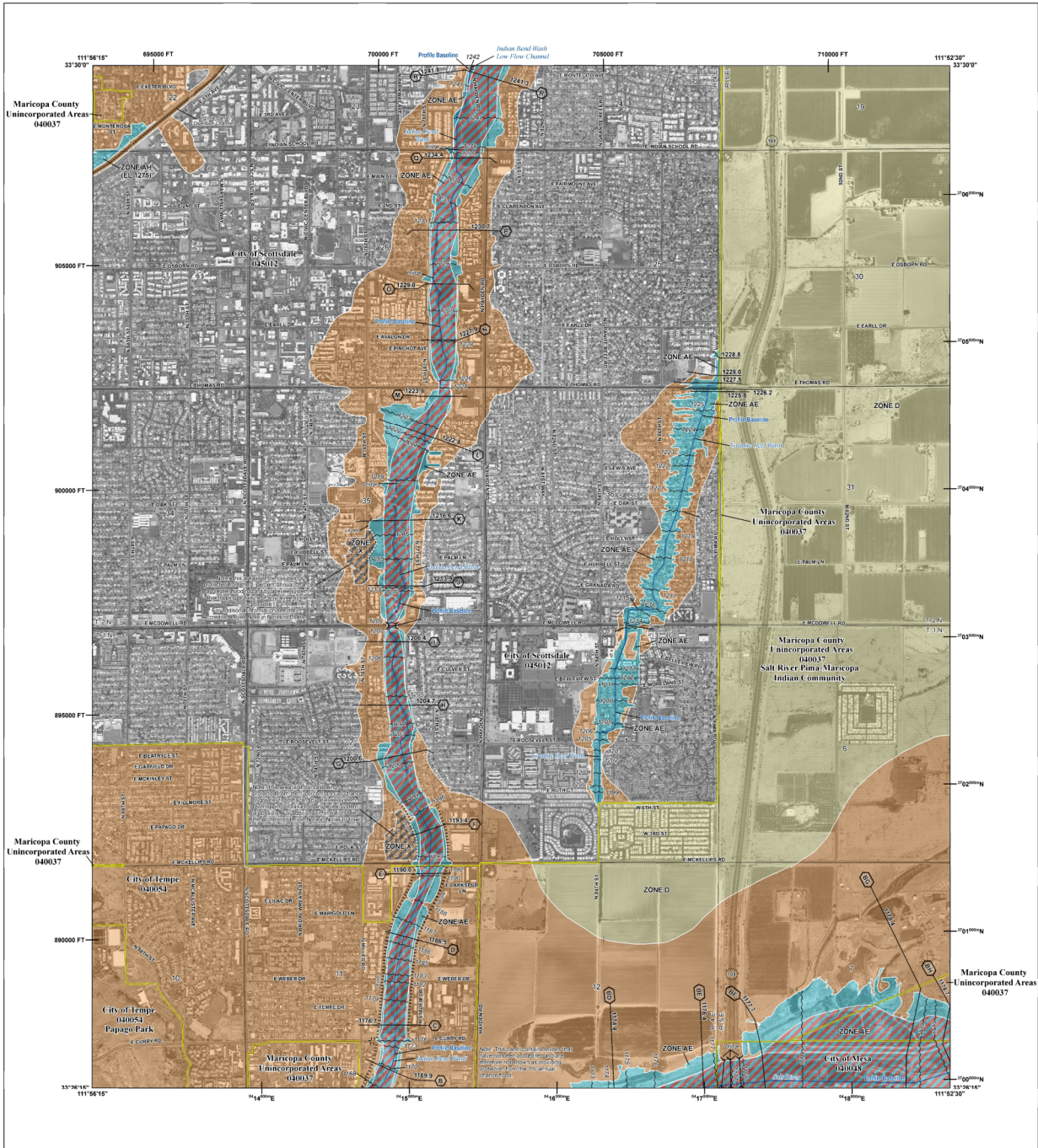


FIGURE 2
AERIAL MAP

8280 E. Gelding Dr., Suite 101
Scottsdale, AZ 85260

Sustainability Engineering Group

info@azSEG.com 480.588.7226 www.azSEG.com



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)

- SPECIAL FLOOD HAZARD AREAS**
 - Without Base Flood Elevation (BFE) 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
- OTHER AREAS OF FLOOD HAZARD**
 - Area of Minimal Flood Hazard Zone X
 - Area of Undetermined Flood Hazard Zone D
- OTHER AREAS**
 - Channel, Culvert, or Storm Sewer
 - Levee, Dike, or Floodwall
- GENERAL STRUCTURES**
 - Cross Sections with 1% Annual Chance Water Surface Elevation
 - Coastal Transect
 - Coastal Transect Baseline
 - Profile Baseline
 - Hydrologic Profile Feature
 - Base Flood Elevation Line (BFE)
 - Limit of Study
 - Jurisdiction Boundary
- OTHER FEATURES**

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 data file for this FIRM panel, how to order products, or the National Flood Insurance Program (NFIP), in general, please call the FEMA Flood Map Service Center website at <https://www.fema.gov>. Available products may include previously issued editions of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered directly from the website.

Communities seeking hard or softcopy FIRM panels must obtain a current copy of the relevant panel as well as the current FIRM index. These may be ordered directly from the Flood Map Service Center at the number listed above.

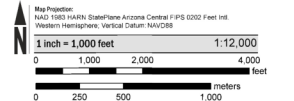
For community and countywide map data refer to the Flood Insurance Study Report for that jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-8602.

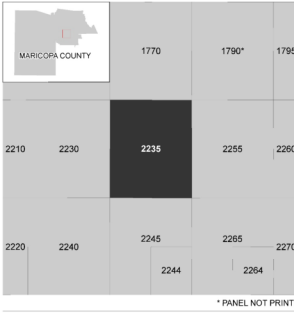
Base map information shown on this FIRM was derived from U.S. Census Bureau TIGER files, dated 2014, and digital data provided by the Flood Control District of Maricopa County. Digital orthorectification was provided by the Flood Control District of Maricopa County. The imagery was derived from 2014 and was produced with a 1:6 foot ground sample distance.

ACCURACY OF DATA: CHECK WITH YOUR LOCAL COMMUNITY TO OBTAIN MORE INFORMATION, SUCH AS THE EXTENDED LEVEL OF PROTECTION PROVIDED (which may exceed the 1-percent-annual-chance level) and Emergency Action Plan, or the levee system shown as providing protection for areas on this panel. To mitigate flood risk in residential areas, property owners and residents are encouraged to consider flood insurance and floodproofing or other protective measures. For more information on flood insurance, increased protection and floodproofing, visit the FEMA Website at <http://www.fema.gov/national-flood-insurance-program>.

SCALE



PANEL LOCATOR



National Flood Insurance Program

**NATIONAL FLOOD INSURANCE PROGRAM
 FLOOD INSURANCE RATE MAP**

MARICOPA COUNTY, ARIZONA
 and Incorporated Areas

PANEL 2235 OF 4425

Panel Contains:			
COMMUNITY	NUMBER	FIRM	SUFFIX
MARICOPA COUNTY	040037	2235	M
MESA, CITY OF	040048	2235	M
SCOTTSDALE, CITY OF	040013	2235	M
TEMPE, CITY OF	040054	2235	M

VERSION NUMBER
2.3.3.2

MAP NUMBER
04013C235M

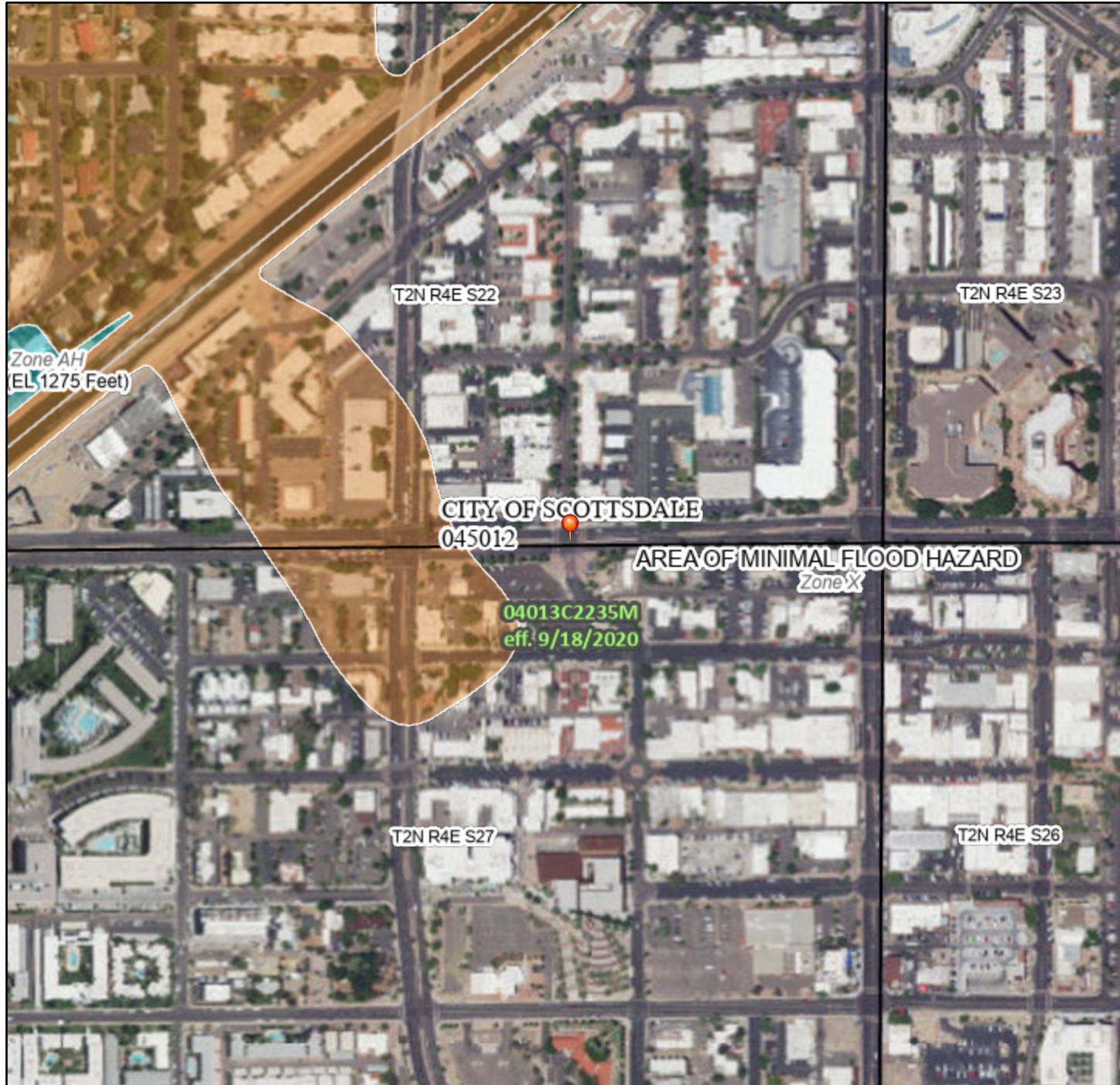
MAP REVISED
September 18, 2020

* PANEL NOT PRINTED

National Flood Hazard Layer FIRMette



111°56'3"W 33°29'56"N



Legend

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

SPECIAL FLOOD HAZARD AREAS	
	Without Base Flood Elevation (BFE) Zone A, V, A99
	With BFE or Depth Zone AE, AO, AH, VE, AR
	Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD	
	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

OTHER AREAS	
	NO SCREEN Area of Minimal Flood Hazard Zone X
	Effective LOMRs
	Area of Undetermined Flood Hazard Zone D

GENERAL STRUCTURES	
	Channel, Culvert, or Storm Sewer
	Levee, Dike, or Floodwall

OTHER FEATURES	
	20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
	17.5 Coastal Transect
	Base Flood Elevation Line (BFE)
	Limit of Study
	Jurisdiction Boundary
	Coastal Transect Baseline
	Profile Baseline
	Hydrographic Feature

MAP PANELS	
	Digital Data Available
	No Digital Data Available
	Unmapped

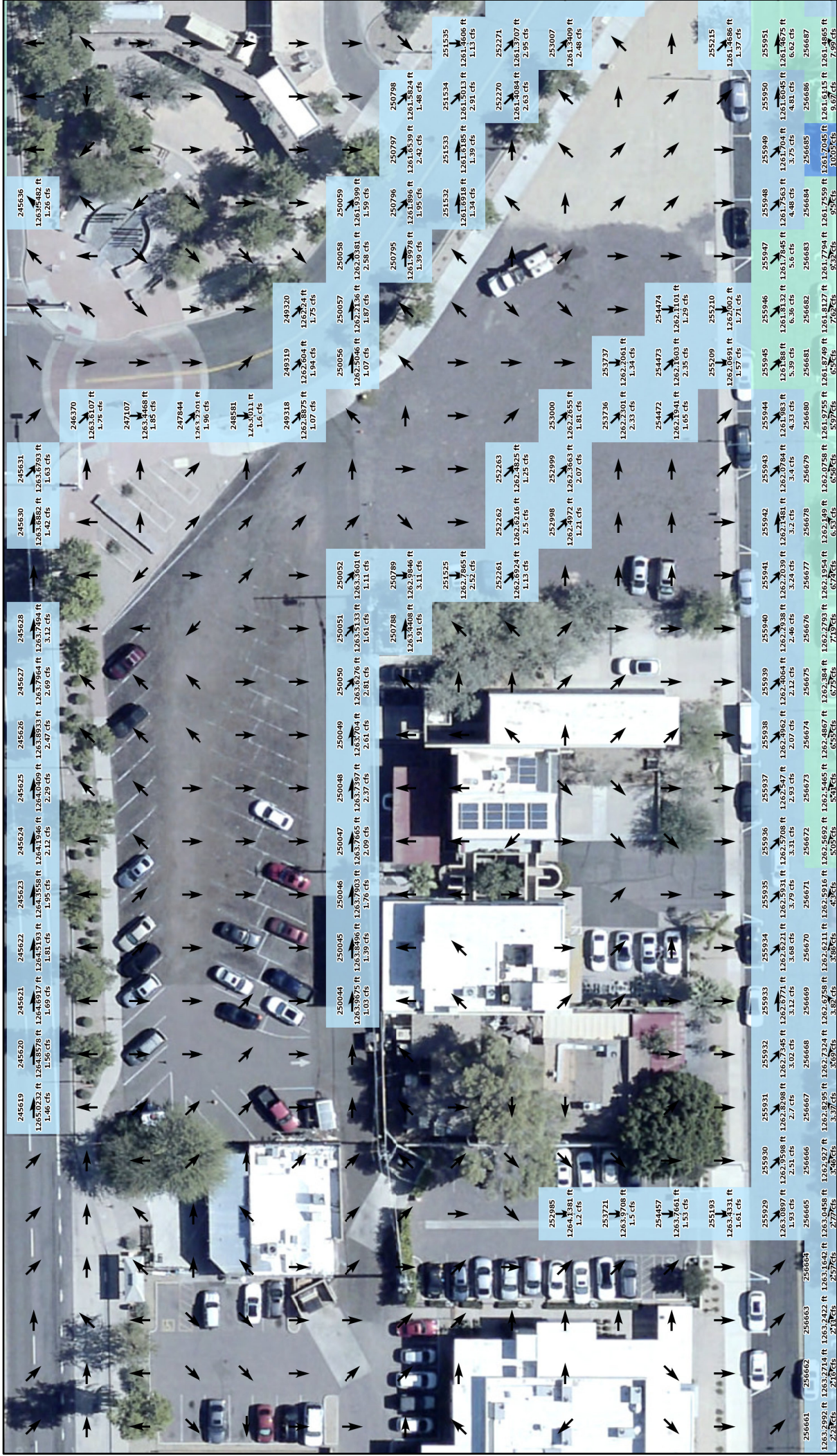
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

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

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **6/1/2021 at 4:53 PM** 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 void if the one or more of the following map elements do not appear: basemap 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.

679_LIBW - South 100YR6HR



September 2, 2020

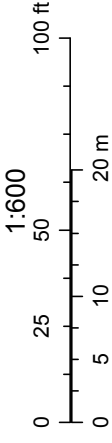


FIGURE 4
FLO-2D Map

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 & aeriels](#)

PF tabular

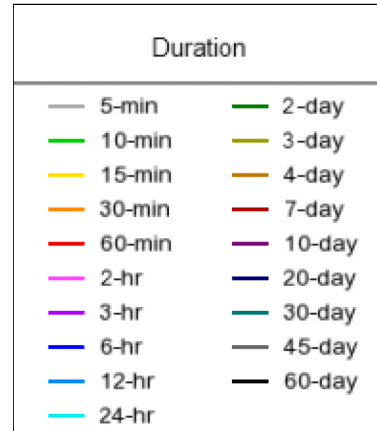
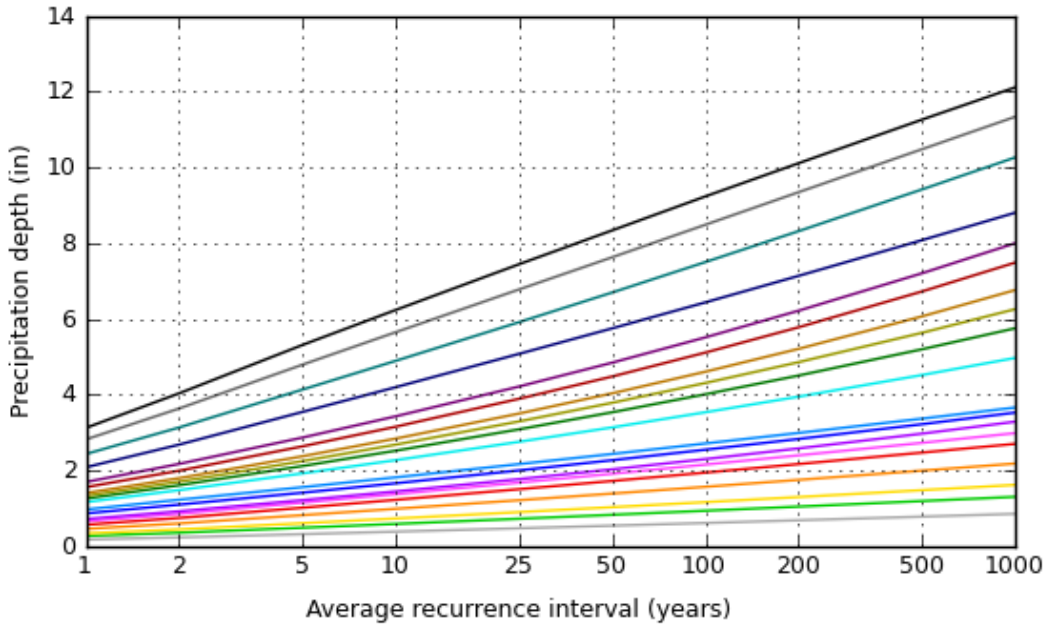
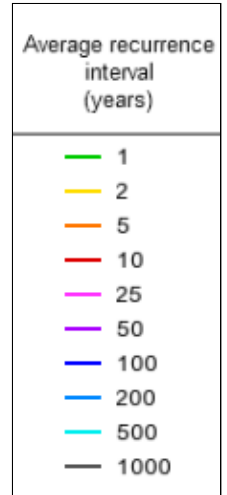
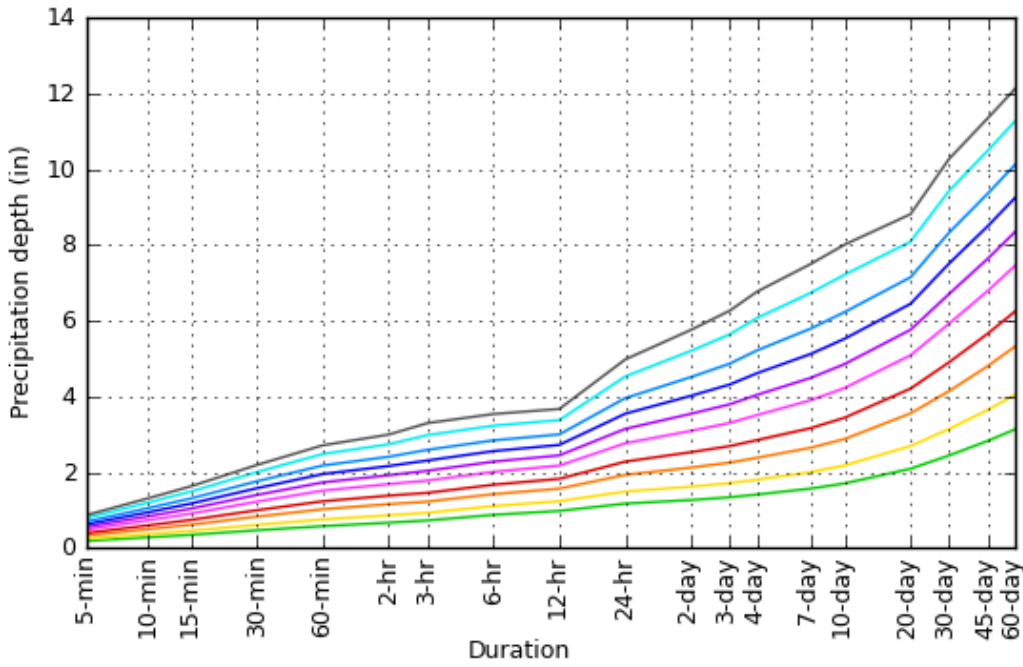
PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.183 (0.154-0.223)	0.240 (0.202-0.291)	0.326 (0.273-0.395)	0.392 (0.326-0.472)	0.481 (0.394-0.577)	0.550 (0.444-0.657)	0.620 (0.492-0.739)	0.692 (0.540-0.824)	0.788 (0.598-0.940)	0.862 (0.641-1.03)
10-min	0.279 (0.234-0.339)	0.364 (0.307-0.443)	0.495 (0.415-0.600)	0.596 (0.496-0.719)	0.732 (0.599-0.878)	0.837 (0.676-1.00)	0.944 (0.748-1.12)	1.05 (0.821-1.25)	1.20 (0.911-1.43)	1.31 (0.976-1.57)
15-min	0.345 (0.290-0.420)	0.452 (0.381-0.549)	0.614 (0.514-0.744)	0.739 (0.614-0.891)	0.907 (0.743-1.09)	1.04 (0.838-1.24)	1.17 (0.928-1.39)	1.31 (1.02-1.55)	1.49 (1.13-1.77)	1.63 (1.21-1.94)
30-min	0.465 (0.390-0.565)	0.608 (0.513-0.740)	0.827 (0.692-1.00)	0.995 (0.827-1.20)	1.22 (1.00-1.47)	1.40 (1.13-1.67)	1.58 (1.25-1.88)	1.76 (1.37-2.09)	2.00 (1.52-2.39)	2.19 (1.63-2.61)
60-min	0.575 (0.483-0.700)	0.753 (0.635-0.915)	1.02 (0.857-1.24)	1.23 (1.02-1.49)	1.51 (1.24-1.82)	1.73 (1.40-2.07)	1.95 (1.55-2.32)	2.18 (1.70-2.59)	2.48 (1.88-2.95)	2.71 (2.02-3.24)
2-hr	0.666 (0.569-0.795)	0.863 (0.736-1.03)	1.16 (0.983-1.37)	1.38 (1.16-1.64)	1.69 (1.40-1.99)	1.92 (1.57-2.26)	2.16 (1.75-2.54)	2.41 (1.91-2.82)	2.74 (2.12-3.21)	2.99 (2.27-3.54)
3-hr	0.724 (0.614-0.870)	0.929 (0.793-1.12)	1.22 (1.04-1.47)	1.45 (1.22-1.74)	1.78 (1.47-2.11)	2.04 (1.66-2.41)	2.31 (1.85-2.73)	2.59 (2.04-3.06)	2.98 (2.28-3.52)	3.29 (2.46-3.91)
6-hr	0.873 (0.756-1.03)	1.11 (0.962-1.30)	1.42 (1.23-1.66)	1.67 (1.43-1.95)	2.01 (1.70-2.33)	2.28 (1.90-2.63)	2.56 (2.10-2.95)	2.84 (2.28-3.28)	3.23 (2.53-3.74)	3.53 (2.71-4.11)
12-hr	0.977 (0.855-1.13)	1.23 (1.08-1.44)	1.57 (1.36-1.81)	1.82 (1.58-2.11)	2.17 (1.86-2.50)	2.44 (2.07-2.81)	2.72 (2.27-3.13)	3.00 (2.47-3.45)	3.37 (2.71-3.91)	3.67 (2.89-4.28)
24-hr	1.17 (1.05-1.32)	1.49 (1.33-1.68)	1.93 (1.72-2.18)	2.28 (2.02-2.56)	2.76 (2.43-3.11)	3.14 (2.75-3.53)	3.54 (3.08-3.97)	3.95 (3.41-4.44)	4.53 (3.86-5.08)	4.98 (4.20-5.60)
2-day	1.26 (1.13-1.43)	1.62 (1.44-1.82)	2.12 (1.89-2.39)	2.53 (2.24-2.84)	3.09 (2.73-3.47)	3.54 (3.11-3.98)	4.02 (3.50-4.52)	4.51 (3.90-5.08)	5.21 (4.45-5.87)	5.76 (4.88-6.51)
3-day	1.34 (1.19-1.51)	1.71 (1.52-1.93)	2.25 (2.00-2.53)	2.69 (2.38-3.02)	3.30 (2.91-3.70)	3.79 (3.32-4.25)	4.32 (3.75-4.84)	4.87 (4.20-5.47)	5.64 (4.80-6.34)	6.26 (5.28-7.06)
4-day	1.41 (1.25-1.59)	1.80 (1.60-2.04)	2.38 (2.11-2.68)	2.85 (2.52-3.20)	3.51 (3.08-3.94)	4.04 (3.53-4.53)	4.61 (4.00-5.17)	5.22 (4.49-5.86)	6.07 (5.16-6.82)	6.77 (5.69-7.61)
7-day	1.57 (1.39-1.77)	2.00 (1.78-2.26)	2.64 (2.34-2.98)	3.16 (2.80-3.56)	3.90 (3.43-4.38)	4.49 (3.92-5.04)	5.12 (4.44-5.75)	5.79 (4.98-6.51)	6.73 (5.72-7.57)	7.49 (6.30-8.45)
10-day	1.70 (1.51-1.92)	2.18 (1.94-2.45)	2.87 (2.55-3.23)	3.44 (3.04-3.86)	4.22 (3.71-4.73)	4.85 (4.24-5.43)	5.52 (4.79-6.18)	6.22 (5.36-6.98)	7.21 (6.14-8.08)	8.00 (6.74-8.99)
20-day	2.09 (1.87-2.34)	2.69 (2.40-3.01)	3.55 (3.17-3.97)	4.20 (3.74-4.69)	5.08 (4.50-5.67)	5.76 (5.08-6.42)	6.44 (5.65-7.19)	7.14 (6.23-7.98)	8.08 (6.99-9.05)	8.81 (7.56-9.88)
30-day	2.44 (2.17-2.74)	3.14 (2.80-3.52)	4.14 (3.68-4.63)	4.90 (4.35-5.47)	5.92 (5.23-6.60)	6.70 (5.89-7.47)	7.51 (6.57-8.36)	8.32 (7.25-9.27)	9.42 (8.14-10.5)	10.3 (8.81-11.5)
45-day	2.83 (2.53-3.16)	3.64 (3.26-4.07)	4.80 (4.29-5.36)	5.66 (5.04-6.32)	6.78 (6.02-7.57)	7.63 (6.76-8.52)	8.49 (7.49-9.49)	9.35 (8.21-10.5)	10.5 (9.13-11.8)	11.3 (9.82-12.7)
60-day	3.13 (2.81-3.49)	4.04 (3.63-4.51)	5.32 (4.76-5.92)	6.24 (5.58-6.95)	7.45 (6.64-8.29)	8.34 (7.41-9.29)	9.24 (8.17-10.3)	10.1 (8.91-11.3)	11.3 (9.87-12.6)	12.1 (10.6-13.6)

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: 33.4900°, Longitude: -111.9300°



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Maps & aerials

Small scale terrain



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 & aeriels](#)

PF tabular

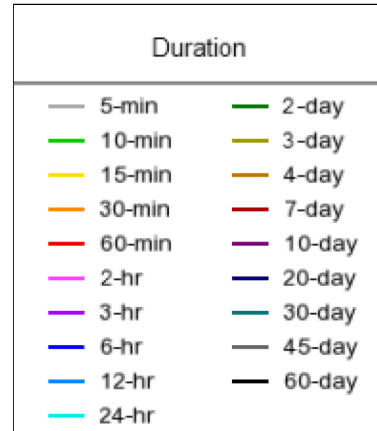
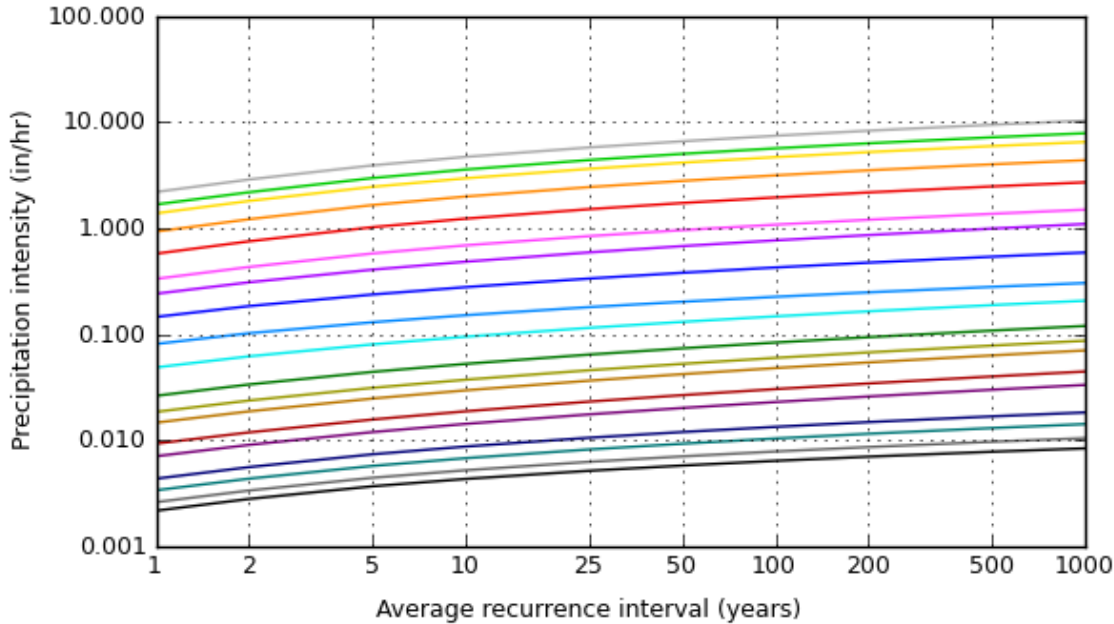
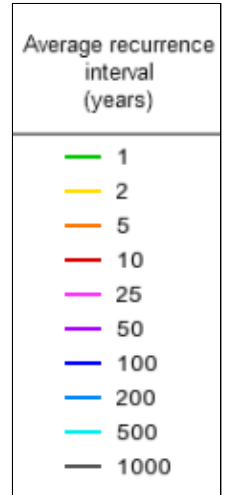
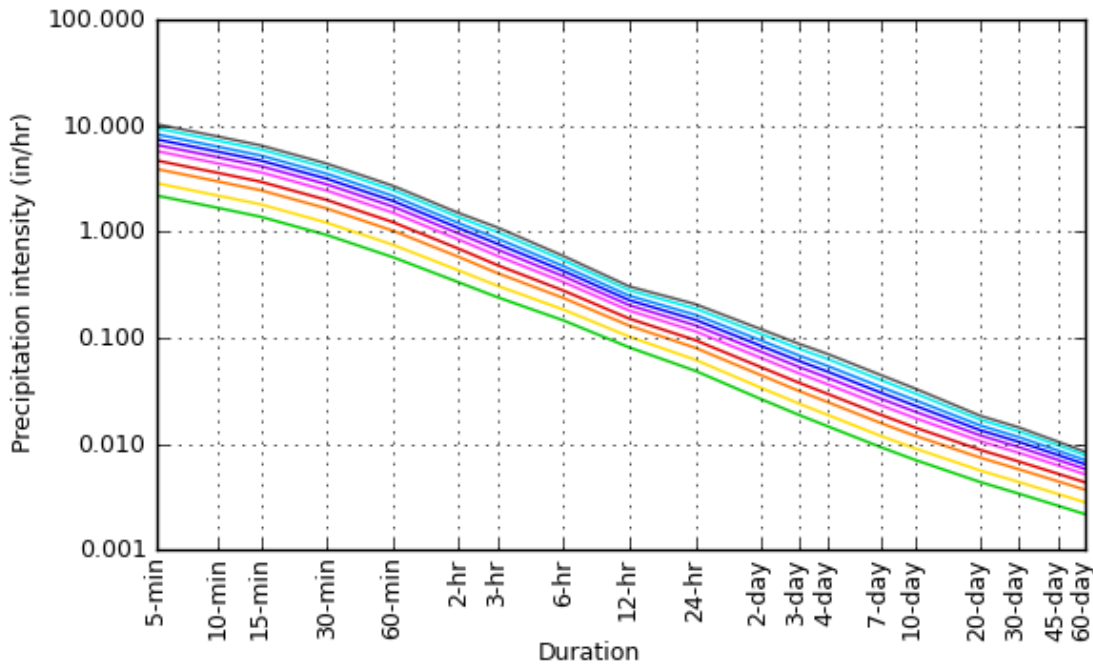
PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	2.20 (1.85-2.68)	2.88 (2.42-3.49)	3.91 (3.28-4.74)	4.70 (3.91-5.66)	5.77 (4.73-6.92)	6.60 (5.33-7.88)	7.44 (5.90-8.87)	8.30 (6.48-9.89)	9.46 (7.18-11.3)	10.3 (7.69-12.3)
10-min	1.67 (1.40-2.03)	2.18 (1.84-2.66)	2.97 (2.49-3.60)	3.58 (2.98-4.31)	4.39 (3.59-5.27)	5.02 (4.06-6.00)	5.66 (4.49-6.74)	6.32 (4.93-7.52)	7.19 (5.47-8.58)	7.87 (5.86-9.40)
15-min	1.38 (1.16-1.68)	1.81 (1.52-2.20)	2.46 (2.06-2.98)	2.96 (2.46-3.56)	3.63 (2.97-4.36)	4.15 (3.35-4.96)	4.68 (3.71-5.58)	5.22 (4.07-6.22)	5.95 (4.52-7.09)	6.50 (4.84-7.76)
30-min	0.930 (0.780-1.13)	1.22 (1.03-1.48)	1.65 (1.38-2.00)	1.99 (1.65-2.40)	2.44 (2.00-2.93)	2.79 (2.26-3.34)	3.15 (2.50-3.75)	3.52 (2.74-4.18)	4.00 (3.04-4.77)	4.38 (3.26-5.23)
60-min	0.575 (0.483-0.700)	0.753 (0.635-0.915)	1.02 (0.857-1.24)	1.23 (1.02-1.49)	1.51 (1.24-1.82)	1.73 (1.40-2.07)	1.95 (1.55-2.32)	2.18 (1.70-2.59)	2.48 (1.88-2.95)	2.71 (2.02-3.24)
2-hr	0.333 (0.284-0.398)	0.432 (0.368-0.516)	0.578 (0.492-0.687)	0.690 (0.580-0.818)	0.842 (0.700-0.992)	0.960 (0.787-1.13)	1.08 (0.872-1.27)	1.20 (0.954-1.41)	1.37 (1.06-1.61)	1.50 (1.13-1.77)
3-hr	0.241 (0.204-0.290)	0.309 (0.264-0.374)	0.407 (0.345-0.489)	0.484 (0.407-0.578)	0.592 (0.491-0.703)	0.678 (0.554-0.803)	0.768 (0.616-0.909)	0.862 (0.680-1.02)	0.992 (0.759-1.17)	1.10 (0.818-1.30)
6-hr	0.146 (0.126-0.172)	0.185 (0.161-0.217)	0.237 (0.205-0.278)	0.279 (0.239-0.325)	0.335 (0.284-0.389)	0.380 (0.317-0.439)	0.427 (0.350-0.493)	0.474 (0.381-0.548)	0.539 (0.423-0.625)	0.590 (0.452-0.686)
12-hr	0.081 (0.071-0.094)	0.102 (0.090-0.119)	0.130 (0.113-0.150)	0.151 (0.131-0.175)	0.180 (0.154-0.208)	0.203 (0.172-0.233)	0.226 (0.188-0.260)	0.249 (0.205-0.287)	0.280 (0.225-0.324)	0.304 (0.240-0.355)
24-hr	0.049 (0.044-0.055)	0.062 (0.055-0.070)	0.080 (0.072-0.091)	0.095 (0.084-0.107)	0.115 (0.101-0.129)	0.131 (0.115-0.147)	0.148 (0.128-0.166)	0.165 (0.142-0.185)	0.189 (0.161-0.212)	0.207 (0.175-0.233)
2-day	0.026 (0.023-0.030)	0.034 (0.030-0.038)	0.044 (0.039-0.050)	0.053 (0.047-0.059)	0.064 (0.057-0.072)	0.074 (0.065-0.083)	0.084 (0.073-0.094)	0.094 (0.081-0.106)	0.108 (0.093-0.122)	0.120 (0.102-0.136)
3-day	0.019 (0.017-0.021)	0.024 (0.021-0.027)	0.031 (0.028-0.035)	0.037 (0.033-0.042)	0.046 (0.040-0.051)	0.053 (0.046-0.059)	0.060 (0.052-0.067)	0.068 (0.058-0.076)	0.078 (0.067-0.088)	0.087 (0.073-0.098)
4-day	0.015 (0.013-0.017)	0.019 (0.017-0.021)	0.025 (0.022-0.028)	0.030 (0.026-0.033)	0.037 (0.032-0.041)	0.042 (0.037-0.047)	0.048 (0.042-0.054)	0.054 (0.047-0.061)	0.063 (0.054-0.071)	0.071 (0.059-0.079)
7-day	0.009 (0.008-0.011)	0.012 (0.011-0.013)	0.016 (0.014-0.018)	0.019 (0.017-0.021)	0.023 (0.020-0.026)	0.027 (0.023-0.030)	0.030 (0.026-0.034)	0.034 (0.030-0.039)	0.040 (0.034-0.045)	0.045 (0.037-0.050)
10-day	0.007 (0.006-0.008)	0.009 (0.008-0.010)	0.012 (0.011-0.013)	0.014 (0.013-0.016)	0.018 (0.015-0.020)	0.020 (0.018-0.023)	0.023 (0.020-0.026)	0.026 (0.022-0.029)	0.030 (0.026-0.034)	0.033 (0.028-0.037)
20-day	0.004 (0.004-0.005)	0.006 (0.005-0.006)	0.007 (0.007-0.008)	0.009 (0.008-0.010)	0.011 (0.009-0.012)	0.012 (0.011-0.013)	0.013 (0.012-0.015)	0.015 (0.013-0.017)	0.017 (0.015-0.019)	0.018 (0.016-0.021)
30-day	0.003 (0.003-0.004)	0.004 (0.004-0.005)	0.006 (0.005-0.006)	0.007 (0.006-0.008)	0.008 (0.007-0.009)	0.009 (0.008-0.010)	0.010 (0.009-0.012)	0.012 (0.010-0.013)	0.013 (0.011-0.015)	0.014 (0.012-0.016)
45-day	0.003 (0.002-0.003)	0.003 (0.003-0.004)	0.004 (0.004-0.005)	0.005 (0.005-0.006)	0.006 (0.006-0.007)	0.007 (0.006-0.008)	0.008 (0.007-0.009)	0.009 (0.008-0.010)	0.010 (0.008-0.011)	0.011 (0.009-0.012)
60-day	0.002 (0.002-0.002)	0.003 (0.003-0.003)	0.004 (0.003-0.004)	0.004 (0.004-0.005)	0.005 (0.005-0.006)	0.006 (0.005-0.006)	0.006 (0.006-0.007)	0.007 (0.006-0.008)	0.008 (0.007-0.009)	0.008 (0.007-0.009)

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

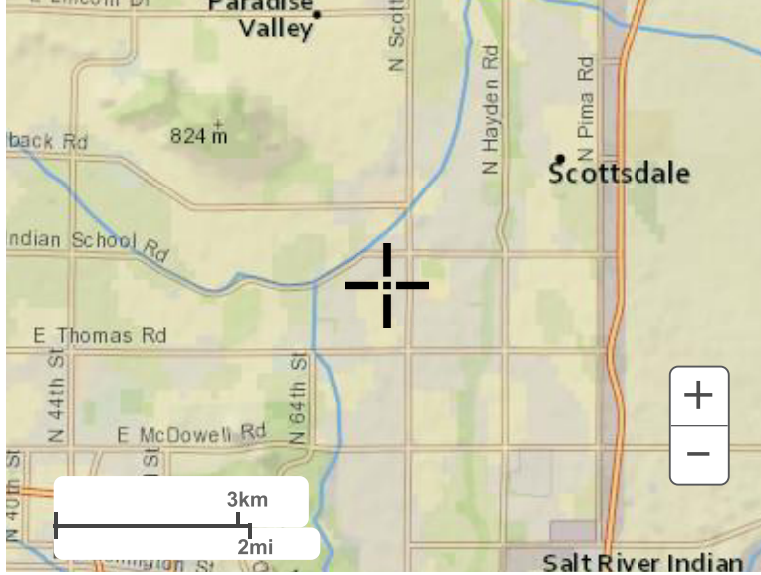
PDS-based intensity-duration-frequency (IDF) curves
 Latitude: 33.4900°, Longitude: -111.9300°



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Maps & aerials

Small scale terrain



Large scale terrain



Large scale map



Large scale aerial

APPENDIX II

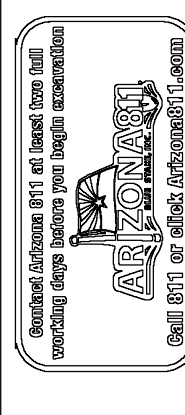
Calculations

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8280 E. GELDING DRIVE SUITE 101, SCOTTSDALE, ARIZONA 85260
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SUSTAINABILITY
ENGINEERING
GROUP

SEG



PROJECT ARTISAN SCOTTSDALE
LOCATION SWC INDIAN SCHOOL RD & MARSHALL WAY SCOTTSDALE, AZ 85251
DRAWN BY LP 06/09/2021
DESIGNED BY LP 06/09/2021
CHECKED BY SC 06/17/2021
PROJECT MGR. AF

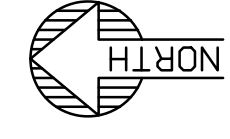
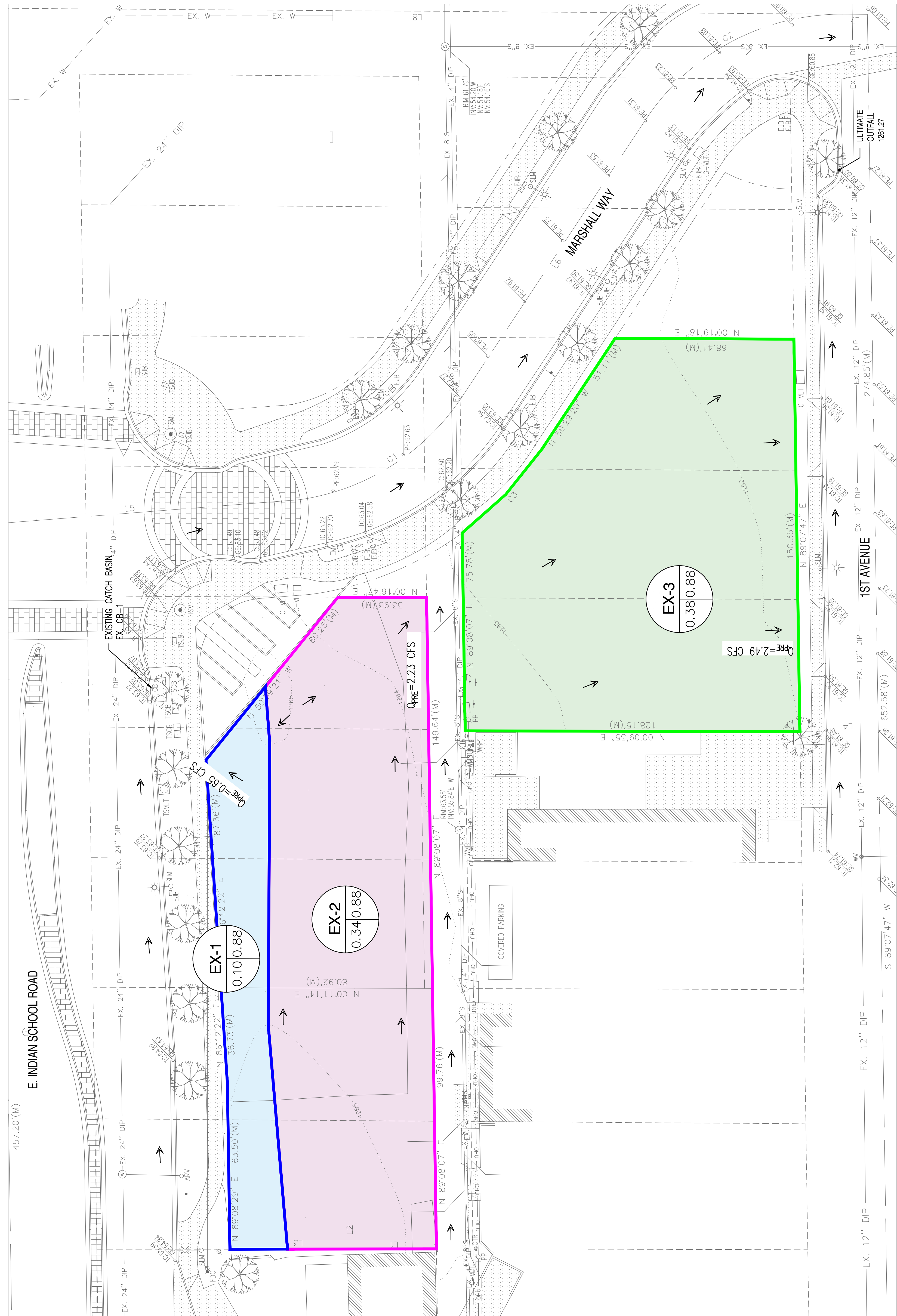
DATE: 06/18/2021
ISSUED FOR: REZONING

REVISION NO.	DATE:

SHEET TITLE: EXISTING CONDITIONS DRAINAGE AREA MAP

JOB NO.: 200708
PAGE NO.: 3 OF 4
SHEET NO.: EXHIBIT C

ARTISAN SCOTTSDALE
SWC INDIAN SCHOOL RD & MARSHALL WAY
SCOTTSDALE, AZ 85251
EXISTING CONDITIONS DRAINAGE AREA MAP

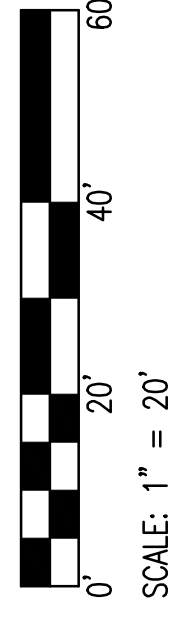
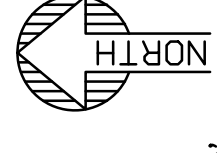
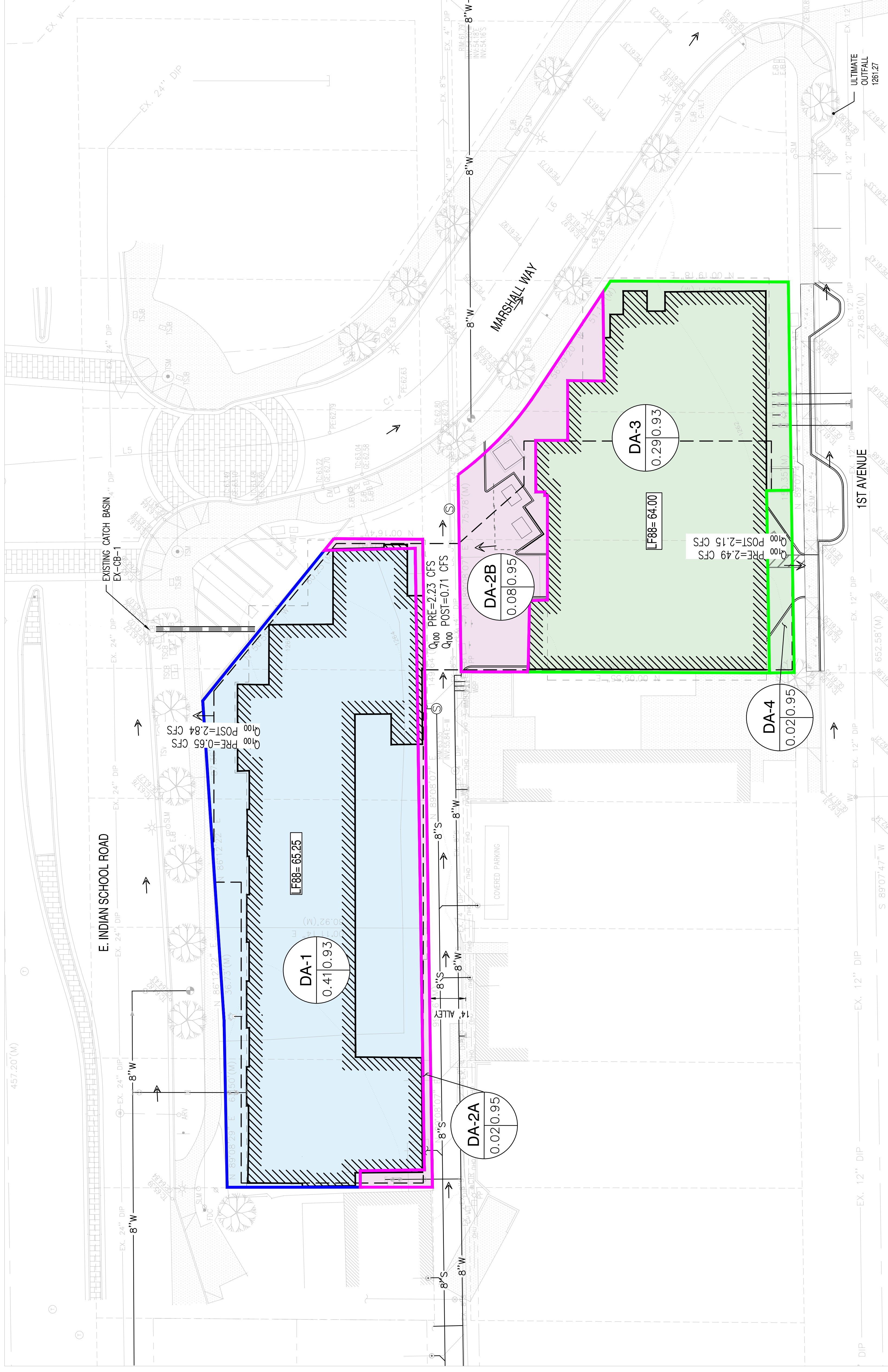


- LEGEND**
- DRAINAGE AREAS CONTRIBUTING TO EAST ISR
 - DRAINAGE AREAS CONTRIBUTING TO ALLEY/ MARSHALL WAY
 - DRAINAGE AREAS CONTRIBUTING TO 1ST AVE.
 - FLOW ARROW

- DRAINAGE AREA KEY**
- DRAINAGE AREA ID
 - AREA IN ACRES
 - RUNOFF COEFFICIENT

DRAINAGE AREA KEY

ARTISAN SCOTTSDALE
SCOTTSDALE, AZ 85251
PROPOSED DRAINAGE AREA MAP



- LEGEND**
- █ DRAINAGE AREAS CONTRIBUTING TO EAST ISR
 - █ DRAINAGE AREAS CONTRIBUTING TO ALLEY / MARSHALL WAY
 - █ DRAINAGE AREAS CONTRIBUTING TO 1ST AVE.
 - FLOW ARROW

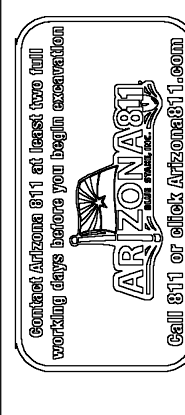
- DRAINAGE AREA KEY**
- DRAINAGE AREA ID
 - AREA IN ACRES
 - RUNOFF COEFFICIENT

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WWW.AZSEEG.COM TEL. 480.588.7226 FAX 480.259.9534



PROJECT: ARTISAN SCOTTSDALE
LOCATION: SMC INDIAN SCHOOL RD & MARSHALL WAY SCOTTSDALE, AZ 85251

DATE: 06/18/2021
ISSUED FOR: REZONING

DATE:	06/18/2021
REVISION NO.:	
DATE:	
REVISION NO.:	
DATE:	
REVISION NO.:	
DATE:	
REVISION NO.:	
DATE:	
REVISION NO.:	
DATE:	
REVISION NO.:	

SHEET TITLE: 200708
JOB NO.: 200708
PROPOSED CONDITIONS DRAINAGE AREA MAP
PAGE NO.: 4 OF 4
SHEET NO.: EXHIBIT D

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Weighted Runoff Coefficient-Calculations (C_w) (100-year storm)					
EXISTING SITE C_w					
<u>Outfall</u>		Building or Concrete Area (C _w =0.95)	Parking/ Compacted Gravel Area (C _w =0.88)	TOTAL AREA	C _w t
Indian School Road	EX-1	0.00	0.09	0.09	0.88
Marshall Way	EX-2	0.00	0.34	0.34	0.88
1st Street	EX-3	0.00	0.38	0.38	0.88

PROPOSED SITE C_w (100-year storm)					
<u>Outfall</u>		Building or Concrete Area (C _w =0.95)	Desert Landscape (C _w =0.45)	TOTAL AREA	C _w t
Indian School Road	DA-1	0.39	0.02	0.41	0.93
Marshall Way	DA-2A	0.01	0.00	0.01	0.95
	DA-2B	0.08	0.00	0.08	0.95
1st Street	DA-3	0.28	0.01	0.29	0.93
	DA-4	0.02	0.00	0.02	0.95

City of Scottsdale DSPM

- C=0.95 for building or concrete
- C=0.45 for desert landscape

FCDMC Drainage Policies and Standards Table 6.3

- C=0.88 for parking/gravel roadways

24inch at S=0.012 ft/ft; d/D=1.0

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.012 ft/ft
Normal Depth	24.0 in
Diameter	24.0 in

Results	
Discharge	25.19 cfs
Flow Area	3.1 ft ²
Wetted Perimeter	6.3 ft
Hydraulic Radius	6.0 in
Top Width	0.00 ft
Critical Depth	21.2 in
Percent Full	100.0 %
Critical Slope	0.011 ft/ft
Velocity	8.02 ft/s
Velocity Head	1.00 ft
Specific Energy	3.00 ft
Froude Number	(N/A)
Maximum Discharge	27.10 cfs
Discharge Full	25.19 cfs
Slope Full	0.012 ft/ft
Flow Type	Undefined

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	100.0 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	24.0 in
Critical Depth	21.2 in
Channel Slope	0.012 ft/ft
Critical Slope	0.011 ft/ft

48inch at S=0.0063 ft/ft; d/D=1.0

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data	
Roughness Coefficient	0.013
Channel Slope	0.006 ft/ft
Normal Depth	48.0 in
Diameter	48.0 in

Results	
Discharge	114.01 cfs
Flow Area	12.6 ft ²
Wetted Perimeter	12.6 ft
Hydraulic Radius	12.0 in
Top Width	0.00 ft
Critical Depth	38.7 in
Percent Full	100.0 %
Critical Slope	0.007 ft/ft
Velocity	9.07 ft/s
Velocity Head	1.28 ft
Specific Energy	5.28 ft
Froude Number	(N/A)
Maximum Discharge	122.64 cfs
Discharge Full	114.01 cfs
Slope Full	0.006 ft/ft
Flow Type	Undefined

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	100.0 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	48.0 in
Critical Depth	38.7 in
Channel Slope	0.006 ft/ft
Critical Slope	0.007 ft/ft

APPENDIX III

Preliminary Grading and Drainage Plans

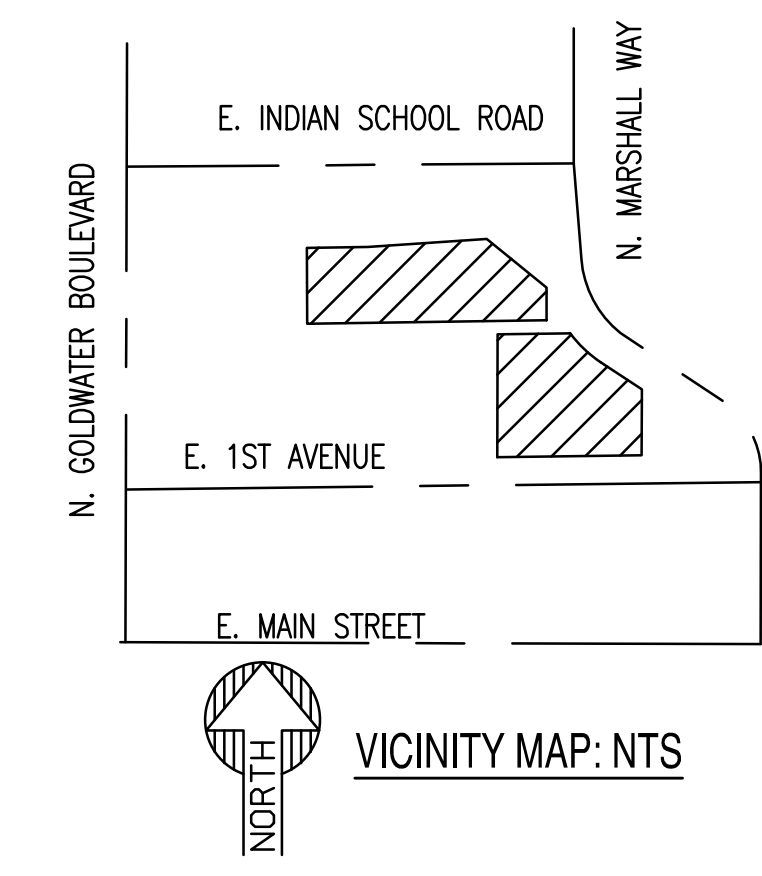
CIVIL ENGINEER:
 SEG
 8280 E. GELDING DR, SUITE #101
 SCOTTSDALE, AZ 85260
 480-588-7226
 ATTN: ALI FAKIH

DEVELOPER:
 JACKSON DEARBORN
 404 S. WELLS ST. SUITE 400
 CHICAGO, IL 60607
 312-878-7362
 ATTN: RYAN TOBIAS

ARCHITECT:
 SWABACK PLLC
 7550 E. McDONALD DR. SUITE A
 SCOTTSDALE, AZ 85250
 480-367-2100
 ATTN: JEFFREY DENZAK

OWNER:
 BENEFICIARY TRUST
 810 W. HOWE ST.
 TEMPE AZ 85281
 480-367-2100
 ATTN: BENJAMIN FUNKE

SUB4
 SWC INDIAN SCHOOL RD & MARSHALL WAY
 SCOTTSDALE, AZ 85251
 PRELIMINARY GRADING & DRAINAGE EXHIBIT

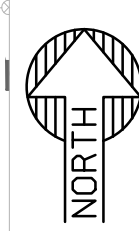
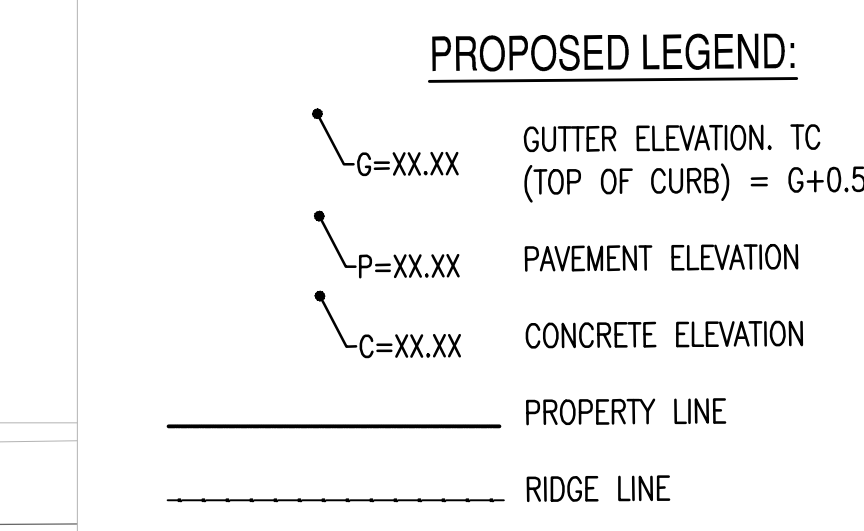
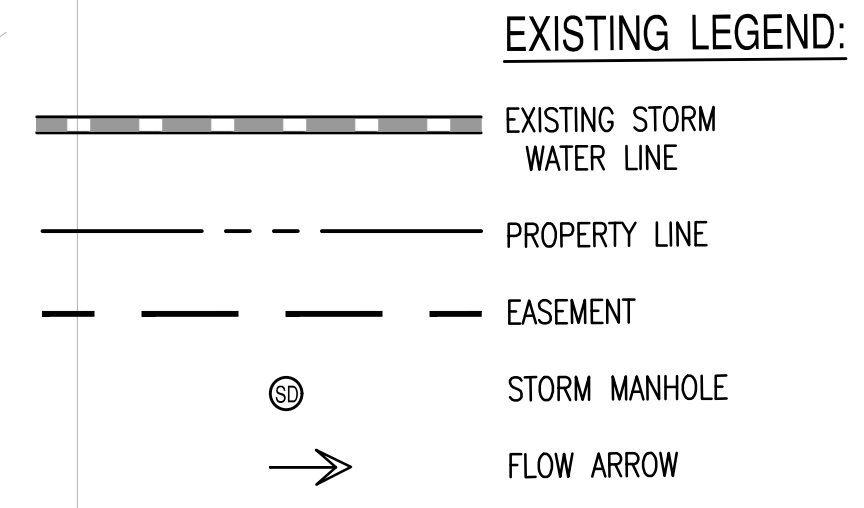
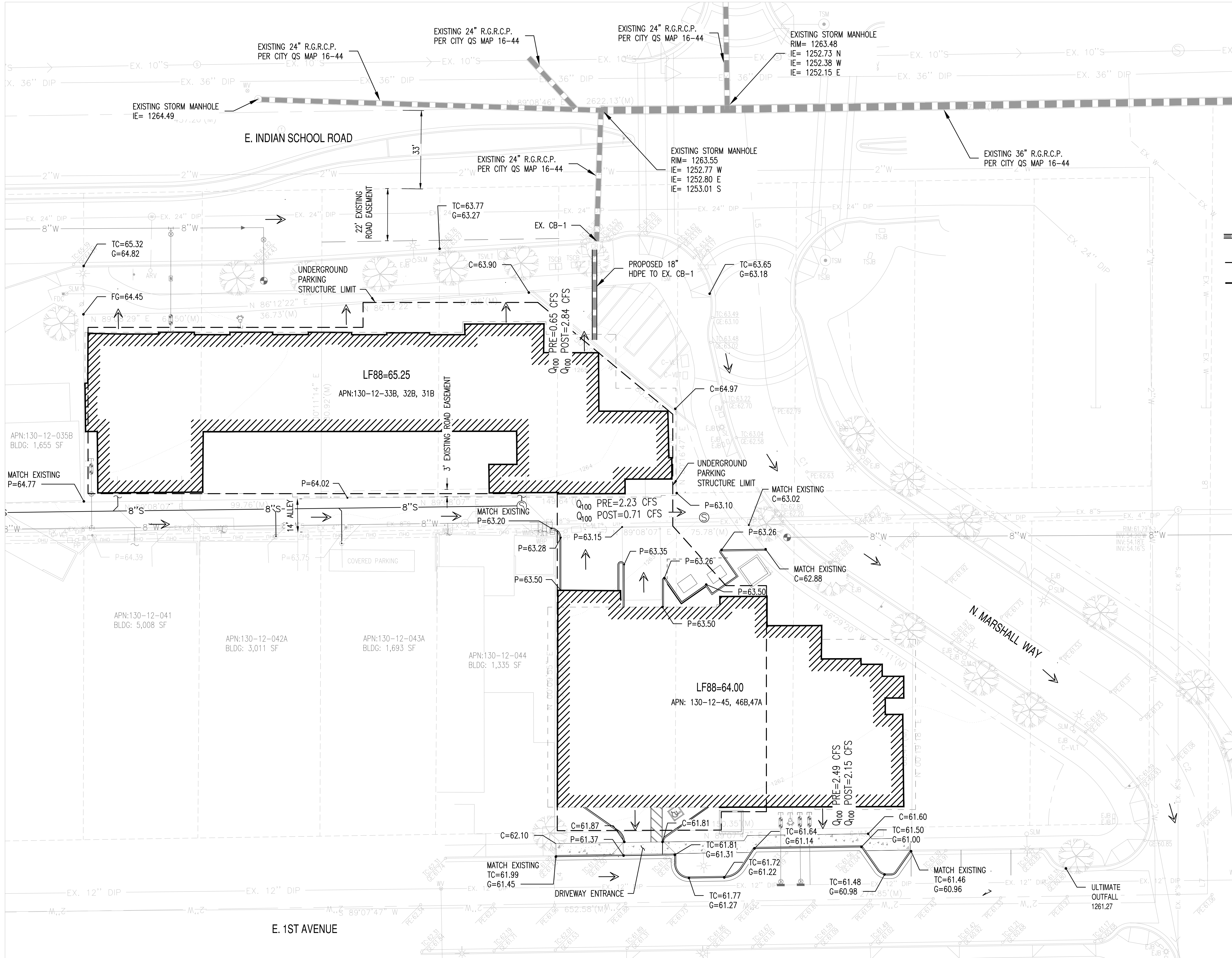


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8280 E. GELDING DRIVE SUITE 101, SCOTTSDALE, ARIZONA 85260
 WWW.AZSEG.COM TEL. 480.588.7226 FAX. 480.259.9534



LOCATION: Z:\SHARED\PROJECTS\JACKSON DEARBORN PARTNERS-SWABACK\MARSHAL WAY-SCOTTSDALE-200708\11 CAD (SEG)\11.2 ENTITLEMENT-PLANNING\200708-PRELIMINARY GRADING PLAN.DWG DATE: 6/18/2021



PROJECT	ARTISAN SCOTTSDALE	LOCATION	SWC INDIAN SCHOOL RD & MARSHALL WAY SCOTTSDALE, AZ 85251
DRAWN	LP	DATE	06/09/2021
DESIGNED	LP	DATE	06/09/2021
QC	SC	DATE	06/17/2021
PROJ. MGR.	AF	DATE	06/18/2021
ISSUED FOR:	REZONING		
REVISION NO.:	DATE:		
JOB NO.:	200708		
SHEET TITLE:	PRELIMINARY GRADING & DRAINAGE EXHIBIT		
PAGE NO.:	1 OF 1	SHEET NO.:	C3.10

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APPENDIX IV

Lower Indian Bend Wash ADMP Excerpt

Inlet Summary Table										
SWM M Name		Curb High / Soffit High Inflow	FLO-2D/SWMM Model							
			100-yr, 24-hr		100-yr, 6-hr		10-yr, 24-hr		10-yr, 6-hr	
			Inflow	Pipe Max	Inflow	Pipe Max	Inflow	Pipe Max	Inflow	Pipe Max
Inlet	Connector Pipe	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
I32CPW2ST	C32CPW2ST	14.4	0.5	0.5	0.5	0.5	0.3	0.3	0.4	0.4
I32CP2W2ST	C32CP2W2ST	14.4	0.9	0.9	10	10	0.6	0.6	0.7	0.7
I2CPW2STSRL	C2CPW2STSRL	7.2	4.9	4.9	5.4	5.4	3.4	3.4	4.0	4.0
I1CPW2STSRL	C1CPW2STSRL	7.2	15	14	3.0	3.0	0.5	0.5	0.6	0.6
I4CPW2STSRL	C4CPW2STSRL	7.2	56	56	6.4	6.4	2.5	2.5	3.5	3.5
I6CPW2STSRL	C6CPW2STSRL	4.8	15	15	17	17	10	10	12	12
I7CPW2STSRL	C7CPW2STSRL	9.6	7.3	7.3	8.6	8.6	4.0	4.0	5.1	5.0
I8CPW2STSRL	C8CPW2STSRL	4.8	0.7	0.7	0.8	10	0.4	0.5	0.5	0.5
I9CPW2STSRL	C9CPW2STSRL	4.8	0.9	0.9	18	18	0.6	0.6	0.7	0.7
I5CP2W2STSRL	C5CP2W2STSRL	9.6	6.7	6.7	8.1	8.1	3.8	3.8	4.7	4.7
I5CP3W2STSRL	C5CP3W2STSRL	14.4	14.8	14.7	156	156	11.4	11.4	12.7	12.7
I21CPW2STSRL	C21CPW2STSRL	12.0	4.7	4.6	5.9	5.8	2.7	2.7	3.3	3.3
I20CPW2STSRL	C20CPW2STSRL	12.0	2.7	2.7	4.0	4.0	1.5	1.5	1.8	1.8
I19CPW2STSRL	C19CPW2STSRL	12.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
I17CPW2STSRL	C17CPW2STSRL	4.8	1.1	1.1	13	13	0.6	0.6	0.7	0.7
I16CPW2STSRL	C16CPW2STSRL	4.8	19	19	2.2	2.2	0.9	0.9	1.1	1.1
I15CPW2STSRL	C15CPW2STSRL	4.8	4.0	4.0	4.2	4.2	2.9	2.9	3.3	3.3
I14CPW2STSRL	C14CPW2STSRL	4.8	2.0	2.0	3.0	3.0	0.3	0.3	0.4	0.4
I13CPW2STSRL	C13CPW2STSRL	7.2	3.3	3.2	3.8	3.8	1.6	1.5	2.0	2.0
I10CP2W2STSRL	C10CP2W2STSRL	12.0	13.8	13.8	150	150	6.7	6.7	9.2	9.2
I10CP3W2STSRL	C10CP3W2STSRL	12.0	12	12	3.2	3.1	0.5	0.5	0.6	0.6
I12CPW2STSRL	C12CPW2STSRL	12.0	1.6	1.5	2.1	2.0	0.7	0.7	0.9	0.9
I18CP2W2STSRL	C18CP2W2STSRL	14.4	8.4	8.3	9.9	9.8	5.3	5.3	6.2	6.2
I18CPW2STSRL	C18CPW2STSRL	8.7	1.1	9.4	14	11.2	0.5	5.7	0.6	6.8
I20CPW2ST	C20CPW2ST	32.2	1.1	1.1	2.0	2.3	0.3	0.3	0.5	0.5
I21CPW2ST	C21CPW2ST	32.2	9.7	9.7	14.5	14.5	3.5	3.5	5.3	5.3
I20CP2W2ST	C20CP2W2ST	32.2	0.8	0.8	16	16	0.3	0.3	0.4	0.4
I1W2STBAL	C1W2STBAL	32.2	119	29.0	16.8	34.7	5.5	20.9	7.3	23.4
I24CP2W2ST	C24CP2W2ST	2.6	16	16	2.0	2.0	10	10	12	12
I24CP4W2ST	C24CP4W2ST	2.6	19	19	2.3	2.2	1.1	1.1	1.4	1.4
I33CPW2ST	C33CPW2ST	20.0	15	15	19	19	0.9	0.9	1.1	1.1
I34CPW2ST	C34CPW2ST	20.0	1.3	1.2	1.6	1.6	0.7	0.7	0.9	0.9
I35CPW2ST	C35CPW2ST	20.0	1.8	1.8	2.3	2.3	1.0	1.0	1.2	1.2
I37CPW2ST	C37CPW2ST	32.2	8.9	8.9	10.4	10.4	5.8	5.8	7.0	7.0
I37CP2W2ST	C37CP2W2ST	32.2	3.0	3.0	3.6	3.6	1.8	1.8	2.2	2.2
I36CPW2ST	C36CPW2ST	20.0	8.7	8.7	10.6	10.6	4.7	4.7	6.1	6.1
I43CPW2ST	C43CPW2ST	32.2	110	110	13.2	13.1	5.5	5.5	6.7	6.7
I47CPW2ST	C47CPW2ST	32.2	5.8	5.8	6.7	6.7	3.7	3.7	4.5	4.5
I46CPW2ST	C46CPW2ST	17.4	1.6	1.6	2.0	2.0	0.8	0.8	1.1	1.1
I2CPW2ST69STL	C2CPW2ST69STL	2.6	0.9	0.9	10	10	0.5	0.5	0.6	0.6
I1CPW2ST69STL	C1CPW2ST69STL	2.6	3.1	3.1	3.2	3.2	1.7	1.7	2.0	2.0
I9CPW2STBAL	C9CPW2STBAL	2.6	1.8	3.9	3.2	6.2	1.9	3.7	2.1	4.0
I9CP2W2STBAL	C9CP2W2STBAL	2.6	1.9	2.0	3.1	3.0	2.0	2.2	2.0	2.1
I7CPW2STBAL	C7CPW2STBAL	2.6	2.0	1.9	2.6	2.5	4.3	1.9	2.1	2.1
I4CPW2STBAL	C4CPW2STBAL	3.6	5.5	5.4	5.9	5.9	5.4	5.3	5.4	5.3

Inlet Summary Table										
SWM M Name		Curb High / Soffit High Inflow	FLO-2D/SWMM Model							
			100-yr, 24-hr		100-yr, 6-hr		10-yr, 24-hr		10-yr, 6-hr	
			Inflow	Pipe Max	Inflow	Pipe Max	Inflow	Pipe Max	Inflow	Pipe Max
Inlet	Connector Pipe	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
I2CPW2STEISRL	C2CPW2STEISRL	17.4	7.9	7.9	10.5	10.6	3.1	3.1	4.5	4.5
I1CPW2STEISRL	C1CPW2STEISRL	20.0	10.1	10.0	13.1	13.0	3.5	3.6	5.6	5.6
I26CPW2STSRL	C26CPW2STSRL	4.8	5.8	5.7	7.6	7.5	3.6	3.6	4.4	4.4
I5CPW2STEISRL	C5CPW2STEISRL	13.9	7.2	7.2	7.8	7.8	5.1	5.1	6.1	6.0
I4CPW2STEISRL	C4CPW2STEISRL	20.0	14.9	14.9	17.0	17.0	10.7	10.7	12.2	12.1
I6CPW2STEISRL	C6CPW2STEISRL	3.4	3.9	3.9	4.3	4.3	2.7	2.7	3.2	3.2
I9CPW2STEISRL	C9CPW2STEISRL	17.4	7.1	7.1	8.2	8.2	5.0	5.0	5.9	5.8
I8CPW2STEISRL	C8CPW2STEISRL	3.1	2.3	2.3	2.7	2.7	1.6	1.6	1.9	1.9
I7CP2W2STEISRL	C7CP2W2STEISRL	5.2	8.5	8.5	8.9	8.8	5.5	5.5	6.2	6.2
I7CP3W2STEISRL	C7CP3W2STEISRL	13.1	10.9	10.8	12.7	12.7	7.4	7.3	8.9	8.9
I2CPW2STWISRL	C2CPW2STWISRL	7.8	7.2	7.1	8.4	8.4	4.7	4.7	5.5	5.5
I3CPW2STWISRL	C3CPW2STWISRL	5.4	9.2	9.1	10.6	10.6	5.6	5.6	7.0	6.9
I1CPW2STWISRL	C1CPW2STWISRL	4.8	3.9	3.9	4.6	4.6	2.5	2.5	2.9	2.9
I16CPW2STGBL	C16CPW2STGBL	17.4	3.9	3.9	4.4	4.4	2.6	2.6	3.1	3.1
I8W2STWISRL	C8W2STWISRL	5.0	3.6	4.6	4.3	5.4	2.2	2.8	2.7	3.4
I5CPW2STWISRL	C5CPW2STWISRL	4.8	4.0	4.0	4.3	4.3	3.1	3.1	3.4	3.4
I8CPW2STWISRL	C8CPW2STWISRL	3.1	10	10	12	12	0.7	0.7	0.8	0.8
I6CP6W2STWISRL	C6CP6W2STWISRL	5.0	13	4.1	16	4.8	0.7	2.3	0.8	2.8
I6CP7W2STWISRL	C6CP7W2STWISRL	5.0	2.0	2.8	2.4	3.3	1.2	1.6	1.5	2.0
I6CP3W2STWISRL	C6CP3W2STWISRL	2.6	1.7	1.7	2.0	2.0	1.3	1.3	1.5	1.5
I6CP4W2STWISRL	C6CP4W2STWISRL	2.6	1.7	1.7	2.0	2.0	1.3	1.3	1.5	1.5
I6CP8W2STWISRL	C6CP8W2STWISRL	5.0	0.7	0.7	0.9	0.9	0.4	0.4	0.5	0.5
I5CPW2ST69STL	C5CPW2ST69STL	5.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I5CPW2ST	C5CPW2ST	7.2	6.1	6.0	7.4	7.1	3.5	3.4	4.3	4.3
I2CPW2STGBL	C2CPW2STGBL	5.2	1.2	4.7	1.6	5.9	0.6	2.5	0.8	3.1
I2CP2W2STGBL	C2CP2W2STGBL	5.2	3.5	3.5	4.4	4.4	1.8	1.8	2.3	2.3
I3CPW2STGBL	C3CPW2STGBL	17.4	7.3	7.3	9.1	9.1	3.6	3.6	4.7	4.6
I4CP3W2STGBL	C4CP3W2STGBL	7.8	7.6	7.5	8.1	8.0	5.1	5.1	5.9	5.9
I4CP2W2STGBL	C4CP2W2STGBL	5.2	1.5	1.5	1.8	1.8	0.8	0.8	1.0	1.0
I6CPW2STGBL	C6CPW2STGBL	3.6	1.8	1.8	2.1	2.1	1.3	1.3	1.5	1.5
I5CPW2STGBL	C5CPW2STGBL	17.4	6.4	6.4	8.0	8.0	3.3	3.3	4.4	4.4
I7CP3W2STGBL	C7CP3W2STGBL	11.3	4.3	4.3	5.0	5.0	2.8	2.8	3.3	3.3
I7CP2W2STGBL	C7CP2W2STGBL	5.2	3.8	3.8	4.3	4.3	2.7	2.7	3.1	3.1
I8CPW2STGBL	C8CPW2STGBL	5.2	0.5	0.5	0.6	0.6	0.3	0.3	0.4	0.4
I9CPW2STGBL	C9CPW2STGBL	17.4	3.7	3.6	5.6	5.5	0.9	0.9	1.4	1.3
I10CP3W2STGBL	C10CP3W2STGBL	17.4	5.8	5.8	6.9	6.9	3.4	3.4	4.1	4.1
I10CP2W2STGBL	C10CP2W2STGBL	7.8	4.1	4.1	4.7	4.7	2.7	2.7	3.2	3.2
I11CPW2STGBL	C11CPW2STGBL	17.4	8.4	8.3	10.2	10.1	4.3	4.3	5.8	5.7
I17CP2W2STGBL	C17CP2W2STGBL	17.4	3.8	3.8	4.8	4.7	2.2	2.2	2.8	2.8
I17CPW2STGBL	C17CPW2STGBL	17.4	3.1	3.1	3.8	3.8	1.9	1.9	2.4	2.4
I18CPW2STGBL	C18CPW2STGBL	17.4	3.5	3.5	4.7	4.7	1.5	1.5	2.0	2.0
I21CP3W2STGBL	C21CP3W2STGBL	4.8	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1
I21CPW2STGBL	C21CPW2STGBL	5.0	0.2	0.2	0.3	0.3	0.1	0.1	0.2	0.2
I21CP2W2STGBL	C21CP2W2STGBL	4.8	0.0	0.2	0.0	0.3	0.0	0.1	0.0	0.2
I19CPW2STGBL	C19CPW2STGBL	7.0	2.5	2.5	3.0	3.0	1.5	1.5	1.9	1.9

INLET SUMMARY TABLE NOTES:

1. The curb high/soffit high inflow discharge were calculated according to the procedures outlined in the District's Hydraulics Manual.
2. The inflow discharge is the peak hydrograph discharge taken from the SWMMQIN.OUT file.
3. The pipe Max Discharge is the peak hydrograph discharge taken from the 'Link Results' in the SWMM.RTP file.



LOWER INDIAN BEND WASH ADMS/P
STUDY AREA-SOUTH

SWMM Outfall:		
W2STIBWOUTFALL (West 2nd Street S.D. Outfall)		
Prepared	By	Date
Checked	AJA	12/18/2017
	MTG	12/18/2017

Inlet Summary Table										
SWMM Name		Curb High / Soffit High Inflow	FLO-2D/SWMM Model							
Inlet	Connector Pipe		100-yr, 24-hr		100-yr, 6-hr		10-yr, 24-hr		10-yr, 6-hr	
		Inflow	Pipe Max	Inflow	Pipe Max	Inflow	Pipe Max	Inflow	Pipe Max	
		(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
I19CP2W2STGBL	C19CP2W2STGBL	7.0	4.3	4.3	4.9	4.9	2.8	2.7	3.3	3.3
I20CP7W2STGBL	C20CP7W2STGBL	5.0	0.7	0.7	0.8	0.8	0.4	0.4	0.5	0.5
I20CP10W2STGBL	C20CP10W2STGBL	7.0	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2
I20CP9W2STGBL	C20CP9W2STGBL	7.0	5.9	5.9	6.9	6.9	3.8	3.8	4.6	4.6
I20CP4W2STGBL	C20CP4W2STGBL	7.0	5.2	5.2	5.8	5.8	3.6	3.6	4.2	4.2
I20CP5W2STGBL	C20CP5W2STGBL	7.0	2.0	2.0	2.5	2.4	12	12	14	14
I20CP2W2STGBL	C20CP2W2STGBL	5.0	1.3	1.3	1.5	1.5	0.7	0.7	0.8	0.8
I8CP2W2STBAL	C8CP2W2STBAL	3.1	1.0	1.0	1.1	1.1	0.7	0.7	1.0	1.1
I29CP1W2STSRL	C29CP1W2STSRL	113	113	112	12.4	12.4	8.6	8.5	9.6	9.6
I7CP1W2ST	C7CP1W2ST	3.4	1.5	1.5	1.7	1.6	1.1	1.1	1.2	1.2
I9CP1W2ST	C9CP1W2ST	3.4	2.7	2.7	2.9	2.9	2.1	2.1	2.3	2.3
I6ACP1W2ST	C6ACP1W2ST	5.2	10.2	10.2	10.8	10.9	8.3	8.3	8.6	8.6
I5CP1W2STCCL	C5CP1W2STCCL	10.8	0.6	0.6	0.7	0.7	0.4	0.4	0.4	0.4
I8CP1W2STCCL	C8CP1W2STCCL	2.5	2.5	2.5	2.9	2.9	1.6	1.6	1.9	1.9
I4CP3W2STCCL	C4CP3W2STCCL	2.5	2.3	2.3	2.8	2.8	1.3	1.3	1.6	1.6
I4CP2W2STCCL	C4CP2W2STCCL	2.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
I11CP1W2STCCL	C11CP1W2STCCL	2.5	0.4	1.1	0.5	1.3	0.2	0.6	0.3	0.8
I11CP2W2STCCL	C11CP2W2STCCL	2.5	0.7	0.7	0.9	0.9	0.4	0.4	0.5	0.5
I11CP3W2STCCL	C11CP3W2STCCL	2.5	0.5	2.0	0.5	2.4	0.3	1.2	0.4	1.5
I11CP4W2STCCL	C11CP4W2STCCL	2.5	1.6	1.6	1.9	1.9	0.9	0.9	1.2	1.2
I10CP1W2STCCL	C10CP1W2STCCL	2.5	0.9	0.9	1.0	1.0	0.5	0.5	0.6	0.6
I9CP1W2STCCL	C9CP1W2STCCL	2.5	1.4	1.4	1.7	1.7	0.9	0.9	1.1	1.1
I6CP1W2STCCL	C6CP1W2STCCL	10.8	0.4	0.4	0.5	0.5	0.2	0.2	0.3	0.3
I7CP1W2STCCL	C7CP1W2STCCL	2.5	1.6	1.6	2.0	2.0	0.8	0.8	1.1	1.1
I2CP2W2STBAL	C2CP2W2STBAL	4.4	3.0	3.0	3.3	3.3	2.4	2.3	2.6	2.6
I2CP1W2STBAL	C2CP1W2STBAL	2.6	1.8	4.8	2.1	5.4	1.1	3.5	1.4	4.0
I37ACP2W2ST	C37ACP2W2ST	2.6	3.3	3.3	3.7	3.7	2.6	2.6	2.9	2.9
I10ACP1W2ST	C10ACP1W2ST	3.5	3.0	3.0	3.3	3.3	2.4	2.4	2.6	2.6
I10ACP2W2ST	C10ACP2W2ST	3.6	1.8	1.8	2.0	2.0	1.1	1.1	1.4	1.3
I3CP5W2STDBL	C3CP5W2STDBL	17.0	11.1	11.0	11.7	11.7	5.9	5.9	7.3	7.2
I3CP4W2STDBL	C3CP4W2STDBL	11.0	8.5	32.3	17.9	38.2	1.4	17.4	1.9	21.5
I3CP6W2STDBL	C3CP6W2STDBL	17.0	14.7	14.2	14.8	14.0	10.3	10.2	12.6	12.6
I3CP2W2STDBL	C3CP2W2STDBL	17.0	9.2	9.1	10.0	9.7	4.7	4.7	5.9	5.9
I3CP1W2STDBL	C3CP1W2STDBL	20.4	2.4	19.4	6.1	22.4	1.0	10.0	1.3	12.4
I3CP3W2STDBL	C3CP3W2STDBL	17.0	8.5	8.5	9.3	9.9	4.5	4.5	5.5	5.5
I12BCP1W2ST	C12BCP1W2ST	4.7	0.3	0.3	0.4	1.3	0.2	0.2	0.2	0.2
I11BCP2W2ST	C11BCP2W2ST	31.4	4.3	4.3	5.0	4.9	2.9	2.9	3.4	3.4
I11BCP1W2ST	C11BCP1W2ST	19.5	2.4	6.7	3.0	7.8	1.4	4.3	1.7	5.1
I11ACP1W2ST	C11ACP1W2ST	3.6	0.5	0.5	0.6	0.6	0.3	0.3	0.3	0.3
I12BCP2W2ST	C12BCP2W2ST	3.5	0.9	0.9	1.0	1.2	0.6	0.6	0.7	0.7
I11BCP4W2ST	C11BCP4W2ST	7.6	8.8	8.8	10.3	10.1	5.2	5.2	6.3	6.3
I11BCP5W2ST	C11BCP5W2ST	7.8	5.5	5.5	6.8	6.6	2.8	2.8	3.6	3.5
I19BCP2W2ST	C19BCP2W2ST	3.5	2.5	2.5	2.9	2.9	1.6	1.5	1.9	1.9
I19BCP1W2ST	C19BCP1W2ST	3.2	1.9	4.3	2.4	5.3	1.2	2.8	1.4	3.2
I19ACP1W2ST	C19ACP1W2ST	3.4	1.3	1.3	1.7	1.6	0.8	0.8	1.0	1.0

INLET SUMMARY TABLE NOTES:

1. The curb high/soffit high inflow discharge were calculated according to the procedures outlined in the District's Hydraulics Manual.
2. The inflow discharge is the peak hydrograph discharge taken from the SWMMQIN.OUT file.
3. The pipe Max Discharge is the peak hydrograph discharge taken from the 'Link Results' in the SWMM.RTP file.

SHEET SD31 OF SD121



LOWER INDIAN BEND WASH ADMS/P
STUDY AREA-SOUTH

SWMM Outfall:		
W2STIBWOUTFALL (West 2nd Street S.D. Outfall)		
	By	Date
Prepared	AJA	12/18/2017
Checked	MTG	12/18/2017

Pipe Discharge Summary Table					
Conduit Name	Normal Depth Capacity	FLO-2D/SWMM Model Discharge			
		10-yr, 24-hr	10-yr, 6-hr	10-yr, 24-hr	10-yr, 6-hr
		(cfs)	(cfs)	(cfs)	(cfs)
C1W2ST	246.4	485.0	550.2	272.7	334.0
C2W2ST	337.3	484.5	549.8	272.2	334.2
C3W2ST	329.8	482.8	549.8	274.1	335.0
C4W2ST	344.7	484.4	549.9	272.4	331.1
C5W2ST	270.9	484.4	549.7	271.6	330.1
C6AW2ST	277.9	480.7	545.2	270.2	328.2
C6W2ST	272.4	470.3	534.2	263.4	320.3
C7W2ST	235.5	470.3	534.2	278.9	319.9
C8W2ST	254.7	468.9	533.0	270.1	322.5
C9W2ST	204.0	468.9	533.0	271.5	325.6
C10AW2ST	229.5	466.4	530.2	271.6	326.3
C10BW2ST	288.4	462.3	525.6	271.4	335.3
C11AW2ST	240.9	462.2	525.8	263.9	321.4
C11BW2ST	283.6	462.1	525.6	269.4	320.1
C12AW2ST	274.9	449.6	512.3	258.7	322.8
C12BW2ST	288.4	449.5	512.0	259.2	318.3
C12CW2ST	282.7	449.2	511.8	258.6	316.4
C13W2ST	204.0	449.2	512.0	263.4	319.0
C14W2ST	228.7	448.9	511.8	265.5	319.2
C15AW2ST	268.7	449.0	511.6	260.5	313.6
C15BW2ST	245.8	402.9	449.7	243.2	284.9
C16W2ST	257.1	402.8	449.6	245.6	284.2
C17W2ST	987.1	402.8	449.7	253.3	284.3
C18W2ST	868.0	394.9	442.9	248.7	282.9
C19AW2ST	976.5	394.8	442.9	246.7	297.6
C19BW2ST	941.6	393.8	441.7	245.4	301.5
C19CW2ST	938.8	389.9	437.0	242.8	296.4
C20W2ST	948.6	387.2	437.0	236.4	295.8
C21W2ST	946.1	389.8	433.3	235.3	291.6
C22W2ST	644.9	342.3	386.7	203.9	260.7
C23W2ST	353.3	345.3	386.4	217.8	291.2
C24W2ST	494.4	351.9	386.6	205.6	255.5
C25W2ST	486.3	345.0	383.0	206.3	253.9
C26W2ST	508.6	345.4	385.0	208.8	254.0
C27W2ST	510.7	345.8	388.5	207.4	252.7
C28W2ST	512.4	347.4	390.9	206.0	251.5
C29W2ST	1516.1	349.7	391.6	206.4	251.2
C30W2ST	275.1	176.9	196.5	105.3	128.2
C31W2ST	266.9	177.0	196.7	105.5	128.3
C32W2ST	276.6	176.9	196.9	105.6	128.3
C33W2ST	273.5	176.3	195.9	105.3	127.9
C34W2ST	133.9	175.1	194.8	104.7	127.3
C35W2ST	272.8	174.1	194.2	104.2	126.9
C36W2ST	423.5	172.6	193.6	103.6	125.9
C37AW2ST	413.9	164.4	195.2	99.3	119.9

Pipe Discharge Summary Table					
Conduit Name	Normal Depth Capacity	FLO-2D/SWMM Model Discharge			
		10-yr, 24-hr	10-yr, 6-hr	10-yr, 24-hr	10-yr, 6-hr
		(cfs)	(cfs)	(cfs)	(cfs)
C37BW2ST	485.6	160.5	189.3	96.5	116.9
C38W2ST	322.2	149.6	175.5	89.5	108.5
C39W2ST	52.8	148.7	174.5	88.9	108.0
C40W2ST	627.2	148.3	174.1	88.7	107.8
C41W2ST	201.6	21.4	25.1	11.8	14.4
C42W2ST	96.8	21.5	25.2	11.8	14.4
C43W2ST	59.5	21.5	25.2	11.8	14.5
C44W2ST	77.0	10.8	12.4	6.5	8.0
C45W2ST	79.4	10.9	12.6	6.6	8.1
C1W2STGBL	635.7	127.1	149.3	77.1	93.8
C2W2STGBL	108.3	127.0	149.2	77.1	93.7
C3W2STGBL	109.4	123.0	144.0	75.1	91.2
C4W2STGBL	108.8	115.9	135.4	71.6	86.7
C5W2STGBL	109.0	107.0	125.9	65.7	79.8
C6W2STGBL	87.9	101.0	118.8	62.5	75.6
C7W2STGBL	108.0	99.3	116.8	61.3	74.1
C8W2STGBL	110.6	91.6	108.1	56.0	67.9
C9W2STGBL	111.5	91.6	107.8	55.8	67.3
C10W2STGBL	111.0	88.4	103.1	54.5	65.7
C11W2STGBL	112.5	78.7	91.9	48.9	58.9
C12W2STGBL	111.5	70.5	82.2	44.4	53.0
C13W2STGBL	111.1	70.7	82.5	44.5	53.0
C14W2STGBL	111.1	70.8	82.7	44.6	53.1
C15W2STGBL	172.5	70.9	82.8	44.7	53.3
C16W2STGBL	262.7	36.5	43.3	22.2	26.7
C17W2STGBL	262.2	32.6	39.0	19.6	23.7
C18W2STGBL	61.9	25.7	30.5	15.4	18.6
C19W2STGBL	61.9	22.3	26.0	14.2	16.8
C20W2STGBL	36.5	15.6	18.2	10.0	11.8
C21W2STGBL	7.8	0.4	0.5	0.3	0.3
C1W2STSRL	2055.1	173.8	195.6	105.0	122.7
C2W2STSRL	1790.3	172.7	205.7	104.4	122.2
C3W2STSRL	1925.0	168.3	193.4	100.9	118.3
C4W2STSRL	164.5	168.3	197.4	100.8	118.2
C5W2STSRL	164.1	163.4	191.2	99.0	116.6
C6W2STSRL	163.6	142.2	168.0	84.5	97.5
C7W2STSRL	100.9	140.9	166.6	84.3	96.5
C8W2STSRL	163.9	134.0	158.3	81.5	92.2
C9W2STSRL	167.5	133.2	157.5	85.1	93.4
C10W2STSRL	164.0	132.1	155.4	85.1	97.1
C11W2STSRL	154.1	116.8	137.2	76.8	90.0
C12W2STSRL	98.3	116.8	137.1	76.6	90.3
C13W2STSRL	139.6	115.5	135.5	76.0	90.8
C14W2STSRL	76.2	112.5	131.9	74.5	90.1
C15W2STSRL	139.4	110.7	129.2	74.0	91.2

Pipe Discharge Summary Table					
Conduit Name	Normal Depth Capacity	FLO-2D/SWMM Model Discharge			
		10-yr, 24-hr	10-yr, 6-hr	10-yr, 24-hr	10-yr, 6-hr
		(cfs)	(cfs)	(cfs)	(cfs)
C16W2STSRL	138.7	106.7	124.8	69.2	89.1
C17W2STSRL	139.7	104.9	122.5	65.5	87.2
C18W2STSRL	139.3	103.9	121.3	65.9	84.4
C19W2STSRL	136.9	95.4	111.1	59.9	75.1
C20W2STSRL	87.9	95.3	110.9	63.8	72.2
C21W2STSRL	139.5	92.8	107.3	55.5	71.1
C22W2STSRL	135.8	88.2	102.1	54.9	70.4
C23W2STSRL	62.2	89.1	102.2	60.9	67.2
C24W2STSRL	98.3	21.1	20.5	15.7	18.1
C25W2STSRL	110.8	23.4	19.3	14.5	16.4
C26W2STSRL	85.8	19.5	19.7	10.5	18.0
C27W2STSRL	85.5	11.4	11.9	9.0	11.2
C28W2STSRL	595.5	11.2	12.3	8.4	9.5
C29W2STSRL	1017	11.2	12.3	8.5	9.5
C30W2STSRL	96.4	0.0	0.0	0.0	0.0
C1W2STWISRL	62.5	34.8	39.6	23.0	27.1
C2W2STWISRL	25.7	31.1	35.1	20.4	24.2
C3W2STWISRL	27.7	24.5	27.5	15.9	18.8
C4W2STWISRL	27.6	16.1	18.4	10.5	12.1
C5W2STWISRL	26.5	15.7	18.4	10.5	12.2
C6W2STWISRL	26.7	12.1	13.8	7.6	9.0
C7W2STWISRL	25.6	4.6	5.4	2.8	3.3
C8W2STWISRL	13.9	4.6	5.4	2.8	3.4
C1W2STEISRL	139.1	71.5	83.4	44.3	53.4
C2W2STEISRL	101.6	61.4	69.7	40.2	48.0
C3W2STEISRL	128.5	53.7	59.4	37.1	43.8
C4W2STEISRL	39.2	53.3	59.7	37.3	43.6
C5W2STEISRL	64.0	39.2	43.3	26.6	31.2
C6W2STEISRL	57.7	32.4	36.3	21.6	25.5
C7W2STEISRL	48.0	28.5	32.1	19.1	22.6
C8W2STEISRL	20.9	9.4	10.8	6.6	7.7

PIPE DISCHARGE SUMMARY TABLE NOTES:

1. The normal depth capacity discharges were obtained from the SWMM.RPT file.
2. The pipe discharge is the peak hydrograph discharge taken from the "Link Results" in the SWMM.RTP file.



LOWER INDIAN BEND WASH ADMS/P
STUDY AREA-SOUTH

SWMM Outfall:		
W2STIBWOUTFALL (West 2nd Street S.D. Outfall)		
Prepared	By AJA	Date 12/18/2017
Checked	MTG	12/18/2017