



Drainage Reports

Abbreviated Water and Sewer Needs

Water Study

Wastewater Study

Stormwater Waiver Application

July 9, 2019

Re: Scottsdale Hangar
Water Wastewater Infrastructure Analysis
BCG Project #: 090475

This building will have a low water demand, only being normally occupied around times of arrivals and departures, having minimal landscaping and having only a small break room / kitchen and two restrooms.

PROPOSED DOMESTIC WATER DEMAND

Proposed domestic demand is calculated as shown using projected water and wastewater demands from the DS & PM. The peak domestic demand is 17.5 gallons per minute. Based upon the tables in the DS & PM., a 1" meter is required to facilitate the peak demand.

Potable water is provided to the property by the City of Scottsdale in McClain Drive and an easement running on the site. Connection to the existing water line will be made utilizing a 1" service and meter. The meter vault and backflow preventer will be constructed on-site within the existing public utility easement. The domestic meter will be used as the source for the landscape irrigation system. A fire flow test was conducted utilizing the existing fire hydrants. The results are attached.

PROPOSED WASTEWATER DISCHARGES

Proposed wastewater demand is calculated as shown using projected demands from the DS & PM. The peak discharge is 32.8 gallons per minute. Based upon the tables in the DS & PM., a 6" service is required to facilitate the peak demand.

Sewer is provided to the property by the City of Scottsdale in an easement running on the site.

The proposed water and wastewater system improvements will be designed and developed in accordance with MAG Specifications and Details as amended by the City of Scottsdale and with Maricopa County's Environmental Services Department requirements.

PRELIMINARY Basis of Design Report

- ACCEPTED
- ACCEPTED AS NOTED
- REVISE AND RESUBMIT



Disclaimer: If accepted; the preliminary approval is granted under the condition that a final basis of design report will also be submitted for city review and approval (typically during the DR or PP case). The final report shall incorporate further water or sewer design and analysis requirements as defined in the city design standards and policy manual and address those items noted in the preliminary review comments (both separate and included herein). The final report shall be submitted and approved prior to the plan review submission.

For questions or clarifications contact the Water Resources Planning and Engineering Department at 480-312-5685.

BY rsacks

DATE 7/16/2019



WATER

Commercial/Retail	Inside Use	Outside Use	Total Use
	0.7	0.1	0.8
15750 SF	11025	1575	12600 GPD
15750 SF			0.00111
			17.5 GPM

SEWER

Commercial/Retail	USE	PF	
15750 SF	0.5	3	23625 GPD
			32.8 GPM

John Gray

From: Sacks, Richard <RSacks@ScottsdaleAz.Gov>
Sent: Tuesday, July 9, 2019 2:44 PM
To: John Gray
Subject: RE: Scottsdale Hanger Project

John

We can accept a reduced basis of design.

It should include:

1. Projected water and wastewater demands from DS & PM
2. Site plan showing the utility layout and services to the building. For commercial developments we require a 6" diameter sewer lateral.
3. Hydrant flow test

Richard Sacks, P.E.
Senior Water Resources Engineer
City of Scottsdale
9379 E. San Salvador
Scottsdale, AZ 85258
480-312-5673
rsacks@scottsdaleaz.gov

Sending me an attachment over 5MB? Please use the link below:
<https://securemail.scottsdaleaz.gov/filedrop/rsacks@scottsdaleaz.gov>



"Water Sustainability through Stewardship, Innovation and People"

From: John Gray <jgray@bowmanconsulting.com>
Sent: Tuesday, July 9, 2019 10:53 AM
To: Sacks, Richard <RSacks@ScottsdaleAz.Gov>
Subject: RE: Scottsdale Hanger Project

⚠ EXTERNAL Email with links or attachments. Please use caution!
Attachment added

John Gray | Bowman Consulting

From: John Gray
Sent: Tuesday, July 9, 2019 10:52 AM
To: rsacks@scottsdaleaz.gov
Subject: RE: Scottsdale Hanger Project

Good morning Richard,

We are working on civil engineering plans for a new hanger building to be constructed at the airport. Attached are preliminary civil plans.

We are preparing to make the DRB submittal to the city and in the list of requirements they ask for water and sewer basis of design reports, unless those reports are not required by the Water Resources Department.


This building will have a low water demand, only being normally occupied around times of arrivals and departures, having minimal landscaping and having only a small break room / kitchen and two restrooms. Are water and sewer basis of design reports necessary?

Please call with any questions,

**John Gray | Principal
Bowman Consulting**

1295 W Washington Street, Suite 108, Tempe, AZ 85281
Direct: 480.559.8351 | fax: 480.629.8841 | cell: 480.349.3556

jgray@bowmanconsulting.com | bowmanconsulting.com |   

 — Go Green! Please consider the environment before printing this email.

Arizona Flow Testing LLC

HYDRANT FLOW TEST REPORT

Project Name:	Scottsdale Airport Hanger Expansion
Project Address:	15000 North Airport Drive, Scottsdale, Arizona, 85260
Client Project No.:	Not Provided
Arizona Flow Testing Project No.:	19125
Flow Test Permit No.:	C57849
Date and time flow test conducted:	April 12, 2019 at 7:00 AM
Data is current and reliable until:	October 12, 2019
Conducted by:	Floyd Vaughan – Arizona Flow Testing, LLC (480-250-8154)
Coordinated by:	Jared Berry – City of Scottsdale-Inspector (602-541-4942)
Witnessed by:	Matt Johnson- Airport Operations Supervisor (480-312-7609)

Raw Test Data

Static Pressure: **70.0 PSI**
(Measured in pounds per square inch)

Residual Pressure: **56.0 PSI**
(Measured in pounds per square inch)

Pitot Pressure: **25.0 PSI**
(Measured in pounds per square inch)

Diffuser Orifice Diameter: One 4-inch Pollard Diffuser
(Measured in inches)

Coefficient of Diffuser: 0.9

Flowing GPM: **2,148 GPM**
(Measured in gallons per minute)

GPM @ 20 PSI: **4,272 GPM**

Data with 10% Safety Factor

Static Pressure: **63.0 PSI**
(Measured in pounds per square inch)

Residual Pressure: **49.0 PSI**
(Measured in pounds per square inch)

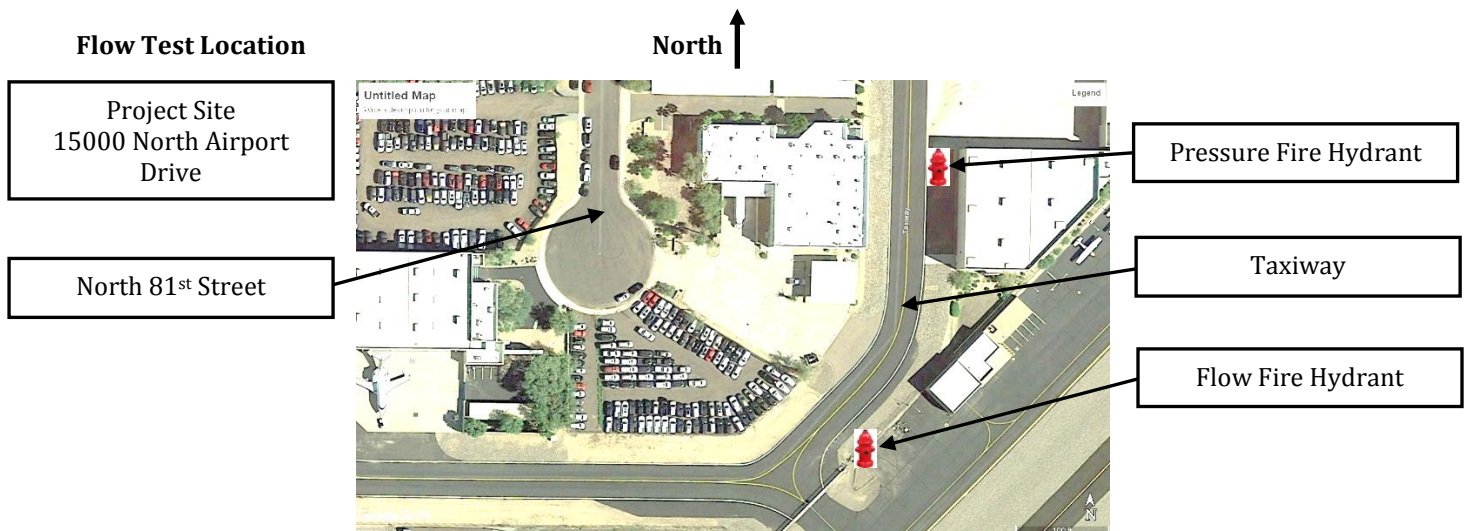
Distance between hydrants: Approx. 320 Feet

Main size: Not Provided

Flowing GPM: **2,148 GPM**

GPM @ 20 PSI: **3,938 GPM**

Flow Test Location



Arizona Flow Testing LLC

HYDRANT FLOW TEST REPORT

Project Name:	Scottsdale Airpark Hangar
Project Address:	7974 East McClain Drive, Scottsdale, Arizona, 85260
Client Project No.:	Not Provided
Arizona Flow Testing Project No.:	19191
Flow Test Permit No.:	C58301
Date and time flow test conducted:	May 14, 2019 at 7:15 AM
Data is current and reliable until:	November 14, 2019
Conducted by:	Floyd Vaughan – Arizona Flow Testing, LLC (480-250-8154)
Witnessed by:	Jared Berry – City of Scottsdale-Inspector (602-541-4942)

Raw Test Data

Static Pressure: **75.0 PSI**
(Measured in pounds per square inch)

Residual Pressure: **66.0 PSI**
(Measured in pounds per square inch)

Pitot Pressure: **21.0 PSI**
(Measured in pounds per square inch)

Diffuser Orifice Diameter: One 4-inch Hose Monster
(Measured in inches)

Coefficient of Diffuser: 0.7875

Flowing GPM: **1,723 GPM**
(Measured in gallons per minute)

GPM @ 20 PSI: **4,579 GPM**

Data with 10% Safety Factor

Static Pressure: **67.5 PSI**
(Measured in pounds per square inch)

Residual Pressure: **58.5 PSI**
(Measured in pounds per square inch)

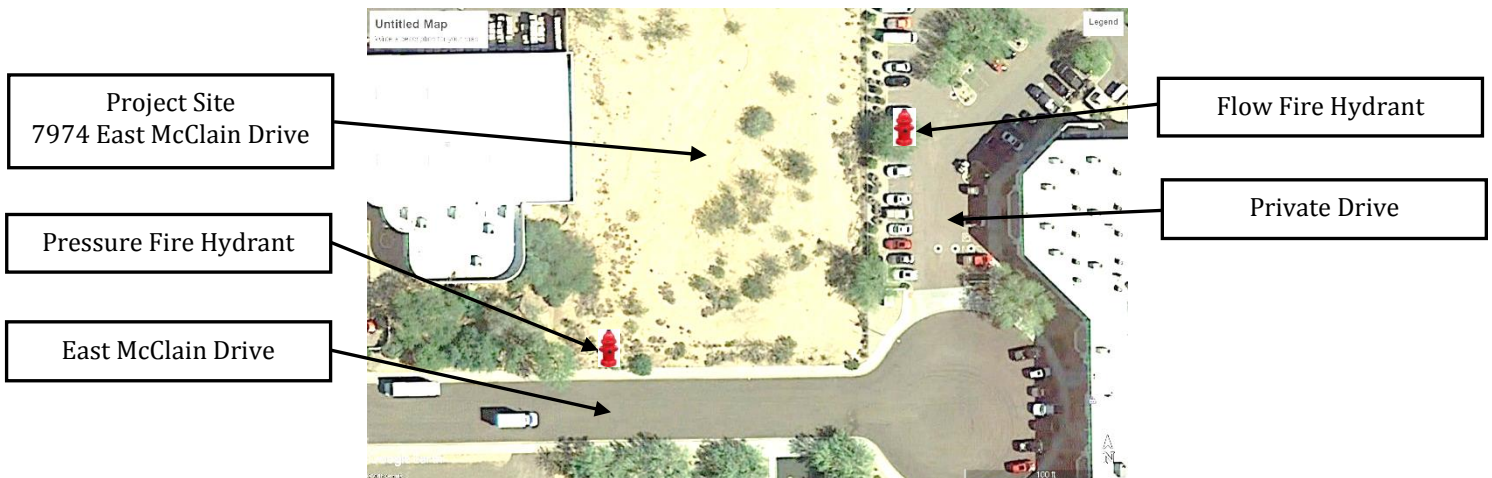
Distance between hydrants: Approx. 330 Feet

Main size: Not Provided

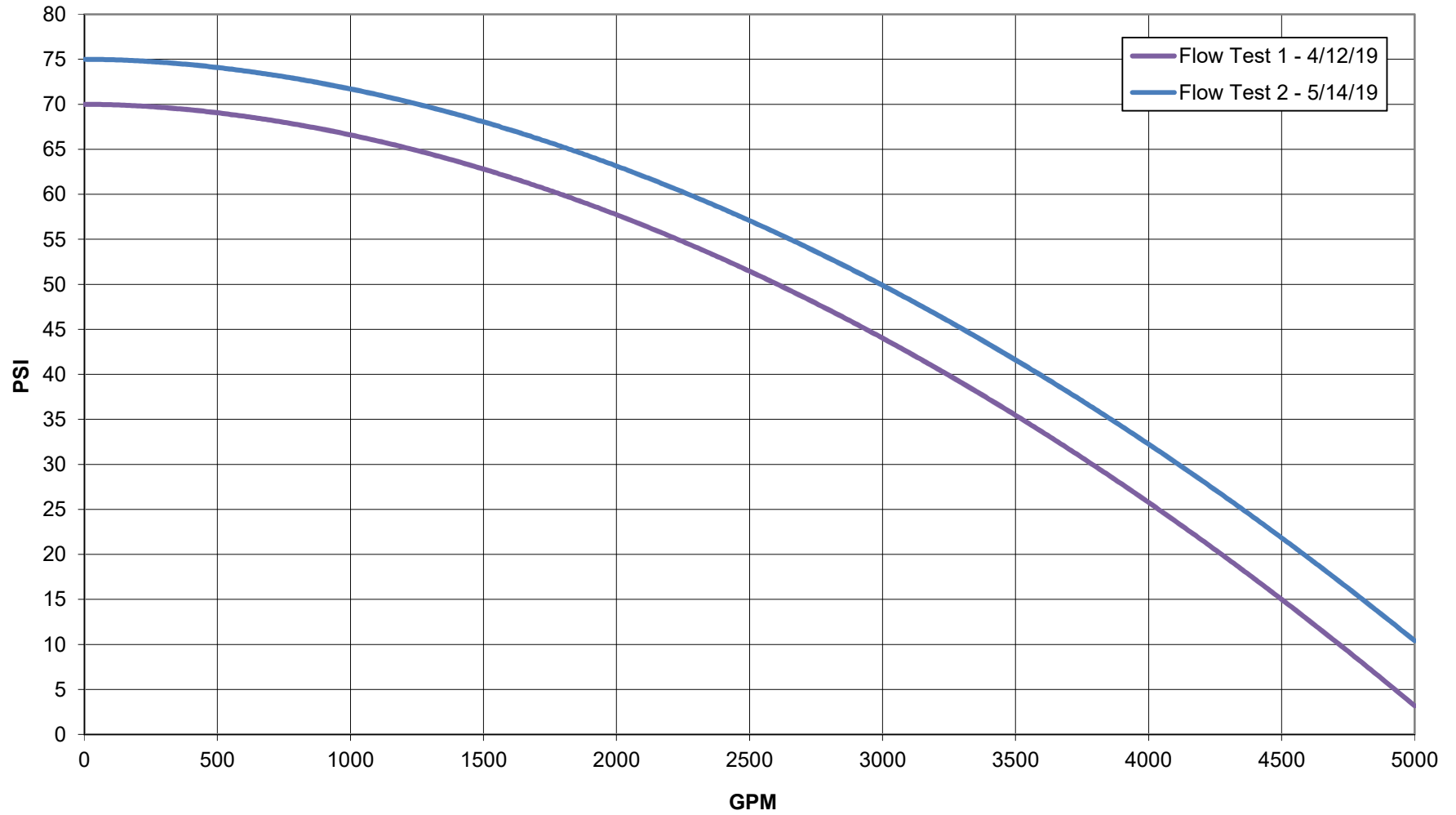
Flowing GPM: **1,723 GPM**

GPM @ 20 PSI: **4,231 GPM**

Flow Test Location



Flow Test Chart



PRELIMINARY DRAINAGE REPORT
FOR
NORTH SCOTTSDALE AIRPARK UNIT 2
NEC OF GREENWAY ROAD & SCOTTSDALE ROAD
SCOTTSDALE, ARIZONA

Prepared for:
Scottsdale Hangar Company
3131 East Camelback Road, Suite 210
Phoenix, AZ 85016
602-535-5338

Prepared by:
Bowman Consulting Group
1295 W Washing Street, Suite 108
Tempe, Arizona 85281
480-629-8830



Plan #	37-DR-2019
Case #	
Q-S #	
<input checked="" type="checkbox"/> Accepted	
<input type="checkbox"/> Corrections	
A. Menez	09/13/2019
Reviewed By	Date

August 28, 2019
Bowman Project No. 090475

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- C. Drainage Exhibit.....Appendix A



1.0 INTRODUCTION

This project is a 1.28-acre site plan involving the construction of an airplane hangar and is located near the northeast corner of Greenway Road and Scottsdale Road in the City of Scottsdale, Arizona. As shown in appendix A, the project site is within a portion of Section 2, Township 3 North, Range 4 East of the Gila and Salt River Meridian, Maricopa County, Arizona.

The site will be designed in accordance with the City of Scottsdale and Design Standards and Policies Manual (Reference 1) and the Drainage Policies and Standards for Maricopa County, Arizona (Reference 2).

The purpose of this report is the following:

- Identify the development's offsite flows.
- Establish onsite drainage criteria for the development
- Show compliance with the City of Scottsdale Design Standards (Reference 1).

2.0 FLOODPLAIN DESIGNATION

The site lies within the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) map number 04013C1320L, with a current effective date of October 16, 2013. The site is located within Zone X. Flood Zone X is defined as:

Areas of 0.2% annual chance flood; areas of 1% annual chance flood 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 of flood.

3.0 OFFSITE DRAINAGE MANAGEMENT

3.1 EXISTING CONDITIONS

The site lies within the Scottsdale Road Corridor Drainage Master Plan. The drainage master plan shows that runoff north of the site is intercepted by the CAP canal. The site accepts a small amount of flow from a drainage ditch that collects runoff from the taxiway, directly north of the site. A proposed catch basin will capture this flow and take it to the existing 36-inch storm drain east of the site that likely discharges into a regional retention basin.

3.2 PROPOSED OFFSITE IMPROVEMENTS

To properly route the offsite flow through the site, a catch basin and storm drain will be installed to intercept the runoff. From there the flow will be routed to the existing storm drain system east of the site.

4.0 ONSITE DRAINAGE MANAGEMENT

4.1 GENERAL CONCEPT

Currently the site is undeveloped desert and slopes from north to south. Once developed, onsite storm water runoff will be retained using underground retention. Using a 4-inch restrictor plate, the underground retention tank will discharge at

approximately 1 cfs into the existing 36-inch storm drain east of the site. Catch basins and storm drains will be used to capture and convey the storm water into the underground retention system.

4.2 **DESIGN PEAK FLOWS**

Onsite design peak flows were estimated using the Rational Method in accordance with the City of Scottsdale criteria. See appendix A for the corresponding drainage map illustrating the grading and drainage areas for the Project. The runoff coefficient used in the calculations is 0.95, as the site is mostly rooftop, asphalt, and concrete. The peak flow calculations are provided in Appendix B.

4.3 **STREET INLET AND PIPE STRUCTURES**

Parking lot runoff will be conveyed into the underground retention system via storm drain, a slotted drain, and MAG 535 catch basins. These inlet and pipe structures are designed to convey the 10-year peak flow assuming that each type of inlet is 50% clogged. Inlet sizing calculations are provided in Appendix C. A StormCAD model was created to obtain hydraulic grade lines and ensure that the pipes are properly sized. The StormCAD model results are provided in Appendix D.

The underground retention tank will release storm water into the existing 36-inch pipe east of the site. The hydraulic grade line in this existing pipe was considered to not be an issue because of the 4-inch restrictor plate that will only allow 1 cfs to be discharged into the existing storm drain. The hydraulic grade line in the underground retention tanks are assumed to be at half the tank.

4.4 **RETENTION REQUIREMENT**

The retention requirement for the site is the volume of runoff produced by the 100-year 2-hour storm. According to the NOAA Atlas 14 database, the 100-year 2-hour storm rainfall depth is 2.25 inches. Two 8-foot diameter corrugated metal pipe are proposed to accommodate the storm water runoff volume. Retention volume calculations are included in Appendix E.

4.5 **STORM WATER DISSIPATION**

The City of Scottsdale requires retained storm water to be drained from the basin within a 36-hour time period. In order to conform to this design requirement, the underground retention system will drain into existing infrastructure. A 4-inch restrictor plate will be used to control the bleed-off flow. Dissipation calculations are located in Appendix E.

5.0 **ULTIMATE OUTFALL**

An outfall will be provided for each onsite drainage area to allow flow in excess of the design storm or in back to back events to leave the drainage area without inundating finished floors of structures within that area. The ultimate outfall for the project site is located near the southwest corner of the site at an elevation of 1491.80. From here, excess runoff will flow west down McClain Drive.

Finished floors will be set a minimum of 14 inches above the highest applicable ultimate outfall of the lot, drainage area, or project.

6.0 CONCLUSION

The proposed development shall be designed in compliance with the City of Scottsdale design standards and other applicable drainage standards set forth by the Flood Control District of Maricopa County. This report has established:

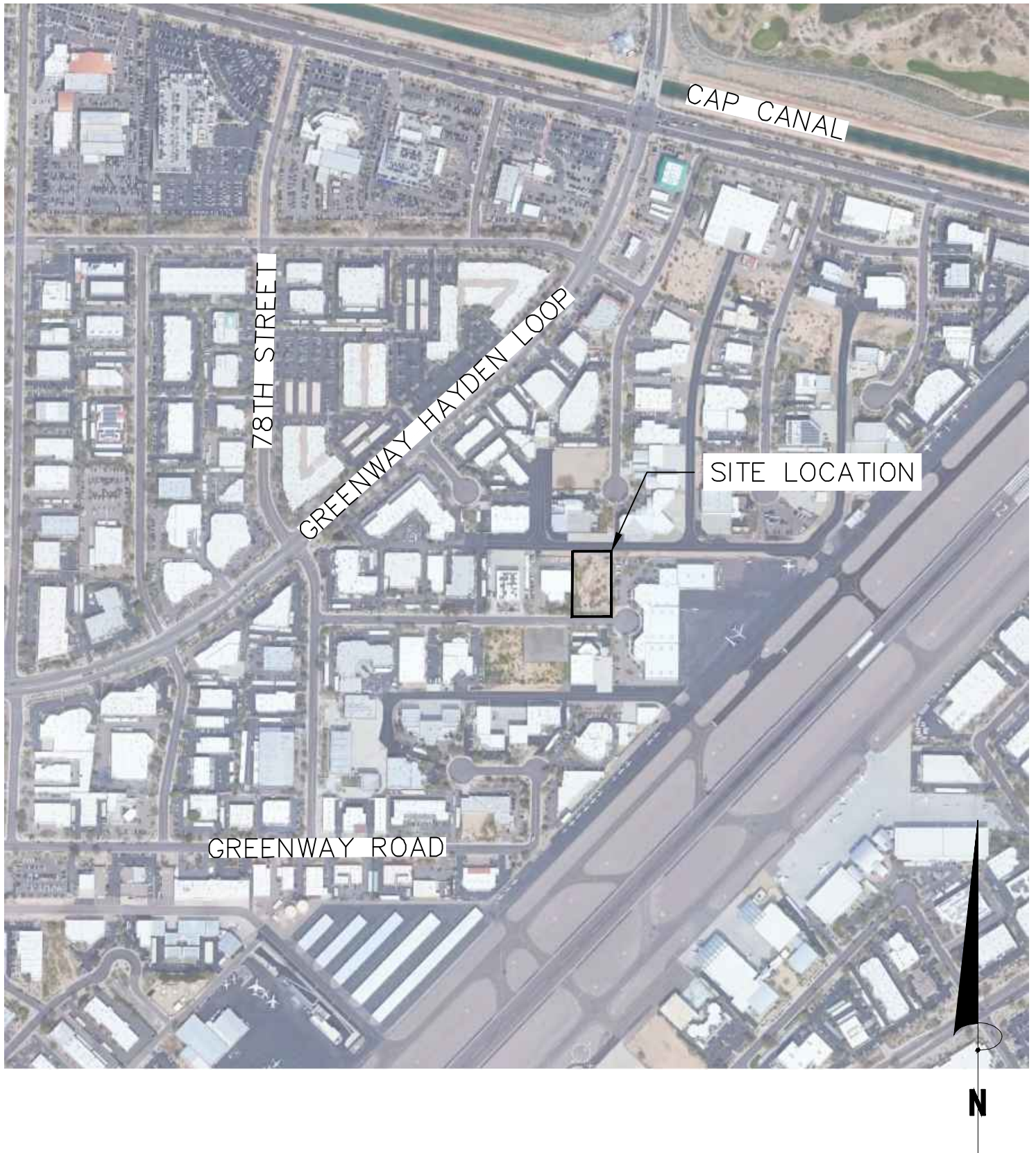
- Onsite storm water from storms up to the 100-year 2-hour event will be retained in an onsite underground retention system.
- Offsite flows will be intercepted and properly routed through the site.
- Catch basins and storm drains will be sized for the 10-year storm event.
- The underground retention system will drain into existing storm drain infrastructure within 36-hours.
- Finished floors will be set a minimum of 14 inches above the highest applicable ultimate outfall of the lot, drainage area, or project.

7.0 REFERENCES

1. City of Scottsdale, 2018. Design Standards and Policies Manual. City of Scottsdale, Arizona.
2. Flood Control District of Maricopa County, August 22, 2018. Drainage Policies and Standards for Maricopa County, Arizona. Flood Control District of Maricopa County, Phoenix, Arizona.

APPENDIX A

Exhibits



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NORTH SCOTTSDALE AIRPARK UNIT 2
SCOTTSDALE, AZ

VICINITY MAP

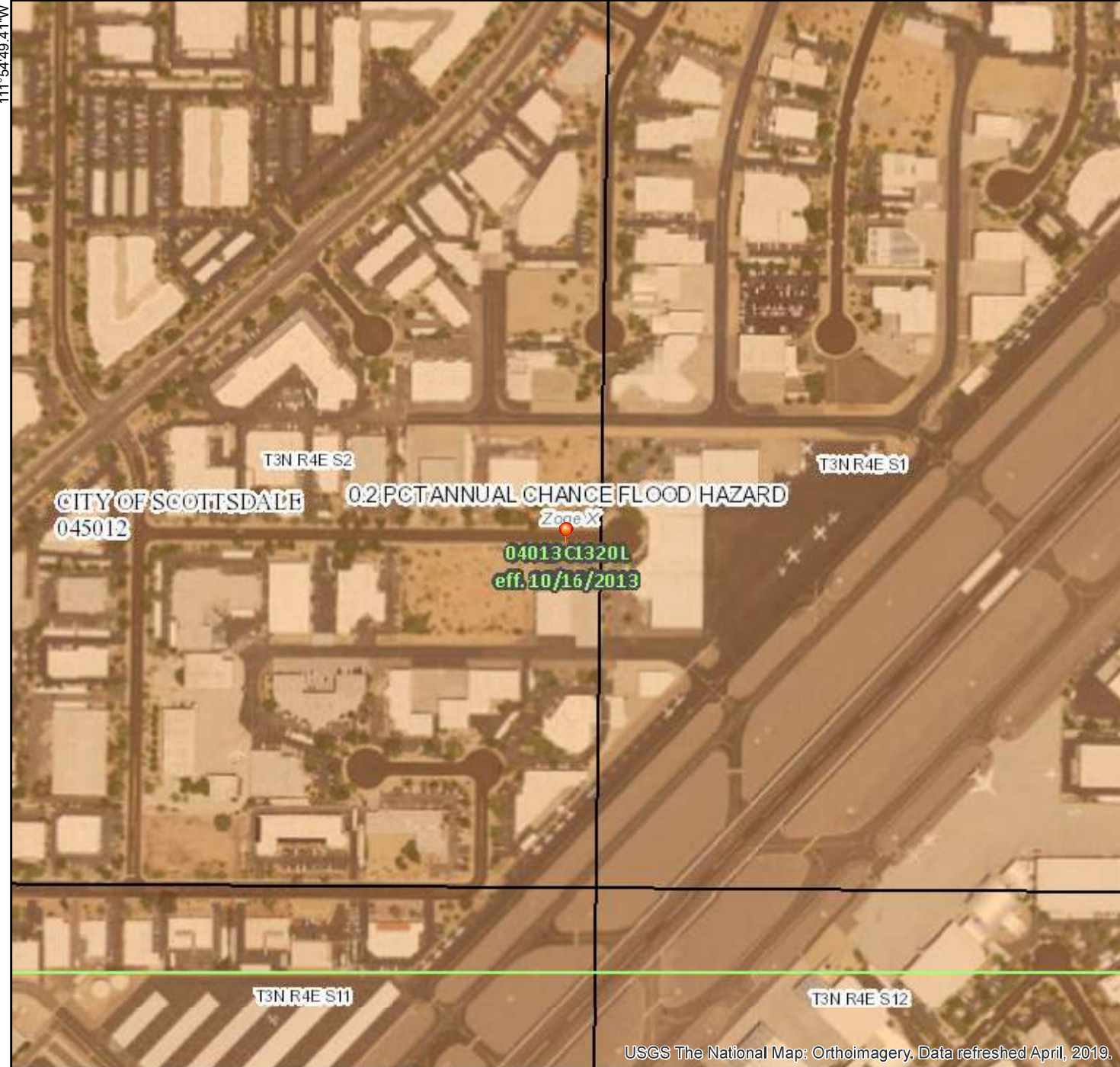
JOB #	090475
DATE	7/9/19
SCALE	N.T.S.
DRAWN	HMT

SHT. 1 OF 1
37-DR-2019

National Flood Hazard Layer FIRMette



33°37'57.27"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 |
| GENERAL STRUCTURES | | Area of Undetermined Flood Hazard Zone D |
| | | 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) |
| MAP PANELS | | 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 6/19/2019 at 1:59:07 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.

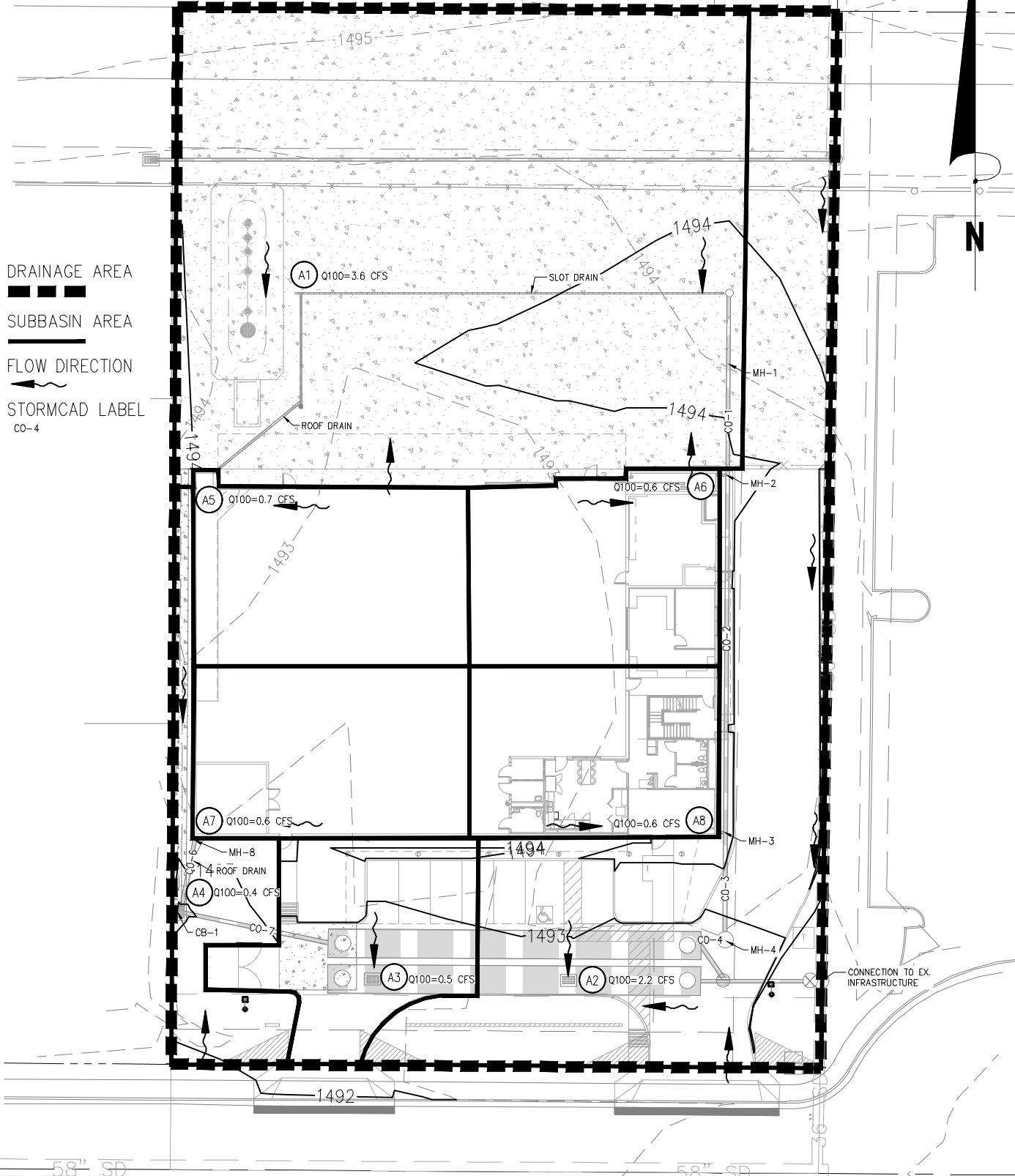
0 250 500 1,000 1,500 2,000 Feet

1:6,000

33°37'27.31"N

37-DR-2019
08/29/19

DRAINAGE AREA
 ■■■■
 SUBBASIN AREA
 ————
 FLOW DIRECTION
 ←
 STORMCAD LABEL
 CO-4



30300 CHECK

Bowman
CONSULTING

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 Tempe, Arizona 85281 www.bowmanconsulting.com

NORTH SCOTTSDALE AIRPARK UNIT 2
 SCOTTSDALE, AZ

PRELIMINARY DRAINAGE EXHIBIT

JOB #	090475
DATE	8/27/19
SCALE	1"=40'
DRAWN	HMT

SHT 1 OF 1

37-DR-2019

APPENDIX B
Rational Calculations

Peak Inlet Flow Calculations Using The Rational Method

Project: **Scottsdale Airpark**
 Proj #: **090475**
 Date: **8/27/19**
 By: **HT**

Rainfall Depth-Duration-Frequency (D-D-F), (inch)					
Desired Frequency	Time				
	5 min	10 min	15 min	30 min	60 min
10-Yr	0.41	0.62	0.76	1.03	1.27
100-Yr	0.64	0.97	1.20	1.62	2.00
Rainfall Intensity-Duration-Frequency (I-D-F), (in/hr)					
10-Yr	4.86	3.70	3.06	2.06	1.27
100-Yr	7.63	5.81	4.80	3.24	2.00

AF for Cw per Cw _{100-Yr}		
Freq.	Typical	Applic.
2-Yr	1.00	1.00
5-Yr	1.00	1.00
10-Yr	1.00	1.00
25-Yr	1.10	1.00
50-Yr	1.20	1.00
100-Yr	1.25	1.00

AF=Frequency Adjustment Factor

Drainage Area ID: -----					10-Yr			100-Yr		
Cw is adjusted as a function of the 100-year value per the table above										
Concent.	Contributing	Total					Q			Q
Point	Sub-basins	Area (ac)	2-10 year Cw	Tc (min)	Cw AF=1.00	i (in/hr)	10-Yr (cfs)	Cw AF=1.00	i (in/hr)	100-Yr (cfs)
1	A1	0.500	0.95	5.0	0.95	4.86	2.3	0.95	7.63	3.6
2	A2	0.307	0.95	5.0	0.95	4.86	1.4	0.95	7.63	2.2
3	A3	0.075	0.95	5.0	0.95	4.86	0.3	0.95	7.63	0.5
4	A4	0.054	0.95	5.0	0.95	4.86	0.2	0.95	7.63	0.4
5	A5	0.093	0.95	5.0	0.95	4.86	0.4	0.95	7.63	0.7
6	A6	0.088	0.95	5.0	0.95	4.86	0.4	0.95	7.63	0.6
7	A7	0.088	0.95	5.0	0.95	4.86	0.4	0.95	7.63	0.6
8	A8	0.079	0.95	5.0	0.95	4.86	0.4	0.95	7.63	0.6

Notes:

APPENDIX C

Inlet Sizing Calculations

CATCH BASIN DESIGN FOR 10-YR EVENT



Project: Scottsdale Airpark
 Project #: 090475
 Prepared by: HT

DATE: 8/27/2019

INTENT: Verify adequacy of catch basin/scupper size per following equations, capacities are as noted below. Evaluation compares capacity at maximum ponding depth to the peak flow. Calculations are as outlined in the Drainage Design Manual for Maricopa County unless otherwise specified.

Slotted Drain:

For a slotted drain in a sump: $Q_i = 0.8LW(2gd)^{0.5}(F_{CL})$

Where: L = length of the drain
 W = width of the drain
 g = gravity
 $F_{CL} = 0.5$

Grated catch basin:

For the grated portion of the catch basin: $Q_{GR} = C_wPd^{1.5}(F_{CL})$

Where: $F_{CL} = 0.50$ Clogging factor for **Grated** portion of the catch basin

	No Curb	Curb @Long Side	2 Sided Curb
$C_w = 3.0$			
MAG 535 P =	9.33 ft	--	--
MAG 537 Single *P =	7.67 ft	5.92 ft	3.83 ft
MAG 537 Double *P =	10.75 ft	7.46 ft	5.38 ft

*Perimeter calculated at edge of concrete collar

Concentration Point	Inlet ID	Flow Q_{10}	Catch Basin/Scupper Type and Length (ft)	Water Height (d)	Max. Flow into Catch Basin (CFS)
A1	Slot Drain	2.3	ADOT STD DTL C-13.60	0.50	40.7
A2	CB2	1.4	MAG 535-Single	0.50	4.95
A3	CB3	0.3	MAG 535-Single	0.50	4.95
A4	CB4	0.2	MAG 535-Single	0.50	4.95

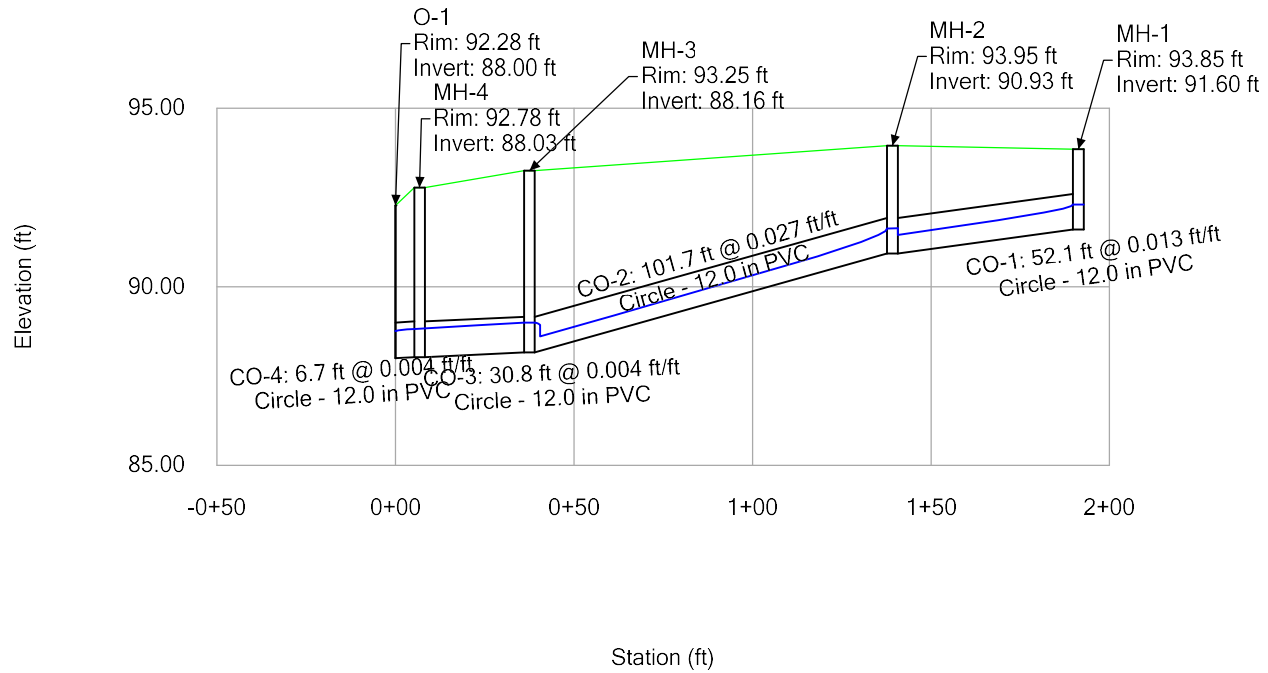
APPENDIX D
StormCAD Model Results

FlexTable: Conduit Table

Label	Start Node	Invert (Start) (ft)	Stop Node	Invert (Stop) (ft)	Hydraulic Grade Line (In) (ft)	Length (Scaled) (ft)	Slope (Calculated) (ft/ft)	Diameter (in)	Manning's n	Flow (cfs)	Velocity (ft/s)	Depth (Normal) (ft)
CO-1	MH-1	91.60	MH-2	90.93	92.30	52.1	0.013	12.0	0.010	2.70	6.74	0.51
CO-2	MH-2	90.93	MH-3	88.16	91.63	101.7	0.027	12.0	0.010	2.70	8.89	0.41
CO-3	MH-3	88.16	MH-4	88.03	88.99	30.8	0.004	12.0	0.010	3.10	4.36	0.85
CO-4	MH-4	88.03	O-1	88.00	88.82	6.7	0.004	12.0	0.010	3.10	4.48	0.82
CO-6	CB-1	90.30	MH-8	92.43	92.69	21.6	-0.099	12.0	0.010	0.40	8.07	0.11
CO-7	CB-1	90.30	O-3	88.21	90.62	43.3	0.048	12.0	0.010	0.60	7.09	0.16

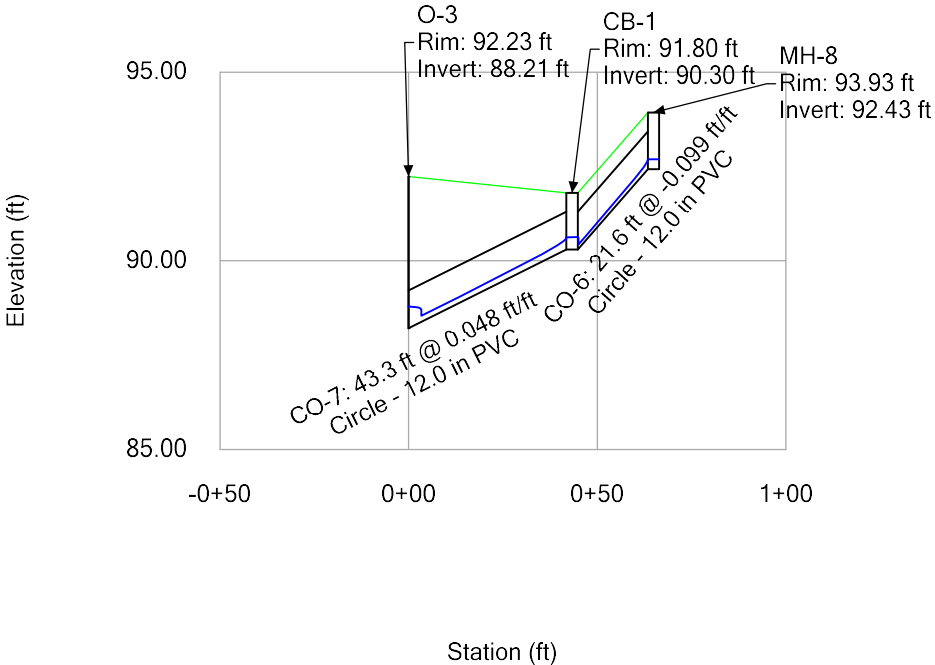
Profile Report

Engineering Profile - MH-1 to O-1 (090475.stsw)



Profile Report

Engineering Profile - MH-8 to O-3 (090475.stsw)



APPENDIX E

Retention and Dissipation Calculations

RETENTION WORKSHEET FOR 100-YR, 2-HR EVENT

Project: 090475 North Scottsdale Airpark Unit 2

Description: Preliminary Underground Retention

Prepared by: HT

DATE: 6/24/2019

Preliminary Retention Summary

Extra Provided		Required Drywells
1,026 cf	0.0236 Ac-ft	N/A

Volume Required:

$$V_r = D/12 \times A \times C$$

D = 100yr 2hr Rainfall, 2.25

A = Area in Square Feet

C = Coefficient of Runoff

Sub Area Type	Area (sf)	Runoff Coefficient	Retention Required (cf)	Retention Required (ac-ft)
Ashpalt	9,890	0.90	1,669 cf	0.04 Ac-ft
Concrete/Roof	40,810	0.95	7,269 cf	0.17 Ac-ft
Desert L/S	5,272	0.70	692 cf	0.02 Ac-ft
Totals	55,972		9,630 cf	0.22 Ac-ft

Total Retention Required

9,630 cf

0.22 Ac-ft

Underground Retention Volume Provided:

Pipe Diameter (ft)	Pipe Length (ft)	Volume (cf)
8.00	212.00	10,656

Volume Provided: 10,656 cf

Total Volume Provided: 10,656 cf

Dissipation Calculations

Volume to Drain Through Bleed-off Pipes (cf)	Bleed-off Flow Rate (cf/sec)	Bleed-off Flow Rate (cf/hr)	Hours to drain (hr)
9,630	0.174	626	15.4

APPENDIX F
Warning and Disclaimer Liability

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.

37-DR-2019

Plan Check #



Owner

8/28/19

Date