Dynamic Civil Designs LLC
4690 N Melpomene Way
Tucson AZ 85749
Ph: 520 461-8016

DRAINAGE REPORT

Submittal #2

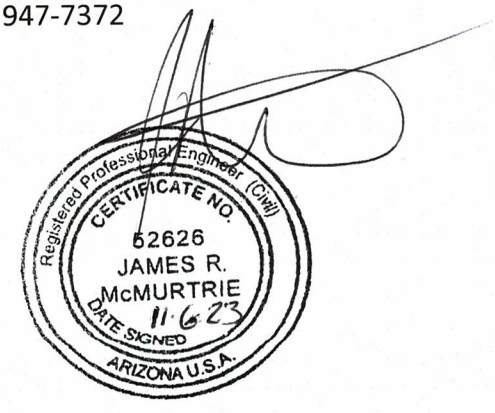
Case **2302254**
Ref CSP 2202232
OV12-98-12

Project:

Tropical Smoothie-La Canada Dr

10335 N La Canada Dr
Oro Valley, Arizona 85737
NE1/4 Sec 15, T12S, R13E G&SRM
APN # 224-39-001D

Client:
OneTen REI Guadalupe LLC
Attn: Nico Fricchione
140 Rio Salado Pkwy Ste 1104
Tempe, Arizona 85281
Ph: (570) 947-7372



SUBMITTAL: November, 2023
Job D21017

PLANS REVIEWED AND ACCEPTED FOR CODE COMPLIANCE

Stormwater: droberts 11/16/2023

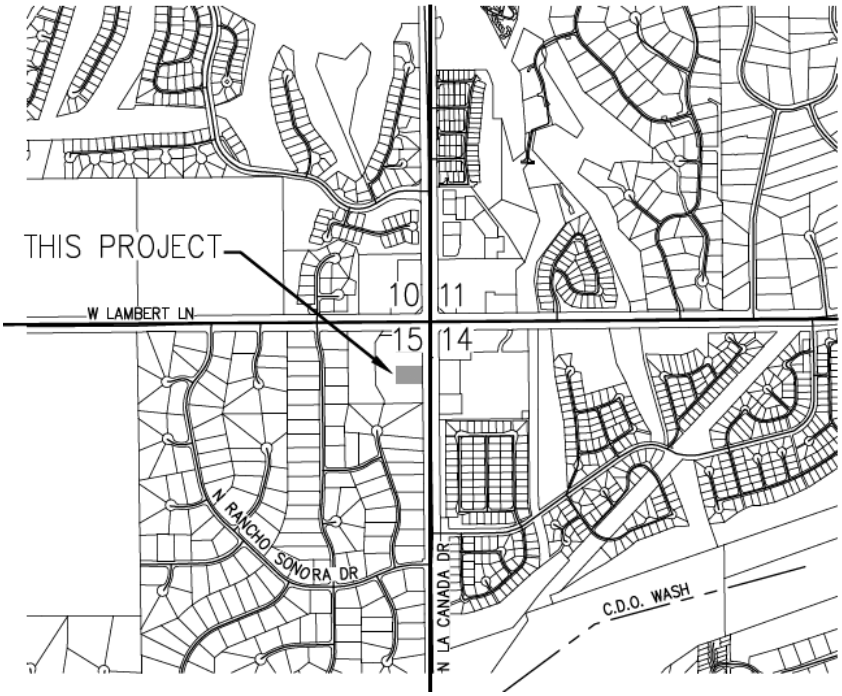
The issuance of a permit shall not be construed to be a permit or approval of any violation of the codes or ordinances of the Town of Oro Valley

Table of Contents

1.0 Introduction

A. Site Location and Project Description

The project site is located on the west side of La Canada Dr, south of the intersection of Lambert Lane, at 10355 N La Canada Dr. The current Assessor's Parcel Number is 224-39-001D. A vicinity map is below.



The subject parcel is a 0.76-acre portion of the Canada Crossroads development that has been prepared as a flat, vacant building pad. The land is zoned C-N. The proposed improvements consist of constructing a roughly 1,649 SF Tropical Smoothie drive-thru with associated parking lot improvements.

The project site does not receive any offsite runoff from areas outside the Canada Crossroads shopping center with the exception of runoff from a portion of the adjacent south half of the Lambert Lane right-of-way. The drainage improvements for Canada Crossroads are already existing and were designed to accommodate development on the subject lot. Namely, a system of storm drains onsite collect runoff from the shopping center and stormwater detention for the overall development was provided at the southwest portion of the development. The approved Development Plan is OV12-98-12 (Bk 19, Pg 30).

This project does not propose any substantial change to the drainage scheme or stormwater detention requirements approved for the Canada Crossroads development on Development Plan OV12-98-12. The project proposes 72% impervious areas compared to 88% impervious areas on the approved Development Plan OV12-98-12.

B. Purpose and Objectives

The drainage analyses summarized in this report are to ensure compliance with the Town of Oro Valley Floodplain and Erosion Hazard Management Ordinance and the Town of Oro Valley Department of Public Works Drainage Criteria Manual. This report shall accompany the project Development Plan submittals.

C. Known Development Requirements

Stormwater detention/retention requirements for this site have already been satisfied as part of the overall Canada Crossroads development approved by Development Plan OV12-98-12 in 1999 and constructed over the span of the following 2 years.

The current Town of Oro Valley's Drainage Criteria Manual, Section 11.3.1, requires retention and/or treatment of the First Flush runoff volume, which is calculated as the first one-half inch of rainfall over the paved parking lot surface. Further discussion is provided in Section 4.D.

Rainwater harvesting is a requirement for new development per the current Town Code, in accordance with Section 27.6.D.4.d. The development of the subject lot, being an interior infill portion of the Canada Crossroads development, is eligible for an exemption of the requirements per Section 27.6.D.1.f since the substantial drainage improvements built with the Canada Crossroads Development Plan OV12-98-12, which accommodate the development of the subject lot, were constructed before June 1, 2010. However, as discussed herein, harvesting is proposed on the Tropical Smoothie lot wherever runoff can be collected and landscape areas can be depressed for passive harvesting.

D. Previous Studies

The Drainage Report for the approved Canada Crossroads Development Plan, OV12-98-12, was prepared by Arroyo Engineering, Inc. (Arroyo Job #OPW19). The Town has provided a revised version of the report sealed and dated July 22, 1998. The construction of Canada Crossroads differed from the drainage report exhibits in some ways, as discussed herein. The as-built conditions are more accurately reflected by the drainage design shown on the approved Development Plan OV12-98-12. There are no other known studies.

E. Required Permits

This project requires a Conceptual Site Plan (M&C) approval and Final Site Plan/Improvement Plan approvals as the development proposed differs from the layout on the approved Development Plan.

This project requires approval of a Conditional Use Permit.

Grading disturbance for the project will not exceed 1-acre. Therefore, a Stormwater Pollution Prevention Plan (SWPPP) and permit coverage under the AZPDES general permit or not required. The contractor is still advised to implement stormwater pollution prevention best management practices.

The contractor shall obtain a dust control permit from Pima County DEQ.

Construction of waterlines will require full review and approval processes by the Town of Oro Valley Water Utility. An Approval to Construct permit from ADEQ/PDEQ should not be required for the limited length of line extension required.

2.0 Existing Conditions Drainage

A. On-site Drainage

Figure 2 in Appendix A shows an aerial photo of the existing project site, a vacant building pad, being Pad #2 of the Canada Crossroads Development Plan.

In 1998, Arroyo Engineering prepared the aforementioned Drainage Report for the Canada Crossroads development and designed the paved parking lot as a detention basin. The outlet of the basin was to be a single grated catch basin connected to a storm drain with an orifice plate on the storm drain pipe. Figure 3 in Appendix A is Figure 3 from the drainage report. It shows the planned single parking lot detention area, ponding limits, catch basin, and storm drain with the peak discharges from the development noted for both existing and developed conditions. At some point in time, between the approval of the drainage report and the approval of the Development Plan in 1999, the location of Pad #2 changed and the parking lot detention basin was split into two separate ponding areas with their own individual catch basins and storm drains to accommodate the change. The first detention area is north of Pad #2 and the second is to the southwest. The change in design is reflected on the second sheet of the Development Plan, included as Figure 4 in Appendix A. The final post-development peak discharges from the development were noted on the Development Plan in similar detail to the previously approved Drainage Report Figure 3 along with the change in ponding limits and storm drain configuration. The conditions in the development today closely resemble the approved Development Plan, especially as they relate to the overall drainage scheme for the development. Of course, Pad #2, the subject parcel, is currently in the temporary configuration shown on Figure 2. Pad #1 to the north is also a vacant pad.

The existing building pad area on the subject lot is encompassed by a temporary extruded vertical curb. That area does not currently drain. All rainfall landing within the curbed area percolates and evaporates. The drainage design of Canada Crossroads accounted for roughly half of the building pad to drain north and half to drain south post-development. The existing paved parking area access lanes (PAALs) and parking spaces outside of the curbed building pad area have minimal slopes. Runoff from those

areas is directed to the storm drain catch basins to the north and to the southwest of the subject parcel, with roughly half of those areas going to either catch basin in accordance with the general drainage scheme of the approved Development Plan for Canada Crossroads. Across the subject parcel, the approved development plan contained approximately 88% impervious areas.

B. Off-site Drainage

There is no offsite runoff impacting the subject parcel that is not associated with the Canada Crossroads development and the portion of the south half of the Lambert Lane right-of-way evaluated in the original drainage report for OV12-98-12. Refer to Figure 3, the OV12-98-12 drainage report exhibit, and Figure 4, the Development Plan. More recently, the Lambert Lane roadway was improved and storm drains were installed near the north entrance to the development that reduced the amount of Lambert Lane runoff entering Canada Crossroads. For the purposes of this evaluation, an analysis of the reduction is not necessary.

3.0 Proposed Conditions Drainage Design

A proposed conditions map is included in Appendix A as Figure 5. The map contains proposed drainage area boundaries with each drainage area labeled DEV-1 through DEV-7. The proposed impervious surfaces coverage across the subject lot is approximately 72%, versus the 88% shown on the approved OV12-98-12 Development Plan.

Drainage Area DEV-1 will drain to the north, to the existing storm drain catch basin in the parking lot north of the site. DEV-1 includes harvesting depressions that capture rainfall landing in the depressed area and landing on some additional areas very local to the depressions only. The catch basin receiving DEV-1 runoff is the outlet of the parking lot detention basin north of the site constructed under the Development Plan OV12-98-12. Ponding will occur above the grated inlet of the catch basin, by design.

Drainage Area DEV-2 will drain runoff to the existing storm drain catch basin southwest of the subject parcel in the service portion of the Canada Crossroads parking lot. That catch basin is the outlet for the parking lot detention basin constructed by Development Plan OV12-98-12. DEV-2 will also include harvesting depressions. The larger of the two depressions at the southwest corner of the subject parcel will allow runoff from the row of parking spaces north of it to enter the depressed area. The smaller harvesting island in DEV-2, located in the landscape island that divides the southern row of parking spaces, will fill with runoff exiting DEV-6. Excess volume will exit the depression into the paved area of DEV-2.

DEV-3 represents a small fraction of the existing parking lot that drains directly to the La Canada Drive roadway. The two existing parking spaces that are proposed for removal in DEV-3 will be replaced with a passive harvesting landscaped area.

Similarly, DEV-4 is the existing landscaped area along the La Canada frontage. Excess runoff from DEV-4 enters La Canada Dr.

The runoff from DEV-5 and DEV-6 will exit the paved drive-thru lane and enter harvesting basins before crossing under the proposed sidewalk, through sidewalk scuppers, to the parking area in DEV-2. The DEV-5 and DEV-6 flows will combine with the DEV-2 flows exiting the site toward the southwest. DEV-6 includes the entirety of the roof drainage from the Tropical Smoothie building.

The drainage area identified as DEV-7 consists only of the landscaped areas and a small reach of sidewalk north of the building. No roof drainage will be directed to the north side of the building. The minimal runoff from DEV-7 will be directed into harvesting depressions. Excess ponding in the harvesting areas is not likely to occur and would only be plausible in the event there were successive storm events and soil percolation issues. However, if excess ponding occurs, the excess will be allowed to flow under the sidewalk through the proposed sidewalk scupper and then onto the paved area through a curb opening to ensure ponding does not back-up toward the building.

4.0 Hydrologic and Hydraulic Analysis

A. Hydrology

Hydrologic calculations were performed using the Pima County software, PC-Hydro version 7.1.

Precipitation data used in the PC-Hydro software is derived from NOAA Altas 14, upper 90% confidence interval.

Soils is the area are identified as Pinaleno-Stagecoach-Palos Verdes complex, map unit symbol 61, on the Natural Resources Conservation Service Web Soils survey. The hydrologic soils group is 100% Type C.

Hydrologic worksheets for developed-conditions drainage areas DEV-1 through DEV-7, as depicted on Figure 5, are included in Appendix B.

B. Hydraulics

There are several sidewalk scuppers and curb openings proposed, as depicted on Figure 5. Hydraulic calculation worksheets are included in Appendix C.

C. Floodplain Analysis

The subject parcel is not impacted by any FEMA floodplain or any local regulatory floodplain. A FEMA FIRMette from panel 04019C1090L, effective 6/16/2001, is included in Appendix A as Figure 6.

D. Storm Water Detention/Retention Calculations

Stormwater detention/retention requirements for this site have already been satisfied as part of the overall Canada Crossroads development as discussed in Section 2.A above. Since the proposed improvements for Tropical Smoothie will maintain the same general drainage scheme shown on the OV12-98-12 Development Plan, with roughly half the site draining north and half draining south, and proposes less impervious area, no additional detention facilities are necessary.

The current Town of Oro Valley's Drainage Criteria Manual, Section 11.3.1, requires retention and/or treatment of the First-Flush runoff volume, which is calculated as the first one-half inch of rainfall over the paved parking lot surface. For this project, being an interior, infill portion of an overall development that is nearly fully constructed, enforcement of the requirement is not practical. Capturing runoff from the paved areas on the subject parcel for First-Flush treatment before it exits onto the existing surrounding parking lot is not feasible. Typically, the first-flush capture/treatment areas would be located at the outer edge of a parking lot, in detention areas, or in harvesting depressions strategically situated on the site in the overall grading and drainage design. In this case, the original drainage design for Canada Crossroads utilized the paved surfaces as the stormwater detention ponding area. Additionally, the First-Flush treatment requirements were not part of the requirements at the time the Development Agreement (Resolution (R)98-79) and Development Plan OV12-98-12 were approved.

E. Rainwater Harvesting

Rainwater harvesting is a requirement for new development per the current Town Code, in accordance with Section 27.6.D.4.d. However, the development of the subject lot, being an interior infill portion of the Canada Crossroads development, is eligible for an exemption of the requirements per Section 27.6.D.1.f since the substantial drainage improvements built with the Canada Crossroads Development Plan OV12-98-12, which accommodate the development of the subject lot, were constructed before June 1, 2010. However, harvesting is proposed on the Tropical Smoothie lot wherever runoff can be collected and landscape areas can be depressed for passive harvesting.

The standard volume requirement for rainwater harvesting is 3,000 gal/acre of impervious surfaces. The impervious surfaces proposed total 23,682.8 sf, or 0.54 acres. Therefore, the standard calculation would require a minimum harvesting volume of 1,620 gal, or 216 cf for the Tropical Smoothie development. Harvesting depressions are limited to four-inch ponding depths.

Harvesting areas are proposed on the subject parcel, as shown on Figure 5, wherever capturing runoff is possible. The total volume proposed, 502 cf, exceeds the minimum standard volume requirement.

F. Drainage Structures Design

There are no significant drainage structures proposed for this development. There are several sidewalk scuppers and curb openings proposed, as depicted on Figure 5. Hydraulic calculation worksheets are included in Appendix C.

G. Erosion Control

There are no significant sources of erosion potential proposed for this project. Rip-rap aprons or concrete splash-blocks will be placed at roof drain outlets and sidewalk scupper outlets, where appropriate.

A Stormwater Pollution Prevention Plan and Notice of Intent to ADEQ will not be required for this project, pursuant to the AZPDES General Construction Permit, because the area of disturbance is under the 1-acre.

5.0 Conclusions and Recommendations

This project does not propose any substantial change to the drainage scheme or stormwater detention requirements approved for the Canada Crossroads development on Development Plan OV12-98-12. The project proposes 72% impervious areas compared to 88% impervious areas on the approved Development Plan OV12-98-12.

The more recently adopted First-flush requirements will not be practical to comply with for this project as it is an interior, infill portion of a larger overall development that is already nearly fully completed.

Rainwater harvesting areas meeting the minimum volume requirements have been proposed in the grading design.

The project site is not impacted by any offsite runoff or floodplains.

6.0 References

Standards Manual for Drainage Design and Floodplain Management in Tucson, Arizona, Simons, Li & Associates, Inc. Dec. 1989 Rev. July 1998

PC-Hydro V7, Pc-Hydro User's Guide, Pima County RFCD, Arroyo Engineering, March 2019.

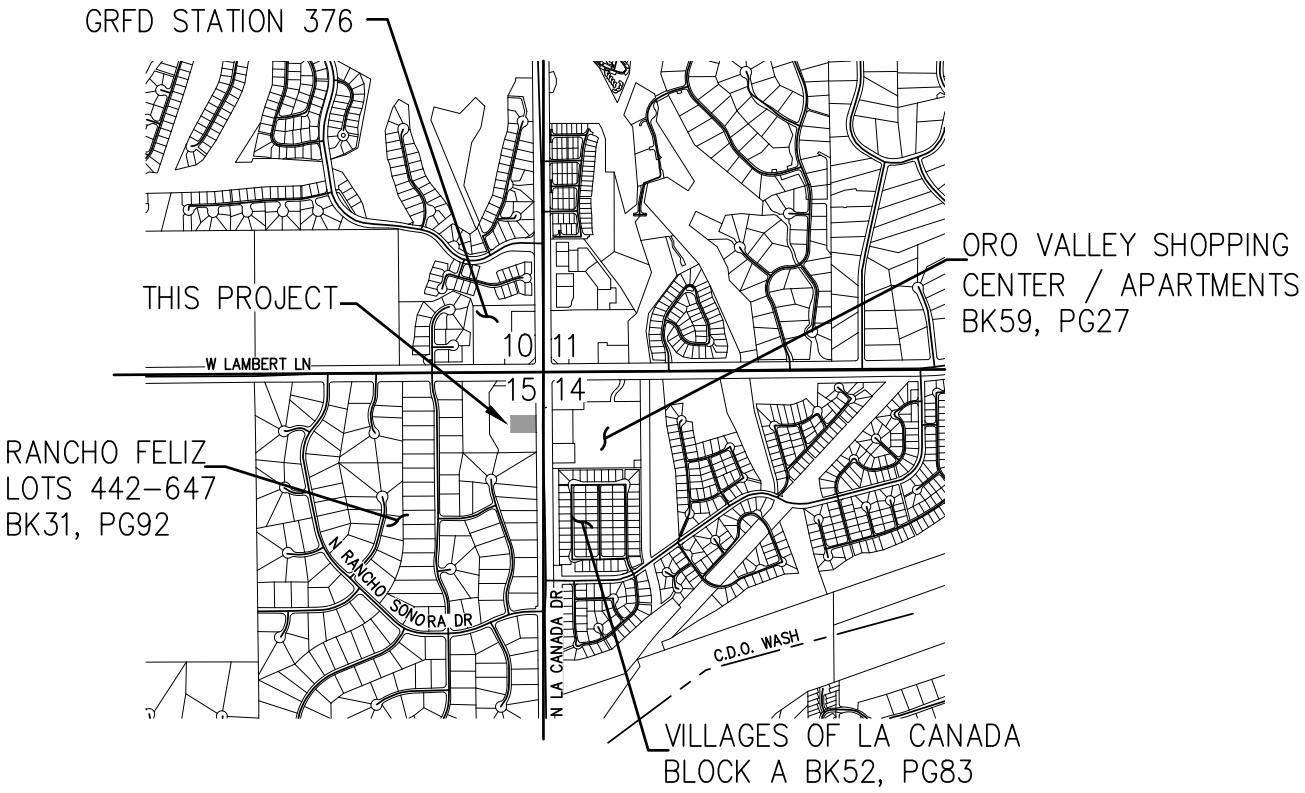
Town of Oro Valley Drainage Criteria Manual, Town of Oro Valley Dept. of Public Works, Draft Release, 2020

APPENDIX A
FIGURES

Dynamic Civil Designs LLC

Dynamic Civil Designs LLC

SCALE: 3"=1 MILE



LOCATED IN THE N.E. 1/4 OF SEC 15, T12S, R13E, G&SRM,
TOWN OF ORO VALLEY, PIMA COUNTY, ARIZONA
APN 224-39-001D

FIGURE 1
PROJECT LOCATION MAP

N

SCALE: 1"=40'

Dynamic Civil Designs LLC

IMAGE: 2020 PC

FIGURE 2
SITE AERIAL PHOTO

150' R/W REC. ROAD NO. 1242, BOOK 8, PG 57 OF ROAD MAPS

LAMBERT LANE (PUBLIC)

WALGREENS DV12-96-7

EXISTING 8" WATER LINE

EXISTING 16" WATER LINE

(B.O.B) N 89°51'50" W (R&M) 2642.40' (M)

SEE GENERAL NOTE #20 REGARDING LAMBERT LANE ACCESS

RIGHT IN ONLY

FOUND 40d NAIL NE CORNER SECTION 15

1/4 CORNER SEC. 10/15 FOUND B.O.S.M.

FOUND 1/2" REBAR 2.5' EAST, NO TAG

FOUND AND ACCEPTED 1/2" REBAR TAGGED L.S. 13019

N 89°51'50" W 665.61'

30' MS&R BUILDING SETBACK

1.1 RIP-RAP

20' LANDSCAPE BUFFER

EL CONQUISTADOR COUNTRY CLUB, BLOCK 3 BK 33 PG 82

NORTH
SCALE: 1" =40'
CONT. INTVL: =1'

564

LOADING

AREA "D"
D.A. = 1.1 AC
Q_{100} = 5.5 CFS

RETAINING WALL

Q_{100} = 5.5 cfs(EXIST)
Q_{100} = 5.5 cfs (DEV)

80' ① FFE=44.0 FG=43.3 4,400 sq.ft.

CO#7

CO#6

FFE=43.9 FG=43.2

DUMPSTER (TYPICAL)

15' PUBLIC WATER EASEMENT

EARTHEN DIVERSION SWALE

AREA "A"
D.A. = 6.3 AC
Q_{100} = 48 CFS
(INCLUDES AREA "A1")

NEW MEDIAN EXTENSION

2800 TO 2600 PRV

SOUTH END OF NEW CURB

LIMITS OF 100 YRS PONDING

AREA "B1"
D.A. = 1.2 AC
Q_{100} = 6.0 CFS

Q_{100} = 6 cfs

Q_{100} = 4 cfs

PHASE I

CO#5

FFE=41.0 FG=41.2 23,200 S.F. ④

80' ② FFE=40.7 FG=40.0 4,400 sq.ft.

LOADING

CO#4

CONCRETE CATCH BASIN GRATE ELEV=382 SUMP INV.=358 100-YR WSEL=382 BASIN "A"

Q_{100}= 42 cfs

2-18" CPPs

30' LANDSCAPE BUFFERYARD (20'ONSITE-10'IN R/W)

EXISTING 15" SEWER LINE G-85-01

EXISTING 8" WATERLINE

EXISTING M.H. #PN G-85-01 RIM = 35.14 INV = 27.33

SCOUR HOLE

Q_{100} = 41 cfs (EXIST)
Q_{100}=11.7 cfs (DEV)
INV.=35

PHASE II (FUTURE OFFICE)

PHASE LINE

AREA "A1"
D.A. = 0.7 AC
Q_{100} = 3.5 CFS

FFE=39.9 FG=39.2

AREA "B"
D.A. = 2.8 AC
Q_{100} = 14 CFS
(INCLUDES AREA B1)

Q_{100}=4cfs

CO#3

CO#2

CO#1

S1

S2

S3

100YRS PONDING LIMITS WSEL = 2548.6

FFE=39.8 FG=39.1 13,200 sq.ft. ③

RETAINING WALL

1-18" CPP

AREA "E2"
D.A. = 0.2 AC

20' PROTECTED NATURAL AREA REC. DKT 7338 PG 1579

BASIN "B"

DETENTION BERM

12" OUTLET CPP

AREA "C"
D.A. = 0.5 AC
Q_{100} = 3.4 CFS

Q_{100} = 3.4 cfs

6' SCREEN WALL

SPILLWAY

SCOUR HOLE

105' BUILDING SETBACK REC. DKT 7397 PG 727

Q_{100} = 0.8 cfs(EXIST)
Q_{100} = 0.8 cfs (DEV)

AREA "E1"
D.A. = 0.1 AC

AREA "F"
D.A. = 0.2 AC
Q_{100} = 0.9 CFS

Q_{100} = 0.5 cfs (EXIST)
Q_{100} = 0.5 cfs (DEV)

Q_{100} = 10 cfs(EXIST)
Q_{100} = 6.8 cfs (DEV)

EXISTING M.H. PN# S-508-6 RIM = 43.0 INV = 34.70

Q_{100}= 0.9 cfs

6' SCREEN WALL TOP OF WALL = 52.0

Q_{100}= 2.0 cfs(EXIST)
Q_{100}= 9.3 cfs(DEV)

FOUND 1/2" REBAR 0.3' EAST TAGGED PE 5955

FOUND AND ACCEPTED 1/2" REBAR, NO TAG

RANCHO FELIZ BK 31 PG 92

15' SEWER & PUBLIC UTILITY ESMT. PER BK 31 M&P PG 92

EXISTING ZONING R1-36

NEW 12' LEFT TURN LANE

1/4 CORNER SEC. 14/15 FOUND 1/2" REBAR L.S. 4989

LA CANADA DRIVE (PUBLIC)

150' R/W REC. ROAD NO. 1213, BOOK 9, PG 64 OF ROAD MAPS

NOTES:

1. EXISTING CONDITIONS SHOWN ON LA CANADA BOULEVARD AND LAMBERT LANE INCLUDE THE PROPOSED ROAD IMPROVEMENTS TO LA CANADA BOULEVARD (PROJECT NO. ORV-0(4)P.
2. ENHANCED PAVING TO BE PROVIDED AT PROJECT ENTRYWAYS AND PEDESTRIAN CROSSINGS AS APPROVED BY TOWN OF ORO VALLEY.

FIGURE 3 - DRAINAGE PLAN
CAÑADA CROSSROADS

ARROYO ENGINEERING, INC
Water Resources & Civil Engineering Consultants
290 North Meyer Avenue
P.O. Box 2668
Tucson Arizona 85702

FIGURE 3
(FROM OV12-98-12
DRAINAGE REPORT)

150' R/W REC. ROAD NO. 1042, BOOK 8, PG 57 OF ROAD MAPS

W. LAMBERT LANE (PUBLIC)

EXISTING 8" WATER LINE

WALGREENS OV12-96-7

EXISTING 16" WATER LINE

FOUND 40d NAIL NE CORNER SECTION 15

10400-N.

1400-W.

(B.O.B) N 89°51'50" W (R&M) 2642.40' (M)

SEE GENERAL NOTE #19 REGARDING LAMBERT LANE ACCESS

RIGHT IN ONLY

1/4 CORNER SEC. 10/15 FOUND B.C.S.M.

REMOVE EXISTING HILL, OVERHEAD ELECTRIC & UNDERGROUND TELEPHONE TO BE LOWERED.

FOUND 1/2" REBAR .25' EAST, NO TAG

FOUND AND ACCEPTED 1/2" REBAR TAGGED L.S. 13019

N 89°51'50" W 665.61'

30' MS&R BUILDING SETBACK

1445 VERIZON WIRELESS POWER POLE

20' 30' LANDSCAPE BUFFER (20' ONSITE-10' IN R/W)

15' PUBLIC WATER ESMT.

GROUTED 1:1 RIPRAP

EL CONQUISTADOR COUNTRY CLUB, BLOCK 3 BK 33 PG 82

NORTH
SCALE: 1" = 40'
CONT. INTVL: = 1'

NEW MEDIAN EXTENSION

2800 TO 2600 PRV

RIGHT IN RIGHT OUT ONLY

SOUTH END OF NEW CURB

564

563

562

561

560

559

554

553

552

RANCHO FELIZ BOOK 31, PAGE 92 EXISTING ZONING R-36

Q_{100}= 5.5 cfs(EXIST)
Q_{100}= 5.5 cfs (DEV)

EARTHEN DIVERSION SWALE

2-10'x10' TRASH BIN LOCATION

WTR.SVC 80' QCO#7 4"HCS

1 10379 5200 SF FG=43.3 FF=44.0

10'X10' TRASH BIN LOCATION

CONCRETE CATCH BASIN
GRATE ELEV.=38.0
SUMP INV.=35.8
100YR WSEL=39.0
Q100 IN=27 CFS
Q100 OUT=4.8 CFS

16" SEWER LINE

20'PUBLIC WATER ESMT.

PHASE 1

12,000 SF FG=41.1 FF=41.8 4 10355

Q_{100} = 6 cfs

UNIT #'S

(197) (193) (189) (181) (173) (165) (157) (149) (141) (133) (125) (117) (109) (101)

PHASE LINE

Q_{100} = 4 cfs

100YR PONDING LIMITS

18" CPP

6,000 SF FG=39.4 FF=40.1

WTR SVC 85' 2 10335 5,950 SF FG=39.3 FF=40.0

4"HCS

10'X10' TRASH BIN LOCATION

CONCRETE CATCH BASIN
GRATE ELEV.=37.0
SUMP INV.=34.8
100YR WSEL=38.0
Q100 IN=12 CFS
Q100 OUT=1.1 CFS

(PRIVATE) CO#2 SEWER LINE

CO#3

CO#1

EXISTING M.H. #PN G-85-01 RIM = 35.14 INV = 27.33

EXISTING 15" SEWER LINE G-85-01

EXISTING 8" WATERLINE

Q_{100}=4cfs

100YR PONDING LIMITS Q_{100}=14 cfs

WTR SVC 150' 3 10325 9,000 SF FG=38.3 FF=39.0 4"HCS

105' BUILDING SETBACK REC. DKT 7397 PG 727

20' PROTECTED NATURAL AREA REC. DKT 7338 PG 1579

DETENTION BERM

12" OUTLET CPP

Q_{100}= 1.3 cfs(EXIST)
Q_{100}= 1.3 cfs (DEV)

8'SCREEN WALL

GROUTED 1:1 RIP-RAP

2-10'X10' TRASH BIN LOCATION

SCOUR HOLE

REMOVE EXISTING HILL OVERHEAD ELECTRIC TO BE LOWERED.

CONCRETE CATCH BASIN
GRATE ELEV.=36.7
SUMP INV.=34.5
100YR WSEL=37.7
Q100 IN=7.2 CFS
Q100 OUT=0.8 CFS

10300-N

FOUND AND ACCEPTED 1/2" REBAR, NO TAG

RANCHO FELIZ BOOK 31, PAGE 92 EXISTING ZONING R-36

Q_{100}= 10 cfs(EXIST)
Q_{100}= 6.8 cfs (DEV)

EXISTING M.H. PN# S-508-6 RIM = 43.0 INV = 34.70

Q_{100}= 0.9 cfs

15' SEWER & PUBLIC UTILITY ESMT. PER BK. 31 M&P PG 92

6' SCREEN WALL TOP OF WALL = 52.0

Q_{100}= 2.0 cfs(EXIST)
Q_{100}= 6.7 cfs(DEV)

FOUND 1/2" REBAR 0.3' EAST TAGGED PE 5955

1/4 CORNER SEC. 14/15 FOUND 1/2" REBAR L.S. 4599

664.73'

664.16'

N 00°08'45" W

N 00°00'00" E

N 36°58'04" E

N 28°51'11" W

N 00°01'28" W 2640.09'(M)

LA CANADA DRIVE (PUBLIC)

150' R/W REC. ROAD NO. 1213, BOOK 9, PG 64 OF ROAD MAPS

NOTES:

1. EXISTING CONDITIONS SHOWN ON LA CANADA BOULEVARD AND LAMBERT LANE INCLUDE THE RECENTLY COMPLETED ROAD IMPROVEMENTS TO LA CANADA BOULEVARD. PROJECT NO. ORV-0(4)P.
2. ENHANCED PAVING TO BE PROVIDED AT PROJECT ENTRYWAYS AND PEDESTRIAN CROSSINGS AS APPROVED BY TOWN OF ORO VALLEY.

SEWER TABLE

CLEANOUT #	RIM	INV	SEWER LINES #	LENGTH	SLOPE
1	38.5	30.0	S1	100'	2.7%
2	38.5	31.0	S2	100'	1.0%
3	38.5	32.0	S3	90'	1.1%
4	38.5	33.0	S4	95'	1.1%
5	40.0	34.0	S5	100'	1.0%
6	41.5	35.5	S6	100'	1.5%
7	43.0	37.0	S7	55'	2.7%

Elevation datum difference from NAVD 88 is approximately 1.5'

OWNER/DEVELOPER

PEREGRINE INVESTMENTS, L.L.C.
2344 E. SPEEDWAY BOULEVARD
TUCSON, ARIZONA 85718
(520) 327-6625

CASE# OV12-98-12
OV9-96-7

DEVELOPMENT PLAN
FOR
CAÑADA CROSSROADS
A PORTION OF THE SECTION 15, T12S, R13E, G&SRBM, TOWN OF ORO VALLEY, PIMA COUNTY, ARIZONA

Design by	WHE
Checked by	TJW
Drawn by	WVR
Scale Vert. CONT.	1" = 40' 1'
Date	FEBRUARY 1999
Sheet	2 of 3
Job Number	93072-104-01

REGISTERED LAND SURVEYOR TIMOTHY J. WALSH 13457 ARIZONA, U.S.A.

Ref. F.B. PG.

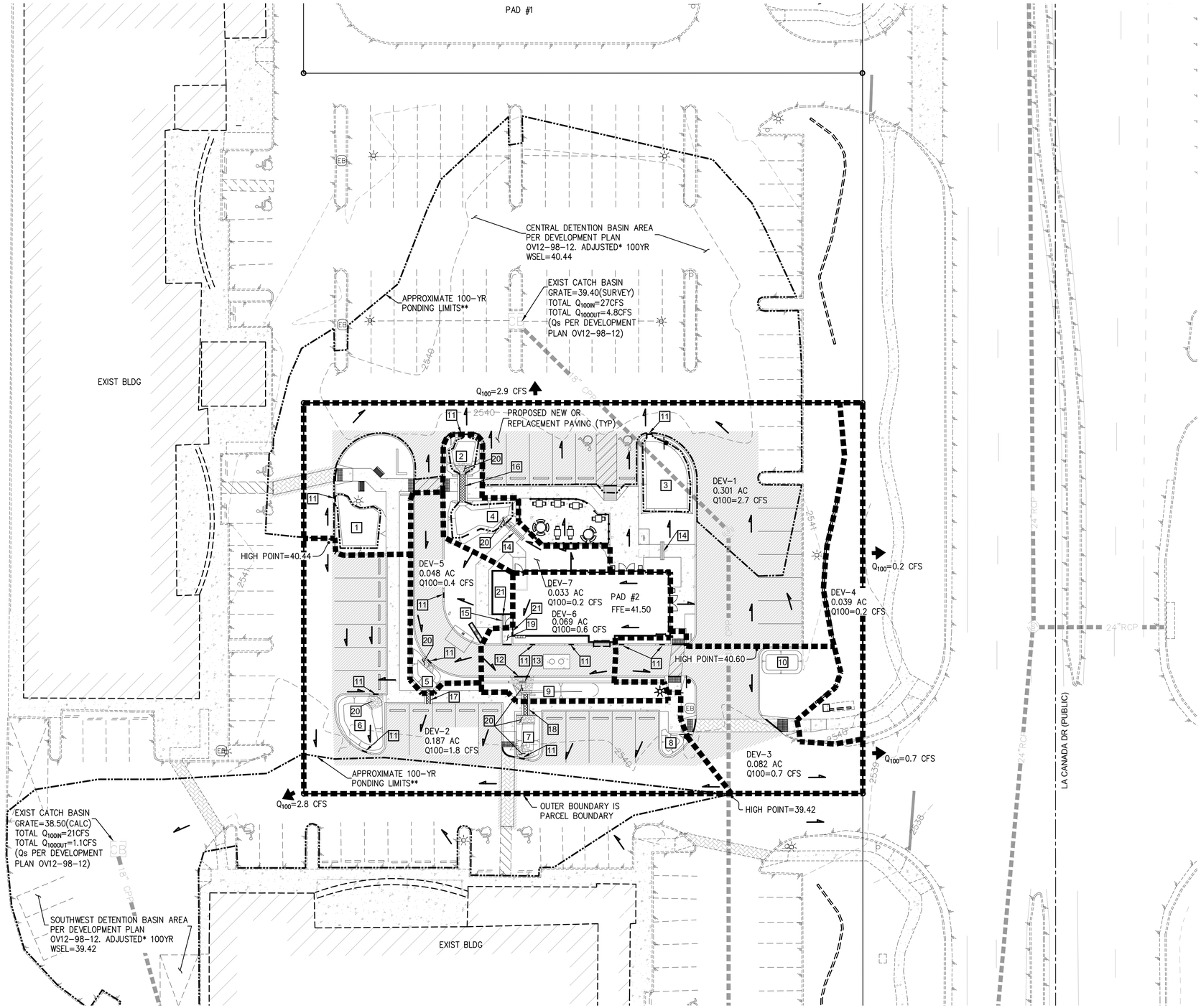
OPW & ASSOCIATES, INC.

6383 East Grant Road
Tucson, Arizona 85715
Phone (520) 296-8644

D:\93\93072\DEVPLN2A 03/25/99 14:36

DP BK.19 PG.30 SHT. 2 of 3

FIGURE 4



LEGEND

- SUBJECT PARCEL BOUNDARY
- ADJACENT PROPERTY/ROW LINE
- CENTERLINE
- EXISTING CURB AND EDGE OF ASPHALT PAVEMENT
- 2540 EXISTING 5' CONTOUR LINE
- EXISTING 1' CONTOUR LINE
- PROPOSED DRAINAGE AREA BOUNDARY
- APPROX 100-YR DETENTION BASIN PONDING LIMIT
- FLOW DIRECTION ARROW
- Q_{100}=___ 100-YR ONSITE RUNOFF RATE

KEYNOTES □

1. HARVESTING DEPRESSION. 4"DEPTH, VOL=96CF
2. HARVESTING DEPRESSION. 4"DEPTH, VOL=35CF
3. HARVESTING DEPRESSION. 4"DEPTH, VOL=138CF
4. HARVESTING DEPRESSION. 4"DEPTH, VOL=60CF
5. HARVESTING DEPRESSION. 4"DEPTH, VOL=15CF
6. HARVESTING DEPRESSION. 4"DEPTH, VOL=52CF
7. HARVESTING DEPRESSION. 4"DEPTH, VOL=24CF
8. HARVESTING DEPRESSION. 4"DEPTH, VOL=12CF
9. HARVESTING DEPRESSION. 4"DEPTH, VOL=40CF
10. HARVESTING DEPRESSION. 4"DEPTH, VOL=30CF
11. 2' CURB OPENING
12. 6' CURB OPENING
13. OMIT 2 CMUs (8"H x 2.67'W) FOR DRAINAGE OPENING AT BOTTOM OF WALL
14. TYPE 1 SDWK SCUPPER PER PAG SD 204. EXTEND 1' BEYOND EDGE OF SIDEWALK.
15. TYPE 1 SDWK SCUPPER PER PAG SD 204. CONNECT DIRECTLY TO ROOF DRAIN DOWNSPOUT
16. TYPE 2 SDWK SCUPPER PER PAG SD 205. 10.70LF, OPEN WIDTH 'A'=2'. OPEN HEIGHT 'H'=0.5'.
17. TYPE 2 SDWK SCUPPER PER PAG SD 205. 5.20LF, OPEN WIDTH 'A'=1.33'. OPEN HEIGHT 'H'=0.5'. OMIT ONE-HALF OF 1 CMU HEIGHT AT BOTTOM OF WALL AT SCUPPER LOCATION
18. TYPE 2 SDWK SCUPPER PER PAG SD 205. 8.20LF, OPEN WIDTH 'A'=1.33'. OPEN HEIGHT 'H'=0.5'.
19. 4"T CLASS 'B' CONC. @ 2% SLOPE FROM ROOF DRAIN TO CURB OPENING. INSTALL VERT CURB AROUND PERIMETER
20. HAND-PLACED RIP-RAP ON FILTER FABRIC, PER DETAIL. D_{50}=4"
21. ROOF DRAIN LOCATION.

* WSELs BASED ON CANADA CROSSROADS DEVELOPMENT PLAN OV12-98-12 & ASSOCIATED DRAINAGE REPORT, WHICH BOTH UTILIZED AN ELEVATION DATUM WITH ELEVATIONS ±1.5' LOWER THAN NAVD 88. WSEL IN PONDING AREAS ALSO ADJUSTED TO REFLECT EXISTING HIGH POINTS ELEVATIONS IN THE PARKING LOT.

** THE PONDING LIMITS SHOWN ARE APPROXIMATE ONLY AND BASED ON COMPARISON OF THE ADJUSTED OV12-98-12 WSELs TO EXISTING SURVEY AND PAG 2015 ELEVATIONS & PROPOSED GRADES. NO RE-EVALUATION OF THE OVERALL CANADA CROSSROADS DRAINAGE FLOW RATES OR FLOOD-ROUTING OF THE BASINS HAVE BEEN PERFORMED.

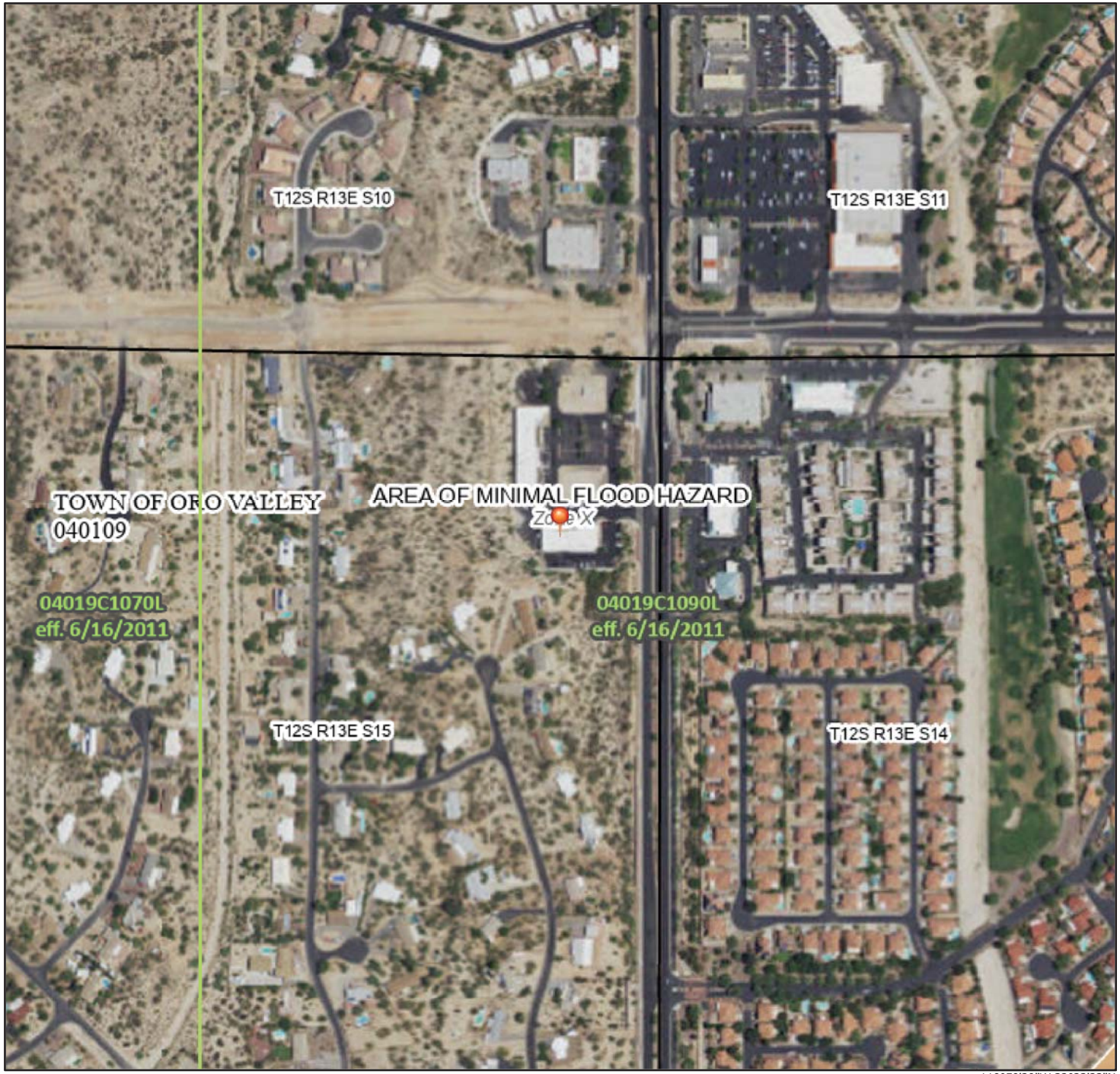
Dynamic Civil Designs LLC

FIGURE 5
PROPOSED CONDITIONS MAP

National Flood Hazard Layer FIRMette

FEMA

111°0'7"W 32°23'52"N



110°59'29"W 32°23'22"N

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

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

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
- 17.5 Water Surface Elevation
- 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

N

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 7/21/2022 at 5:26 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.

FIGURE 6

APPENDIX B
HYDROLOGIC DATA/WORKSHEETS

Dynamic Civil Designs LLC

Map Scale: 1:2,080 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 30 60 120 180

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 12N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Pima County, Arizona, Eastern Part
Survey Area Data: Version 20, Sep 16, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Feb 15, 2020—Feb 18, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
5	Arizo-Riverwash complex, 0 to 3 percent slopes	A	7.7	34.3%
61	Pinaleno-Stagecoach-Palos Verdes complex, 10 to 35 percent slopes	C	14.8	65.7%
Totals for Area of Interest			**22.5**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

PIMA COUNTY
FLOOD CONTROL

HYDROLOGIC DATA SHEET FOR PIMA COUNTY FLOOD PEAK PROCEDURE

Generated using methonds provided by Pima County Regional Flood Control District

Client:	OneTen	Prepared by:	JRM
Project Name:	TSC La Canada	Date:	07/20/2022
Concentration Point:	DEV-1	Job #	
Watershed Area:	0.3 Acres	Watershed Type	High Density Urbanized

Watercourse Data By Reach

Reach No.	Height (Hi)	Length (Li)	Slope (Si)	Basin Factor (Nb)
1	0.6	102	0.0059	0.02

Length of Watercourse (Lc):	102	feet	Mean Slope:	0.0059	
Length to Cen. of Gravity (Lca):	35	feet	Weighted Basin Fac:	0.02	
Veg. Cover Type(s):	Desert Brush		Veg. Cover Density:	20	

RETURN PERIOD: 2-years NOAA Data Obtained: 2022-07-20 03:53:10 PM

Rainfall Depths: NOAA Atlas 14 (90% UCL) @ Latitude: 32.3938 Longitude: -110.9964

Duration:	5-min	10-min	15-min	30-min	1-hr	2-hr	3-hr	6-hr	12-hr	24-hr
Point Values (in):	0.36	0.55	0.68	0.91	1.13	1.28	1.34	1.52	1.71	2.02

Soil Type	Percent	Curve # (CN)	Runoff Coef. (C)
B	-	-	-
C	100	88	0.293
D	-	-	-
Imp.	75	99	0.9

Weighted Runoff Coef. (Cw):	0.75	
Time of Concentration:	5	min
Rainfall Intensity (i) @ Tc:	4.32	in/hr
Runoff Supply Rate (q) @ Tc:	3.23	in/hr
PEAK DISCHARGE:	1	cfs

PIMA COUNTY
FLOOD CONTROL

HYDROLOGIC DATA SHEET FOR PIMA COUNTY FLOOD PEAK PROCEDURE

Generated using methonds provided by Pima County Regional Flood Control District

Client:	OneTen	Prepared by:	JRM
Project Name:	TSC La Canada	Date:	07/20/2022
Concentration Point:	DEV-1	Job #	
Watershed Area:	0.3 Acres	Watershed Type	High Density Urbanized

Watercourse Data By Reach

Reach No.	Height (Hi)	Length (Li)	Slope (Si)	Basin Factor (Nb)
1	0.6	102	0.0059	0.02

Length of Watercourse (Lc):	102	feet	Mean Slope:	0.0059	
Length to Cen. of Gravity (Lca):	35	feet	Weighted Basin Fac:	0.02	
Veg. Cover Type(s):	Desert Brush		Veg. Cover Density:	20	

RETURN PERIOD: 10-years NOAA Data Obtained: 2022-07-20 03:53:10 PM

Rainfall Depths: NOAA Atlas 14 (90% UCL) @ Latitude: 32.3938 Longitude: -110.9964

Duration:	5-min	10-min	15-min	30-min	1-hr	2-hr	3-hr	6-hr	12-hr	24-hr
Point Values (in):	0.56	0.85	1.06	1.42	1.76	1.96	2.04	2.25	2.47	2.95

Soil Type	Percent	Curve # (CN)	Runoff Coef. (C)
B	-	-	-
C	100	88	0.441
D	-	-	-
Imp.	75	99	0.934

Weighted Runoff Coef. (Cw):	0.81	
Time of Concentration:	5	min
Rainfall Intensity (i) @ Tc:	6.72	in/hr
Runoff Supply Rate (q) @ Tc:	5.45	in/hr
PEAK DISCHARGE:	1.6	cfs

PIMA COUNTY
FLOOD CONTROL

HYDROLOGIC DATA SHEET FOR PIMA COUNTY FLOOD PEAK PROCEDURE

Generated using methonds provided by Pima County Regional Flood Control District

Client:	OneTen	Prepared by:	JRM
Project Name:	TSC La Canada	Date:	07/20/2022
Concentration Point:	DEV-1	Job #	
Watershed Area:	0.3 Acres	Watershed Type	High Density Urbanized

Watercourse Data By Reach

Reach No.	Height (Hi)	Length (Li)	Slope (Si)	Basin Factor (Nb)
1	0.6	102	0.0059	0.02

Length of Watercourse (Lc):	102	feet	Mean Slope:	0.0059	
Length to Cen. of Gravity (Lca):	35	feet	Weighted Basin Fac:	0.02	
Veg. Cover Type(s):	Desert Brush		Veg. Cover Density:	20	

RETURN PERIOD: 100-years NOAA Data Obtained: 2022-07-20 03:53:10 PM

Rainfall Depths: NOAA Atlas 14 (90% UCL) @ Latitude: 32.3938 Longitude: -110.9964

Duration:	5-min	10-min	15-min	30-min	1-hr	2-hr	3-hr	6-hr	12-hr	24-hr
Point Values (in):	0.86	1.32	1.63	2.2	2.72	3.03	3.17	3.46	3.73	4.52

Soil Type	Percent	Curve # (CN)	Runoff Coef. (C)
B	-	-	-
C	100	88	0.578
D	-	-	-
Imp.	75	99	0.957

Weighted Runoff Coef. (Cw):	0.86	
Time of Concentration:	5	min
Rainfall Intensity (i) @ Tc:	10.32	in/hr
Runoff Supply Rate (q) @ Tc:	8.89	in/hr
PEAK DISCHARGE:	2.7	cfs

PIMA COUNTY
FLOOD CONTROL

HYDROLOGIC DATA SHEET FOR PIMA COUNTY FLOOD PEAK PROCEDURE

Generated using methonds provided by Pima County Regional Flood Control District

Client:	OneTen	Prepared by:	JRM
Project Name:	TSC La Canada	Date:	07/20/2022
Concentration Point:	DEV-2	Job #	
Watershed Area:	0.187 Acres	Watershed Type	High Density Urbanized

Watercourse Data By Reach

Reach No.	Height (Hi)	Length (Li)	Slope (Si)	Basin Factor (Nb)
1	0.4	163	0.0021	0.02

Length of Watercourse (Lc):	163	feet	Mean Slope:	0.0021	
Length to Cen. of Gravity (Lca):	52	feet	Weighted Basin Fac:	0.02	
Veg. Cover Type(s):	Desert Brush		Veg. Cover Density:	20	

RETURN PERIOD: 2-years NOAA Data Obtained: 2022-07-20 03:53:10 PM

Rainfall Depths: NOAA Atlas 14 (90% UCL) @ Latitude: 32.3938 Longitude: -110.9964

Duration:	5-min	10-min	15-min	30-min	1-hr	2-hr	3-hr	6-hr	12-hr	24-hr
Point Values (in):	0.36	0.55	0.68	0.91	1.13	1.28	1.34	1.52	1.71	2.02

Soil Type	Percent	Curve # (CN)	Runoff Coef. (C)
B	-	-	-
C	100	88	0.293
D	-	-	-
Imp.	88	99	0.9

Weighted Runoff Coef. (Cw):	0.83	
Time of Concentration:	5	min
Rainfall Intensity (i) @ Tc:	4.32	in/hr
Runoff Supply Rate (q) @ Tc:	3.57	in/hr
PEAK DISCHARGE:	0.7	cfs

PIMA COUNTY
FLOOD CONTROL

HYDROLOGIC DATA SHEET FOR PIMA COUNTY FLOOD PEAK PROCEDURE

Generated using methonds provided by Pima County Regional Flood Control District

Client:	OneTen	Prepared by:	JRM
Project Name:	TSC La Canada	Date:	07/20/2022
Concentration Point:	DEV-2	Job #	
Watershed Area:	0.187 Acres	Watershed Type	High Density Urbanized

Watercourse Data By Reach

Reach No.	Height (Hi)	Length (Li)	Slope (Si)	Basin Factor (Nb)
1	0.4	163	0.0021	0.02

Length of Watercourse (Lc):	163	feet	Mean Slope:	0.0021	
Length to Cen. of Gravity (Lca):	52	feet	Weighted Basin Fac:	0.02	
Veg. Cover Type(s):	Desert Brush		Veg. Cover Density:	20	

RETURN PERIOD: 10-years NOAA Data Obtained: 2022-07-20 03:53:10 PM

Rainfall Depths: NOAA Atlas 14 (90% UCL) @ Latitude: 32.3938 Longitude: -110.9964

Duration:	5-min	10-min	15-min	30-min	1-hr	2-hr	3-hr	6-hr	12-hr	24-hr
Point Values (in):	0.56	0.85	1.06	1.42	1.76	1.96	2.04	2.25	2.47	2.95

Soil Type	Percent	Curve # (CN)	Runoff Coef. (C)
B	-	-	-
C	100	88	0.441
D	-	-	-
Imp.	88	99	0.934

Weighted Runoff Coef. (Cw):	0.88	
Time of Concentration:	5	min
Rainfall Intensity (i) @ Tc:	6.72	in/hr
Runoff Supply Rate (q) @ Tc:	5.88	in/hr
PEAK DISCHARGE:	1.1	cfs

PIMA COUNTY
FLOOD CONTROL

HYDROLOGIC DATA SHEET FOR PIMA COUNTY FLOOD PEAK PROCEDURE

Generated using methonds provided by Pima County Regional Flood Control District

Client:	OneTen	Prepared by:	JRM
Project Name:	TSC La Canada	Date:	07/20/2022
Concentration Point:	DEV-2	Job #	
Watershed Area:	0.187 Acres	Watershed Type	High Density Urbanized

Watercourse Data By Reach

Reach No.	Height (Hi)	Length (Li)	Slope (Si)	Basin Factor (Nb)
1	0.4	163	0.0021	0.02

Length of Watercourse (Lc):	163	feet	Mean Slope:	0.0021	
Length to Cen. of Gravity (Lca):	52	feet	Weighted Basin Fac:	0.02	
Veg. Cover Type(s):	Desert Brush		Veg. Cover Density:	20	

RETURN PERIOD: 100-years NOAA Data Obtained: 2022-07-20 03:53:10 PM

Rainfall Depths: NOAA Atlas 14 (90% UCL) @ Latitude: 32.3938 Longitude: -110.9964

Duration:	5-min	10-min	15-min	30-min	1-hr	2-hr	3-hr	6-hr	12-hr	24-hr
Point Values (in):	0.86	1.32	1.63	2.2	2.72	3.03	3.17	3.46	3.73	4.52

Soil Type	Percent	Curve # (CN)	Runoff Coef. (C)
B	-	-	-
C	100	88	0.578
D	-	-	-
Imp.	88	99	0.957

Weighted Runoff Coef. (Cw):	0.91	
Time of Concentration:	5	min
Rainfall Intensity (i) @ Tc:	10.32	in/hr
Runoff Supply Rate (q) @ Tc:	9.4	in/hr
PEAK DISCHARGE:	1.8	cfs

PIMA COUNTY
FLOOD CONTROL

HYDROLOGIC DATA SHEET FOR PIMA COUNTY FLOOD PEAK PROCEDURE

Generated using methonds provided by Pima County Regional Flood Control District

Client:	OneTen	Prepared by:	JRM
Project Name:	TSC La Canada	Date:	07/20/2022
Concentration Point:	DEV-3	Job #	
Watershed Area:	0.082 Acres	Watershed Type	High Density Urbanized

Watercourse Data By Reach

Reach No.	Height (Hi)	Length (Li)	Slope (Si)	Basin Factor (Nb)
1	1.6	122	0.0131	0.02

Length of Watercourse (Lc):	122	feet	Mean Slope:	0.0131	
Length to Cen. of Gravity (Lca):	60	feet	Weighted Basin Fac:	0.02	
Veg. Cover Type(s):	Desert Brush		Veg. Cover Density:	20	

RETURN PERIOD: 2-years NOAA Data Obtained: 2022-07-20 03:53:10 PM

Rainfall Depths: NOAA Atlas 14 (90% UCL) @ Latitude: 32.3938 Longitude: -110.9964

Duration:	5-min	10-min	15-min	30-min	1-hr	2-hr	3-hr	6-hr	12-hr	24-hr
Point Values (in):	0.36	0.55	0.68	0.91	1.13	1.28	1.34	1.52	1.71	2.02

Soil Type	Percent	Curve # (CN)	Runoff Coef. (C)
B	-	-	-
C	100	88	0.293
D	-	-	-
Imp.	76	99	0.9

Weighted Runoff Coef. (Cw):	0.75	
Time of Concentration:	5	min
Rainfall Intensity (i) @ Tc:	4.32	in/hr
Runoff Supply Rate (q) @ Tc:	3.26	in/hr
PEAK DISCHARGE:	0.3	cfs

PIMA COUNTY
FLOOD CONTROL

HYDROLOGIC DATA SHEET FOR PIMA COUNTY FLOOD PEAK PROCEDURE

Generated using methonds provided by Pima County Regional Flood Control District

Client:	OneTen	Prepared by:	JRM
Project Name:	TSC La Canada	Date:	07/20/2022
Concentration Point:	DEV-3	Job #	
Watershed Area:	0.082 Acres	Watershed Type	High Density Urbanized

Watercourse Data By Reach

Reach No.	Height (Hi)	Length (Li)	Slope (Si)	Basin Factor (Nb)
1	1.6	122	0.0131	0.02

Length of Watercourse (Lc):	122	feet	Mean Slope:	0.0131	
Length to Cen. of Gravity (Lca):	60	feet	Weighted Basin Fac:	0.02	
Veg. Cover Type(s):	Desert Brush		Veg. Cover Density:	20	

RETURN PERIOD: 10-years NOAA Data Obtained: 2022-07-20 03:53:10 PM

Rainfall Depths: NOAA Atlas 14 (90% UCL) @ Latitude: 32.3938 Longitude: -110.9964

Duration:	5-min	10-min	15-min	30-min	1-hr	2-hr	3-hr	6-hr	12-hr	24-hr
Point Values (in):	0.56	0.85	1.06	1.42	1.76	1.96	2.04	2.25	2.47	2.95

Soil Type	Percent	Curve # (CN)	Runoff Coef. (C)
B	-	-	-
C	100	88	0.441
D	-	-	-
Imp.	76	99	0.934

Weighted Runoff Coef. (Cw):	0.82	
Time of Concentration:	5	min
Rainfall Intensity (i) @ Tc:	6.72	in/hr
Runoff Supply Rate (q) @ Tc:	5.48	in/hr
PEAK DISCHARGE:	0.5	cfs

PIMA COUNTY
FLOOD CONTROL

HYDROLOGIC DATA SHEET FOR PIMA COUNTY FLOOD PEAK PROCEDURE

Generated using methonds provided by Pima County Regional Flood Control District

Client:	OneTen	Prepared by:	JRM
Project Name:	TSC La Canada	Date:	07/20/2022
Concentration Point:	DEV-3	Job #	
Watershed Area:	0.082 Acres	Watershed Type	High Density Urbanized

Watercourse Data By Reach

Reach No.	Height (Hi)	Length (Li)	Slope (Si)	Basin Factor (Nb)
1	1.6	122	0.0131	0.02

Length of Watercourse (Lc):	122	feet	Mean Slope:	0.0131	
Length to Cen. of Gravity (Lca):	60	feet	Weighted Basin Fac:	0.02	
Veg. Cover Type(s):	Desert Brush		Veg. Cover Density:	20	

RETURN PERIOD: 100-years NOAA Data Obtained: 2022-07-20 03:53:10 PM

Rainfall Depths: NOAA Atlas 14 (90% UCL) @ Latitude: 32.3938 Longitude: -110.9964

Duration:	5-min	10-min	15-min	30-min	1-hr	2-hr	3-hr	6-hr	12-hr	24-hr
Point Values (in):	0.86	1.32	1.63	2.2	2.72	3.03	3.17	3.46	3.73	4.52

Soil Type	Percent	Curve # (CN)	Runoff Coef. (C)
B	-	-	-
C	100	88	0.578
D	-	-	-
Imp.	76	99	0.957

Weighted Runoff Coef. (Cw):	0.87	
Time of Concentration:	5	min
Rainfall Intensity (i) @ Tc:	10.32	in/hr
Runoff Supply Rate (q) @ Tc:	8.93	in/hr
PEAK DISCHARGE:	0.7	cfs

PIMA COUNTY
FLOOD CONTROL

HYDROLOGIC DATA SHEET FOR PIMA COUNTY FLOOD PEAK PROCEDURE

Generated using methonds provided by Pima County Regional Flood Control District

Client:	OneTen	Prepared by:	JRM
Project Name:	TSC La Canada	Date:	07/20/2022
Concentration Point:	DEV-4	Job #	
Watershed Area:	0.039 Acres	Watershed Type	High Density Urbanized

Watercourse Data By Reach

Reach No.	Height (Hi)	Length (Li)	Slope (Si)	Basin Factor (Nb)
1	1	14	0.0714	0.035

Length of Watercourse (Lc):	14	feet	Mean Slope:	0.0714	
Length to Cen. of Gravity (Lca):	7	feet	Weighted Basin Fac:	0.035	
Veg. Cover Type(s):	Desert Brush		Veg. Cover Density:	20	

RETURN PERIOD: 2-years NOAA Data Obtained: 2022-07-20 03:53:10 PM

Rainfall Depths: NOAA Atlas 14 (90% UCL) @ Latitude: 32.3938 Longitude: -110.9964

Duration:	5-min	10-min	15-min	30-min	1-hr	2-hr	3-hr	6-hr	12-hr	24-hr
Point Values (in):	0.36	0.55	0.68	0.91	1.13	1.28	1.34	1.52	1.71	2.02

Soil Type	Percent	Curve # (CN)	Runoff Coef. (C)
B	-	-	-
C	100	88	0.293
D	-	-	-
Imp.	5	99	0.9

Weighted Runoff Coef. (Cw):	0.32	
Time of Concentration:	5	min
Rainfall Intensity (i) @ Tc:	4.32	in/hr
Runoff Supply Rate (q) @ Tc:	1.4	in/hr
PEAK DISCHARGE:	0.1	cfs

PIMA COUNTY
FLOOD CONTROL

HYDROLOGIC DATA SHEET FOR PIMA COUNTY FLOOD PEAK PROCEDURE

Generated using methonds provided by Pima County Regional Flood Control District

Client:	OneTen	Prepared by:	JRM
Project Name:	TSC La Canada	Date:	07/20/2022
Concentration Point:	DEV-4	Job #	
Watershed Area:	0.039 Acres	Watershed Type	High Density Urbanized

Watercourse Data By Reach

Reach No.	Height (Hi)	Length (Li)	Slope (Si)	Basin Factor (Nb)
1	1	14	0.0714	0.035

Length of Watercourse (Lc):	14	feet	Mean Slope:	0.0714	
Length to Cen. of Gravity (Lca):	7	feet	Weighted Basin Fac:	0.035	
Veg. Cover Type(s):	Desert Brush		Veg. Cover Density:	20	

RETURN PERIOD: 10-years NOAA Data Obtained: 2022-07-20 03:53:10 PM

Rainfall Depths: NOAA Atlas 14 (90% UCL) @ Latitude: 32.3938 Longitude: -110.9964

Duration:	5-min	10-min	15-min	30-min	1-hr	2-hr	3-hr	6-hr	12-hr	24-hr
Point Values (in):	0.56	0.85	1.06	1.42	1.76	1.96	2.04	2.25	2.47	2.95

Soil Type	Percent	Curve # (CN)	Runoff Coef. (C)
B	-	-	-
C	100	88	0.441
D	-	-	-
Imp.	5	99	0.934

Weighted Runoff Coef. (Cw):	0.47	
Time of Concentration:	5	min
Rainfall Intensity (i) @ Tc:	6.72	in/hr
Runoff Supply Rate (q) @ Tc:	3.13	in/hr
PEAK DISCHARGE:	0.1	cfs

PIMA COUNTY
FLOOD CONTROL

HYDROLOGIC DATA SHEET FOR PIMA COUNTY FLOOD PEAK PROCEDURE

Generated using methonds provided by Pima County Regional Flood Control District

Client:	OneTen	Prepared by:	JRM
Project Name:	TSC La Canada	Date:	07/20/2022
Concentration Point:	DEV-4	Job #	
Watershed Area:	0.039 Acres	Watershed Type	High Density Urbanized

Watercourse Data By Reach

Reach No.	Height (Hi)	Length (Li)	Slope (Si)	Basin Factor (Nb)
1	1	14	0.0714	0.035

Length of Watercourse (Lc):	14	feet	Mean Slope:	0.0714	
Length to Cen. of Gravity (Lca):	7	feet	Weighted Basin Fac:	0.035	
Veg. Cover Type(s):	Desert Brush		Veg. Cover Density:	20	

RETURN PERIOD: 100-years NOAA Data Obtained: 2022-07-20 03:53:10 PM

Rainfall Depths: NOAA Atlas 14 (90% UCL) @ Latitude: 32.3938 Longitude: -110.9964

Duration:	5-min	10-min	15-min	30-min	1-hr	2-hr	3-hr	6-hr	12-hr	24-hr
Point Values (in):	0.86	1.32	1.63	2.2	2.72	3.03	3.17	3.46	3.73	4.52

Soil Type	Percent	Curve # (CN)	Runoff Coef. (C)
B	-	-	-
C	100	88	0.578
D	-	-	-
Imp.	5	99	0.957

Weighted Runoff Coef. (Cw):	0.6	
Time of Concentration:	5	min
Rainfall Intensity (i) @ Tc:	10.32	in/hr
Runoff Supply Rate (q) @ Tc:	6.16	in/hr
PEAK DISCHARGE:	0.2	cfs

PIMA COUNTY
FLOOD CONTROL

HYDROLOGIC DATA SHEET FOR PIMA COUNTY FLOOD PEAK PROCEDURE

Generated using methonds provided by Pima County Regional Flood Control District

Client:	OneTen	Prepared by:	JRM
Project Name:	TSC La Canada	Date:	07/20/2022
Concentration Point:	DEV-5	Job #	
Watershed Area:	0.048 Acres	Watershed Type	High Density Urbanized

Watercourse Data By Reach

Reach No.	Height (Hi)	Length (Li)	Slope (Si)	Basin Factor (Nb)
1	0.8	78	0.0106	0.02

Length of Watercourse (Lc):	78 feet	Mean Slope:	0.0106
Length to Cen. of Gravity (Lca):	35 feet	Weighted Basin Fac:	0.02
Veg. Cover Type(s):	Desert Brush	Veg. Cover Density:	20

RETURN PERIOD: 2-years NOAA Data Obtained: 2022-07-20 03:53:10 PM

Rainfall Depths: NOAA Atlas 14 (90% UCL) @ Latitude: 32.3938 Longitude: -110.9964

Duration:	5-min	10-min	15-min	30-min	1-hr	2-hr	3-hr	6-hr	12-hr	24-hr
Point Values (in):	0.36	0.55	0.68	0.91	1.13	1.28	1.34	1.52	1.71	2.02

Soil Type	Percent	Curve # (CN)	Runoff Coef. (C)
B	-	-	-
C	100	88	0.293
D	-	-	-
Imp.	65	99	0.9

Weighted Runoff Coef. (Cw):	0.69	
Time of Concentration:	5	min
Rainfall Intensity (i) @ Tc:	4.32	in/hr
Runoff Supply Rate (q) @ Tc:	2.97	in/hr
PEAK DISCHARGE:	0.1	cfs

PIMA COUNTY
FLOOD CONTROL

HYDROLOGIC DATA SHEET FOR PIMA COUNTY FLOOD PEAK PROCEDURE

Generated using methonds provided by Pima County Regional Flood Control District

Client:	OneTen	Prepared by:	JRM
Project Name:	TSC La Canada	Date:	07/20/2022
Concentration Point:	DEV-5	Job #	
Watershed Area:	0.048 Acres	Watershed Type	High Density Urbanized

Watercourse Data By Reach

Reach No.	Height (Hi)	Length (Li)	Slope (Si)	Basin Factor (Nb)
1	0.8	78	0.0106	0.02

Length of Watercourse (Lc):	78 feet	Mean Slope:	0.0106
Length to Cen. of Gravity (Lca):	35 feet	Weighted Basin Fac:	0.02
Veg. Cover Type(s):	Desert Brush	Veg. Cover Density:	20

RETURN PERIOD: 10-years NOAA Data Obtained: 2022-07-20 03:53:10 PM

Rainfall Depths: NOAA Atlas 14 (90% UCL) @ Latitude: 32.3938 Longitude: -110.9964

Duration:	5-min	10-min	15-min	30-min	1-hr	2-hr	3-hr	6-hr	12-hr	24-hr
Point Values (in):	0.56	0.85	1.06	1.42	1.76	1.96	2.04	2.25	2.47	2.95

Soil Type	Percent	Curve # (CN)	Runoff Coef. (C)
B	-	-	-
C	100	88	0.441
D	-	-	-
Imp.	65	99	0.934

Weighted Runoff Coef. (Cw):	0.76	
Time of Concentration:	5	min
Rainfall Intensity (i) @ Tc:	6.72	in/hr
Runoff Supply Rate (q) @ Tc:	5.12	in/hr
PEAK DISCHARGE:	0.2	cfs

PIMA COUNTY
FLOOD CONTROL

HYDROLOGIC DATA SHEET FOR PIMA COUNTY FLOOD PEAK PROCEDURE

Generated using methonds provided by Pima County Regional Flood Control District

Client:	OneTen	Prepared by:	JRM
Project Name:	TSC La Canada	Date:	07/20/2022
Concentration Point:	DEV-5	Job #	
Watershed Area:	0.048 Acres	Watershed Type	High Density Urbanized

Watercourse Data By Reach

Reach No.	Height (Hi)	Length (Li)	Slope (Si)	Basin Factor (Nb)
1	0.8	78	0.0106	0.02

Length of Watercourse (Lc):	78	feet	Mean Slope:	0.0106	
Length to Cen. of Gravity (Lca):	35	feet	Weighted Basin Fac:	0.02	
Veg. Cover Type(s):	Desert Brush		Veg. Cover Density:	20	

RETURN PERIOD: 100-years NOAA Data Obtained: 2022-07-20 03:53:10 PM

Rainfall Depths: NOAA Atlas 14 (90% UCL) @ Latitude: 32.3938 Longitude: -110.9964

Duration:	5-min	10-min	15-min	30-min	1-hr	2-hr	3-hr	6-hr	12-hr	24-hr
Point Values (in):	0.86	1.32	1.63	2.2	2.72	3.03	3.17	3.46	3.73	4.52

Soil Type	Percent	Curve # (CN)	Runoff Coef. (C)
B	-	-	-
C	100	88	0.578
D	-	-	-
Imp.	65	99	0.957

Weighted Runoff Coef. (Cw):	0.82	
Time of Concentration:	5	min
Rainfall Intensity (i) @ Tc:	10.32	in/hr
Runoff Supply Rate (q) @ Tc:	8.5	in/hr
PEAK DISCHARGE:	0.4	cfs

PIMA COUNTY
FLOOD CONTROL

HYDROLOGIC DATA SHEET FOR PIMA COUNTY FLOOD PEAK PROCEDURE

Generated using methonds provided by Pima County Regional Flood Control District

Client:	OneTen	Prepared by:	JRM
Project Name:	TSC La Canada	Date:	07/20/2022
Concentration Point:	DEV-6	Job #	
Watershed Area:	0.070 Acres	Watershed Type	High Density Urbanized

Watercourse Data By Reach

Reach No.	Height (Hi)	Length (Li)	Slope (Si)	Basin Factor (Nb)
1	1.8	87	0.0207	0.02

Length of Watercourse (Lc):	87	feet	Mean Slope:	0.0207	
Length to Cen. of Gravity (Lca):	40	feet	Weighted Basin Fac:	0.02	
Veg. Cover Type(s):	Desert Brush		Veg. Cover Density:	20	

RETURN PERIOD: 2-years NOAA Data Obtained: 2022-07-20 03:53:10 PM

Rainfall Depths: NOAA Atlas 14 (90% UCL) @ Latitude: 32.3938 Longitude: -110.9964

Duration:	5-min	10-min	15-min	30-min	1-hr	2-hr	3-hr	6-hr	12-hr	24-hr
Point Values (in):	0.36	0.55	0.68	0.91	1.13	1.28	1.34	1.52	1.71	2.02

Soil Type	Percent	Curve # (CN)	Runoff Coef. (C)
B	-	-	-
C	100	88	0.293
D	-	-	-
Imp.	77	99	0.9

Weighted Runoff Coef. (Cw):	0.76	
Time of Concentration:	5	min
Rainfall Intensity (i) @ Tc:	4.32	in/hr
Runoff Supply Rate (q) @ Tc:	3.28	in/hr
PEAK DISCHARGE:	0.2	cfs

PIMA COUNTY
FLOOD CONTROL

HYDROLOGIC DATA SHEET FOR PIMA COUNTY FLOOD PEAK PROCEDURE

Generated using methonds provided by Pima County Regional Flood Control District

Client:	OneTen	Prepared by:	JRM
Project Name:	TSC La Canada	Date:	07/20/2022
Concentration Point:	DEV-6	Job #	
Watershed Area:	0.070 Acres	Watershed Type	High Density Urbanized

Watercourse Data By Reach

Reach No.	Height (Hi)	Length (Li)	Slope (Si)	Basin Factor (Nb)
1	1.8	87	0.0207	0.02

Length of Watercourse (Lc):	87	feet	Mean Slope:	0.0207	
Length to Cen. of Gravity (Lca):	40	feet	Weighted Basin Fac:	0.02	
Veg. Cover Type(s):	Desert Brush		Veg. Cover Density:	20	

RETURN PERIOD: 10-years NOAA Data Obtained: 2022-07-20 03:53:10 PM

Rainfall Depths: NOAA Atlas 14 (90% UCL) @ Latitude: 32.3938 Longitude: -110.9964

Duration:	5-min	10-min	15-min	30-min	1-hr	2-hr	3-hr	6-hr	12-hr	24-hr
Point Values (in):	0.56	0.85	1.06	1.42	1.76	1.96	2.04	2.25	2.47	2.95

Soil Type	Percent	Curve # (CN)	Runoff Coef. (C)
B	-	-	-
C	100	88	0.441
D	-	-	-
Imp.	77	99	0.934

Weighted Runoff Coef. (Cw):	0.82	
Time of Concentration:	5	min
Rainfall Intensity (i) @ Tc:	6.72	in/hr
Runoff Supply Rate (q) @ Tc:	5.51	in/hr
PEAK DISCHARGE:	0.4	cfs

PIMA COUNTY
FLOOD CONTROL

HYDROLOGIC DATA SHEET FOR PIMA COUNTY FLOOD PEAK PROCEDURE

Generated using methonds provided by Pima County Regional Flood Control District

Client:	OneTen	Prepared by:	JRM
Project Name:	TSC La Canada	Date:	07/20/2022
Concentration Point:	DEV-6	Job #	
Watershed Area:	0.070 Acres	Watershed Type	High Density Urbanized

Watercourse Data By Reach

Reach No.	Height (Hi)	Length (Li)	Slope (Si)	Basin Factor (Nb)
1	1.8	87	0.0207	0.02

Length of Watercourse (Lc):	87	feet	Mean Slope:	0.0207	
Length to Cen. of Gravity (Lca):	40	feet	Weighted Basin Fac:	0.02	
Veg. Cover Type(s):	Desert Brush		Veg. Cover Density:	20	

RETURN PERIOD: 100-years NOAA Data Obtained: 2022-07-20 03:53:10 PM

Rainfall Depths: NOAA Atlas 14 (90% UCL) @ Latitude: 32.3938 Longitude: -110.9964

Duration:	5-min	10-min	15-min	30-min	1-hr	2-hr	3-hr	6-hr	12-hr	24-hr
Point Values (in):	0.86	1.32	1.63	2.2	2.72	3.03	3.17	3.46	3.73	4.52

Soil Type	Percent	Curve # (CN)	Runoff Coef. (C)
B	-	-	-
C	100	88	0.578
D	-	-	-
Imp.	77	99	0.957

Weighted Runoff Coef. (Cw):	0.87	
Time of Concentration:	5	min
Rainfall Intensity (i) @ Tc:	10.32	in/hr
Runoff Supply Rate (q) @ Tc:	8.97	in/hr
PEAK DISCHARGE:	0.6	cfs

PIMA COUNTY
FLOOD CONTROL

HYDROLOGIC DATA SHEET FOR PIMA COUNTY FLOOD PEAK PROCEDURE

Generated using methonds provided by Pima County Regional Flood Control District

Client:	OneTen	Prepared by:	JRM
Project Name:	TSC La Canada	Date:	07/20/2022
Concentration Point:	DEV-7	Job #	
Watershed Area:	0.033 Acres	Watershed Type	High Density Urbanized

Watercourse Data By Reach

Reach No.	Height (Hi)	Length (Li)	Slope (Si)	Basin Factor (Nb)
1	1.1	90	0.0122	0.02

Length of Watercourse (Lc):	90	feet	Mean Slope:	0.0122	
Length to Cen. of Gravity (Lca):	45	feet	Weighted Basin Fac:	0.02	
Veg. Cover Type(s):	Desert Brush		Veg. Cover Density:	20	

RETURN PERIOD: 2-years NOAA Data Obtained: 2022-07-20 03:53:10 PM

Rainfall Depths: NOAA Atlas 14 (90% UCL) @ Latitude: 32.3938 Longitude: -110.9964

Duration:	5-min	10-min	15-min	30-min	1-hr	2-hr	3-hr	6-hr	12-hr	24-hr
Point Values (in):	0.36	0.55	0.68	0.91	1.13	1.28	1.34	1.52	1.71	2.02

Soil Type	Percent	Curve # (CN)	Runoff Coef. (C)
B	-	-	-
C	100	88	0.293
D	-	-	-
Imp.	20	99	0.9

Weighted Runoff Coef. (Cw):	0.41	
Time of Concentration:	5	min
Rainfall Intensity (i) @ Tc:	4.32	in/hr
Runoff Supply Rate (q) @ Tc:	1.79	in/hr
PEAK DISCHARGE:	0.1	cfs

PIMA COUNTY
FLOOD CONTROL

HYDROLOGIC DATA SHEET FOR PIMA COUNTY FLOOD PEAK PROCEDURE

Generated using methonds provided by Pima County Regional Flood Control District

Client:	OneTen	Prepared by:	JRM
Project Name:	TSC La Canada	Date:	07/20/2022
Concentration Point:	DEV-7	Job #	
Watershed Area:	0.033 Acres	Watershed Type	High Density Urbanized

Watercourse Data By Reach

Reach No.	Height (Hi)	Length (Li)	Slope (Si)	Basin Factor (Nb)
1	1.1	90	0.0122	0.02

Length of Watercourse (Lc):	90 feet	Mean Slope:	0.0122
Length to Cen. of Gravity (Lca):	45 feet	Weighted Basin Fac:	0.02
Veg. Cover Type(s):	Desert Brush	Veg. Cover Density:	20

RETURN PERIOD: 10-years NOAA Data Obtained: 2022-07-20 03:53:10 PM

Rainfall Depths: NOAA Atlas 14 (90% UCL) @ Latitude: 32.3938 Longitude: -110.9964

Duration:	5-min	10-min	15-min	30-min	1-hr	2-hr	3-hr	6-hr	12-hr	24-hr
Point Values (in):	0.56	0.85	1.06	1.42	1.76	1.96	2.04	2.25	2.47	2.95

Soil Type	Percent	Curve # (CN)	Runoff Coef. (C)
B	-	-	-
C	100	88	0.441
D	-	-	-
Imp.	20	99	0.934

Weighted Runoff Coef. (Cw):	0.54	
Time of Concentration:	5	min
Rainfall Intensity (i) @ Tc:	6.72	in/hr
Runoff Supply Rate (q) @ Tc:	3.62	in/hr
PEAK DISCHARGE:	0.1	cfs

PIMA COUNTY
FLOOD CONTROL

HYDROLOGIC DATA SHEET FOR PIMA COUNTY FLOOD PEAK PROCEDURE

Generated using methonds provided by Pima County Regional Flood Control District

Client:	OneTen	Prepared by:	JRM
Project Name:	TSC La Canada	Date:	07/20/2022
Concentration Point:	DEV-7	Job #	
Watershed Area:	0.033 Acres	Watershed Type	High Density Urbanized

Watercourse Data By Reach

Reach No.	Height (Hi)	Length (Li)	Slope (Si)	Basin Factor (Nb)
1	1.1	90	0.0122	0.02

Length of Watercourse (Lc):	90	feet	Mean Slope:	0.0122	
Length to Cen. of Gravity (Lca):	45	feet	Weighted Basin Fac:	0.02	
Veg. Cover Type(s):	Desert Brush		Veg. Cover Density:	20	

RETURN PERIOD: 100-years NOAA Data Obtained: 2022-07-20 03:53:10 PM

Rainfall Depths: NOAA Atlas 14 (90% UCL) @ Latitude: 32.3938 Longitude: -110.9964

Duration:	5-min	10-min	15-min	30-min	1-hr	2-hr	3-hr	6-hr	12-hr	24-hr
Point Values (in):	0.86	1.32	1.63	2.2	2.72	3.03	3.17	3.46	3.73	4.52

Soil Type	Percent	Curve # (CN)	Runoff Coef. (C)
B	-	-	-
C	100	88	0.578
D	-	-	-
Imp.	20	99	0.957

Weighted Runoff Coef. (Cw):	0.65	
Time of Concentration:	5	min
Rainfall Intensity (i) @ Tc:	10.32	in/hr
Runoff Supply Rate (q) @ Tc:	6.74	in/hr
PEAK DISCHARGE:	0.2	cfs

APPENDIX C
HYDRAULIC WORKSHEETS

Dynamic Civil Designs LLC

Curb Inlet in a Sag- COT Stds Manual Equation 10.14

Location: DEV-5 CURB OPENING AND TYPE 2 SCUPPER

Equation 10.14:

$Q_i=2.3\ L\ (Y_i^{3/2})$

Where:

L=	Length of Curb-inlet, ft
Y_i=	Depth at lip of inlet, ft
Q_i=	rate of flow into opening, cfs

Variables:

Q_i=	0.4	cfs	DEV-5 100-YR PEAK DISCHARGE
Y_i=	0.5	ft	
Coeff	2.3		

Solution:

L= **0.5** ft

Recommend clogging factor (1.5 x L).

Recommended minimum L= **0.7** ft

Curb Inlet in a Sag- COT Stds Manual Equation 10.14

Location: DEV-6 CURB OPENING

Equation 10.14:

$Q_i=2.3\ L\ (Y_i^{3/2})$

Where:

L=	Length of Curb-inlet, ft
Y_i=	Depth at lip of inlet, ft
Q_i=	rate of flow into opening, cfs

Variables:

Q_i=	0.4	cfs	DEV-6 10-YR PEAK DISCHARGE
Y_i=	0.1	ft	
Coeff	2.3		

Solution:

L=	**5.5**	ft

Flow Through Wall openings - COT Stds Manual Equations 12.1 and 12.2

Location: DEV-6 flow-thru wall opening

Equations

$L=0.52 \times [Q/(HW^{1.33} x D^{0.17})]$ Equation 12.1

for HW<D and $Q/AD^{0.5} < 3.5$

OR

$L=0.21 \times (Q/D) \times [1/HW-0.82D]^{0.5}$ Equation 12.2

for HW>D and $Q/AD^{0.5} > 3.5$

Where:

L=	Total length of wall openings, ft
Q=	Total design discharge, cfs
D=	Height of the wall openings, ft
HW=	Headwater height at the inlet, ft
A=	Cross section area of flow, SF

Variables:

Q=	0.6	cfs	DEV-6 100-YR PEAK DISCHARGE
D=	0.67	ft	
HW=	0.3	ft	

Equation 12.1 is valid if HW<D and $Q/AD^{0.5}<3.5$

L=	1.66	Eq 12.1	**Recommend omit 2 CMUs**
A=	1.11	SF	
$Q/AD^{0.5=}$	0.66		
Result:	**Eq 12.1 VALID**		

Equation 12.2 is valid if HW>D and $Q/AD^{0.5}>3.5$

L=	#NUM!	Eq 12.2
A=	#NUM!	SF
$Q/AD^{0.5=}$	#NUM!	
Result:	**Eq 12.2 NOT VALID**	

Curb Inlet in a Sag- COT Stds Manual Equation 10.14

Location: TYPE 2 SCUPPER DEV-6

Equation 10.14:

$Q_i=2.3\ L\ (Y_i^{3/2})$

Where:

L=	Length of Curb-inlet, ft
Y_i=	Depth at lip of inlet, ft
Q_i=	rate of flow into opening, cfs

Variables:

Q_i=	0.6	cfs	DEV-6 100-YR PEAK DISCHARGE
Y_i=	0.5	ft	
Coeff	2.3		

Solution:

L= **0.7** ft

Recommend clogging factor (1.5 x L).

Recommended minimum L= **1.1** ft

Broad-crested weir flow

Location: DEV-7 CURB OUTLET & TYPE 2 SCUPPER

Weir flow equation:

$Q_i = C\ L\ (Y_i^{3/2})$

Where:

L=	Length of weir, ft
Y_i=	Depth at weir flow, ft
Q_i=	rate of flow across weir, cfs

Variables:

Q_i=	0.2	cfs	DEV-7 100-YR peak discharge
Y_i=	0.1	ft	Yi corresponds to max desired WSEL
C	3.33		

Solution:

L= **1.9** ft