Jomax Road – Dysart Road to 126th Drive

Drainage Report

Prepared for:

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1.0 Introduction

1.1 Authority

TYLin contracted with the City of Surprise to perform professional design services including data collection, hydrologic & hydraulic analysis, and development of proposed roadway and drainage infrastructure for 60%, 90%, 100%, and final sealed design plans.

1.2 Purpose of Project

The purpose of this project is to provide roadway and drainage improvements along Jomax Road between Dysart Road and 126th Drive as well as the intersection of Dysart Road and Jomax Road. This report summarizes the key elements of the drainage design including hydrologic and hydraulic calculations for the proposed roadway improvements and the impacted wash.

1.3 Study Area

The Jomax Road extension project is located within Section 2 T04N R01W, Section 3 T04N R01W, Section 34 T05N R01W, and Section 35 T05N R01W in unincorporated Maricopa County and the City of Peoria. The project is bordered on the north by undisturbed native desert and a single-family development, on the east by undisturbed native desert and the Jomax WRF, on the south by undisturbed native desert and the Beardsley Canal, on the west by undisturbed native desert and a single-family development. The figure below provides the extents of the proposed project.

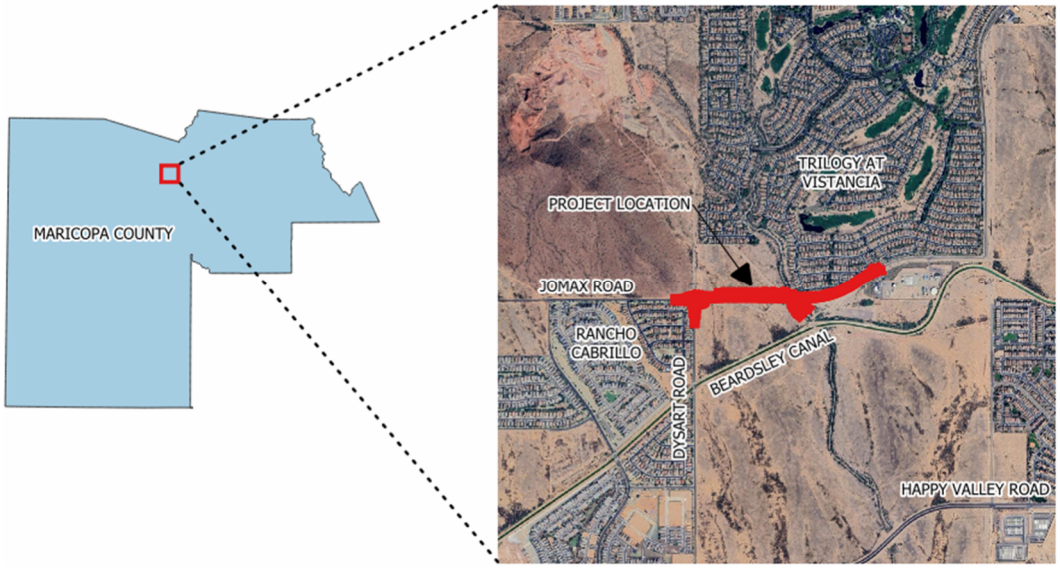


Figure 1.1 – Vicinity Map

1.4 Existing Conditions

Jomax Road, from Dysart Road to 126th Drive, is currently a dirt road surrounded by undisturbed native desert, single-family developments, and the Jomax WRF. The undeveloped property north of the proposed roadway improvements produces runoff that sheet flows to the south towards the Beardsley Canal. Power lines run along the north side of the roadway. Wash 16 East (McMicken Wash), an existing Special Flood Hazard Area (SFHA), crosses Jomax Road approximately 1,700 feet east of the Dysart Road intersection. Within the project limits, Wash 16 East is an ephemeral stream running from the northwest to the southeast, where it ultimately drains to the Agua Fria River.

1.5 Proposed Roadway Improvements

The intent of the project is to connect the existing Dysart Road and Jomax Road dead-end intersection to an existing dead-end section of Jomax Road to support ongoing development in the area. The project begins at the intersection of Dysart Road and Jomax Road and extends approximately 3,500 feet east to the intersection of 126th Drive and Jomax Road. As part of this project scope, interim half-street improvements will be constructed for Jomax Road between Dysart Road and 126th Drive to City of Peoria standards for an arterial roadway 2-lane half-street within the ultimate right-of-way as well as a roundabout at the intersection of Dysart Road and Jomax Road. As part of a future project scope, Jomax Road will be ultimately expanded to a 4-lane full-street to City of Peoria standards west of Dysart Road and a 6-lane full-street east of Dysart Road. The proposed improvements continue to cross Wash 16 East. The proposed drainage infrastructure is designed to accommodate the interim half-street and the future ultimate full-street roadway improvements.

1.6 FEMA Special Flood Hazard Areas

The project area lies within the effective Flood Insurance Rate Map #04013C1230L dated October 16, 2013. A review of the effective Flood Insurance Rate Map (FIRM) panel indicates that the project length lies within Shaded Zone X and Zone AE which is described as:

Shaded Zone X – 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 flood.

Zone AE – The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood.

The Base Flood Elevation is the water surface elevation of the 1% annual chance flood. Base Flood Elevations determined.

Recent Conditional Letter of Map Revisions (CLOMRs) and Letter of Map Revisions (LOMRs) have been issued and have defined base flood elevations within the project area. The FEMA documentation is provided in **Appendix A**.

1.7 Previous Studies

Previous studies associated with the project include:

- Flood Insurance Study (FIS), Maricopa County, Arizona and Incorporated Areas, FIS #04013CV001F, Revised February 08, 2024.
- Letter of Map Revision (LOMR), City of Peoria, Maricopa County, Arizona, Case #14-09-2661P, Effective October 07, 2014.
- Master Drainage, Phase I, Phase II, and Proposed Phase III Drainage Report for Vistancia, Wood, Patel & Associates, Inc., September 22, 2006.

Excerpts for the previous studies are provided in **Appendix A** and **B**. Full digital copies are provided in **Appendix G**.

1.8 Required Permits

Due to the nature of this project, there is potential for drainage related permitting. Since 16 East (McMicken Wash) is a known floodplain, a floodplain use permit may be required.

Alterations to the existing floodplains are required, and a CLOMR will need to be documented and submitted to the City of Peoria and FEMA for review and approval. Post construction, a LOMR will need to be documented and submitted as well.

1.9 Drainage Design Criteria

The following publications provide the City of Peoria and Maricopa County drainage design criteria and methodology:

- City of Peoria Engineering Standards (PESM), City of Peoria, February 2025.
- Drainage Design Manual for Maricopa County – Hydrology (DDM Hydrology), Flood Control District of Maricopa County (FCDMC), July 06, 2023.
- Drainage Design Manual for Maricopa County – Hydraulics (DDM Hydraulics), Flood Control District of Maricopa County (FCDMC), December 14, 2018.
- Drainage Policies and Standards for Maricopa County (DPS), Flood Control District of Maricopa County (FCDMC), August 22, 2018.
- Maricopa County Transportation Roadway Design Manual (MCTRDM), MCDOT Engineering Division, March 27, 2025.

Table 1.1 – Drainage Design Criteria

Criteria	Criteria Value	Reference
Hydrology		
HEC-1 or HEC-HMS (Unit Hydrograph Method)	For watersheds greater than 160-acres	• PESM Chapter 4.5.1 & 4.5.3 • DDM Hydrology Chapter 5
Rational Method	• For watersheds up to 160-acres • Minimum Tc is 5-minutes	• PESM Chapter 4.5.1 & 4.5.2 • DDM Hydrology Chapter 3
Culverts: Discharge Overtopping the Roadway		
Peak Discharge with no Overtopping of the Roadway	50-year frequency for arterial / all-weather access streets	• DPS Chapter 6.3.4
100 yr Peak Discharge Overtopping of the Roadway	Maximum flow depth of 6-inches over vehicular travel lane	• DPS Chapter 6.3.4
Culverts: Minimum Barrel Sizes		
Box Culvert (Cast in Place or Precast)	• 5 ft height • 4 ft height allowed in vertically constrained locations	• PESM Chapter 4.9.7 • MCTRDM Chapter 4.7.5
Pipe Culvert (RGRCP or RCP)	• 24 in diameter at roadway crossings • 18 in diameter for driveways	MCTRDM Chapter 4.7.5
Storm Drain		
Pipe Size	15 in minimum diameter	PESM Chapter 4.9.2
Velocities	3 ft/s to 9 ft/s	PESM Chapter 4.9.2
Cover	2 ft minimum	PESM Chapter 4.9.2
HGL	1 ft below the ground elevation for the design storm	PESM Chapter 4.9.2
Pipe Material	Class IV or V Rubber Gasket Reinforced Concrete Pipe (RGRCP)	PESM Chapter 4.9.3
Structure Spacing	• 400 ft for lines 15 in to 36 in diameter • 550 ft for lines over 36 in diameter	PESM Chapter 4.9.5
Catch Basin Type	Curb opening inlet	PESM Chapter 4.9.6

Channels / Ditches		
Side Slopes	6:1 minimum	PESM Chapter 4.10.2
Freeboard	1 ft minimum for channels	PESM Chapter 4.10.3
Bottom Width	4 ft minimum for trapezoidal bottom	DDM Hydraulics Chapter 3.3.1
Roadway		
Spread for Parkways / Arterials	• 10 yr flow between the curbs and maintain a 12 ft dry lane in each direction • 100 yr flow within the right-of-way with a maximum depth of 6-inches over the crown • Street right-of-way shall be designed to limit storm water conveyance to carry a maximum of 100 cfs	PESM Chapter 4.8.2
Storm Water Storage		
Required Volume	• 100 yr, 2 hr storm event • First Flush	• PESM Chapter 4.7.1 • DPS Chapter 3.6.6
Freeboard	1-foot	PESM Chapter 4.7.2
Ponding Depth	3 ft maximum depth	PESM Chapter 4.7.3
Basin Slopes	• 6:1 maximum adjacent to right-of-way or pedestrian access • 4:1 maximum adjacent to walls / fences / hedges • 0.1% minimum bottom slope	PESM Chapter 4.7.3
Disposal / Discharge	36-hour drain time	PESM Chapter 4.7.3
Erosion Protection		
Culvert Outlet	Required when outlet velocity exceeds maximum allowable lining velocity	DDM Hydraulics Chapter 5.4.2
Channel / Ditch	Required when the maximum velocity exceeds the scouring velocity of the soil (with natural cover)	PESM Chapter 4.10.3

Storm Drain / Scupper / Weir / Spillway Outlet to Basin	• d50 = 4 in at 9-inches thick grouted riprap splash pad 10' x 10' minimum size; 5 ft beyond each side of the spillway	PESM Chapter 4.7.3 & 4.10.3

2.0 Hydrology

2.1 Offsite Hydrology

Regional offsite runoff consists of the existing contributing flows to 16 East (McMicken Wash) at the crossing with the proposed roadway improvements. Offsite flows are taken from the FIS. The table below provides the discharges from the FIS within the project limits. Excerpts and full digital copies are provided in **Appendix A** and **G**.

Table 2.1 – FIS Discharges

Flooding Source and Location	Drainage Area (sq mi)	100-yr Peak Discharge (cfs)
16 East (McMicken Wash)		
Just downstream of third siphon east of Grand Avenue on Beardsley Canal	10.19	3,958
Flow through third siphon east of Grand Avenue on Beardsley Canal	10.19	4,535

Local offsite runoff consists of flows generated from the upstream drainage areas north of the proposed roadway improvements. A HEC-HMS analysis for the local offsite runoff was developed to determine peak flows. The HEC-HMS model was completed using the Army Corps of Engineers Hydrologic Engineering Center's HEC-HMS modeling program version 4.12. HEC-HMS drainage area delineations and input data were generated from aerial photographs, USGS GeoTIFF, NOAA Atlas 14 rainfall data, and land use/soils shapefiles in QGIS. Default values associated with land use and soils from FCDMC's Drainage Design Management System for Windows (DDMSW) version 6.8.0 were used to develop rainfall and loss parameters. The Clark Unit Hydrograph and Green & Ampt Rainfall loss methodologies were used. For the purposes of this project, the 50-year and 100-year storm events were modeled for the 6-hour and 24-hour storm durations.

2.1.1 Rainfall Data

NOAA Atlas 14 Volume 1, Version 5 is used to determine the point rainfall depth parameters for the HEC-HMS model. The Partial Duration Series based point

precipitation frequency estimates were downloaded and used for the HEC-HMS model. See **Appendix C** for the NOAA Atlas 14 rainfall data.

2.1.2 Topographic Mapping Data

The topographic mapping data used to develop the HEC-HMS model is a combination of aerial photography survey flown on February 05, 2025 and a downloaded GeoTIFF from the USGS National Map Download Client published on October 16, 2024 with a 10-meter grid precision. See **Appendix D.1** for the elevation map exhibit.

2.1.3 HEC-HMS Schematic Map

The drainage area boundaries and flow paths are delineated using the obtained topographic mapping data and aerial photographs. The drainage area shapefile provides name designations and area square footages. The flow paths shapefile provides drainage area designations, upstream & downstream elevations, and flow path lengths. See **Appendix D.2** for the HEC-HMS schematic exhibit.

2.1.4 Rainfall Losses

The rainfall loss method used for the HEC-HMS model was Green & Ampt. The soils data used to develop the HEC-HMS model was downloaded from the NRCS Web Soil Survey. The soils data is used in conjunction with the land use data and default values from the DDMSW to develop the rainfall losses. See Appendix **D.3** and **D.4** for the soils map and land use map exhibits.

2.1.5 Unit Hydrograph

The unit hydrograph method used for the HEC-HMS model is the Clark Unit Hydrograph. The time of concentration (Tc) and storage coefficient (R) parameters are developed using the land use data, default values from DDMSW, and the delineated flow paths.

2.1.6 Results

The hydrologic analysis uses the 50 yr and 100 yr storm events for the design of the drainage infrastructure handling the local offsite flows. The table below provides a summary of the HEC-HMS results. See **Appendix D.2**, **D.5**, and **D.6** for the HEC-HMS schematic exhibit and the complete HEC-HMS results.

Table 2.2 – Local Offsite Runoff HEC-HMS Results

Element ID	Area (ac)	50 yr, 24 hr (cfs)	Time to Peak (hrs)	100 yr, 24 hr (cfs)	Time to Peak (hrs)
050005	7.84	17.7	12.3	21.0	12.3
050010	56.84	90.0	12.5	108.2	12.5
05 OUT	-	104.1	12.5	124.9	12.4
100005	12.28	42.4	12.3	49.1	12.3
100010	4.84	16.2	12.2	18.9	12.2
10 OUT	-	58.4	12.3	67.3	12.3

2.2 Onsite Hydrology

As part of this project, both the interim and ultimate roadway improvements are evaluated. The City of Peoria design standards, supplemented with the DDM Hydrology are the basis of design. In the future, the ultimate roadway improvements drainage design may need to be re-evaluated as development in the area progresses.

2.2.1 Drainage Areas

Two sets of drainage areas are delineated for the project to determine the hydrology for both the interim and ultimate conditions using the Rational Method. The interim conditions hydrology is used to design temporary storm water storage for the project. The ultimate conditions hydrology is used to appropriately design scuppers, storm drains, erosion protection, and verify existing storm water storage for future roadway improvements. The interim and ultimate conditions drainage exhibits are provided in **Appendix E.1** and **E.2**.

2.2.2 Rational Method Calculations

Rainfall data for the project is based on the NOAA Atlas 14, volume 1, version 5 documentation. The NOAA Atlas 14 data is provided in **Appendix C**.

Runoff coefficients relate runoff to rainfall for different land uses and storm frequencies. Runoff coefficient values from table 3.2 in the DDM Hydrology are used to calculate weighted runoff coefficients for the delineated drainage areas. The table below provides the values obtained from the DDM Hydrology. The weighted runoff coefficient calculations are provided in **Appendix D.7**.

Table 2.3 – Onsite Runoff Coefficients

Land Use Category	Runoff Coefficient by Storm Frequency		
	2 – 10 Year	50 Year	100 Year
Desert landscaping 2	0.40	0.48	0.50
Pavement and Rooftops	0.85	0.95	0.95

Peak flows are calculated for the 10 yr, 50 yr, and 100 yr storms. The tables below provide a summary of the calculated weighted runoff coefficients and peak flows. The complete rational method calculations are provided in **Appendix D.7**.

Table 2.4 – Interim Conditions Weighted Runoff Coefficients and Peak Flows

Drainage Area ID	Area (ac)	10 yr C	50 yr C	100 yr C	10 yr Flow (cfs)	50 yr Flow (cfs)	100 yr Flow (cfs)
A5	0.68	0.66	0.75	0.76	2.1	3.6	4.1
B5-1	0.09	0.77	0.87	0.87	0.3	0.5	0.6
B5-2	0.72	0.76	0.85	0.86	2.1	3.5	4.0
C5-1	0.56	0.78	0.88	0.88	1.8	3.0	3.6
C5-2	0.06	0.82	0.92	0.92	0.2	0.4	0.4
C10-1	0.13	0.82	0.92	0.92	0.5	0.8	0.9
C10-2	0.42	0.69	0.78	0.79	1.4	2.3	2.6
E5	0.49	0.68	0.77	0.78	1.5	2.6	3.0
F5-1	0.82	0.70	0.79	0.80	2.4	3.9	4.5
F5-2	0.79	0.74	0.83	0.84	2.2	3.8	4.3
G5-1	0.14	0.71	0.80	0.81	0.5	0.8	0.9
G5-2	0.07	0.78	0.88	0.88	0.3	0.4	0.5
G10	0.53	0.73	0.82	0.83	1.9	3.0	3.5
H5	0.46	0.66	0.76	0.76	1.5	2.4	2.8
I5	0.11	0.81	0.91	0.91	0.4	0.7	0.8
D5	0.24	0.78	0.87	0.88	0.9	1.5	1.7

Table 2.5 – Ultimate Conditions Weighted Runoff Coefficients and Peak Flows

Drainage Area ID	Area (ac)	10 yr C	50 yr C	100 yr C	10 yr Flow (cfs)	50 yr Flow (cfs)	100 yr Flow (cfs)
A5	0.42	0.72	0.82	0.82	1.3	2.1	2.5
B5-1	0.10	0.79	0.89	0.89	0.4	0.6	0.7
B5-2	0.82	0.78	0.87	0.88	2.5	4.1	4.9
C5-1	0.64	0.80	0.89	0.90	2.1	3.5	4.2
C5-2	0.07	0.84	0.94	0.94	0.3	0.4	0.5
C10-1	0.15	0.83	0.93	0.93	0.6	1.0	1.1
C10-2	0.07	0.83	0.93	0.93	0.3	0.4	0.5
E5	0.40	0.73	0.82	0.83	1.3	2.3	2.6
F5-1	0.82	0.75	0.85	0.85	2.5	4.2	4.7
F5-2	0.84	0.78	0.87	0.88	2.5	4.2	4.8
G5-1	0.16	0.73	0.82	0.83	0.6	0.9	1.1
G5-2	0.09	0.76	0.86	0.86	0.4	0.6	0.6
G10	0.53	0.68	0.77	0.78	1.8	2.9	3.3
H5	0.45	0.72	0.81	0.82	1.6	2.6	2.9
I5	0.58	0.71	0.81	0.81	2.1	3.3	3.8

3.0 Floodplain Analysis

The floodplain analysis is provided in the associated CLOMR for the project.

4.0 Hydraulics

4.1 Offsite Hydraulics

The proposed drainage infrastructure handling the regional offsite runoff conveyed in 16 East (McMicken Wash) consists of a multi-barrel culvert and erosion protection. The analysis is provided in the associated CLOMR for the project.

The proposed drainage infrastructure handling the local offsite runoff impacting the project consists of ditches, culverts, and erosion protection.

4.1.1 Ditch Calculations

The proposed ditches are designed to accommodate the 50-year flows and convey them to proposed culverts. The table below provides a summary of the ditch calculations performed with Bentley FlowMaster. The complete calculations and Bentley FlowMaster

results are provided in **Appendix F.1** and **F.2**. The interim and ultimate conditions drainage exhibits are provided in **Appendix E.1** and **E.2**.

Table 4.1 – Offsite Ditch Summary

Ditch ID	Road	Offset (Lt/Rt)	From Station	To Station	50 yr Flow (cfs)	50 yr Velocity (ft/s)
DITCH 05-05	Jomax Road	Lt	100+76	104+28	17.7	3.4
DITCH 05-10	Jomax Road	Lt	104+28	105+73	17.7	3.8
DITCH 05-15	Jomax Road	Lt	106+06	109+37	17.7	2.2

4.1.2 Culverts

The proposed culverts are designed to accommodate the 50-year flows without overtopping of the roadways and the 100-year flows with a maximum overtopping depth of 6-inches. The table below provides a summary of the culvert calculations performed with HY-8. The complete calculations and HY-8 results are provided in **Appendix F.3** and **F.4**. The interim and ultimate conditions drainage exhibits are provided in **Appendix E.1** and **E.2**.

Table 4.2 – Offsite Culvert Summary

Culvert ID	Road	Station	Culvert Size	Type	# of Barrels	50 yr Flow (cfs)	50 yr Outlet Velocity (ft/s)
CULV 05	Jomax Road	109+48	36"	RGRCP	3	104.1	4.9
CULV 05-05	Jomax Road	105+90	30" x 19"	HECP	1	17.7	8.4
CULV 10	Jomax Road	116+68	30"	RGRCP	2	58.4	6.0
						100 yr Flow (cfs)	**100 yr Outlet Velocity (ft/s)**
CULV WASH 16 EAST	Jomax Road	123+46	10 x 8	RCBC	6	4,217	8.8

4.1.3 Spreader Basins

Spreader basins are proposed at the outlets of specific culverts to maintain minimum pipe covers, reduce the velocity of the conveyed runoff, and return the concentrated flow to sheet flow. The table below provides a summary of the spreader basin calculations

performed with Bentley FlowMaster. The complete calculations and Bentley FlowMaster results are provided in **Appendix F.3** and **F.5**.

Table 4.3 – Spreader Basin Summary

Culvert ID	Road	Station	Crest Length (ft)	50 yr Flow (cfs)	Depth Above Crest (ft)
CULV 05	Jomax Road	109+48	115.0	104.1	0.48
CULV 10	Jomax Road	116+68	76.0	58.4	0.44

4.1.4 Erosion Protection

Riprap is proposed at the inlets and outlets of the culverts and along the ditches where velocities exceed the maximum allowable lining velocity. The riprap will aid in preventing erosion and dissipate energy to reduce velocities to non-erosive levels. The minimum design d50 for the rock size of the angular riprap is 6-inches with a thickness of 1-foot.

4.2 Onsite Hydraulics

The proposed onsite drainage infrastructure includes roadway drainage, temporary and existing storm water storage, and erosion protection.

4.2.1 Spread, Inlet & Ditch Calculations

The proposed onsite drainage infrastructure includes new scuppers, ditches, and a storm drain system to dewater the roadway and meet City of Peoria and Maricopa County design criteria. The proposed ditches are designed to accommodate the interim conditions. Although the proposed scuppers and storm drain system will be constructed as part of the interim conditions, the design also accommodates the ultimate conditions. The drainage exhibits for both conditions are provided in **Appendix E.1** and **E.2**. The spread, inlet, and ditch calculations were performed using Bentley FlowMaster and CivilStorm.

Clogging factors are applied to the scuppers and storm drain inlets. The table below provides a summary of the spread calculations for the 10 yr and 100 yr storm events. The complete spread and inlet calculations are provided in **Appendix F.6**. Bentley FlowMaster and CivilStorm results are provided in **Appendix F.7**, **F.8**, and **F.9**.

Table 4.4 – Onsite Spread & Inlet Summary

Inlet ID	Road	Station	Inlet Type	Wing/Inlet Opening (ft)	Allowable Spread (ft)	10 yr Calculated Spread (ft)	100 yr Calculated Depth (in)
SC A5	Jomax Road	110+80	Scupper	12	15.5	11.0	4.5
SC B5	Jomax Road	126+74	Scupper	8	18.5	8.1	6.9
SC C5	Jomax Road	138+00	Scupper	8	18.5	10.7	6.9
CB C10	Jomax Road	139+82	Catch Basin	3	18.5	15.7	8.4
SC E5	Jomax Road	113+95	Scupper	8	18.5	8.3	3.7
SC F5	Jomax Road	119+71	Scupper	16	18.5	12.1	7.6
SC G5	Jomax Road	107+58	Scupper	4	6.5	3.8	5.2
CB G10	Jomax Road	104+62	Catch Basin	13	11.0	10.9	2.7
SC H5	Jomax Road	107+14	Scupper	8	12.5	12.4	3.3
SC I5	Jomax Road	104+77	Scupper	4	7.7	4.8	1.8

The tables below provide a summary of the storm drain system calculations performed with Bentley CivilStorm. The model results are provided in **Appendix F.7** and **F.8**.

Table 4.5 – 10-year Onsite Storm Drain System Summary

Label	Velocity (ft/s)	Elevation Ground (Start) (ft)	Elevation Ground (Stop) (ft)	HGL (In) (ft)	HGL (Out) (ft)
C10 – C10 OUT	3.6	1348.41	1344.35	1345.21	1344.88
G10 – G10 OUT	4.8	1357.31	1349.00	1352.54	1350.00

Table 4.6 – 100-year Onsite Storm Drain System Summary

Label	Velocity (ft/s)	Elevation Ground (Start) (ft)	Elevation Ground (Stop) (ft)	HGL (in) (ft)	HGL (Out) (ft)
C10 – C10 OUT	4.2	1348.41	1344.35	1345.41	1345.07
G10 – G10 OUT	5.3	1357.31	1349.00	1352.64	1350.00

The table below provides a summary of the ditch calculations performed with Bentley FlowMaster. The complete calculations and Bentley FlowMaster results are provided in **Appendix F.1** and **F.2**.

Table 4.7 – Onsite Ditch Summary

Ditch ID	Road	Offset (Lt/Rt)	From Station	To Station	10 yr Flow (cfs)	10 yr Velocity (ft/s)
DITCH D5	Dysart Road	Rt	196+71	198+40	0.9	2.4

4.2.2 Storm Water Storage

Proposed temporary retention basins will provide storage for the first flush (0.5-inches) during interim conditions until further development in the area progresses and provides permanent storm water storage. There are existing retention basins along a segment of the roadway improvements that will provide detention for the 100-yr, 2-hr storm event. Sufficient documentation is unavailable for the existing basins to verify the design. The Trilogy at Vistancia development should have sized the existing basins appropriately to accommodate the half street runoff of Jomax Road. The temporary retention basins are located along Jomax Road and Dysart Road, west of the 16 East (McMicken Wash) crossing and the existing retention basins are located to the east of the same crossing. The table below provides a summary of the basin calculations. The complete calculations are provided in **Appendix F.10**.

Table 4.8 – Onsite Retention Basin Summary

Basin ID	Road	Station	Storm Water Storage	Volume Required (cf)	Volume Provided (cf)	Drain Time (hrs)
BASIN A	Jomax Road	110+80	Interim First Flush	1,380	2,583	32.0
EX BASIN B	Jomax Road	126+74	Ultimate 100 yr, 2 hr	5,813	13,583	-

EX BASIN C	Jomax Road	138+00	Ultimate 100 yr, 2 hr	8,318	12,677	-
BASIN D	Dysart Road	197+00	Interim First Flush	495	981	1.4
BASIN E	Jomax Road	114+95	Interim First Flush	959	1,217	33.4
BASIN F	Jomax Road	119+71	Interim First Flush	3,178	4,774	19.6
BASIN G	Jomax Road	107+58	Interim First Flush	1,423	1,462	3.9

4.2.3 Erosion Protection

Riprap is proposed at the outlets of scupper spillways, the storm drain system, and the ditches where necessary. The riprap will aid in preventing erosion and dissipate energy to reduce velocities to non-erosive levels. The minimum design d50 for the rock size of the loose angular riprap is 6 inches with a thickness of 1 foot.

5.0 Drainage Maintenance Manual

This section provides general guidance regarding anticipated maintenance activities required for the project. The multi-barrel culvert at the 16 East (McMicken Wash) crossing will be incorporated into City of Peoria's bridge inventory program. This section does not supersede any standard operating procedures established by the City of Peoria, Flood Control District of Maricopa County, or the Maricopa County Department of Transportation.

5.1 Routine Inspection and Cleaning

1. Inspect and clean as needed, all scuppers and catch basins annually or before the sump is 40% full.
2. Stencil scuppers and catch basins per standard BMP (e.g.:"Rain only in the Drain")
3. Inspect and clean as needed, all scuppers and catch basins after major storm events and in know problem areas more than once a year.
4. Inspect and clean as needed, all storm drain pipe systems in known problem areas more than once a year.
5. Develop flushing schedule of the storm drain based on experienced gained over time and from amount of debris and sediment accumulation in the drain.
6. Inspect and clean as needed, all ditches.
7. Cleaning activities may occur on a year round basis; however, known problem areas shall be targeted prior to the rainy season which correspond to summer

monsoon (July through September) and the winter rainy season (November through March).

8. Inspect and clean as needed, all drainage facilities that have been affected by emergency response activities (fire response, hazmat response, etc.)
9. Remove and transport collected solid waste debris and sediment to landfill.
10. Culvert Barrels, Inlets, and Outlets – Inspect and clean as needed. Inspect for local erosion and repair as needed. Remove debris and sediment accumulation.
11. Headwall Safety Railings and Access Barriers – Inspect and clean as needed. Check structural integrity of railings, barriers, and bolts. Paint as needed.
12. Inspect basins for accumulation of sediment and debris. If sediment buildup occurs to an average depth of 3 inches or more, remove sediment using City of Peoria standard practices. Inspect basin side slopes for signs of erosion and deterioration and repair as needed. Make note of signs of off-road vehicle activity (ATVs, motorcycles, etc.) and damages caused by such activity. Inspect basins during major flow events and after drawdown of flood pool.
13. Conduct drainage facilities video survey on an annual basis.
14. Conduct visual drainage facilities survey on an as-needed basis or after major storm events.
15. Check for illicit discharges to the scuppers, catch basins, storm drains, culverts, and ditches as part of the routine annual condition survey.

5.2 Solid Waste Best Management Practices

1. Provide a referral and follow up process between drainage facilities operation and maintenance and illicit connection and illegal dumping investigation staff for problems found in the field.
2. Document any unusual flows observed during inspection (particularly dry weather flows) and the follow up actions/referrals.
3. Check scuppers, catch basins, culverts, and basin sites for signs of illegal dumping. Remove dumped waste as appropriate. Post “No Dumping” signs if required.

5.3 Staff/Contractor Training and Coordination

1. Provide a referral and follow up process between drainage facilities operation and maintenance and illicit connection and illegal dumping investigation staff for problems found in the field.
2. Provide staff training for drainage facilities operation and maintenance personnel at least once a year with emphasis on controlling storm water pollution through drainage facilities operation and maintenance.

3. Include provisions for stormwater pollution prevention in contract specifications for conducting drainage facilities operation and maintenance.

5.4 Record Keeping and Evaluation

1. Maintain records tracking all cleaning activities. The records shall show when and which facilities have been inspected and cleaned. Spill and illegal dumping incidents and responses to both incidents shall also be documented and tracked.
2. Review the records annually to critique the effectiveness of drainage facilities operation and maintenance activities. Modifications of drainage facilities operation and maintenance activities shall be identified in the annual individual work plans.
3. Document any unusual flows observed during inspection (particularly dry weather flows) and the follow up actions/referrals.

5.5 Operational Improvement, Structural Retrofit, and Design Changes

1. Review the drainage facilities operation and maintenance program annually and if needed, identify operational improvements, opportunities for structural retrofit and design changes.
2. Operation and maintenance provisions shall be included in planning and design phases of Capital Improvement Projects (for retrofit) to ensure that storm water quality issues are considered in the design of storm drain systems.

6.0 Summary and Conclusions

The design proposed in this report will not cause adverse drainage impacts to adjacent developed properties upstream or downstream of the proposed improvements. As local development progresses, further analysis may be needed to ensure no adverse drainage impacts will occur.

Additional important information about the project is provided below.

- The proposed roadway improvements for this project include an extension of a half-roadway section of Jomax Road, a roundabout at the intersection of Dysart Road & Jomax Road, and necessary curb and gutter.
- A proposed multi-barrel culvert will handle the regional offsite flows conveyed in 16 East (McMicken Wash).
- Proposed ditches and culverts will manage the local offsite flows generated from the upstream drainage areas north of the proposed roadway improvements to prevent inundation.
- The proposed interim onsite drainage infrastructure will manage the onsite flows with scuppers, storm drain systems, and a ditch to temporary and existing retention basins. The drainage infrastructure will need to be re-evaluated and revised once undeveloped parcels in the area are developed.
- The proposed onsite drainage infrastructure will provide a 12-foot dry lane during the 10-year storm and contain the 100-year storm flow within the right-of-way with a maximum depth of 6 inches over the crown of the road.
- The proposed drainage design meets the City of Peoria criteria as well as applicable FCDMC criteria.

7.0 References

- City of Peoria Engineering Standards, City of Peoria, February 2025.
- Drainage Design Manual for Maricopa County – Hydrology, Flood Control District of Maricopa County, July 06, 2023.
- Drainage Design Manual for Maricopa County – Hydraulics, Flood Control District of Maricopa County, December 14, 2018.
- Drainage Policies and Standards for Maricopa County, Flood Control District of Maricopa County, August 22, 2018.
- Maricopa County Transportation Roadway Design Manual, MCDOT Engineering Division, March 27, 2025.
- Flood Insurance Study, Maricopa County, Arizona and Incorporated Areas, FIS #04013CV001F, February 08, 2024.
- Letter of Map Revision, City of Peoria, Maricopa County, Arizona, Case #14-09-2661P, October 07, 2014.
- Master Drainage, Phase I, Phase II, and Proposed Phase III Drainage Report for Vistancia, Wood, Patel & Associates, Inc., September 22, 2006.
- Hydrologic Modeling System (HEC-HMS) version 4.12, U.S. Army Corps of Engineers, May 08, 2024.
- HY-8 version 7.80.0.2, Federal Highway Administration, November 22, 2022.
- Bentley OpenFlows CivilStorm 2024 version 24.00.03.23, Bentley Systems, Inc., August 29, 2025.
- FlowMaster CONNECT Edition Update 3 version 10.03.00.03, Bentley Systems, Inc., March 20, 2020.

Appendix A

FEMA Documentation

NOTES TO USERS

This map is for use in administering the Nation Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Arizona State Plane Central zone (FIPSZONE 0202). The **horizontal datum** was NAD 83 HARN, GRS1980 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988 (NAVD 88). These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. Map users wishing to obtain flood elevations referenced to the National Geodetic Vertical Datum of 1929 (NGVD 29) may use the following Maricopa County website application: http://www.fcd.maricopa.gov/Maps/gismaps/apps/gdacs/application/index.cfm

This web tool allows users to obtain point-specific datum conversion values by zooming in and hovering over a VERTCON checkbox on the layers menu on the left side of the screen. The VERTCON grid referenced in this web application was also used to convert existing flood elevations from NGVD 29 to NAVD 88.

To obtain current elevation, description, and/or location information for National Geodetic Survey bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at http://www.ngs.noaa.gov. To obtain information about Geodetic Densification and Cadastral Survey bench marks produced by the Maricopa County Department of Transportation, please visit the Flood Control District of Maricopa County website at:
http://www.fcd.maricopa.gov/Maps/gismaps/apps/gdacs/application/index.cfm.

Base map information shown on this FIRM was derived from multiple sources. Aerial imagery was provided in digital format by the Maricopa County Department of Public Works, Flood Control District. The imagery is dated October 2009 to November 2009. Additional National Agricultural Imagery Program (NAIP) imagery was provided by the Arizona State Land Department (ALRIS) and is dated 2007. The coordinate system used for the production of the digital FIRM is State Plane Arizona Central NAD83 HARN, International Feet.

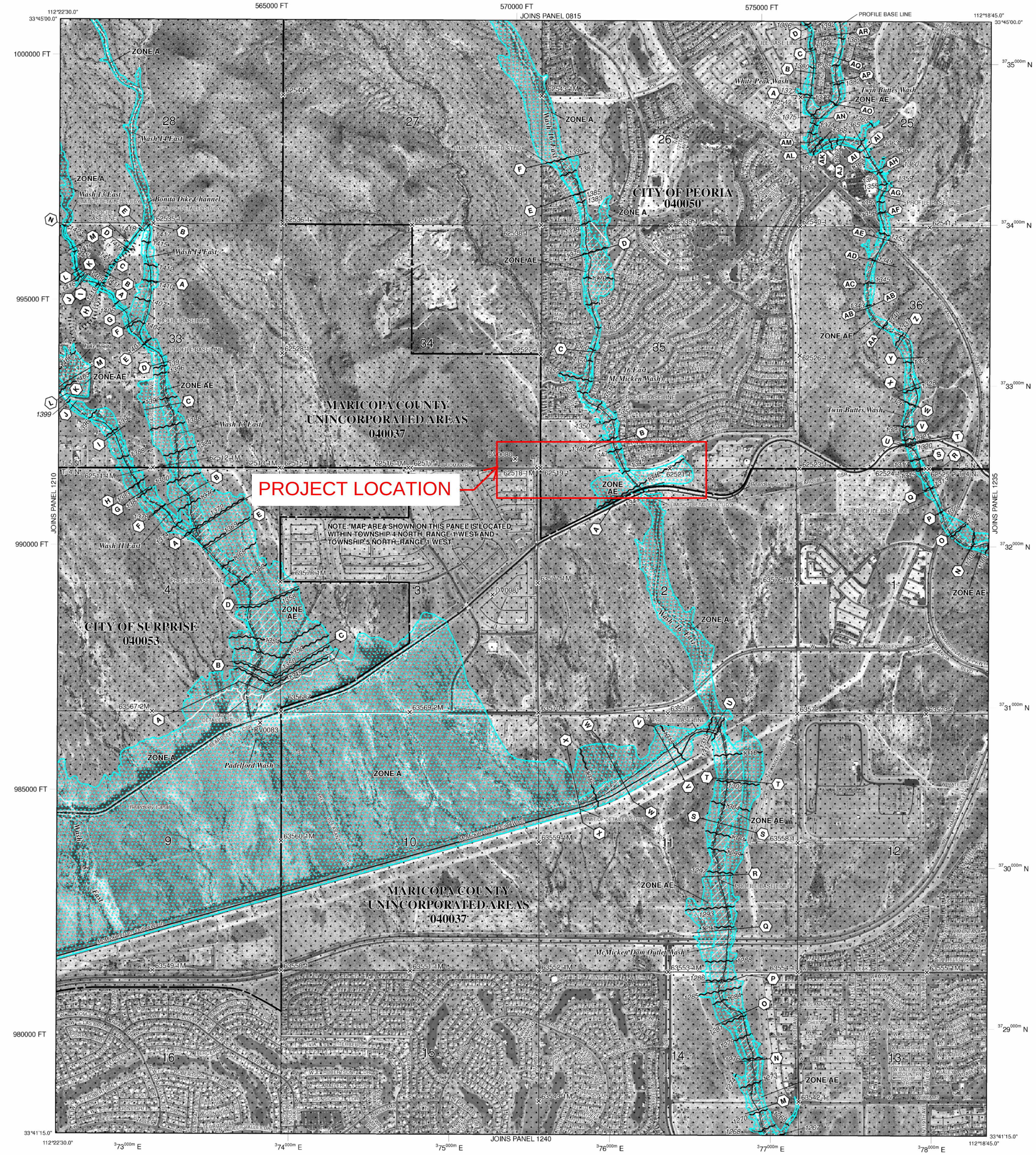
The **profile baseline** depicted on this map represents the hydraulic modeling baselines that match flood profiles in the FIS report. As a result of improved topographic data, the **profile baseline**, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For Information on available products associated with this FIRM, visit the **Map Service Center (MSC)** website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

If you have **questions about this map,** how to order products, or the National Flood Insurance Program in general, please call the **FEMA Map Information eXchange (FMIX)** at **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	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 flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary
0.2% annual chance floodplain boundary
Floodway boundary
Zone D boundary
CBRS and OPA boundary
Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

~~ 513 ~~~~	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

(A)——(A)	Cross section line
(23)- - - -(23)	Transect line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
$^{42}75^{000m}$N	1000-meter Universal Transverse Mercator grid ticks, zone 12
6000000 M	5000-foot grid ticks: Arizona State Plane coordinate system, central zone (FIPSZONE 0202), Transverse Mercator
DX5510	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
April 15, 1988
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
September 4, 1991 December 3, 1993 July 19, 2001 September 30, 2005
October 16, 2013 –to advance suffix, to add roads and road names, to update corporate limits, to add special flood hazard areas, to change base flood elevations, to change floodway, to incorporate previously issued letters of map revision, to add floodway, and to add base flood elevation.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

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

MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1230L

FIRM
FLOOD INSURANCE RATE MAP
MARICOPA COUNTY, ARIZONA
AND INCORPORATED AREAS

PANEL 1230 OF 4425
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MARICOPA COUNTY	040037	1230	L
PEORIA, CITY OF	040050	1230	L
SURPRISE, CITY OF	040053	1230	L

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

MAP NUMBER
04013C1230L

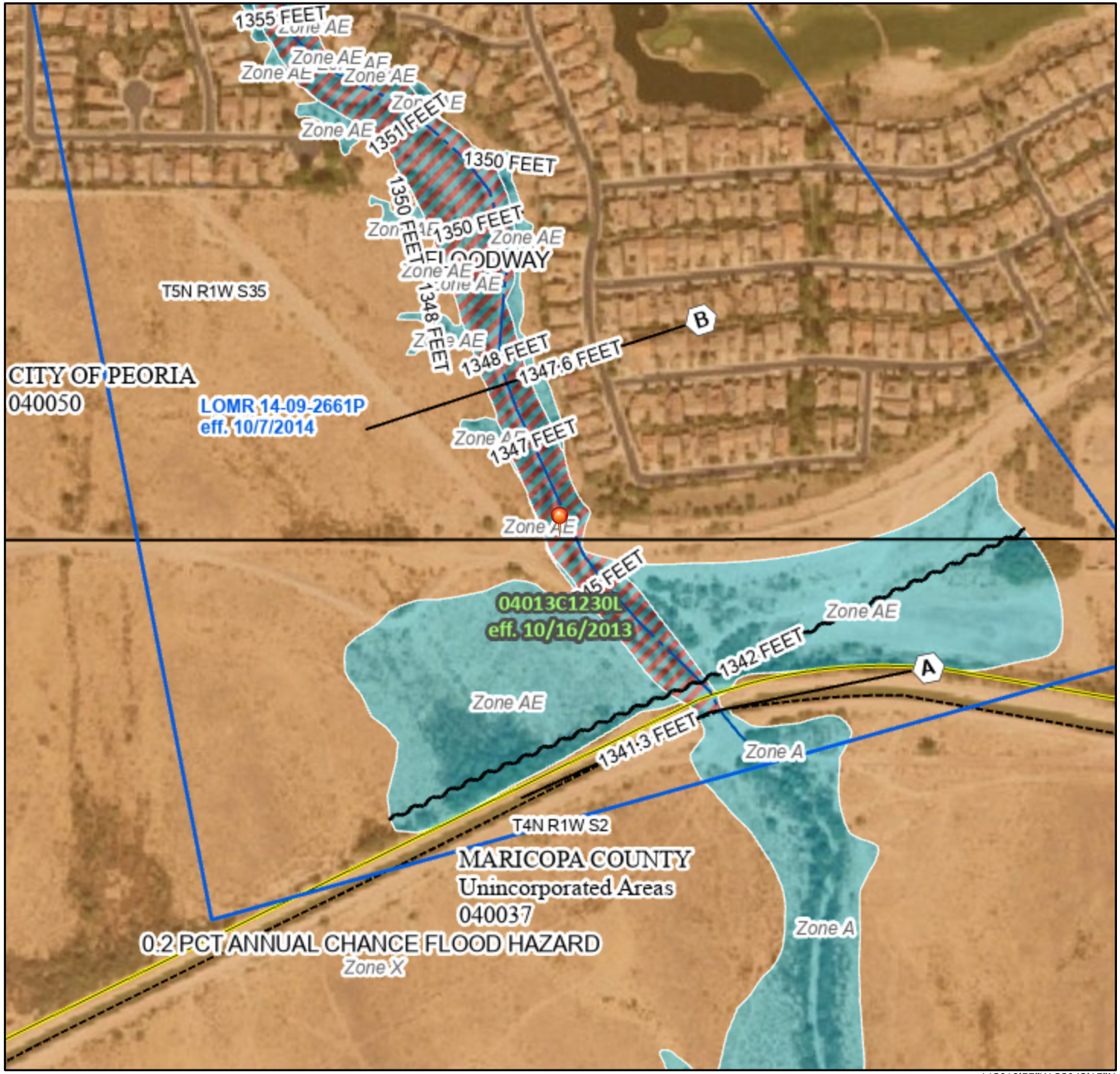
MAP REVISED
OCTOBER 16, 2013

Federal Emergency Management Agency

National Flood Hazard Layer FIRMette

FEMA

112°20'33"W 33°43'45"N



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

1:6,000

112°19'55"W 33°43'15"N

Basemap Imagery Source: USGS National Map 2023

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
- 513 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

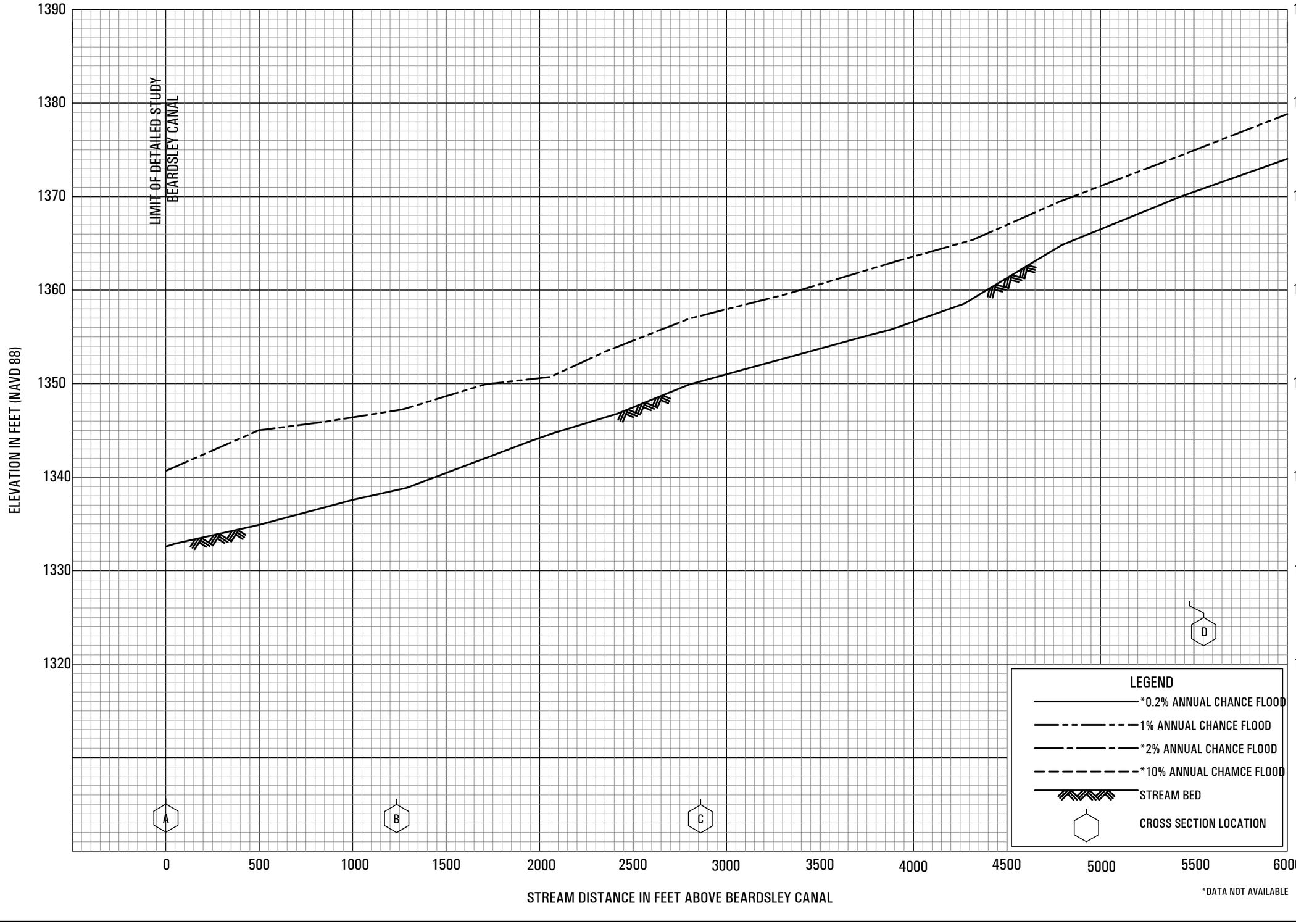
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/17/2025 at 8:18 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by 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.

Table 3. Summary of Discharges

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (Sq. Miles)	PEAK DISCHARGES (cfs) 10-PERCENT ANNUAL CHANCE	2-PERCENT ANNUAL CHANCE	1-PERCENT ANNUAL CHANCE	0.2-PERCENT ANNUAL CHANCE
16 East (McMicken Wash)					
Just downstream of third siphon east of Grand Avenue on Beardsley Canal	10.19	--[1]	--[1]	3,958	--[1]
Flow through third siphon east of Grand Avenue on Beardsley Canal	10.19	--[1]	--[1]	4,535	--[1]
Just downstream of wash confluence on Western Side of Section 35	8.72	--[1]	--[1]	3,898	--[1]
At CAP 16 East Sixteenth Overchute east of Grand Avenue on CAP Canal	3.27	--[1]	--[1]	1,652	--[1]
191st Avenue Wash (Peak discharges have been derived by performing a HEC-2 split flow analysis along 191st Avenue Wash)					
Approximately 200 feet north of I-10	--[1]	--[1]	--[1]	617	--[1]
At Indian School Road	--[1]	--[1]	--[1]	147	--[1]
At Camelback Road	--[1]	--[1]	--[1]	564	--[1]
ADOT U.S. 60 Channel					
Downstream of confluence with Tempe Canal	--[2]	--[2]	--[2]	2,506	--[2]
Upstream of confluence with Tempe Canal	--[2]	--[2]	--[2]	1,617	--[2]
Agua Fria River					
At confluence with Gila River	--[2]	22,000	68,000	94,000	183,000
Upstream of downstream end of USACE levee approximately 0.7 mile below Lower Buckeye Road	--[2]	22,000	69,000	95,000	184,000

--[1] Data Not Computed
--[2] Data Not Available



FLOOD PROFILES

16 EAST (McMicken Wash)

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ

AND INCORPORATED AREAS

01P

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT

COMMUNITY AND REVISION INFORMATION		PROJECT DESCRIPTION	BASIS OF REQUEST
COMMUNITY	**City of Peoria Maricopa County Arizona**	**NO PROJECT**	**UPDATE**
	COMMUNITY NO.: 040050		
IDENTIFIER	Update to Wash 16	**APPROXIMATE LATITUDE & LONGITUDE: 33.732, -112.339 SOURCE:** Precision Mapping Streets **DATUM:** NAD 83	

ANNOTATED MAPPING ENCLOSURES	ANNOTATED STUDY ENCLOSURES
TYPE: FIRM* NO.: 04013C1230L DATE: October 16, 2013	DATE OF EFFECTIVE FLOOD INSURANCE STUDY: October 16, 2013 PROFILE(S): 01P AND 02P FLOODWAY DATA TABLE: 6

Enclosures reflect changes to flooding sources affected by this revision.
* FIRM - Flood Insurance Rate Map; ** FBFM - Flood Boundary and Floodway Map; *** FHBM - Flood Hazard Boundary Map

FLOODING SOURCE(S) & REVISED REACH(ES)

16 East (McMicken Wash) - from Beardsley Canal to approximately 7,200 feet upstream

SUMMARY OF REVISIONS

This Letter of Map Revision (LOMR) is issued to update the Special Flood Hazard Area (SFHA) and floodway based on the boundaries from a LOMR dated October 31, 2008 (Case No. 08-09-1762X) and a LOMR dated October 7, 2011 (Case No. 11-09-0647P). When the October 31 and October 7 LOMRs were incorporated into the updated DFIRM database for Maricopa County, Arizona and Incorporated Areas, the delineations of the SFHA and floodway were inadvertently shifted. This LOMR updates the delineations of the SFHA and floodway to correspond to the original location established by the October 31 and October 7 LOMRs. This LOMR does not revise the floodway, base floodplain, or BFEs* along 16 East (McMicken Wash) presented in the October 31 and October 7 LOMRs; however, the datum has been updated.

* BFEs - Base Flood Elevations

DETERMINATION

This document provides the determination from the Department of Homeland Security's Federal Emergency Management Agency (FEMA) regarding a request for a Letter of Map Revision (LOMR) for the area described above. Using the information submitted, we have determined that a revision to the flood hazards depicted in the Flood Insurance Study (FIS) report and/or National Flood Insurance Program (NFIP) map is warranted. This document revises the effective NFIP map, as indicated in the attached documentation. Please use the enclosed annotated map panels revised by this LOMR for floodplain management purposes and for all flood insurance policies and renewals in your community.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Information eXchange toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

COMMUNITY INFORMATION

APPLICABLE NFIP REGULATIONS/COMMUNITY OBLIGATION

We have made this determination pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (P.L. 93-234) and in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, P.L. 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65. Pursuant to Section 1361 of the National Flood Insurance Act of 1968, as amended, communities participating in the NFIP are required to adopt and enforce floodplain management regulations that meet or exceed NFIP criteria. These criteria, including adoption of the FIS report and FIRM, and the modifications made by this LOMR, are the minimum requirements for continued NFIP participation and do not supersede more stringent State/Commonwealth or local requirements to which the regulations apply.

COMMUNITY REMINDERS

We based this determination on the base (1-percent-annual-chance) flood discharges computed in the FIS for your community without considering subsequent changes in watershed characteristics that could increase flood discharges. Future development of projects upstream could cause increased flood discharges, which could cause increased flood hazards. A comprehensive restudy of your community's flood hazards would consider the cumulative effects of development on flood discharges subsequent to the publication of the FIS report for your community and could, therefore, establish greater flood hazards in this area.

Your community must regulate all proposed floodplain development and ensure that permits required by Federal and/or State/Commonwealth law have been obtained. State/Commonwealth or community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction or may limit development in floodplain areas. If your State/Commonwealth or community has adopted more restrictive or comprehensive floodplain management criteria, those criteria take precedence over the minimum NFIP requirements.

We will not print and distribute this LOMR to primary users, such as local insurance agents or mortgage lenders; instead, the community will serve as a repository for the new data. We encourage you to disseminate the information in this LOMR by preparing a news release for publication in your community's newspaper that describes the revision and explains how your community will provide the data and help interpret the NFIP maps. In that way, interested persons, such as property owners, insurance agents, and mortgage lenders, can benefit from the information.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Information eXchange toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

We have designated a Consultation Coordination Officer (CCO) to assist your community. The CCO will be the primary liaison between your community and FEMA. For information regarding your CCO, please contact:

Mr. Jeffrey D. Lusk
Director, Mitigation Division
Federal Emergency Management Agency, Region IX
1111 Broadway, Suite 1200
Oakland, CA 94607-4052
(510) 627-7175

STATUS OF THE COMMUNITY NFIP MAPS

We will not physically revise and republish the FIRM and FIS report for your community to reflect the modifications made by this LOMR at this time. When changes to the previously cited FIRM panel(s) and FIS report warrant physical revision and republication in the future, we will incorporate the modifications made by this LOMR at that time.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Information eXchange toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

COMMUNITY INFORMATION (CONTINUED)

This revision is effective as of the date of this letter. Any requests to review or alter this determination should be made within 30 days and must be based on scientific or technical data.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Information eXchange toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
					(FEET NAVD)			
16 East (McMicken Wash)	**Revised Data**							
A	0	77	494	9.3	1,341.3	1,341.3	1,341.9	0.6
B	1,236	124	708	8.3	1,347.6	1,347.6	1,348.0	0.4
C	3,272	104	470	8.7	1,359.9	1,359.9	1,359.9	0.0
D	5,426	390	975	5.4	1,374.6	1,374.6	1,375.0	0.4
E	6,747	139	571	7.2	1,385.3	1,385.3	1,385.3	0.0
F	7,591	210	513	5.3	1,390.7	1,390.7	1,391.3	0.6
G	8,403	250	535	4.7	1,396.8	1,396.8	1,397.5	0.7

DATA REVISED BY LOMR EFFECTIVE: OCTOBER 17, 2013

[1]Stream Distance in Feet Above Beardsley Canal

REVISED TO REFLECT LOMR EFFECTIVE: October 7. 2014

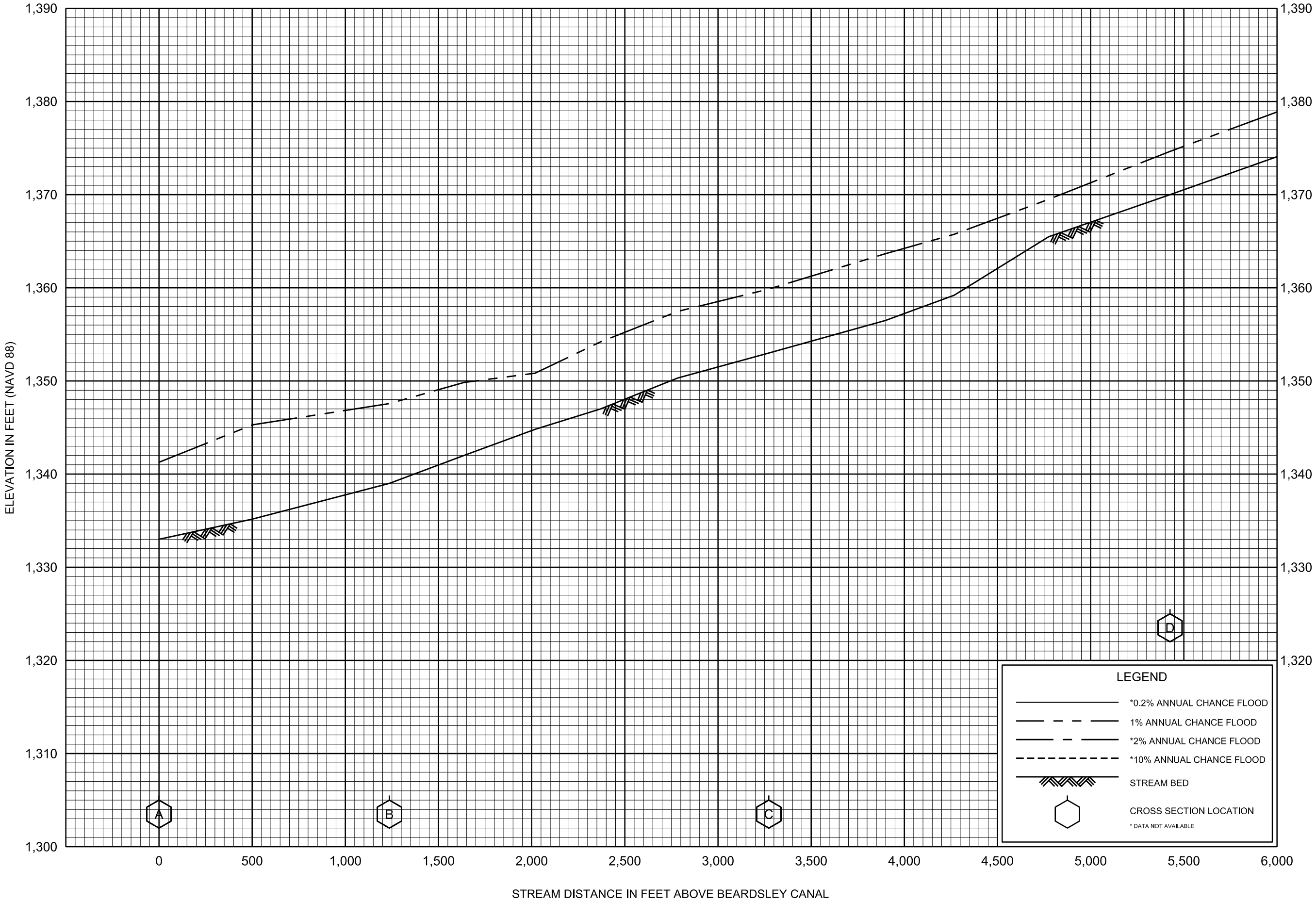
TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ AND INCORPORATED AREAS

FLOODWAY DATA

16 EAST (MCMICKEN WASH)



FLOOD PROFILES REVISED TO REFLECT LOMR

EFFECTIVE: October 7, 2014

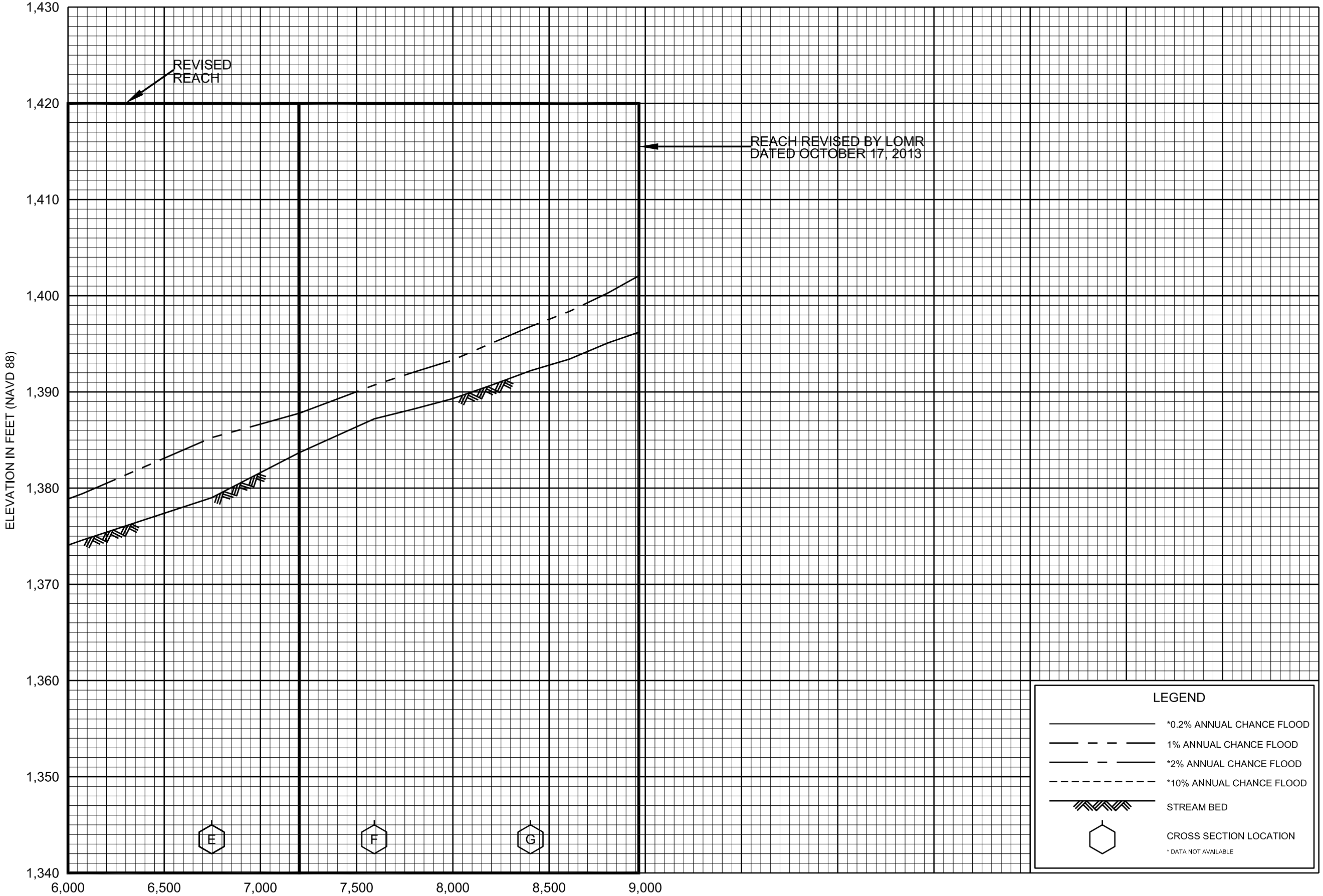
16 EAST (McMicken Wash)

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ

AND INCORPORATED AREAS

01P



FLOOD PROFILES REVISED TO REFLECT LOMR

EFFECTIVE: October 7, 2014

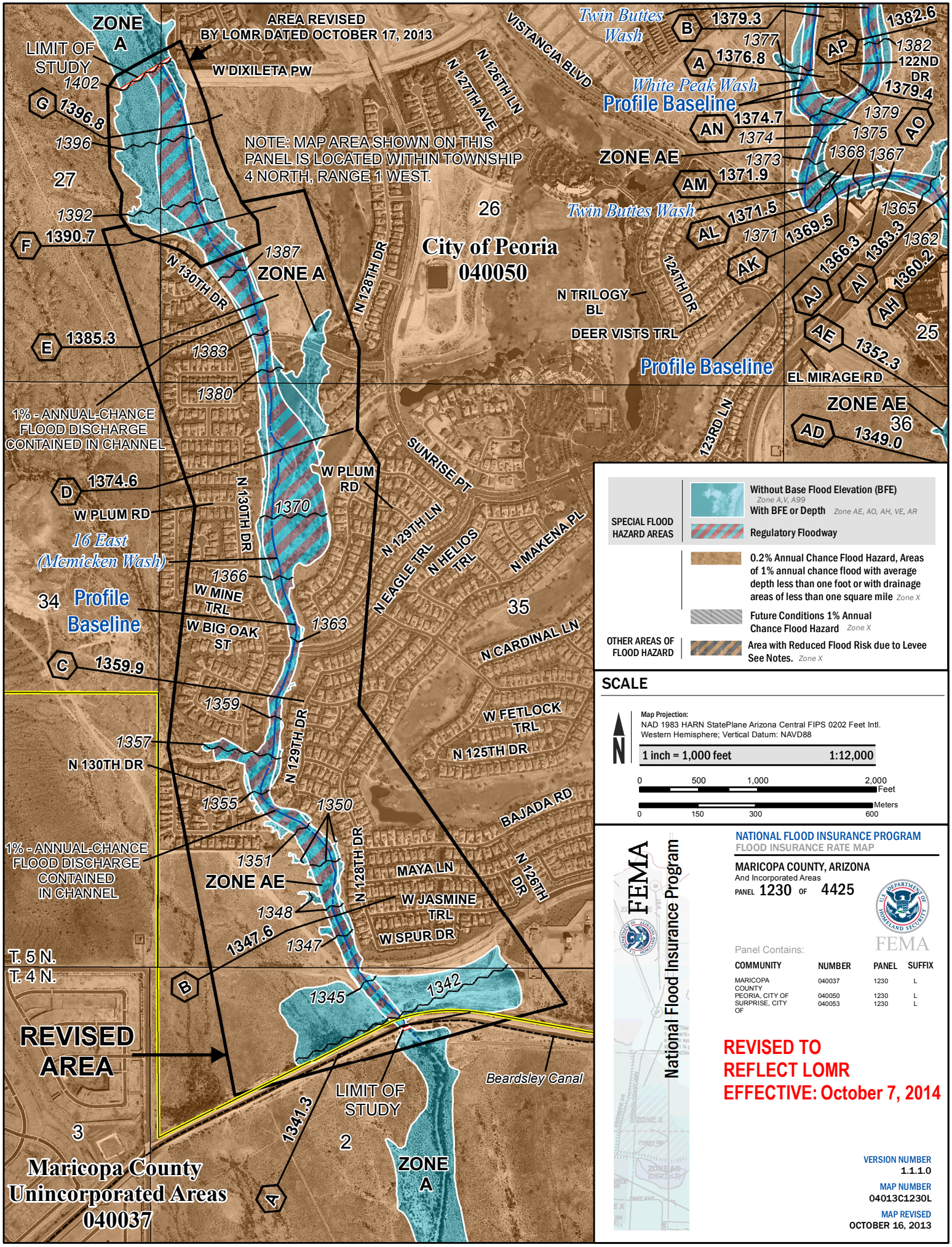
16 EAST (McMicken Wash)

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ

AND INCORPORATED AREAS

02P


ZONE A
LIMIT OF STUDY
AREA REVISED BY LOMR DATED OCTOBER 17, 2013
W DIXILETA PW
VISTANCIA BLVD
N 127TH AVE
N 126TH LN
Twin Buttes Wash
White Peak Wash
Profile Baseline
ZONE AE
NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 4 NORTH, RANGE 1 WEST.
27
26
25
36
35
34
City of Peoria
040050
N 130TH DR
N 128TH DR
N 124TH DR
N TRILOGY BL
DEER VISTS TRL
EL MIRAGE RD
123RD LN
SUNRISE PT
W PLUM RD
N 129TH LN
N EAGLE TRL
N HELIOS TRL
N MAKENA PL
16 East
(Memicken Wash)
W MINE TRL
W BIG OAK ST
N CARDINAL LN
W FETLOCK TRL
N 125TH DR
N 129TH DR
BAJADA RD
MAYA LN
N 126TH DR
W JASMINE TRL
W SPUR DR
1% - ANNUAL-CHANCE FLOOD DISCHARGE CONTAINED IN CHANNEL
1% - ANNUAL-CHANCE FLOOD DISCHARGE CONTAINED IN CHANNEL
T. 5 N.
T. 4 N.
REVISED AREA
Beardsley Canal
LIMIT OF STUDY
Maricopa County
Unincorporated Areas
040037
3
2
B 1379.3
A 1376.8
AP 1382.6
1377
1382
122ND DR
1379.4
AN 1374.7
1379
1375
AO
1374
1373
1368
1367
AM 1371.9
1365
AL 1371.5
1371
1369.5
1363.3
1362
AK
1366.3
AJ
AI
1360.2
AH
AE 1352.3
AD 1349.0
G 1396.8
1396
1402
1392
F 1390.7
1387
ZONE A
E 1385.3
1383
1380
D 1374.6
1370
1366
1363
C 1359.9
1359
1357
N 130TH DR
1355
1350
1351
ZONE AE
1348
1347.6
1347
B
1345
1342
1341.3
A
ZONE A
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
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
OTHER AREAS OF FLOOD HAZARD
Area with Reduced Flood Risk due to Levee See Notes. Zone X
SCALE
Map Projection:
NAD 1983 HARN StatePlane Arizona Central FIPS 0202 Feet Intl.
Western Hemisphere; Vertical Datum: NAVD88
1 inch = 1,000 feet 1:12,000
0 500 1,000 2,000 Feet
0 150 300 600 Meters
FEMA
National Flood Insurance Program
NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP
MARICOPA COUNTY, ARIZONA
And Incorporated Areas
PANEL 1230 OF 4425
FEMA
Panel Contains:
COMMUNITY NUMBER PANEL SUFFIX
MARICOPA COUNTY 040037 1230 L
PEORIA, CITY OF 040050 1230 L
SURPRISE, CITY OF 040053 1230 L
REVISED TO REFLECT LOMR EFFECTIVE: October 7, 2014
VERSION NUMBER
1.1.1.0
MAP NUMBER
04013C1230L
MAP REVISED
OCTOBER 16, 2013

Appendix B

Previous Study Excerpts

MASTER DRAINAGE,
PHASE I, PHASE II, AND PROPOSED PHASE III
DRAINAGE REPORT
FOR
VISTANCIA

September 22, 2006

WP #032007

Prepared for:

Vistancia, L.L.C.
8631 W. Union Hills Drive
Suite 203
Peoria, AZ 85382

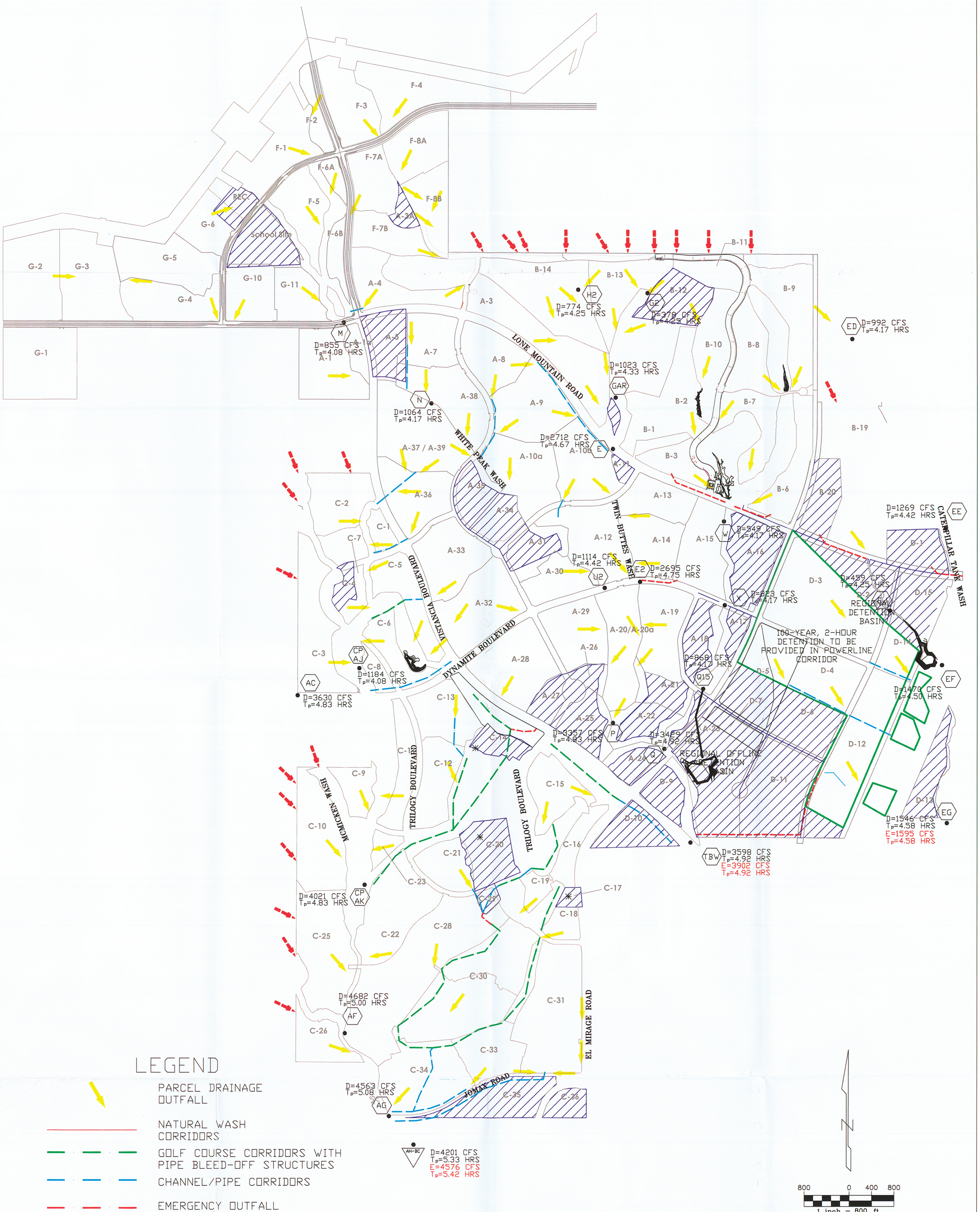
Submitted to:

City of Peoria
8401 West Monroe Street
Peoria, AZ 85345

Prepared by:

Wood, Patel & Associates, Inc.
2051 West Northern Avenue
Suite 100
Phoenix, AZ 85021
Phone: (602) 335-8500
Fax: (602) 335-8580
Website: www.woodpatel.com

Engineer



LEGEND

- PARCEL DRAINAGE OUTFALL
- NATURAL WASH CORRIDORS
- GOLF COURSE CORRIDORS WITH PIPE BLEED-OFF STRUCTURES
- CHANNEL/PIPE CORRIDORS
- EMERGENCY OUTFALL CORRIDORS
- PARCELS REQUIRED TO PROVIDE 100-YEAR, 2-HOUR DETENTION
- OFF-SITE IMPACTS
- A: D=1000 CFS, Tp=4.00 HRS; E=1000 CFS, Tp=4.00 HRS — CONCENTRATION POINT WITH 100-YR, 6-HR DISCHARGE AND TIME TO PEAK; D=DEVELOPED; E=EXISTING
- * PARCELS 100-YEAR, 2-HOUR DETENTION BEING PROVIDED IN ADJACENT GOLF COURSE

VISTANCIA
DRAINAGE MASTER PLAN

PLATE 9

WOOD/PATEL ASSOCIATES
Civil Engineers
Hydrologists
Land Surveyors
(602) 335-8500

N:\2003\032007\project support\hydro\exhibits\ masterdrainageplan06-01-06.dwg

Appendix C

NOAA Atlas 14 Rainfall Data

NOAA Atlas 14, Volume 1, Version 5
Location name: Peoria, Arizona, USA*
Latitude: 33.7249°, Longitude: -112.3397°
Elevation: 1348 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

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

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.197** (0.158-0.251)	**0.256** (0.207-0.328)	**0.348** (0.278-0.442)	**0.418** (0.332-0.529)	**0.512** (0.402-0.647)	**0.585** (0.452-0.735)	**0.659** (0.502-0.829)	**0.736** (0.551-0.926)	**0.837** (0.611-1.05)	**0.914** (0.654-1.15)
10-min	**0.299** (0.241-0.381)	**0.390** (0.315-0.498)	**0.529** (0.423-0.673)	**0.636** (0.505-0.805)	**0.780** (0.612-0.985)	**0.890** (0.689-1.12)	**1.00** (0.764-1.26)	**1.12** (0.838-1.41)	**1.27** (0.930-1.60)	**1.39** (0.995-1.76)
15-min	**0.371** (0.298-0.473)	**0.484** (0.390-0.618)	**0.656** (0.524-0.834)	**0.788** (0.627-0.998)	**0.966** (0.759-1.22)	**1.10** (0.854-1.39)	**1.24** (0.947-1.56)	**1.39** (1.04-1.75)	**1.58** (1.15-1.99)	**1.72** (1.23-2.18)
30-min	**0.499** (0.402-0.637)	**0.651** (0.526-0.832)	**0.884** (0.706-1.12)	**1.06** (0.844-1.34)	**1.30** (1.02-1.64)	**1.49** (1.15-1.87)	**1.68** (1.28-2.11)	**1.87** (1.40-2.35)	**2.13** (1.55-2.68)	**2.32** (1.66-2.93)
60-min	**0.618** (0.497-0.788)	**0.806** (0.650-1.03)	**1.09** (0.874-1.39)	**1.31** (1.04-1.66)	**1.61** (1.26-2.04)	**1.84** (1.42-2.31)	**2.07** (1.58-2.61)	**2.32** (1.73-2.91)	**2.63** (1.92-3.32)	**2.88** (2.06-3.63)
2-hr	**0.718** (0.590-0.893)	**0.926** (0.759-1.16)	**1.24** (1.01-1.54)	**1.48** (1.20-1.84)	**1.80** (1.44-2.23)	**2.05** (1.61-2.53)	**2.31** (1.79-2.84)	**2.58** (1.96-3.15)	**2.93** (2.18-3.59)	**3.21** (2.33-3.94)
3-hr	**0.758** (0.621-0.947)	**0.967** (0.797-1.22)	**1.28** (1.05-1.60)	**1.52** (1.24-1.89)	**1.85** (1.48-2.29)	**2.12** (1.67-2.62)	**2.40** (1.87-2.96)	**2.70** (2.06-3.32)	**3.12** (2.31-3.82)	**3.45** (2.49-4.24)
6-hr	**0.874** (0.740-1.06)	**1.10** (0.938-1.34)	**1.42** (1.20-1.72)	**1.67** (1.39-2.01)	**2.02** (1.66-2.42)	**2.29** (1.85-2.73)	**2.57** (2.04-3.07)	**2.86** (2.24-3.42)	**3.27** (2.49-3.90)	**3.60** (2.67-4.30)
12-hr	**0.991** (0.849-1.17)	**1.25** (1.07-1.48)	**1.58** (1.35-1.87)	**1.84** (1.56-2.17)	**2.20** (1.84-2.58)	**2.47** (2.04-2.90)	**2.75** (2.25-3.23)	**3.04** (2.44-3.57)	**3.43** (2.68-4.04)	**3.73** (2.87-4.43)
24-hr	**1.22** (1.06-1.41)	**1.54** (1.34-1.78)	**1.99** (1.72-2.29)	**2.34** (2.01-2.69)	**2.82** (2.41-3.23)	**3.20** (2.72-3.67)	**3.60** (3.03-4.12)	**4.02** (3.34-4.60)	**4.58** (3.76-5.26)	**5.03** (4.08-5.79)
2-day	**1.28** (1.09-1.51)	**1.63** (1.39-1.92)	**2.13** (1.80-2.50)	**2.52** (2.12-2.96)	**3.06** (2.55-3.59)	**3.49** (2.89-4.08)	**3.93** (3.24-4.59)	**4.40** (3.58-5.14)	**5.04** (4.04-5.90)	**5.54** (4.39-6.53)
3-day	**1.39** (1.19-1.64)	**1.77** (1.52-2.09)	**2.32** (1.98-2.73)	**2.76** (2.34-3.24)	**3.38** (2.85-3.95)	**3.87** (3.24-4.51)	**4.38** (3.65-5.11)	**4.93** (4.07-5.74)	**5.69** (4.64-6.64)	**6.30** (5.08-7.37)
4-day	**1.50** (1.29-1.76)	**1.91** (1.65-2.25)	**2.52** (2.16-2.95)	**3.00** (2.57-3.51)	**3.69** (3.14-4.31)	**4.25** (3.59-4.94)	**4.84** (4.07-5.63)	**5.46** (4.56-6.34)	**6.34** (5.24-7.37)	**7.06** (5.77-8.22)
7-day	**1.68** (1.44-1.99)	**2.15** (1.84-2.54)	**2.84** (2.42-3.34)	**3.38** (2.88-3.98)	**4.16** (3.52-4.88)	**4.78** (4.03-5.60)	**5.44** (4.56-6.36)	**6.14** (5.10-7.17)	**7.13** (5.86-8.33)	**7.92** (6.46-9.28)
10-day	**1.82** (1.57-2.13)	**2.33** (2.01-2.72)	**3.06** (2.63-3.58)	**3.64** (3.13-4.26)	**4.46** (3.81-5.20)	**5.12** (4.34-5.95)	**5.82** (4.90-6.73)	**6.54** (5.48-7.57)	**7.56** (6.27-8.76)	**8.38** (6.89-9.71)
20-day	**2.20** (1.91-2.52)	**2.82** (2.45-3.25)	**3.71** (3.22-4.26)	**4.38** (3.79-5.03)	**5.28** (4.55-6.05)	**5.97** (5.13-6.82)	**6.66** (5.70-7.62)	**7.37** (6.29-8.42)	**8.32** (7.04-9.51)	**9.05** (7.61-10.4)
30-day	**2.56** (2.20-2.97)	**3.29** (2.84-3.82)	**4.32** (3.72-5.01)	**5.10** (4.38-5.90)	**6.15** (5.26-7.10)	**6.95** (5.93-8.02)	**7.77** (6.60-8.97)	**8.60** (7.28-9.93)	**9.71** (8.15-11.2)	**10.6** (8.81-12.2)
45-day	**3.01** (2.62-3.47)	**3.88** (3.37-4.46)	**5.09** (4.41-5.87)	**5.99** (5.18-6.89)	**7.17** (6.18-8.25)	**8.06** (6.93-9.27)	**8.96** (7.67-10.3)	**9.85** (8.40-11.3)	**11.0** (9.35-12.7)	**11.9** (10.0-13.8)
60-day	**3.31** (2.89-3.78)	**4.27** (3.74-4.88)	**5.60** (4.89-6.39)	**6.57** (5.71-7.49)	**7.82** (6.79-8.91)	**8.75** (7.58-9.97)	**9.68** (8.35-11.0)	**10.6** (9.10-12.1)	**11.8** (10.1-13.5)	**12.6** (10.8-14.5)

[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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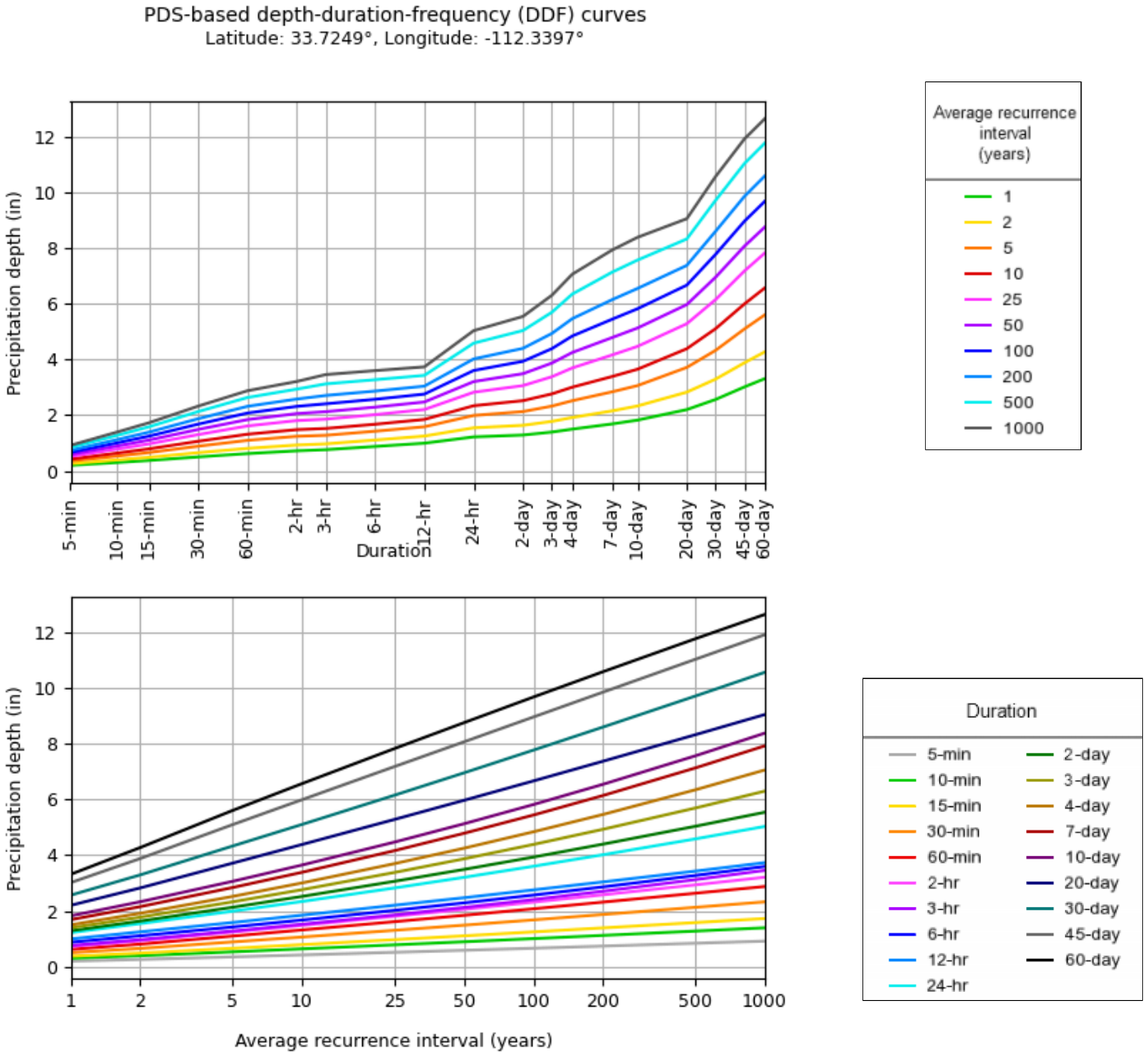
PF graphical

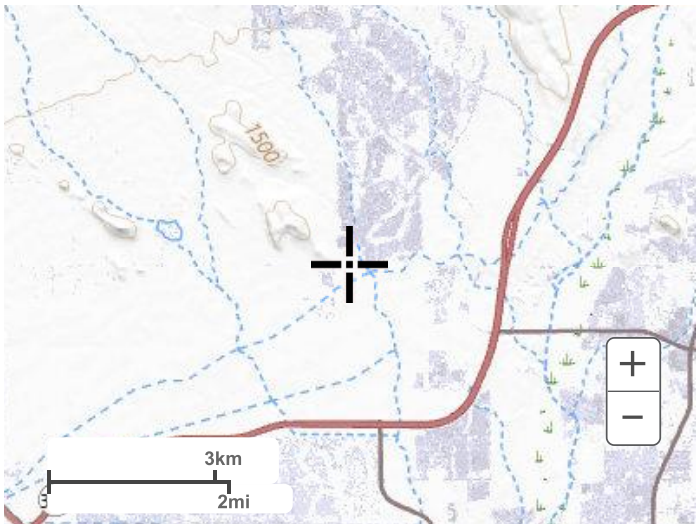


NOAA Atlas 14, Volume 1, Version 5 Created (GMT): Wed Jul 9 18:38:20 2025

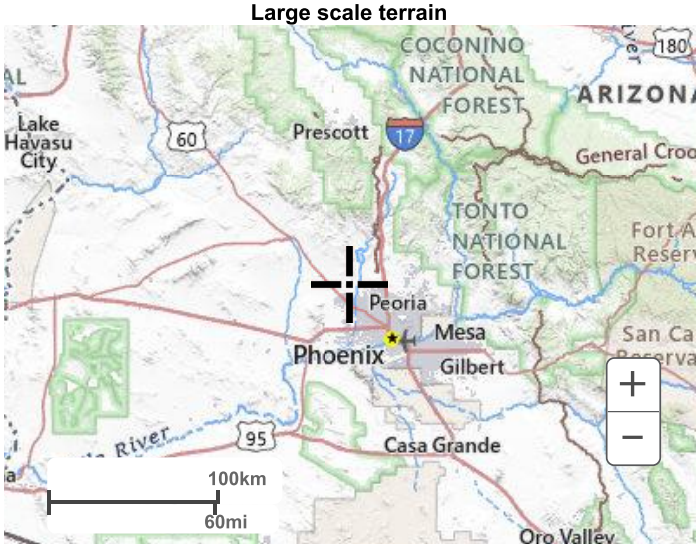
Back to Top

Maps & aerials

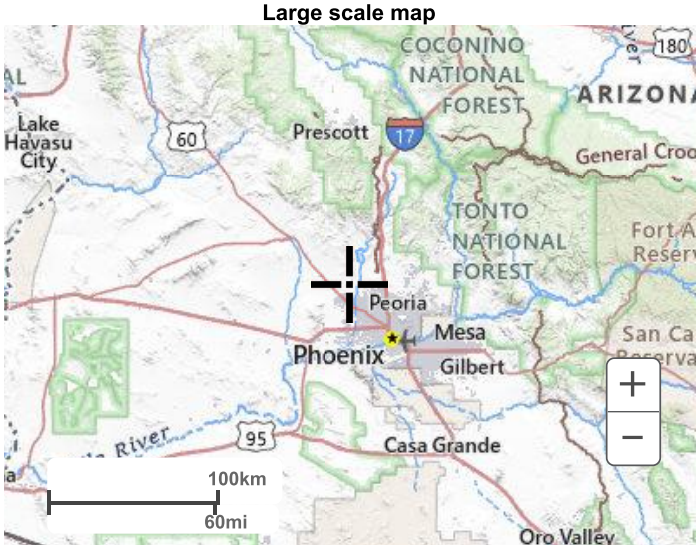
Small scale terrain



Large scale terrain



Large scale map



Large scale aerial

Back to Top

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

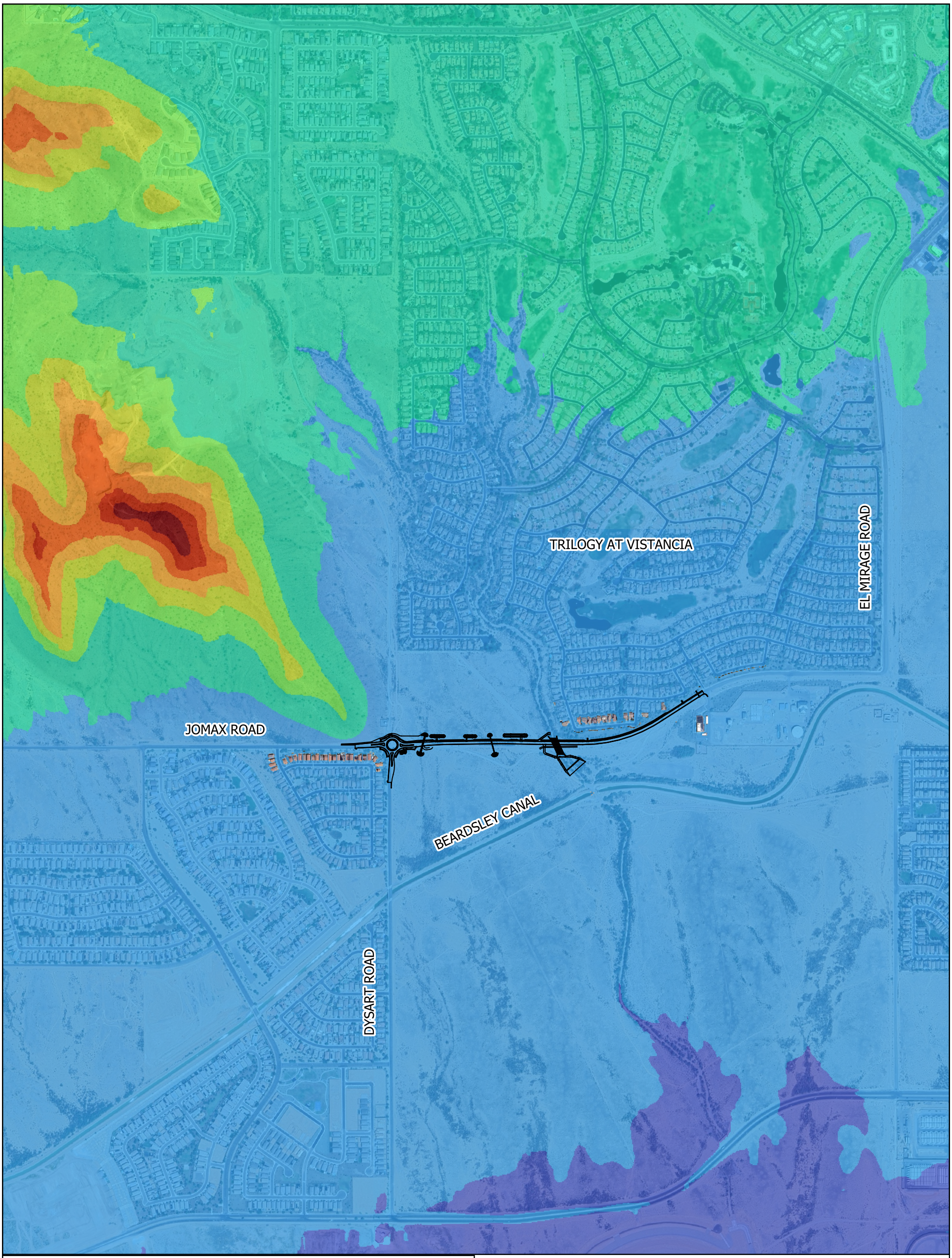
Disclaimer

Appendix D

Hydrology

Appendix D.1

Elevation Map Exhibit



LEGEND

ROADWAY IMPROVEMENTS

EXISTING ELEVATION
- 1223 - 1273
- 1273 - 1323
- 1323 - 1373
- 1373 - 1423
- 1423 - 1473
- 1473 - 1523
- 1523 - 1573

EXISTING ELEVATION
- 1573 - 1623
- 1623 - 1673
- 1673 - 1736

N

0 1,000 2,000 ft

JOMAX ROAD - DYSART ROAD TO 126TH DRIVE ELEVATION MAP EXHIBIT

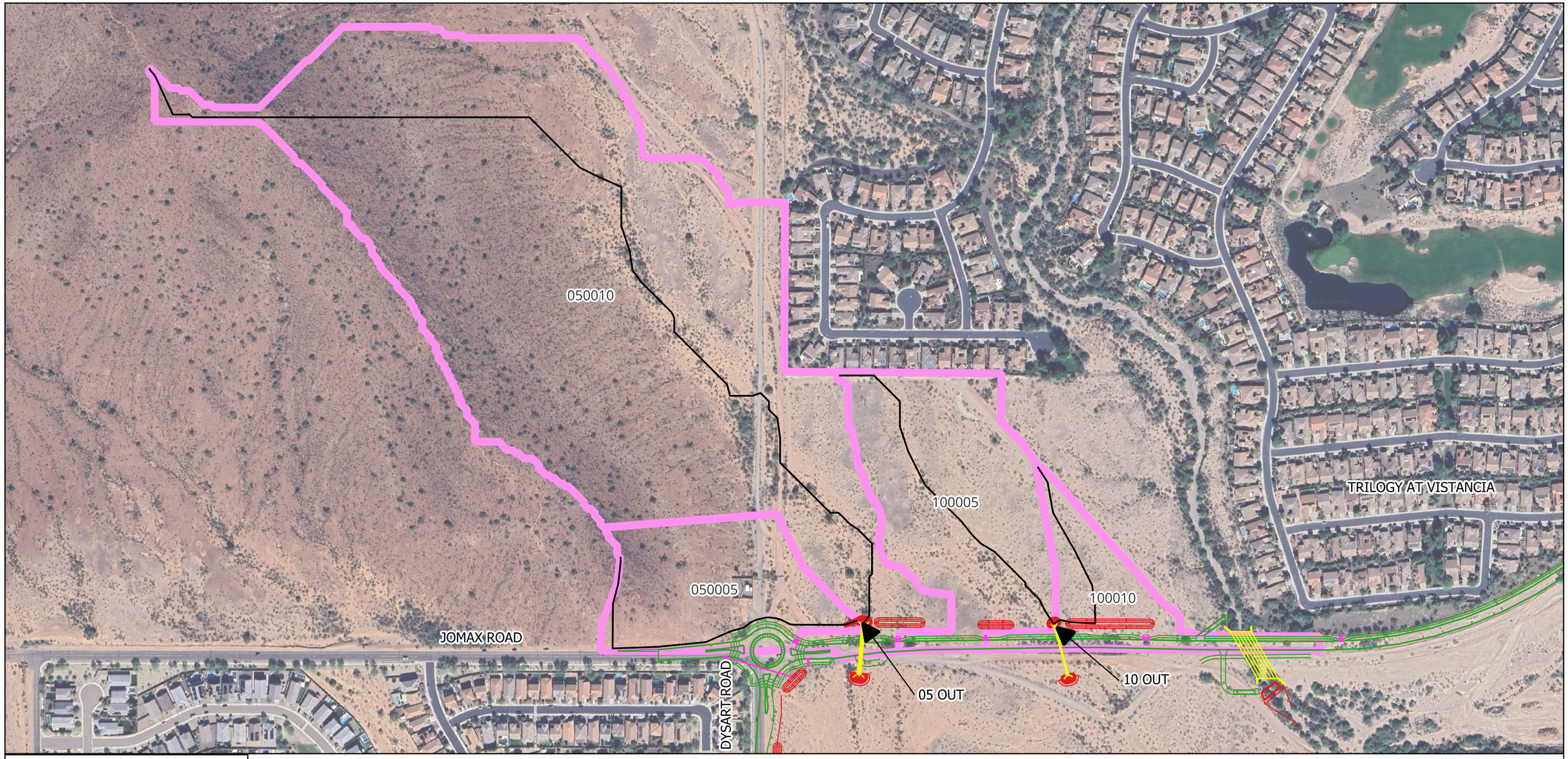
DATE: 10/08/2025

SHEET 1 OF 1

TYLin
1475 NORTH SCOTTSDALE ROAD
SUITE 450
SCOTTSDALE, AZ 85257

Appendix D.2

HEC-HMS Schematic Exhibit



LEGEND

- DRAINAGE AREAS
- FLOW PATHS

ROADWAY IMPROVEMENTS

- BASIN & GRADING
- CULVERT
- ROADWAY
- SCUPPER & STORM DRAIN

N

0 350 700 ft

JOMAX ROAD - DYSART ROAD TO 126TH DRIVE
HEC-HMS SCHEMATIC EXHIBIT

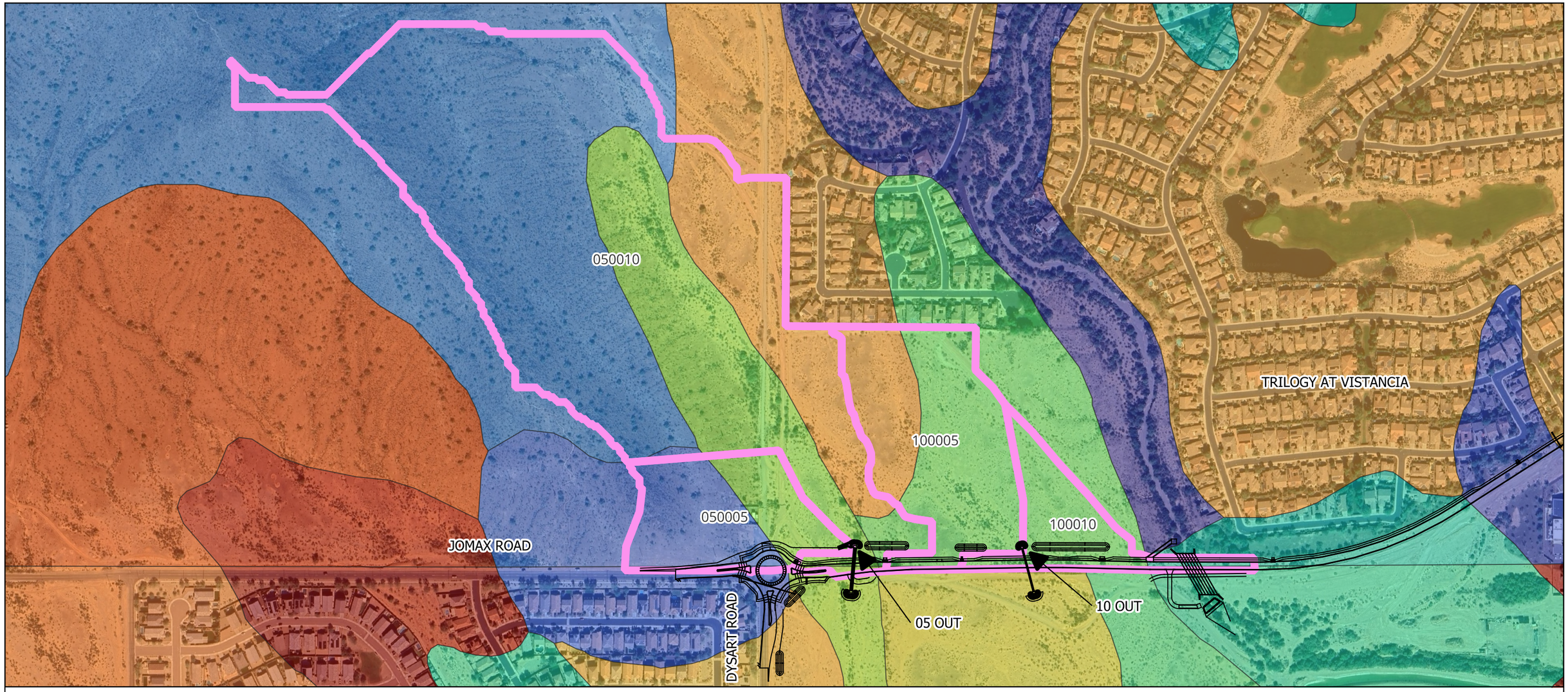
DATE: 05/11/2026

SHEET 1 OF 1

TYLin
1475 NORTH SCOTTSDALE ROAD
SUITE 450
SCOTTSDALE, AZ 85257

Appendix D.3

Soils Map Exhibit



LEGEND

- ROADWAY IMPROVEMENTS
- DRAINAGE AREAS

SOILS
- Brios-Carrizo complex 1 to 5 percent slopes
- Contine clay loam
- Ebon-Pinamt complex 0 to 10 percent slopes
- Ebon-Pinamt complex 3 to 20 percent slopes
- Gachado-Lomitas-Rock outcrop complex 7 to 55 percent slopes
- Gunsight-Cipriano complex 1 to 7 percent slopes

SOILS
- Gunsight-Pinal complex 1 to 10 percent slopes
- Gunsight-Rillito complex 0 to 10 percent slopes
- Gunsight-Rillito complex 1 to 25 percent slopes
- Mohall clay loam
- Mohall-Laveen association
- Perryville-Rillito complex 0 to 3 percent slopes
- Pinal-Suncity complex 0 to 3 percent slopes
- Pinamt-Tremant complex 1 to 10 percent slopes
- Tremant complex 0 to 3 percent slopes
- Tremant gravelly loams

SOILS
- Tremant-Rillito complex
- Tremant-Rillito complex 0 to 5 percent slopes
- Vecont loam

N

0 400 800 ft

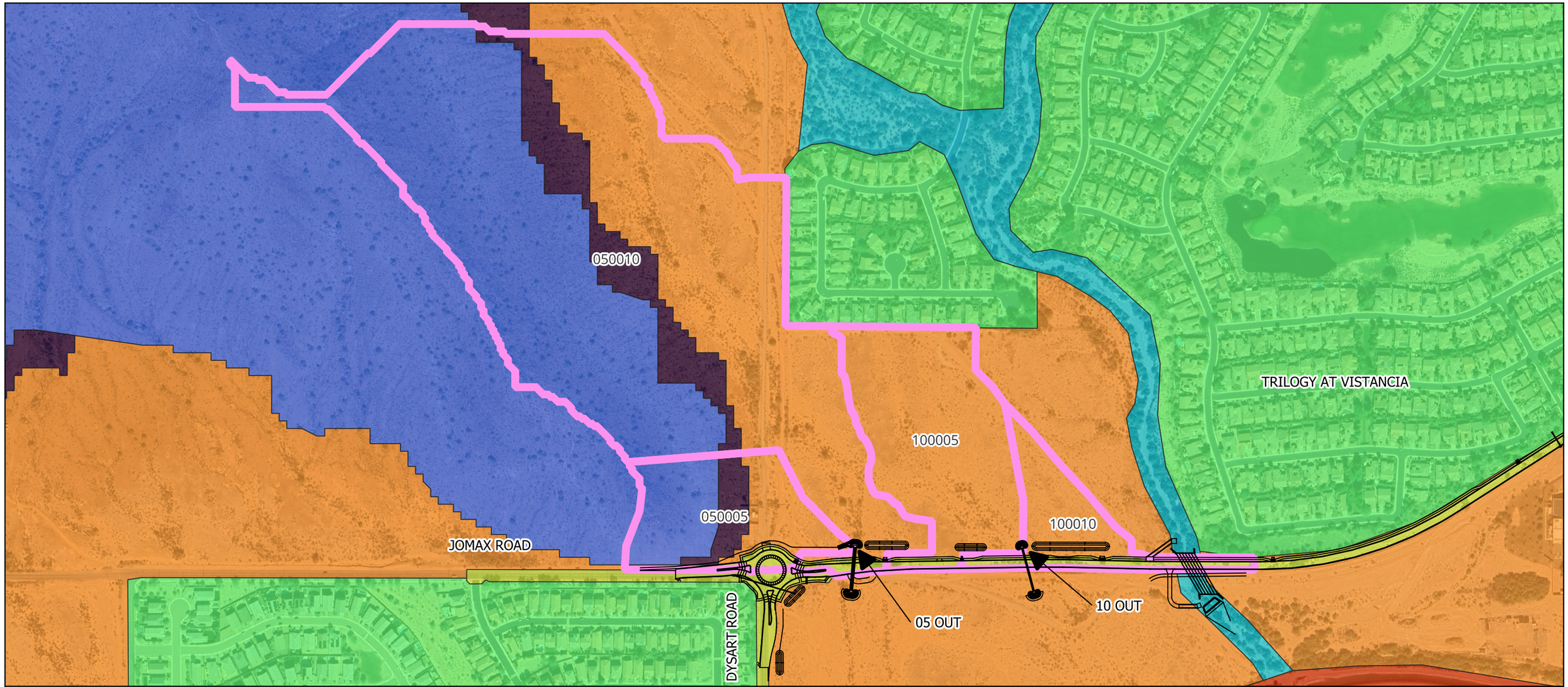
JOMAX ROAD - DYSART ROAD TO 126TH DRIVE
SOILS MAP EXHIBIT
DATE: 05/11/2026

SHEET 1 OF 1

TYLin
1475 NORTH SCOTTSDALE ROAD
SUITE 450
SCOTTSDALE, AZ 85257

Appendix D.4

Land Use Map Exhibit



LEGEND

- ROADWAY IMPROVEMENTS
- DRAINAGE AREAS

LAND USE

- HILLSOPES, SONORAN DESERT, MODERATE TOPOGRAPHIC RELIEF, SLOPES > 5%
- MOUNTAIN TERRAIN, HIGH TOPOGRAPHIC RELIEF, SLOPES > 10%
- PASSIVE OPEN SPACE (INCLUDES MOUNTAIN PRESERVES AND WASHES)
- SMALL LOT RESIDENTIAL - SINGLE FAMILY (4-6 DU PER ACRE)
- TRANSPORTATION
- UNDEVELOPED DESERT RANGELAND, LITTLE TOPOGRAPHIC RELIEF, SLOPES < 5%
- WATER

N

0 400 800 ft

JOMAX ROAD - DYSART ROAD TO 126TH DRIVE
LAND USE MAP EXHIBIT
DATE: 05/11/2026
SHEET 1 OF 1

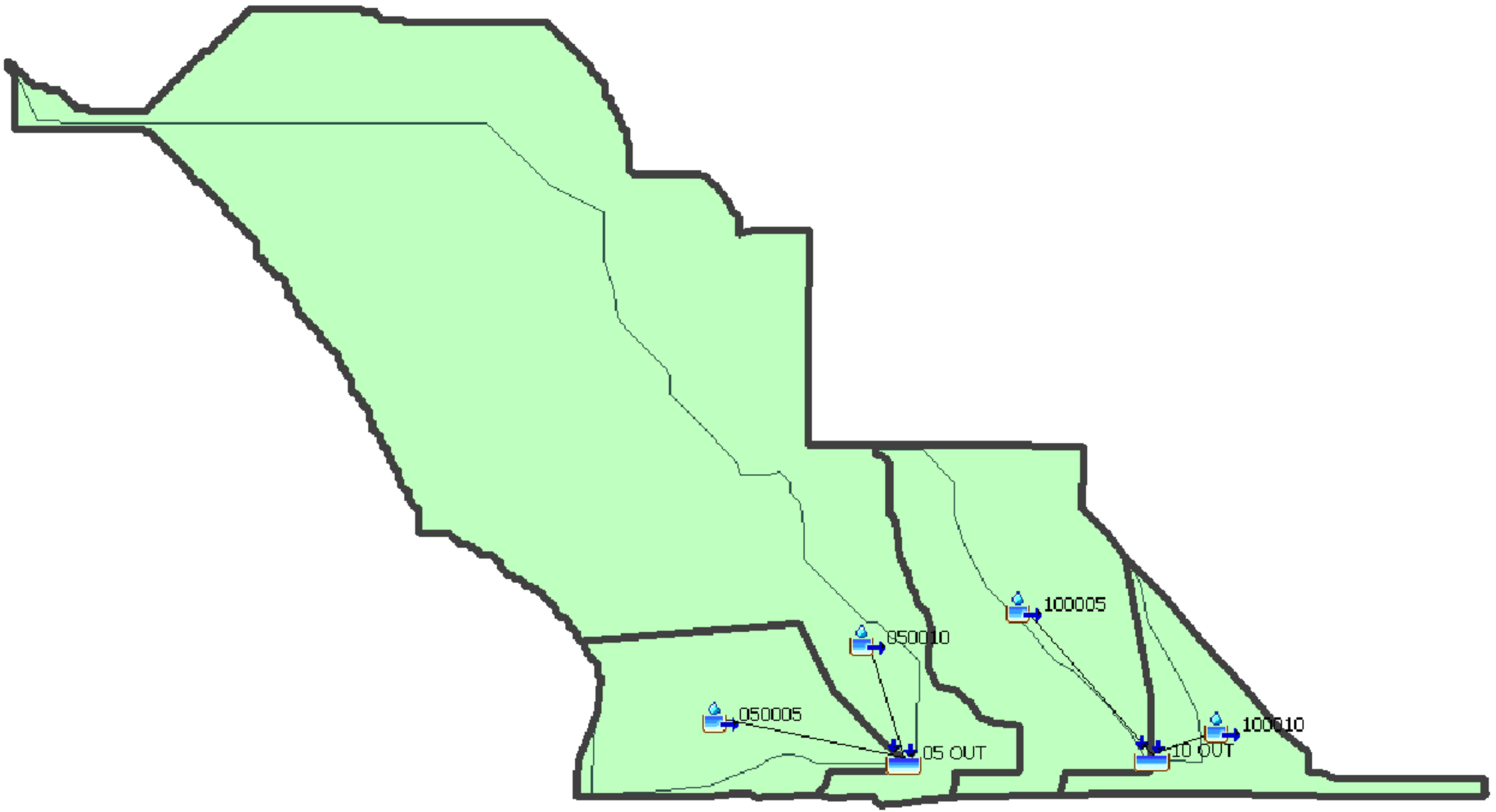
TYLin
1475 NORTH SCOTTSDALE ROAD
SUITE 450
SCOTTSDALE, AZ 85257

Appendix D.5

HEC-HMS Results

50 yr, 24 hr

HEC-HMS LAYOUT



Project: Jrdrt126 Offsite Hydrology
Simulation Run: 50 YR, 24 HR
Simulation Start: 30 November 2025, 24:00
Simulation End: 2 December 2025, 24:00

HMS Version: 4.12
Executed: 11 May 2026, 19:34

Global Parameter Summary - Subbasin

Location

Element Name	Longitude Degrees	Latitude Degrees
50010	-112.34	33.73
50005	-112.34	33.73
1E5	-112.34	33.73
1E5	-112.34	33.73

Area (MI2)

Element Name	Area (MI2)
50010	0.09
50005	0.01
1E5	0.02
1E5	0.01

Downstream

Element Name	Downstream
50010	05 out
50005	05 out
1E5	10 out
1E5	10 out

Loss Rate: Green and Ampt

Element Name	Percent Impervious Area	Initial Variable	Moisture Deficit	Wetting Front Suction	Hydraulic Conductivity
50010	12.3	Moisture Deficit	0.32	7.59	0.07
50005	8.6	Moisture Deficit	0.26	8.48	0.06
1E5	76.5	Moisture Deficit	0.25	5.82	0.28
1E5	80	Moisture Deficit	0.25	5.64	0.3

Canopy: Simple

Element Name	Allow Simultaneous Precip Et	Plant Uptake Method	Initial Canopy Storage Percent	Canopy Storage Capacity	Crop Coefficient
50010	No	None	0	0.23	1
50005	No	None	0	0.21	1
1E5	No	None	0	0.11	1
1E5	No	None	0	0.1	1

Transform: Clark

Element Name	Clark Method	Time Area Method	Flow Path Length	Flow Path Slope	Resistance Coefficient
50010	Maricopa County	Default	0.74	298.95	0.14
50005	Maricopa County	Default	0.23	287.73	0.15
1E5	Maricopa County	Default	0.24	70.81	0.03
1E5	Maricopa County	Default	0.14	65.4	0.04

Global Results Summary

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
50010	0.09	90.02	01Dec2025, 12:30	1.68
50005	0.01	17.67	01Dec2025, 12:20	1.69
05 out	0.1	104.14	01Dec2025, 12:30	1.68
1E5	0.02	42.41	01Dec2025, 12:15	2.63
1E5	0.01	16.22	01Dec2025, 12:10	2.71

10 out	0.03	58.37	01Dec2025, 12:15	2.65

Subbasin: 050010

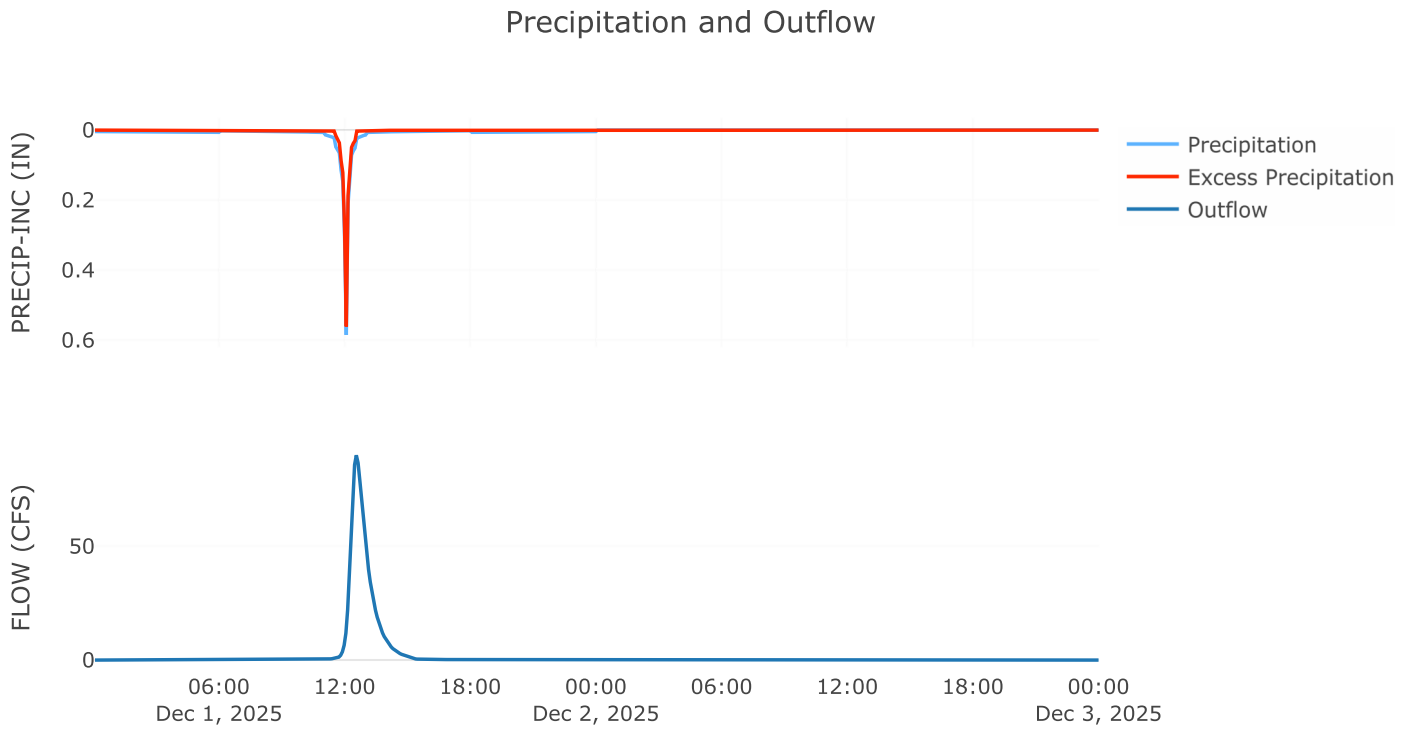
Area (MI2) : 0.09
Latitude Degrees : 33.73
Longitude Degrees : -112.34
Downstream : 05 out

Loss Rate: Green and Ampt	
Percent Impervious Area	12.3
Initial Variable	Moisture Deficit
Moisture Deficit	0.32
Wetting Front Suction	7.59
Hydraulic Conductivity	0.07

Canopy: Simple	
Allow Simultaneous Precip Et	No
Plant Uptake Method	None
Initial Canopy Storage Percent	0
Canopy Storage Capacity	0.23
Crop Coefficient	1

Transform: Clark	
Clark Method	Maricopa County
Time Area Method	Default
Flow Path Length	0.74
Flow Path Slope	298.95
Resistance Coefficient	0.14

Results: 050010	
Peak Discharge (CFS)	90.02
Time of Peak Discharge	01Dec2025, 12:30
Volume (IN)	1.68
Precipitation Volume (AC - FT)	15.02
Loss Volume (AC - FT)	7.16
Excess Volume (AC - FT)	7.86
Direct Runoff Volume (AC - FT)	7.86
Baseflow Volume (AC - FT)	0


Precipitation and Outflow
PRECIP-INC (IN)
0
0.2
0.4
0.6
FLOW (CFS)
50
0
06:00
Dec 1, 2025
12:00
18:00
00:00
Dec 2, 2025
06:00
12:00
18:00
00:00
Dec 3, 2025
Precipitation
Excess Precipitation
Outflow

Subbasin: 050005

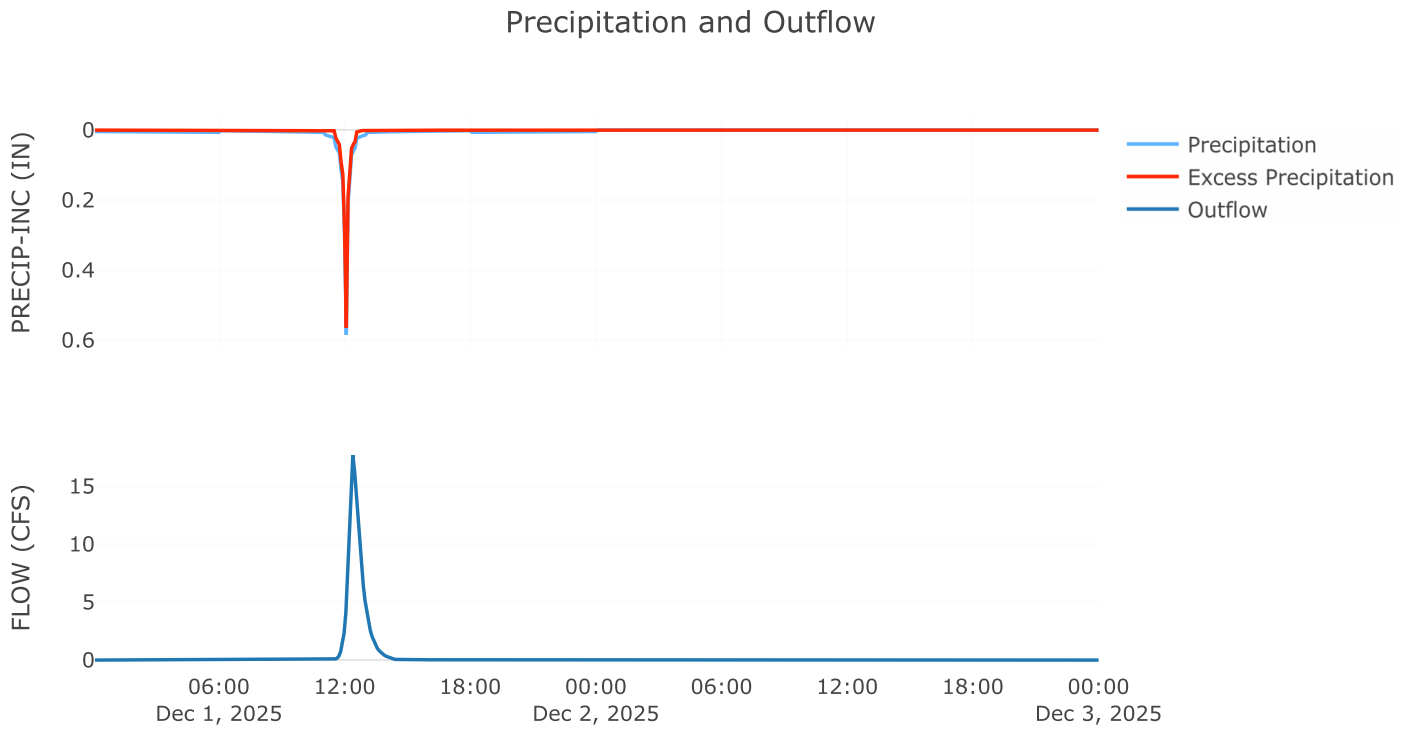
Area (MI2) : 0.01
Latitude Degrees : 33.73
Longitude Degrees : -112.34
Downstream : 05 out

Loss Rate: Green and Ampt	
Percent Impervious Area	8.6
Initial Variable	Moisture Deficit
Moisture Deficit	0.26
Wetting Front Suction	8.48
Hydraulic Conductivity	0.06

Canopy: Simple	
Allow Simultaneous Precip Et	No
Plant Uptake Method	None
Initial Canopy Storage Percent	0
Canopy Storage Capacity	0.21
Crop Coefficient	1

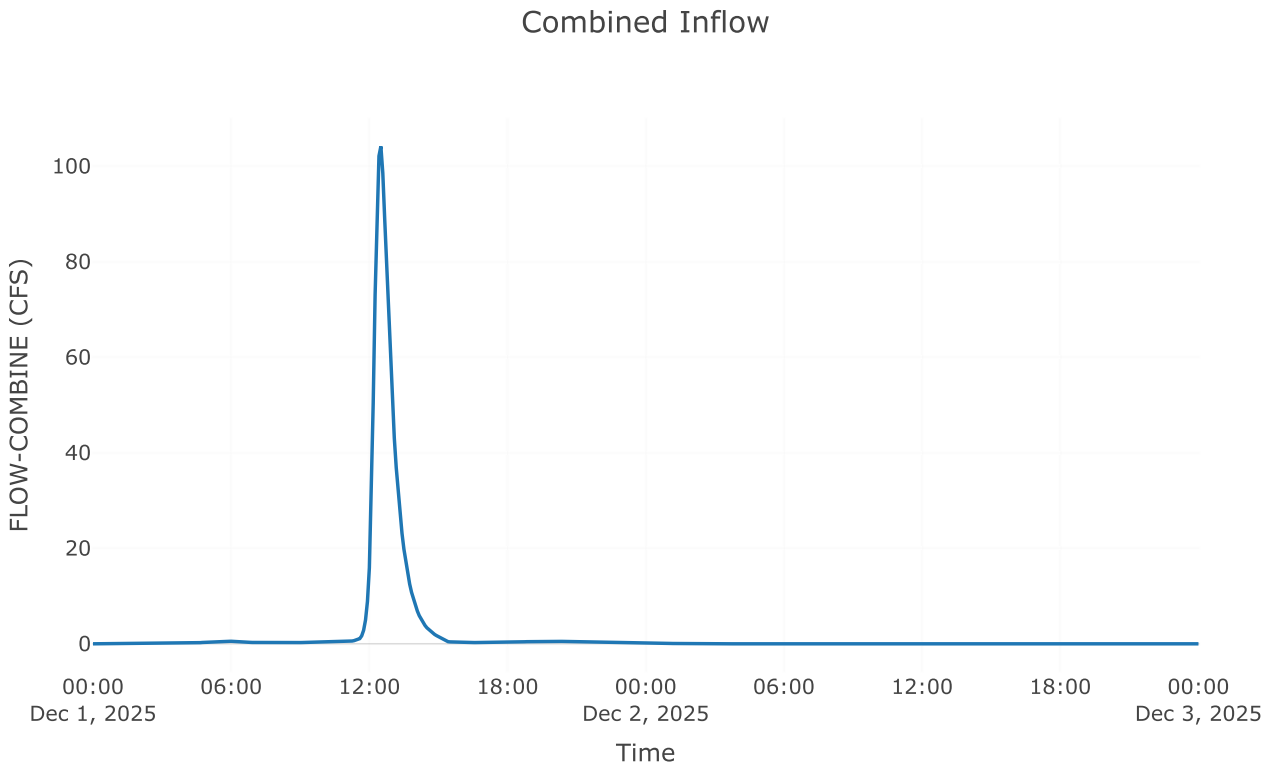
Transform: Clark	
Clark Method	Maricopa County
Time Area Method	Default
Flow Path Length	0.23
Flow Path Slope	287.73
Resistance Coefficient	0.15

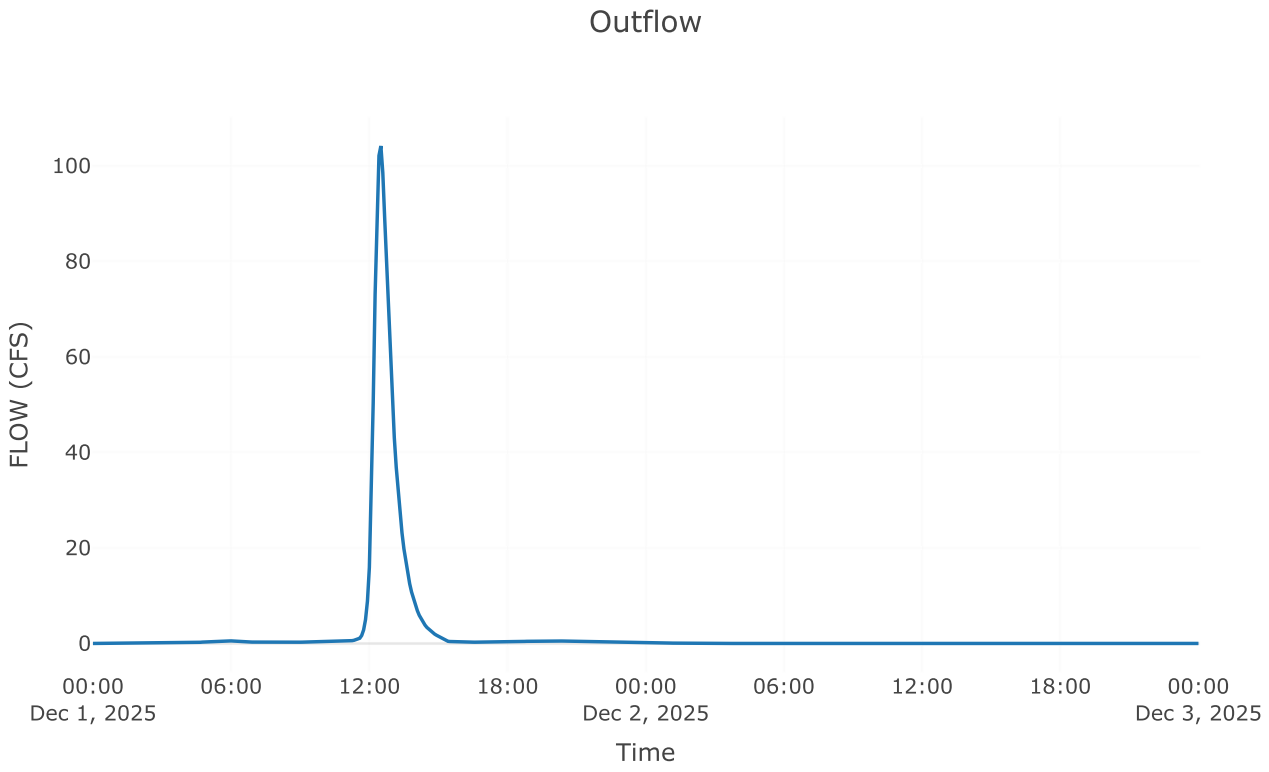
Results: 050005	
Peak Discharge (CFS)	17.67
Time of Peak Discharge	01Dec2025, 12:20
Volume (IN)	1.69
Precipitation Volume (AC - FT)	2.12
Loss Volume (AC - FT)	1
Excess Volume (AC - FT)	1.12
Direct Runoff Volume (AC - FT)	1.12
Baseflow Volume (AC - FT)	0


Precipitation and Outflow
PRECIP-INC (IN)
0
0.2
0.4
0.6
FLOW (CFS)
15
10
5
0
06:00
Dec 1, 2025
12:00
18:00
00:00
Dec 2, 2025
06:00
12:00
18:00
00:00
Dec 3, 2025
Precipitation
Excess Precipitation
Outflow

Sink: 05 OUT

Results: 05 OUT	
Peak Discharge (CFS)	104.14
Time of Peak Discharge	01Dec2025, 12:30
Volume (IN)	1.68


Combined Inflow
FLOW-COMBINE (CFS)
100
80
60
40
20
0
00:00
Dec 1, 2025
06:00
12:00
18:00
00:00
Dec 2, 2025
06:00
12:00
18:00
00:00
Dec 3, 2025
Time


Outflow
FLOW (CFS)
100
80
60
40
20
0
00:00
Dec 1, 2025
06:00
12:00
18:00
00:00
Dec 2, 2025
06:00
12:00
18:00
00:00
Dec 3, 2025
Time

Subbasin: 100005

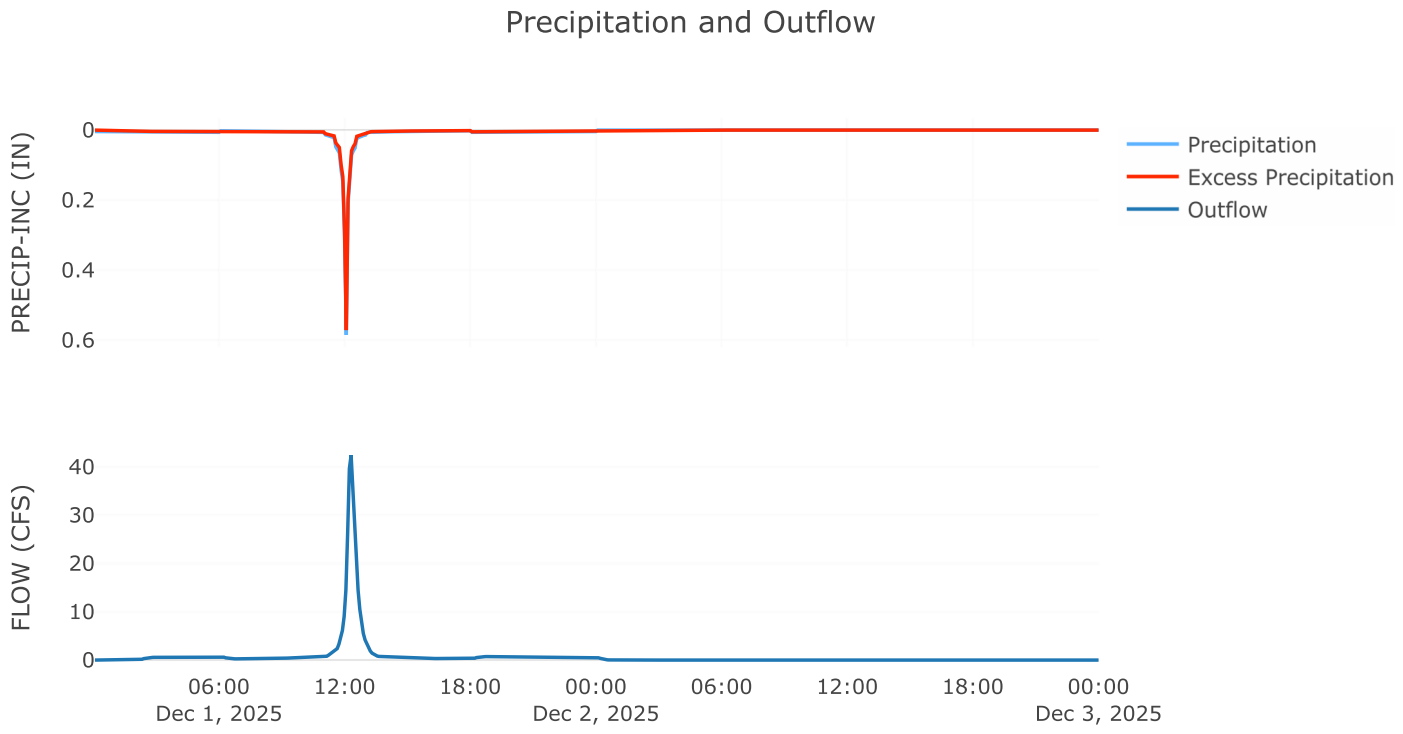
Area (MI2) : 0.02
Latitude Degrees : 33.73
Longitude Degrees : -112.34
Downstream : 10 out

Loss Rate: Green and Ampt	
Percent Impervious Area	76.5
Initial Variable	Moisture Deficit
Moisture Deficit	0.25
Wetting Front Suction	5.82
Hydraulic Conductivity	0.28

Canopy: Simple	
Allow Simultaneous Precip Et	No
Plant Uptake Method	None
Initial Canopy Storage Percent	0
Canopy Storage Capacity	0.11
Crop Coefficient	1

Transform: Clark	
Clark Method	Maricopa County
Time Area Method	Default
Flow Path Length	0.24
Flow Path Slope	70.81
Resistance Coefficient	0.03

Results: 100005	
Peak Discharge (CFS)	42.41
Time of Peak Discharge	01Dec2025, 12:15
Volume (IN)	2.63
Precipitation Volume (AC - FT)	3.45
Loss Volume (AC - FT)	0.61
Excess Volume (AC - FT)	2.84
Direct Runoff Volume (AC - FT)	2.84
Baseflow Volume (AC - FT)	0


Precipitation and Outflow
PRECIP-INC (IN)
0
0.2
0.4
0.6
FLOW (CFS)
40
30
20
10
0
06:00
Dec 1, 2025
12:00
18:00
00:00
Dec 2, 2025
06:00
12:00
18:00
00:00
Dec 3, 2025
Precipitation
Excess Precipitation
Outflow

Subbasin: 100010

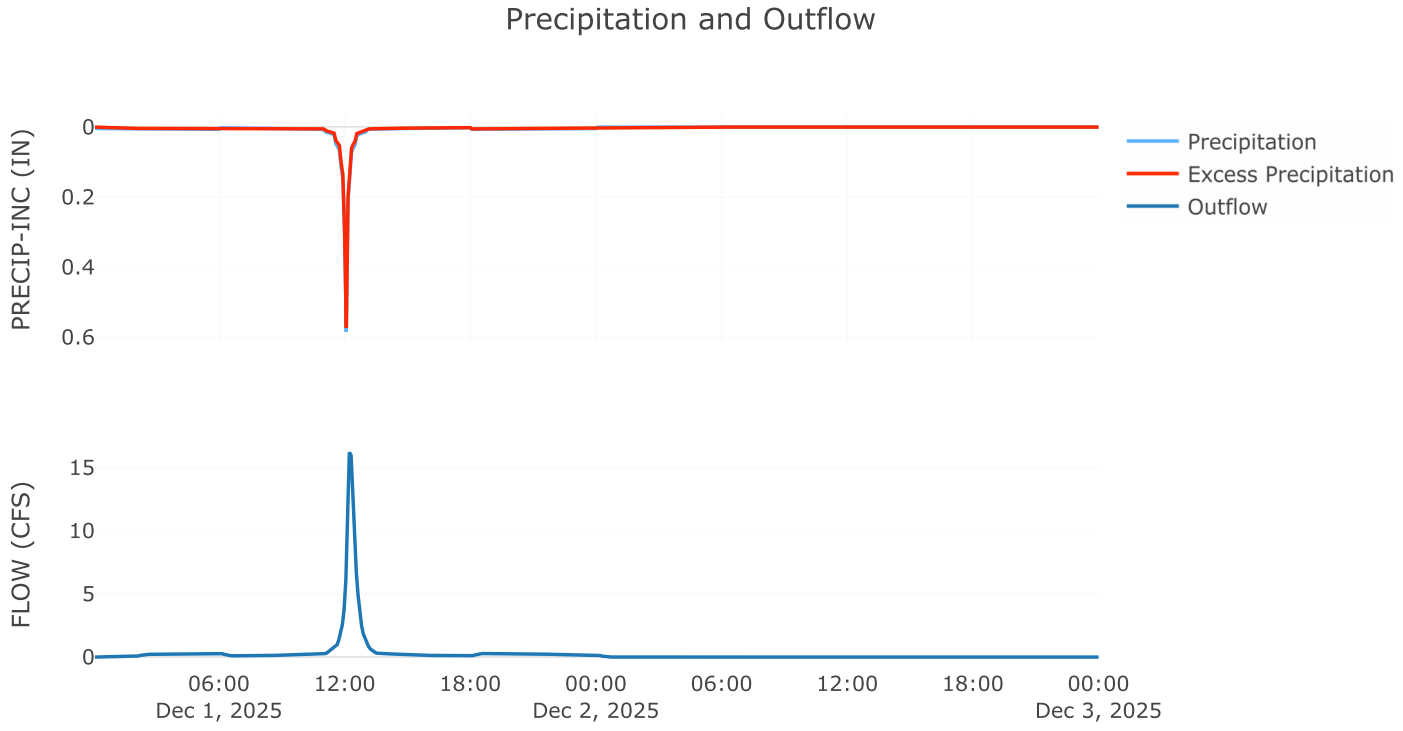
Area (MI2) : 0.01
Latitude Degrees : 33.73
Longitude Degrees : -112.34
Downstream : 10 out

Loss Rate: Green and Ampt	
Percent Impervious Area	80
Initial Variable	Moisture Deficit
Moisture Deficit	0.25
Wetting Front Suction	5.64
Hydraulic Conductivity	0.3

Canopy: Simple	
Allow Simultaneous Precip Et	No
Plant Uptake Method	None
Initial Canopy Storage Percent	0
Canopy Storage Capacity	0.1
Crop Coefficient	1

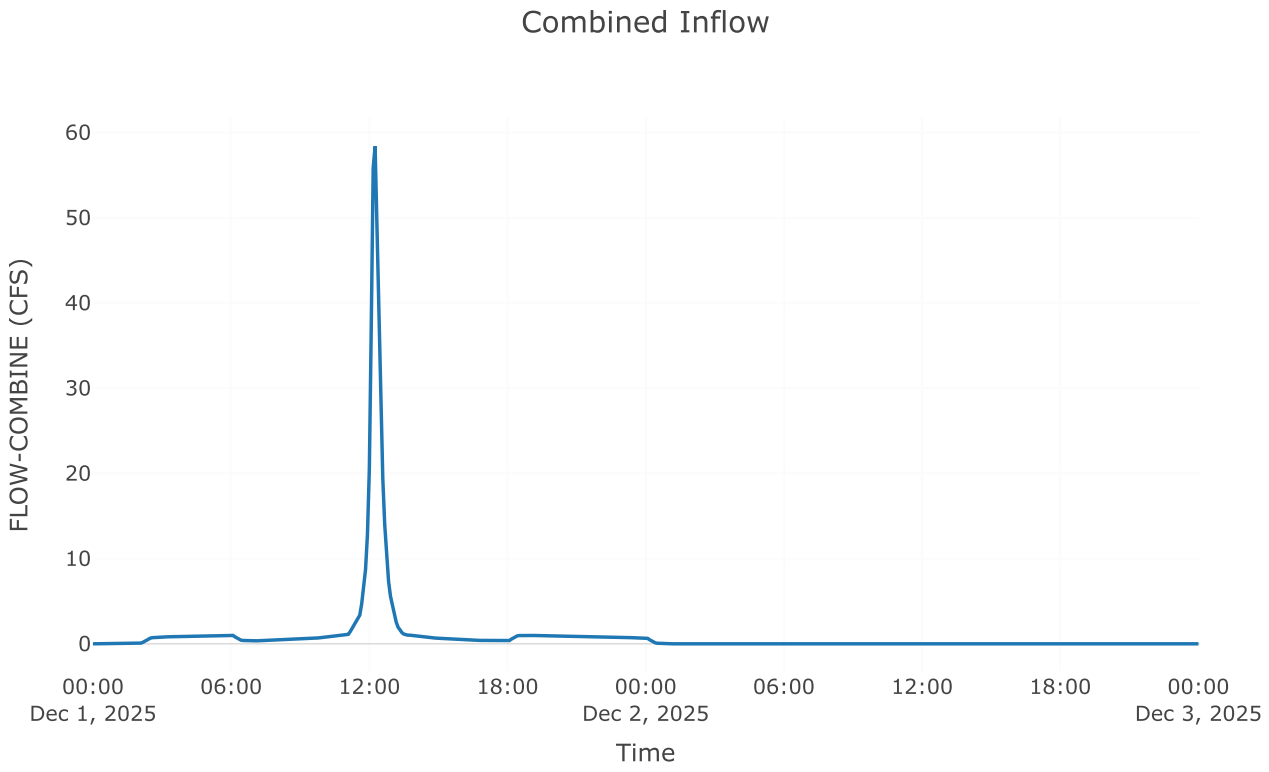
Transform: Clark	
Clark Method	Maricopa County
Time Area Method	Default
Flow Path Length	0.14
Flow Path Slope	65.4
Resistance Coefficient	0.04

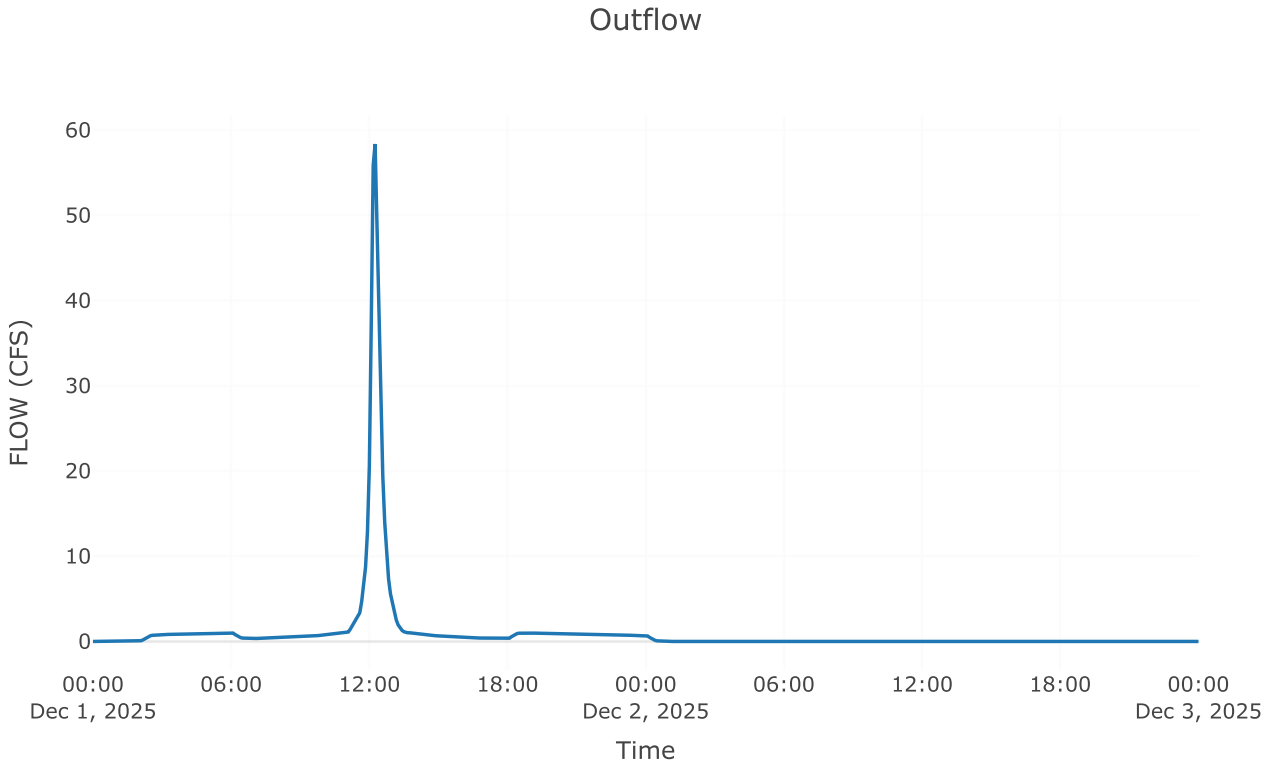
Results: 100010	
Peak Discharge (CFS)	16.22
Time of Peak Discharge	01Dec2025, 12:10
Volume (IN)	2.71
Precipitation Volume (AC - FT)	1.28
Loss Volume (AC - FT)	0.2
Excess Volume (AC - FT)	1.08
Direct Runoff Volume (AC - FT)	1.08
Baseflow Volume (AC - FT)	0


Precipitation and Outflow
PRECIP-INC (IN)
0
0.2
0.4
0.6
FLOW (CFS)
15
10
5
0
06:00
Dec 1, 2025
12:00
18:00
00:00
Dec 2, 2025
06:00
12:00
18:00
00:00
Dec 3, 2025
Precipitation
Excess Precipitation
Outflow

Sink: 10 OUT

Results: 10 OUT	
Peak Discharge (CFS)	58.37
Time of Peak Discharge	01Dec2025, 12:15
Volume (IN)	2.65


Combined Inflow
FLOW-COMBINE (CFS)
60
50
40
30
20
10
0
00:00
Dec 1, 2025
06:00
12:00
18:00
00:00
Dec 2, 2025
06:00
12:00
18:00
00:00
Dec 3, 2025
Time

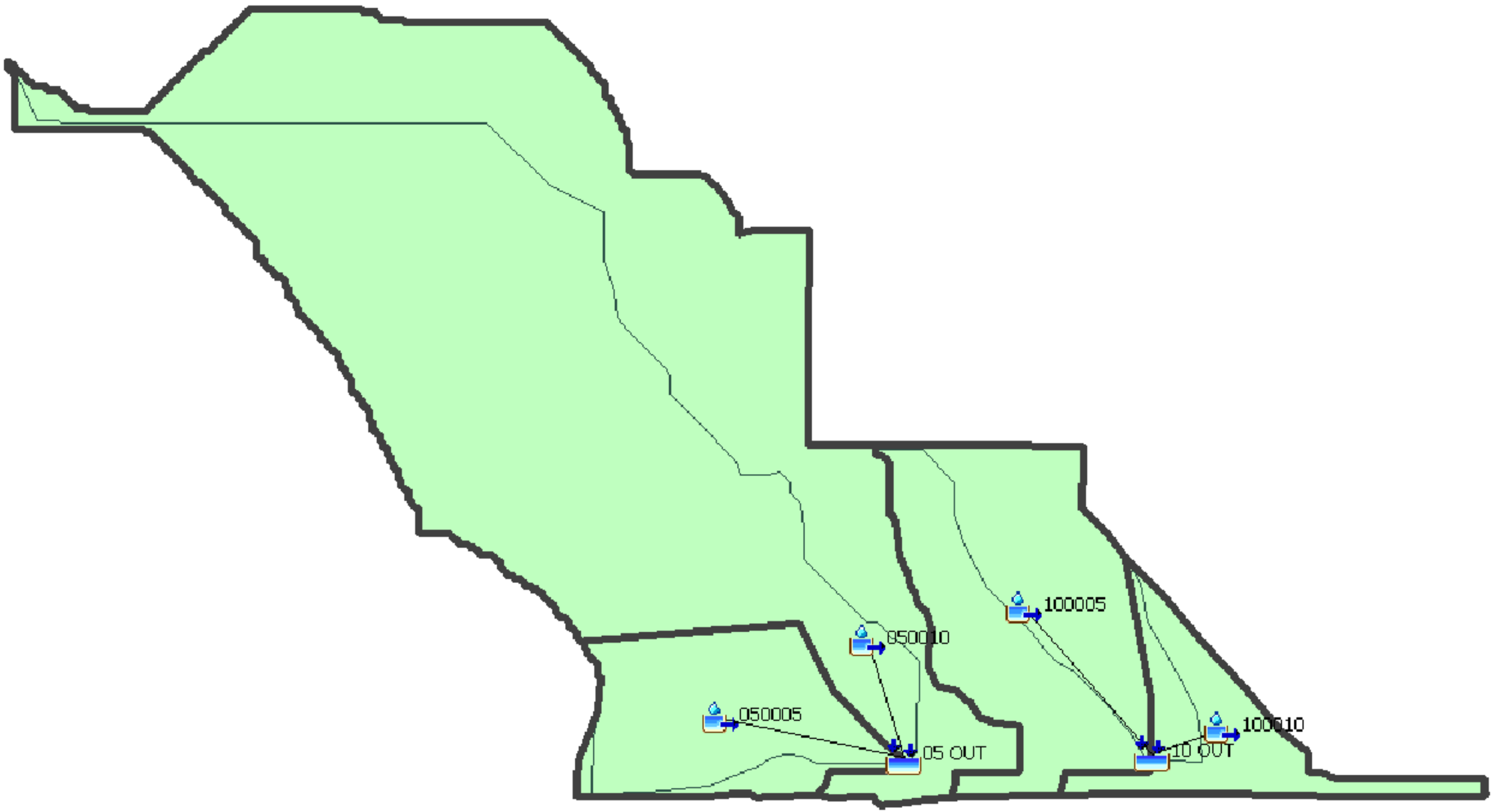

Outflow
FLOW (CFS)
60
50
40
30
20
10
0
00:00
Dec 1, 2025
06:00
12:00
18:00
00:00
Dec 2, 2025
06:00
12:00
18:00
00:00
Dec 3, 2025
Time

Appendix D.6

HEC-HMS Results

100 yr, 24 hr

HEC-HMS LAYOUT



Project: Jrdrt126 Offsite Hydrology
Simulation Run: 100 YR, 24 HR
Simulation Start: 30 November 2025, 24:00
Simulation End: 2 December 2025, 24:00

HMS Version: 4.12
Executed: 11 May 2026, 19:34

Global Parameter Summary - Subbasin

Location

Element Name	Longitude Degrees	Latitude Degrees
50010	-112.34	33.73
50005	-112.34	33.73
1E5	-112.34	33.73
1E5	-112.34	33.73

Area (MI2)

Element Name	Area (MI2)
50010	0.09
50005	0.01
1E5	0.02
1E5	0.01

Downstream

Element Name	Downstream
50010	05 out
50005	05 out
1E5	10 out
1E5	10 out

Loss Rate: Green and Ampt

Element Name	Percent Impervious Area	Initial Variable	Moisture Deficit	Wetting Front Suction	Hydraulic Conductivity
50010	12.3	Moisture Deficit	0.32	7.59	0.07
50005	8.6	Moisture Deficit	0.26	8.48	0.06
1E5	76.5	Moisture Deficit	0.25	5.82	0.28
1E5	80	Moisture Deficit	0.25	5.64	0.3

Canopy: Simple

Element Name	Allow Simultaneous Precip Et	Plant Uptake Method	Initial Canopy Storage Percent	Canopy Storage Capacity	Crop Coefficient
50010	No	None	0	0.23	1
50005	No	None	0	0.21	1
1E5	No	None	0	0.11	1
1E5	No	None	0	0.1	1

Transform: Clark

Element Name	Clark Method	Time Area Method	Flow Path Length	Flow Path Slope	Resistance Coefficient
50010	Maricopa County	Default	0.74	298.95	0.14
50005	Maricopa County	Default	0.23	287.73	0.15
1E5	Maricopa County	Default	0.24	70.81	0.03
1E5	Maricopa County	Default	0.14	65.4	0.04

Global Results Summary

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
50010	0.09	108.19	01Dec2025, 12:30	1.96
50005	0.01	21.01	01Dec2025, 12:20	1.97
05 out	0.1	124.93	01Dec2025, 12:25	1.96
1E5	0.02	49.11	01Dec2025, 12:15	3
1E5	0.01	18.94	01Dec2025, 12:10	3.07

10 out	0.03	67.31	01Dec2025, 12:15	3.02

Subbasin: 050010

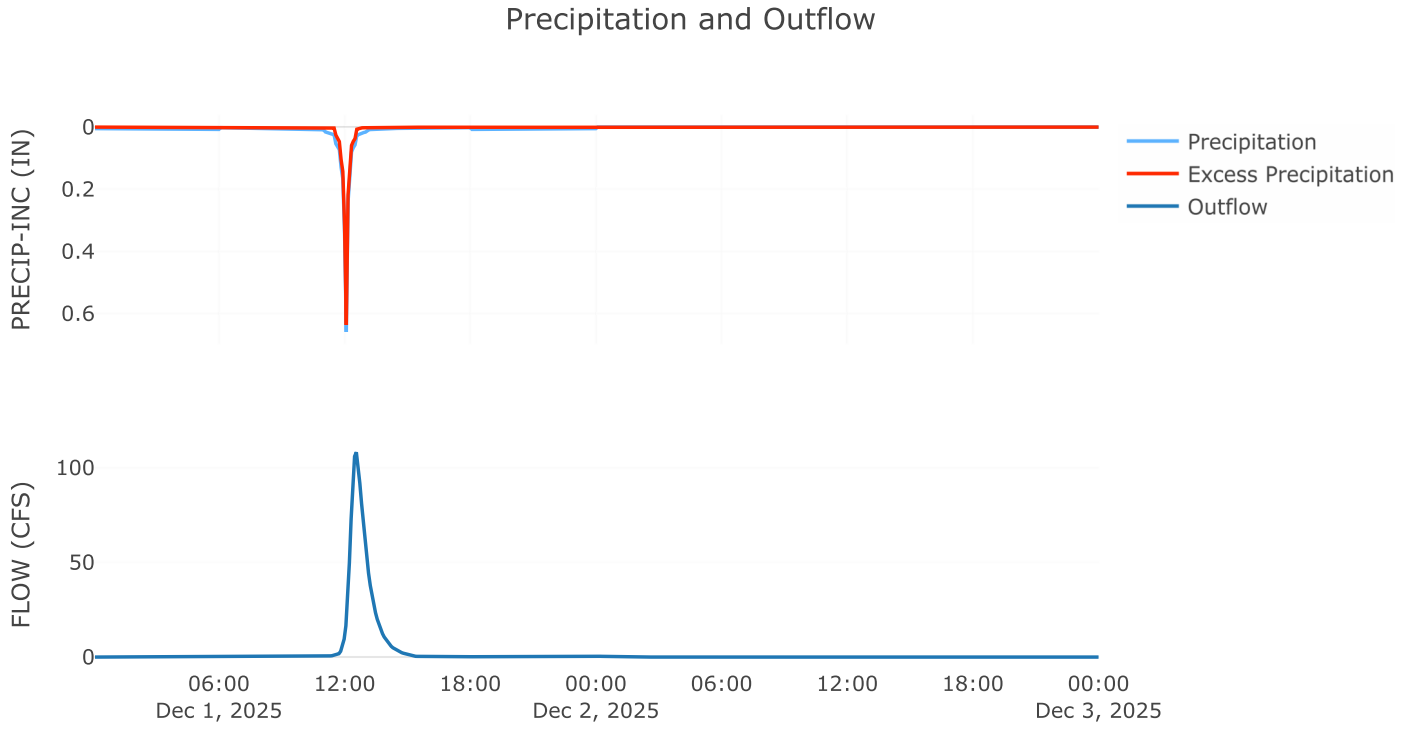
Area (MI2) : 0.09
Latitude Degrees : 33.73
Longitude Degrees : -112.34
Downstream : 05 out

Loss Rate: Green and Ampt	
Percent Impervious Area	12.3
Initial Variable	Moisture Deficit
Moisture Deficit	0.32
Wetting Front Suction	7.59
Hydraulic Conductivity	0.07

Canopy: Simple	
Allow Simultaneous Precip Et	No
Plant Uptake Method	None
Initial Canopy Storage Percent	0
Canopy Storage Capacity	0.23
Crop Coefficient	1

Transform: Clark	
Clark Method	Maricopa County
Time Area Method	Default
Flow Path Length	0.74
Flow Path Slope	298.95
Resistance Coefficient	0.14

Results: 050010	
Peak Discharge (CFS)	108.19
Time of Peak Discharge	01Dec2025, 12:30
Volume (IN)	1.96
Precipitation Volume (AC - FT)	16.9
Loss Volume (AC - FT)	7.72
Excess Volume (AC - FT)	9.18
Direct Runoff Volume (AC - FT)	9.18
Baseflow Volume (AC - FT)	0


Precipitation and Outflow
PRECIP-INC (IN)
0
0.2
0.4
0.6
FLOW (CFS)
100
50
0
06:00
Dec 1, 2025
12:00
18:00
00:00
Dec 2, 2025
06:00
12:00
18:00
00:00
Dec 3, 2025
Precipitation
Excess Precipitation
Outflow

Subbasin: 050005

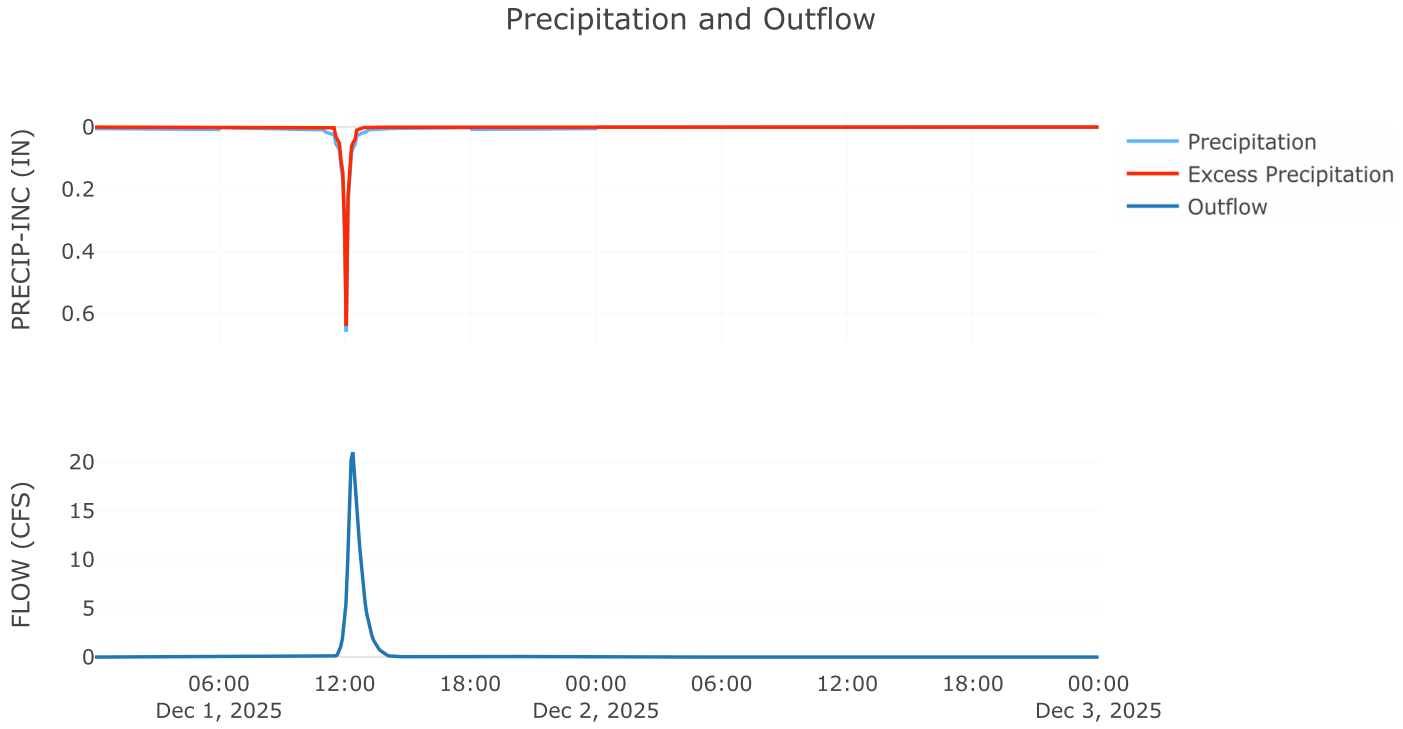
Area (MI2) : 0.01
Latitude Degrees : 33.73
Longitude Degrees : -112.34
Downstream : 05 out

Loss Rate: Green and Ampt	
Percent Impervious Area	8.6
Initial Variable	Moisture Deficit
Moisture Deficit	0.26
Wetting Front Suction	8.48
Hydraulic Conductivity	0.06

Canopy: Simple	
Allow Simultaneous Precip Et	No
Plant Uptake Method	None
Initial Canopy Storage Percent	0
Canopy Storage Capacity	0.21
Crop Coefficient	1

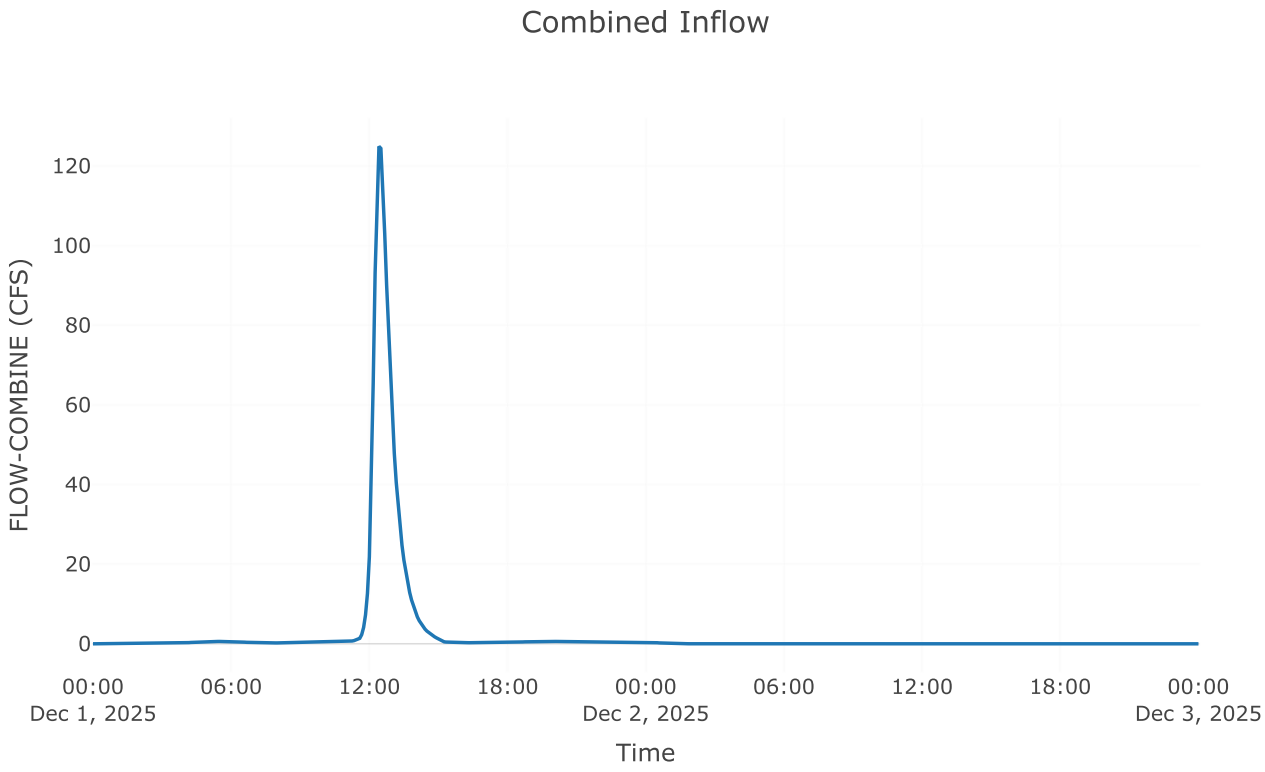
Transform: Clark	
Clark Method	Maricopa County
Time Area Method	Default
Flow Path Length	0.23
Flow Path Slope	287.73
Resistance Coefficient	0.15

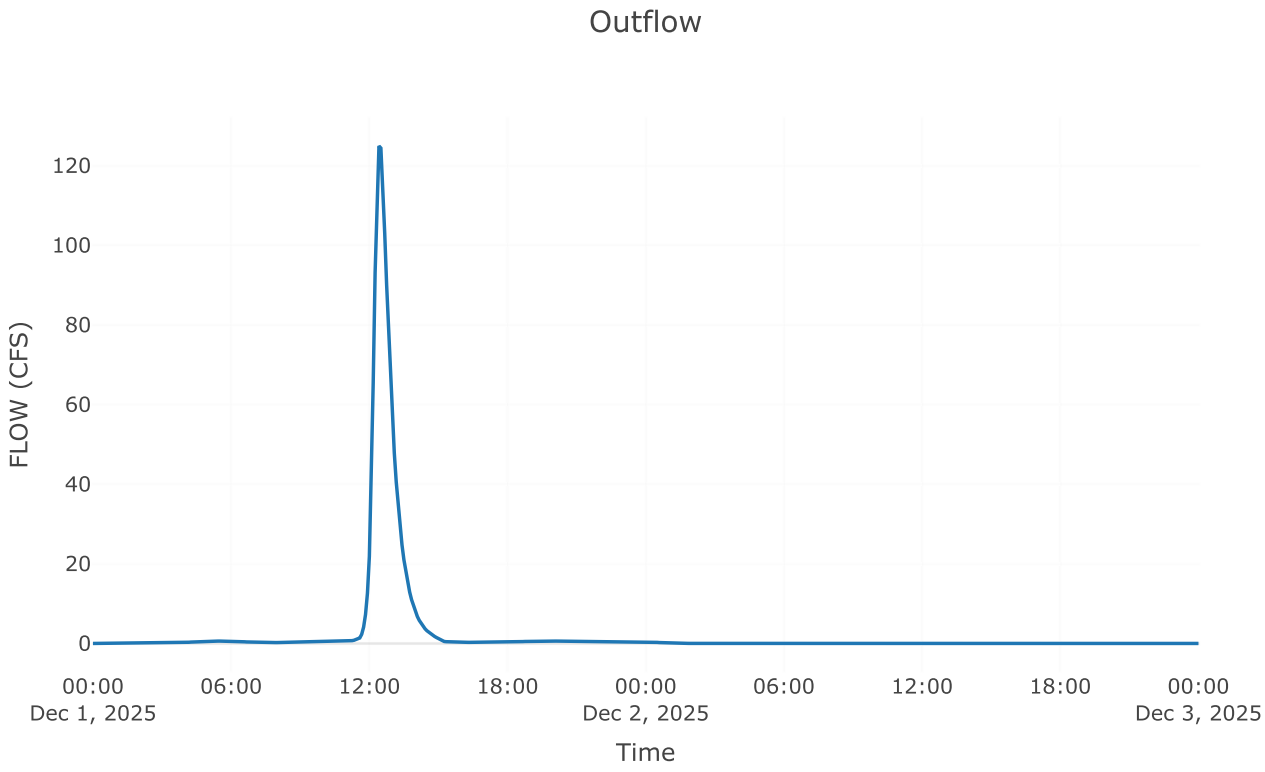
Results: 050005	
Peak Discharge (CFS)	21.01
Time of Peak Discharge	01Dec2025, 12:20
Volume (IN)	1.97
Precipitation Volume (AC - FT)	2.38
Loss Volume (AC - FT)	1.08
Excess Volume (AC - FT)	1.3
Direct Runoff Volume (AC - FT)	1.3
Baseflow Volume (AC - FT)	0


Precipitation and Outflow
PRECIP-INC (IN)
0
0.2
0.4
0.6
FLOW (CFS)
20
15
10
5
0
06:00
Dec 1, 2025
12:00
18:00
00:00
Dec 2, 2025
06:00
12:00
18:00
00:00
Dec 3, 2025
Precipitation
Excess Precipitation
Outflow

Sink: 05 OUT

Results: 05 OUT	
Peak Discharge (CFS)	124.93
Time of Peak Discharge	01Dec2025, 12:25
Volume (IN)	1.96


Combined Inflow
FLOW-COMBINE (CFS)
120
100
80
60
40
20
0
00:00
Dec 1, 2025
06:00
12:00
18:00
00:00
Dec 2, 2025
06:00
12:00
18:00
00:00
Dec 3, 2025
Time


Outflow
FLOW (CFS)
120
100
80
60
40
20
0
00:00
Dec 1, 2025
06:00
12:00
18:00
00:00
Dec 2, 2025
06:00
12:00
18:00
00:00
Dec 3, 2025
Time

Subbasin: 100005

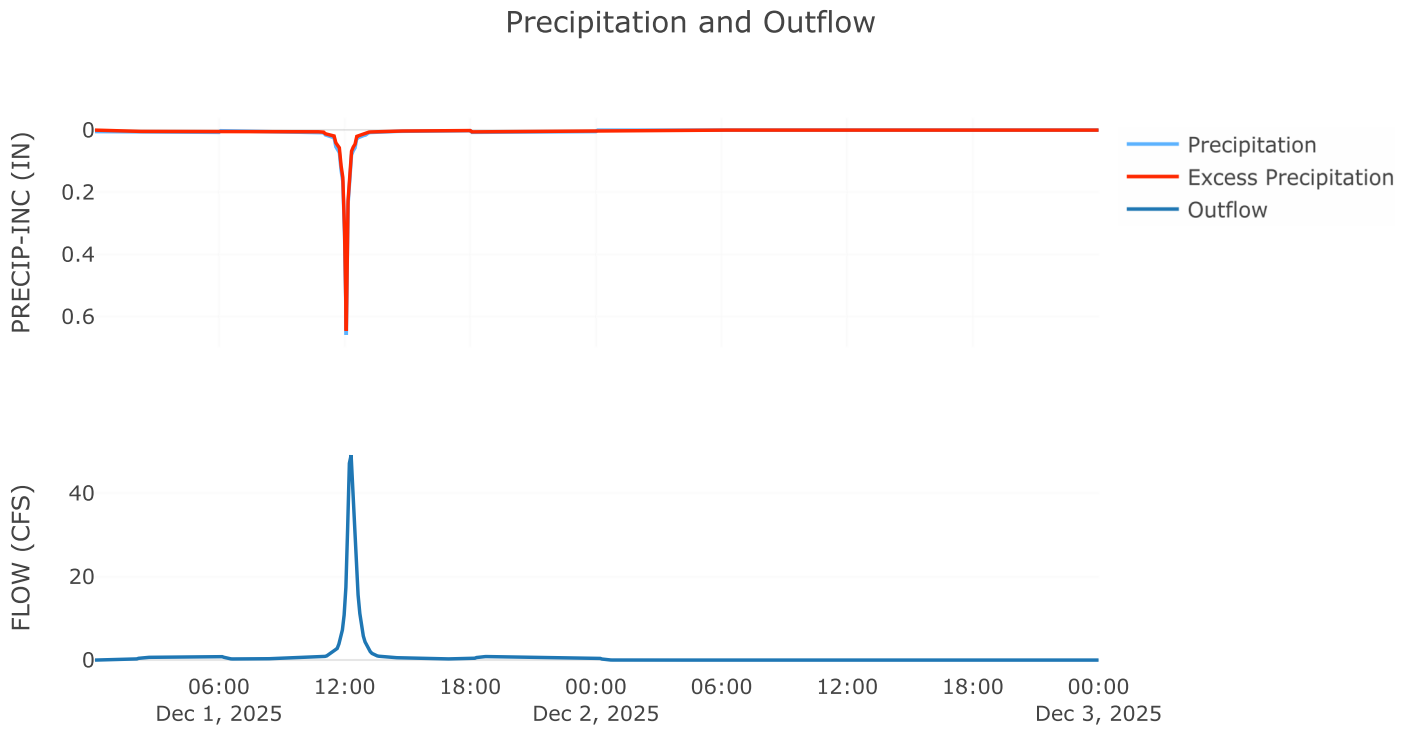
Area (MI2) : 0.02
Latitude Degrees : 33.73
Longitude Degrees : -112.34
Downstream : 10 out

Loss Rate: Green and Ampt	
Percent Impervious Area	76.5
Initial Variable	Moisture Deficit
Moisture Deficit	0.25
Wetting Front Suction	5.82
Hydraulic Conductivity	0.28

Canopy: Simple	
Allow Simultaneous Precip Et	No
Plant Uptake Method	None
Initial Canopy Storage Percent	0
Canopy Storage Capacity	0.11
Crop Coefficient	1

Transform: Clark	
Clark Method	Maricopa County
Time Area Method	Default
Flow Path Length	0.24
Flow Path Slope	70.81
Resistance Coefficient	0.03

Results: 100005	
Peak Discharge (CFS)	49.11
Time of Peak Discharge	01Dec2025, 12:15
Volume (IN)	3
Precipitation Volume (AC - FT)	3.88
Loss Volume (AC - FT)	0.65
Excess Volume (AC - FT)	3.23
Direct Runoff Volume (AC - FT)	3.23
Baseflow Volume (AC - FT)	0


Precipitation and Outflow
PRECIP-INC (IN)
0
0.2
0.4
0.6
FLOW (CFS)
40
20
0
06:00
Dec 1, 2025
12:00
18:00
00:00
Dec 2, 2025
06:00
12:00
18:00
00:00
Dec 3, 2025
Precipitation
Excess Precipitation
Outflow

Subbasin: 100010

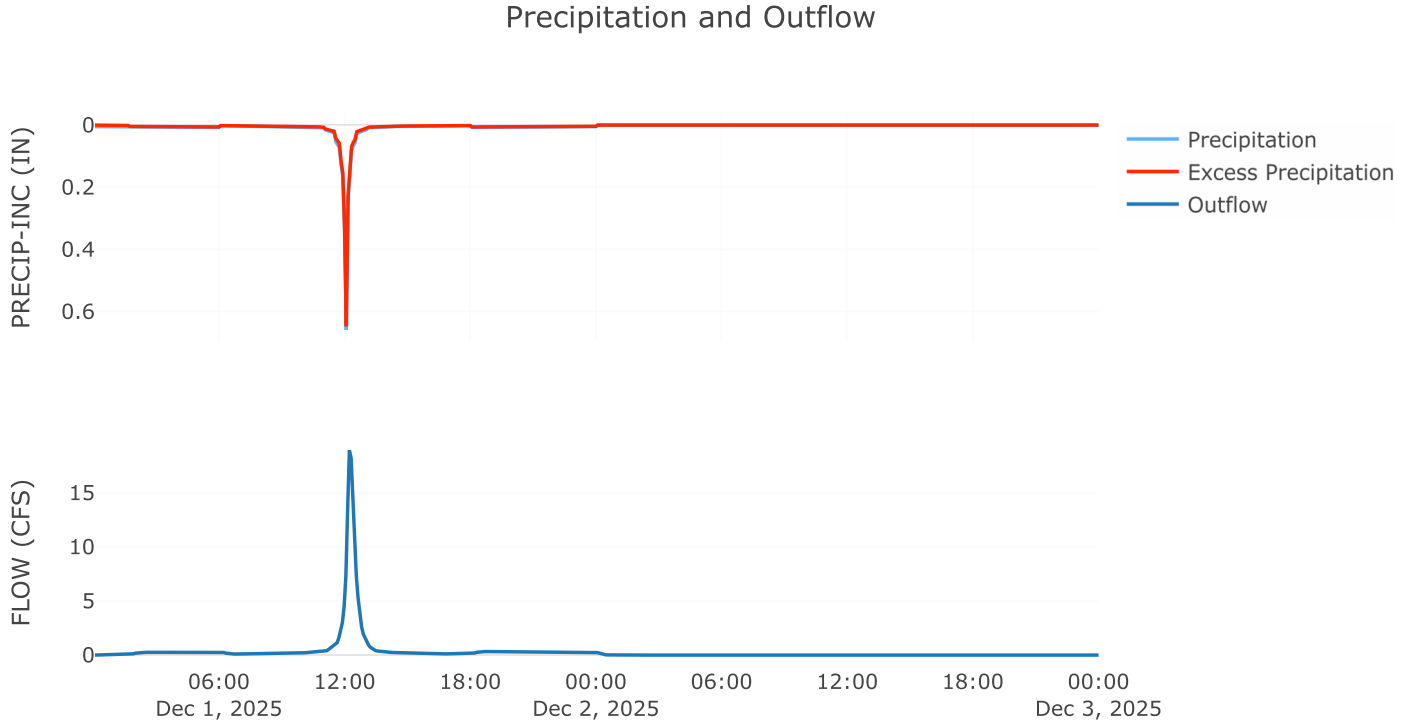
Area (MI2) : 0.01
Latitude Degrees : 33.73
Longitude Degrees : -112.34
Downstream : 10 out

Loss Rate: Green and Ampt	
Percent Impervious Area	80
Initial Variable	Moisture Deficit
Moisture Deficit	0.25
Wetting Front Suction	5.64
Hydraulic Conductivity	0.3

Canopy: Simple	
Allow Simultaneous Precip Et	No
Plant Uptake Method	None
Initial Canopy Storage Percent	0
Canopy Storage Capacity	0.1
Crop Coefficient	1

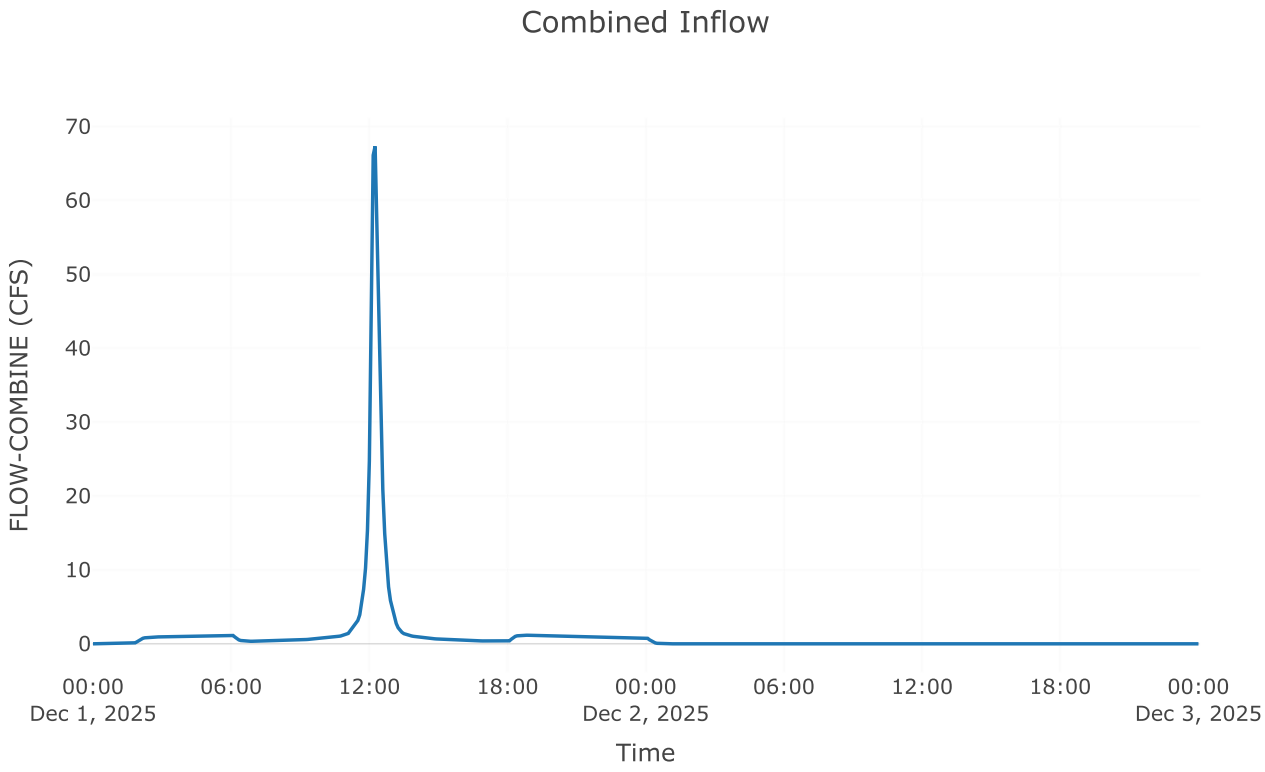
Transform: Clark	
Clark Method	Maricopa County
Time Area Method	Default
Flow Path Length	0.14
Flow Path Slope	65.4
Resistance Coefficient	0.04

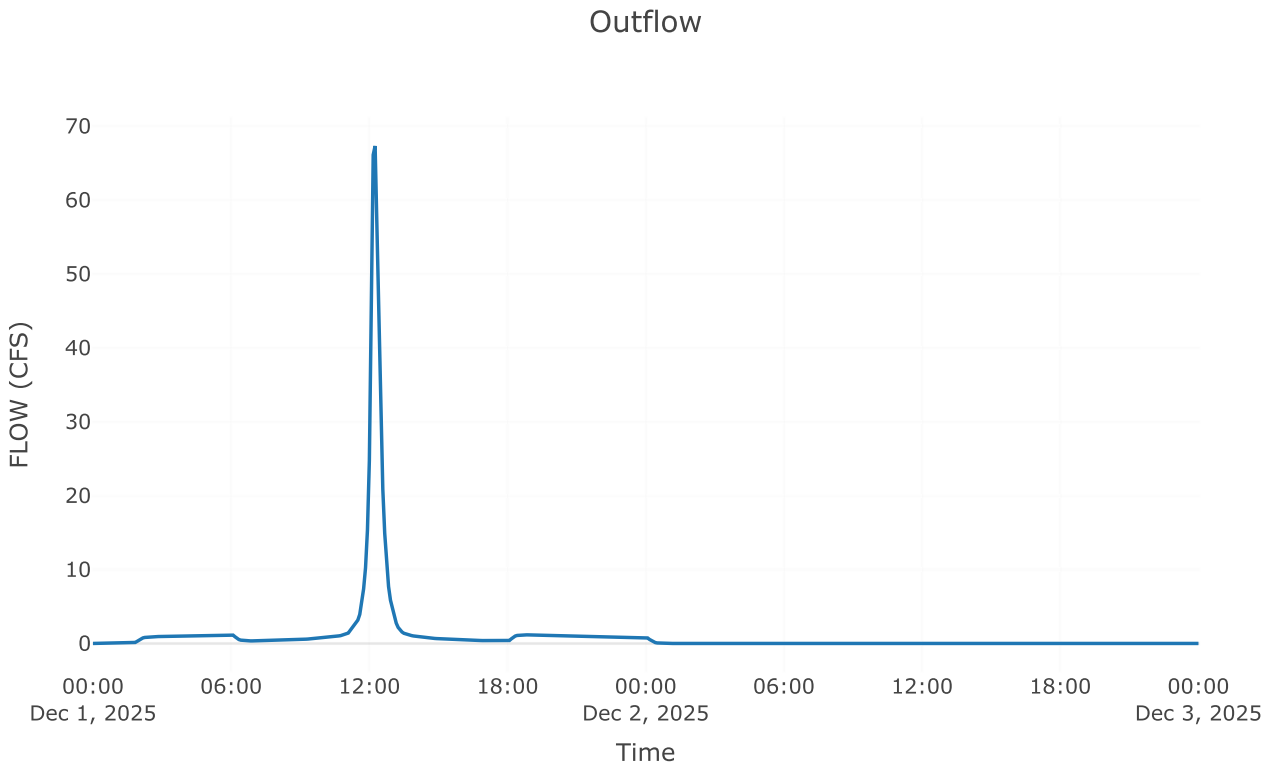
Results: 100010	
Peak Discharge (CFS)	18.94
Time of Peak Discharge	01Dec2025, 12:10
Volume (IN)	3.07
Precipitation Volume (AC - FT)	1.44
Loss Volume (AC - FT)	0.21
Excess Volume (AC - FT)	1.23
Direct Runoff Volume (AC - FT)	1.23
Baseflow Volume (AC - FT)	0


Precipitation and Outflow
PRECIP-INC (IN)
0
0.2
0.4
0.6
FLOW (CFS)
15
10
5
0
06:00
Dec 1, 2025
12:00
18:00
00:00
Dec 2, 2025
06:00
12:00
18:00
00:00
Dec 3, 2025
Precipitation
Excess Precipitation
Outflow

Sink: 10 OUT

Results: 10 OUT	
Peak Discharge (CFS)	67.31
Time of Peak Discharge	01Dec2025, 12:15
Volume (IN)	3.02


Combined Inflow
FLOW-COMBINE (CFS)
70
60
50
40
30
20
10
0
00:00
Dec 1, 2025
06:00
12:00
18:00
00:00
Dec 2, 2025
06:00
12:00
18:00
00:00
Dec 3, 2025
Time


Outflow
FLOW (CFS)
70
60
50
40
30
20
10
0
00:00
Dec 1, 2025
06:00
12:00
18:00
00:00
Dec 2, 2025
06:00
12:00
18:00
00:00
Dec 3, 2025
Time

Appendix D.7

Onsite Hydrology Calculations

Project: Jomax Road - Dysart Road to 126th Drive
Location: City of Peoria, AZ
Date: May 11, 2026
Subject: Intensity-Duration-Frequency Table
Source: NOAA Atlas 14, Volume 1, Version 5

Duration	2-year		5-year		10-year		25-year		50-year		100-year	
min	Depth (in)	Intensity (in/hr)	Depth (in)	Intensity (in/hr)	Depth (in)	Intensity (in/hr)	Depth (in)	Intensity (in/hr)	Depth (in)	Intensity (in/hr)	Depth (in)	Intensity (in/hr)
5	0.256	3.072	0.348	4.176	0.418	5.016	0.512	6.144	0.585	7.020	0.659	7.908
6	0.283	2.828	0.384	3.842	0.462	4.616	0.566	5.656	0.646	6.460	0.727	7.272
7	0.310	2.654	0.420	3.603	0.505	4.330	0.619	5.307	0.707	6.060	0.795	6.818
8	0.336	2.523	0.457	3.425	0.549	4.116	0.673	5.046	0.768	5.760	0.864	6.477
9	0.363	2.421	0.493	3.285	0.592	3.949	0.726	4.843	0.829	5.527	0.932	6.212
10	0.390	2.340	0.529	3.174	0.636	3.816	0.780	4.680	0.890	5.340	1.000	6.000
11	0.409	2.230	0.554	3.024	0.666	3.635	0.817	4.457	0.932	5.084	1.048	5.716
12	0.428	2.138	0.580	2.899	0.697	3.484	0.854	4.272	0.974	4.870	1.096	5.480
13	0.446	2.060	0.605	2.793	0.727	3.356	0.892	4.115	1.016	4.689	1.144	5.280
14	0.465	1.994	0.631	2.703	0.758	3.247	0.929	3.981	1.058	4.534	1.192	5.109
15	0.484	1.936	0.656	2.624	0.788	3.152	0.966	3.864	1.100	4.400	1.240	4.960
16	0.495	1.857	0.671	2.517	0.806	3.023	0.988	3.706	1.126	4.223	1.269	4.760
17	0.506	1.787	0.686	2.423	0.824	2.909	1.011	3.567	1.152	4.066	1.299	4.584
18	0.517	1.725	0.702	2.339	0.842	2.808	1.033	3.443	1.178	3.927	1.328	4.427
19	0.529	1.669	0.717	2.264	0.861	2.717	1.055	3.332	1.204	3.802	1.357	4.286
20	0.540	1.619	0.732	2.196	0.879	2.636	1.077	3.232	1.230	3.690	1.387	4.160
21	0.551	1.574	0.747	2.135	0.897	2.562	1.100	3.142	1.256	3.589	1.416	4.046
22	0.562	1.533	0.762	2.079	0.915	2.495	1.122	3.060	1.282	3.496	1.445	3.942
23	0.573	1.495	0.778	2.029	0.933	2.434	1.144	2.985	1.308	3.412	1.475	3.847
24	0.584	1.461	0.793	1.982	0.951	2.378	1.166	2.916	1.334	3.335	1.504	3.760
25	0.595	1.429	0.808	1.939	0.969	2.326	1.189	2.853	1.360	3.264	1.533	3.680
26	0.606	1.400	0.823	1.900	0.987	2.279	1.211	2.794	1.386	3.198	1.563	3.606
27	0.618	1.372	0.838	1.863	1.006	2.235	1.233	2.740	1.412	3.138	1.592	3.538
28	0.629	1.347	0.854	1.829	1.024	2.194	1.255	2.690	1.438	3.081	1.621	3.474
29	0.640	1.324	0.869	1.798	1.042	2.156	1.278	2.644	1.464	3.029	1.651	3.415
30	0.651	1.302	0.884	1.768	1.060	2.120	1.300	2.600	1.490	2.980	1.680	3.360
31	0.656	1.270	0.891	1.724	1.068	2.068	1.310	2.536	1.502	2.906	1.693	3.277
32	0.661	1.240	0.898	1.683	1.077	2.019	1.321	2.476	1.513	2.838	1.706	3.199
33	0.667	1.212	0.905	1.645	1.085	1.973	1.331	2.420	1.525	2.773	1.719	3.125
34	0.672	1.185	0.911	1.608	1.093	1.929	1.341	2.367	1.537	2.712	1.732	3.056
35	0.677	1.160	0.918	1.574	1.102	1.889	1.352	2.317	1.548	2.654	1.745	2.991
36	0.682	1.137	0.925	1.542	1.110	1.850	1.362	2.270	1.560	2.600	1.758	2.930
37	0.687	1.114	0.932	1.511	1.118	1.814	1.372	2.225	1.572	2.549	1.771	2.872
38	0.692	1.093	0.939	1.483	1.127	1.779	1.383	2.183	1.583	2.500	1.784	2.817
39	0.698	1.073	0.946	1.455	1.135	1.746	1.393	2.143	1.595	2.454	1.797	2.765
40	0.703	1.054	0.953	1.429	1.143	1.715	1.403	2.105	1.607	2.410	1.810	2.715
41	0.708	1.036	0.960	1.404	1.152	1.685	1.414	2.069	1.618	2.368	1.823	2.668
42	0.713	1.019	0.966	1.381	1.160	1.657	1.424	2.034	1.630	2.329	1.836	2.623
43	0.718	1.002	0.973	1.358	1.168	1.630	1.434	2.001	1.642	2.291	1.849	2.580
44	0.723	0.986	0.980	1.337	1.177	1.605	1.445	1.970	1.653	2.255	1.862	2.539
45	0.729	0.971	0.987	1.316	1.185	1.580	1.455	1.940	1.665	2.220	1.875	2.500
46	0.734	0.957	0.994	1.296	1.193	1.557	1.465	1.911	1.677	2.187	1.888	2.463
47	0.739	0.943	1.001	1.278	1.202	1.534	1.476	1.884	1.688	2.155	1.901	2.427
48	0.744	0.930	1.008	1.260	1.210	1.513	1.486	1.858	1.700	2.125	1.914	2.393
49	0.749	0.917	1.014	1.242	1.218	1.492	1.496	1.832	1.712	2.096	1.927	2.360
50	0.754	0.905	1.021	1.226	1.227	1.472	1.507	1.808	1.723	2.068	1.940	2.328
51	0.760	0.894	1.028	1.210	1.235	1.453	1.517	1.785	1.735	2.041	1.953	2.298
52	0.765	0.882	1.035	1.194	1.243	1.435	1.527	1.762	1.747	2.015	1.966	2.268
53	0.770	0.872	1.042	1.180	1.252	1.417	1.538	1.741	1.758	1.991	1.979	2.240
54	0.775	0.861	1.049	1.165	1.260	1.400	1.548	1.720	1.770	1.967	1.992	2.213
55	0.780	0.851	1.056	1.152	1.268	1.384	1.558	1.700	1.782	1.944	2.005	2.187
56	0.785	0.841	1.063	1.138	1.277	1.368	1.569	1.681	1.793	1.921	2.018	2.162
57	0.791	0.832	1.069	1.126	1.285	1.353	1.579	1.662	1.805	1.900	2.031	2.138
58	0.796	0.823	1.076	1.113	1.293	1.338	1.589	1.644	1.817	1.879	2.044	2.114
59	0.801	0.814	1.083	1.101	1.302	1.324	1.600	1.627	1.828	1.859	2.057	2.092
60	0.806	0.806	1.090	1.090	1.310	1.310	1.610	1.610	1.840	1.840	2.070	2.070

Project: Jomax Road - Dysart Road to 126th Drive
Location: City of Peoria, AZ
Date: May 11, 2026

Subject: Proposed Weighted Runoff Coefficient & Volume Calculations - Interim Conditions

Source: Drainage Design Manual for Maricopa County - Hydrology, July 06, 2023

	2-10 Year	50-Year	100-Year
Desert Landscaping 2 C-Value	0.40	0.48	0.50
Pavement and Rooftops C-Value	0.85	0.95	0.95

Drainage Area ID	Beginning Station	Ending Station	Location (Lt/Rt)	Landscape Area (sf)	Pavement Area (sf)	Total Area (sf)	Total Area (ac)	10 yr C	50 yr C	100 yr C	100 yr, 2 hr Depth (ft)	100 yr, 2 hr Volume (cf)	First Flush Depth (ft)	First Flush Volume (cf)
Jomax Road														
A5	106+98	110+83	Lt	12,654	16,974	29,628	0.68	0.66	0.75	0.76	0.19	4,322	0.04	1,235
B5-1	125+98	126+76	Lt	654	3,199	3,853	0.09	0.77	0.87	0.87	0.19	648	0.04	161
B5-2	126+76	132+94	Lt	6,351	24,899	31,250	0.72	0.76	0.85	0.86	0.19	5,165	0.04	1,302
C5-1	132+94	138+00	Lt	3,883	20,580	24,463	0.56	0.78	0.88	0.88	0.19	4,137	0.04	1,019
C5-2	138+00	138+58	Lt	174	2,380	2,554	0.06	0.82	0.92	0.92	0.19	452	0.04	106
C10-1	138+58	139+82	Lt	373	5,106	5,479	0.13	0.82	0.92	0.92	0.19	970	0.04	228
C10-2	139+82	141+15	Both	6,409	11,715	18,124	0.42	0.69	0.78	0.79	0.19	2,759	0.04	755
E5	110+83	113+89	Lt	8,203	12,962	21,165	0.49	0.68	0.77	0.78	0.19	3,160	0.04	882
F5-1	113+89	119+77	Lt	12,025	23,695	35,720	0.82	0.70	0.79	0.80	0.19	5,491	0.04	1,488
F5-2	119+77	125+98	Lt	8,475	25,724	34,199	0.79	0.74	0.83	0.84	0.19	5,520	0.04	1,425
G5-1	106+12	107+58	Rt	1,937	4,175	6,112	0.14	0.71	0.80	0.81	0.19	950	0.04	255
G5-2	107+58	108+56	Rt	465	2,574	3,039	0.07	0.78	0.88	0.88	0.19	515	0.04	127
G10	100+12	104+20	Rt	6,233	16,756	22,989	0.53	0.73	0.82	0.83	0.19	3,664	0.04	958
H5	104+84	106+98	Lt	8,267	11,783	20,050	0.46	0.66	0.76	0.76	0.19	2,951	0.04	835
I5	102+17	104+84	Lt	406	4,316	4,722	0.11	0.81	0.91	0.91	0.19	828	0.04	197
Dysart Road														
D5	195+80	200+00	Rt	1,711	8,704	10,415	0.24	0.78	0.87	0.88	0.19	1,756	0.04	434

Project: Jomax Road - Dysart Road to 126th Drive
Location: City of Peoria, AZ
Date: May 11, 2026
Subject: Proposed Rational Calculations - Interim Conditions
Source: Drainage Design Manual for Maricopa County - Hydrology, July 06, 2023

Drainage Area ID	Total Area (ac)	10 yr C	50 yr C	100 yr C	10 yr Tc (min)	50 yr Tc (min)	100 yr Tc (min)	Flow Length (ft)	L (mi)	m	b	Kb	US Elev (ft)	DS Elev (ft)	S (ft/ft)	S (ft/mi)	10 yr I (in/hr)	50 yr I (in/hr)	100 yr I (in/hr)	10 yr Tc (Calc) (min)	50 yr Tc (Calc) (min)	100 yr Tc (Calc) (min)	10 yr Q (cfs)	50 yr Q (cfs)	100 yr Q (cfs)
Jomax Road																									
A5	0.68	0.66	0.75	0.76	6	5	5	371	0.070	-0.00625	0.04	0.041	1354.74	1352.05	0.0073	38.28	4.62	7.02	7.91	6	5	5	2.1	3.6	4.1
B5-1	0.09	0.77	0.87	0.87	5	5	5	111	0.021	-0.00625	0.04	0.047	1350.11	1348.73	0.0124	65.64	5.02	7.02	7.91	3	3	3	0.3	0.5	0.6
B5-2	0.72	0.76	0.85	0.86	9	8	8	637	0.121	-0.00625	0.04	0.041	1352.62	1348.73	0.0061	32.24	3.95	5.76	6.48	9	8	8	2.1	3.5	4.0
C5-1	0.56	0.78	0.88	0.88	8	7	6	534	0.101	-0.00625	0.04	0.042	1352.62	1348.58	0.0076	39.95	4.12	6.06	7.27	8	7	6	1.8	3.0	3.6
C5-2	0.06	0.82	0.92	0.92	5	5	5	91	0.017	-0.00625	0.04	0.048	1349.18	1348.58	0.0066	34.81	5.02	7.02	7.91	3	3	3	0.2	0.4	0.4
C10-1	0.13	0.82	0.92	0.92	5	5	5	128	0.024	-0.00625	0.04	0.046	1349.18	1348.41	0.0060	31.76	5.02	7.02	7.91	4	3	3	0.5	0.8	0.9
C10-2	0.42	0.69	0.78	0.79	5	5	5	226	0.043	-0.00625	0.04	0.042	1350.31	1348.41	0.0084	44.39	5.02	7.02	7.91	5	4	4	1.4	2.3	2.6
E5	0.49	0.68	0.77	0.78	6	5	5	348	0.066	-0.00625	0.04	0.042	1353.09	1350.36	0.0078	41.42	4.62	7.02	7.91	6	5	5	1.5	2.6	3.0
F5-1	0.82	0.70	0.79	0.80	8	7	7	613	0.116	-0.00625	0.04	0.041	1351.45	1346.70	0.0077	40.91	4.12	6.06	6.82	8	7	7	2.4	3.9	4.5
F5-2	0.79	0.74	0.83	0.84	10	8	8	650	0.123	-0.00625	0.04	0.041	1350.11	1346.70	0.0052	27.70	3.82	5.76	6.48	10	8	8	2.2	3.8	4.3
G5-1	0.14	0.71	0.80	0.81	5	5	5	185	0.035	-0.00625	0.04	0.045	1363.03	1352.91	0.0547	288.83	5.02	7.02	7.91	2	2	2	0.5	0.8	0.9
G5-2	0.07	0.78	0.88	0.88	5	5	5	168	0.032	-0.00625	0.04	0.047	1353.85	1352.91	0.0056	29.54	5.02	7.02	7.91	5	4	4	0.3	0.4	0.5
G10	0.53	0.73	0.82	0.83	5	5	5	454	0.086	-0.00625	0.04	0.042	1365.21	1357.31	0.0174	91.88	5.02	7.02	7.91	5	5	4	1.9	3.0	3.5
H5	0.46	0.66	0.76	0.76	5	5	5	282	0.053	-0.00625	0.04	0.042	1357.05	1353.68	0.0120	63.10	5.02	7.02	7.91	5	4	4	1.5	2.4	2.8
I5	0.11	0.81	0.91	0.91	5	5	5	265	0.050	-0.00625	0.04	0.046	1363.12	1356.62	0.0245	129.51	5.02	7.02	7.91	4	3	3	0.4	0.7	0.8
Dysart Road																									
D5	0.24	0.78	0.87	0.88	5	5	5	462	0.088	-0.00625	0.04	0.044	1363.69	1351.22	0.0270	142.51	5.02	7.02	7.91	5	4	4	0.9	1.5	1.7

Project: Jomax Road - Dysart Road to 126th Drive
Location: City of Peoria, AZ
Date: May 11, 2026

Subject: Proposed Weighted Runoff Coefficient & Volume Calculations - Ultimate Conditions

Source: Drainage Design Manual for Maricopa County - Hydrology, July 06, 2023

	2-10 Year	50-Year	100-Year
Desert Landscaping 2 C-Value	0.40	0.48	0.50
Pavement and Rooftops C-Value	0.85	0.95	0.95

Drainage Area ID	Beginning Station	Ending Station	Location (Lt/Rt)	Landscape Area (sf)	Pavement Area (sf)	Total Area (sf)	Total Area (ac)	10 yr C	50 yr C	100 yr C	100 yr, 2 hr Depth (ft)	100 yr, 2 hr Volume (cf)	First Flush Depth (ft)	First Flush Volume (cf)
Jomax Road														
A5	106+98	110+83	Lt	5,163	13,219	18,382	0.42	0.72	0.82	0.82	0.19	2,914	0.04	766
B5-1	125+99	126+77	Lt	579	3,816	4,395	0.10	0.79	0.89	0.89	0.19	754	0.04	183
B5-2	126+77	132+94	Lt	5,827	29,738	35,565	0.82	0.78	0.87	0.88	0.19	5,999	0.04	1,482
C5-1	132+94	138+00	Lt	3,394	24,605	27,999	0.64	0.80	0.89	0.90	0.19	4,826	0.04	1,167
C5-2	138+00	138+58	Lt	58	2,903	2,961	0.07	0.84	0.94	0.94	0.19	536	0.04	123
C10-1	138+58	139+82	Lt	249	6,100	6,349	0.15	0.83	0.93	0.93	0.19	1,140	0.04	265
C10-2	139+82	140+32	Lt	104	2,844	2,948	0.07	0.83	0.93	0.93	0.19	530	0.04	123
E5	110+83	113+88	Lt	4,721	12,494	17,215	0.40	0.73	0.82	0.83	0.19	2,739	0.04	717
F5-1	113+88	119+77	Lt	7,924	27,662	35,586	0.82	0.75	0.85	0.85	0.19	5,821	0.04	1,483
F5-2	119+77	125+99	Lt	6,044	30,598	36,642	0.84	0.78	0.87	0.88	0.19	6,177	0.04	1,527
G5-1	106+12	107+58	Rt	1,929	5,181	7,110	0.16	0.73	0.82	0.83	0.19	1,133	0.04	296
G5-2	107+58	108+56	Rt	767	3,252	4,019	0.09	0.76	0.86	0.86	0.19	669	0.04	167
G10	100+12	104+20	Rt	8,643	14,346	22,989	0.53	0.68	0.77	0.78	0.19	3,455	0.04	958
H5	104+84	106+98	Lt	5,863	13,894	19,757	0.45	0.72	0.81	0.82	0.19	3,105	0.04	823
I5	100+12	104+84	Lt	7,646	17,726	25,372	0.58	0.71	0.81	0.81	0.19	3,978	0.04	1,057

Project: Jomax Road - Dysart Road to 126th Drive
Location: City of Peoria, AZ
Date: May 11, 2026
Subject: Proposed Rational Calculations - Ultimate Conditions
Source: Drainage Design Manual for Maricopa County - Hydrology, July 06, 2023

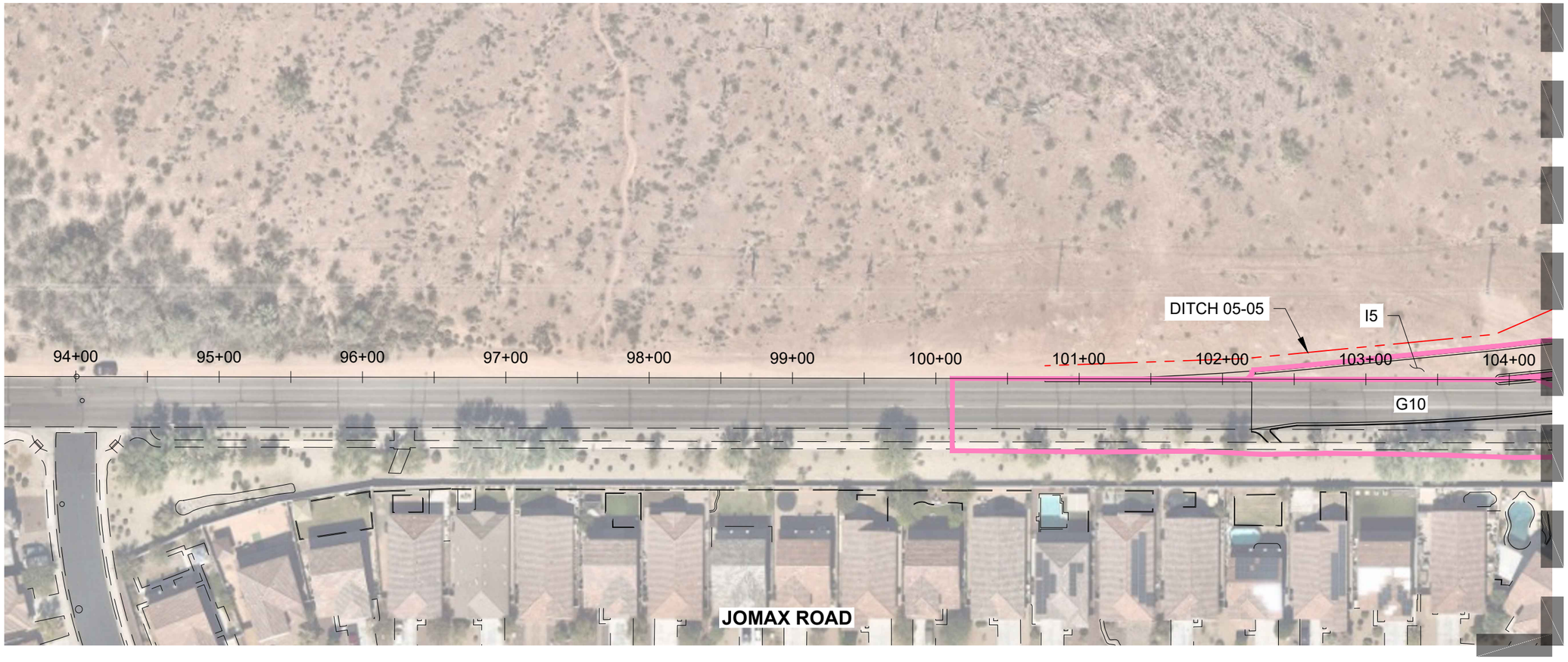
Drainage Area ID	Total Area (ac)	10 yr C	50 yr C	100 yr C	10 yr Tc (min)	50 yr Tc (min)	100 yr Tc (min)	Flow Length (ft)	L (mi)	m	b	Kb	US Elev (ft)	DS Elev (ft)	S (ft/ft)	S (ft/mi)	10 yr I (in/hr)	50 yr I (in/hr)	100 yr I (in/hr)	10 yr Tc (Calc) (min)	50 yr Tc (Calc) (min)	100 yr Tc (Calc) (min)	10 yr Q (cfs)	50 yr Q (cfs)	100 yr Q (cfs)
Jomax Road																									
A5	0.42	0.72	0.82	0.82	8	7	6	402	0.076	-0.00625	0.04	0.042	1354.09	1352.00	0.0052	27.45	4.12	6.06	7.27	8	7	6	1.3	2.1	2.5
B5-1	0.10	0.79	0.89	0.89	5	5	5	118	0.022	-0.00625	0.04	0.046	1350.37	1348.73	0.0139	73.38	5.02	7.02	7.91	3	3	2	0.4	0.6	0.7
B5-2	0.82	0.78	0.87	0.88	9	8	7	644	0.122	-0.00625	0.04	0.041	1353.01	1348.73	0.0066	35.09	3.95	5.76	6.82	9	8	7	2.5	4.1	4.9
C5-1	0.64	0.80	0.89	0.90	8	7	6	541	0.102	-0.00625	0.04	0.041	1353.01	1348.58	0.0082	43.24	4.12	6.06	7.27	8	7	6	2.1	3.5	4.2
C5-2	0.07	0.84	0.94	0.94	5	5	5	98	0.019	-0.00625	0.04	0.047	1349.26	1348.58	0.0069	36.64	5.02	7.02	7.91	3	3	3	0.3	0.4	0.5
C10-1	0.15	0.83	0.93	0.93	5	5	5	127	0.024	-0.00625	0.04	0.045	1349.26	1348.21	0.0083	43.65	5.02	7.02	7.91	4	3	3	0.6	1.0	1.1
C10-2	0.07	0.83	0.93	0.93	5	5	5	104	0.020	-0.00625	0.04	0.047	1350.29	1348.21	0.0200	105.60	5.02	7.02	7.91	3	2	2	0.3	0.4	0.5
E5	0.40	0.73	0.82	0.83	6	5	5	347	0.066	-0.00625	0.04	0.043	1353.07	1350.36	0.0078	41.24	4.62	7.02	7.91	6	5	5	1.3	2.3	2.6
F5-1	0.82	0.75	0.85	0.85	8	7	7	621	0.118	-0.00625	0.04	0.041	1351.59	1346.70	0.0079	41.58	4.12	6.06	6.82	8	7	7	2.5	4.2	4.7
F5-2	0.84	0.78	0.87	0.88	10	8	8	657	0.124	-0.00625	0.04	0.040	1350.37	1346.70	0.0056	29.49	3.82	5.76	6.48	10	8	8	2.5	4.2	4.8
G5-1	0.16	0.73	0.82	0.83	5	5	5	184	0.035	-0.00625	0.04	0.045	1363.03	1352.85	0.0553	292.12	5.02	7.02	7.91	2	2	2	0.6	0.9	1.1
G5-2	0.09	0.76	0.86	0.86	5	5	5	179	0.034	-0.00625	0.04	0.046	1353.90	1352.85	0.0059	30.97	5.02	7.02	7.91	5	4	4	0.4	0.6	0.6
G10	0.53	0.68	0.77	0.78	5	5	5	454	0.086	-0.00625	0.04	0.042	1365.21	1357.31	0.0174	91.88	5.02	7.02	7.91	5	5	4	1.8	2.9	3.3
H5	0.45	0.72	0.81	0.82	5	5	5	309	0.059	-0.00625	0.04	0.042	1357.05	1353.60	0.0112	58.95	5.02	7.02	7.91	5	4	4	1.6	2.6	2.9
I5	0.58	0.71	0.81	0.81	5	5	5	478	0.091	-0.00625	0.04	0.041	1365.33	1356.62	0.0182	96.21	5.02	7.02	7.91	5	5	4	2.1	3.3	3.8

Appendix E

Drainage Exhibits

Appendix E.1

Interim Conditions Drainage Exhibit



MATCH LINE - SEE SHEET 2

MATCH LINE - SEE SHEET 7

LEGEND

- PROPOSED DRAINAGE AREA
- PROPOSED ROADWAY
- PROPOSED SCUPPER & STORM DRAIN
- PROPOSED CULVERT
- PROPOSED BASIN / GRADING
- EXISTING DRAINAGE INFRASTRUCTURE & HARDSCAPE

N

80 0 80 160 240

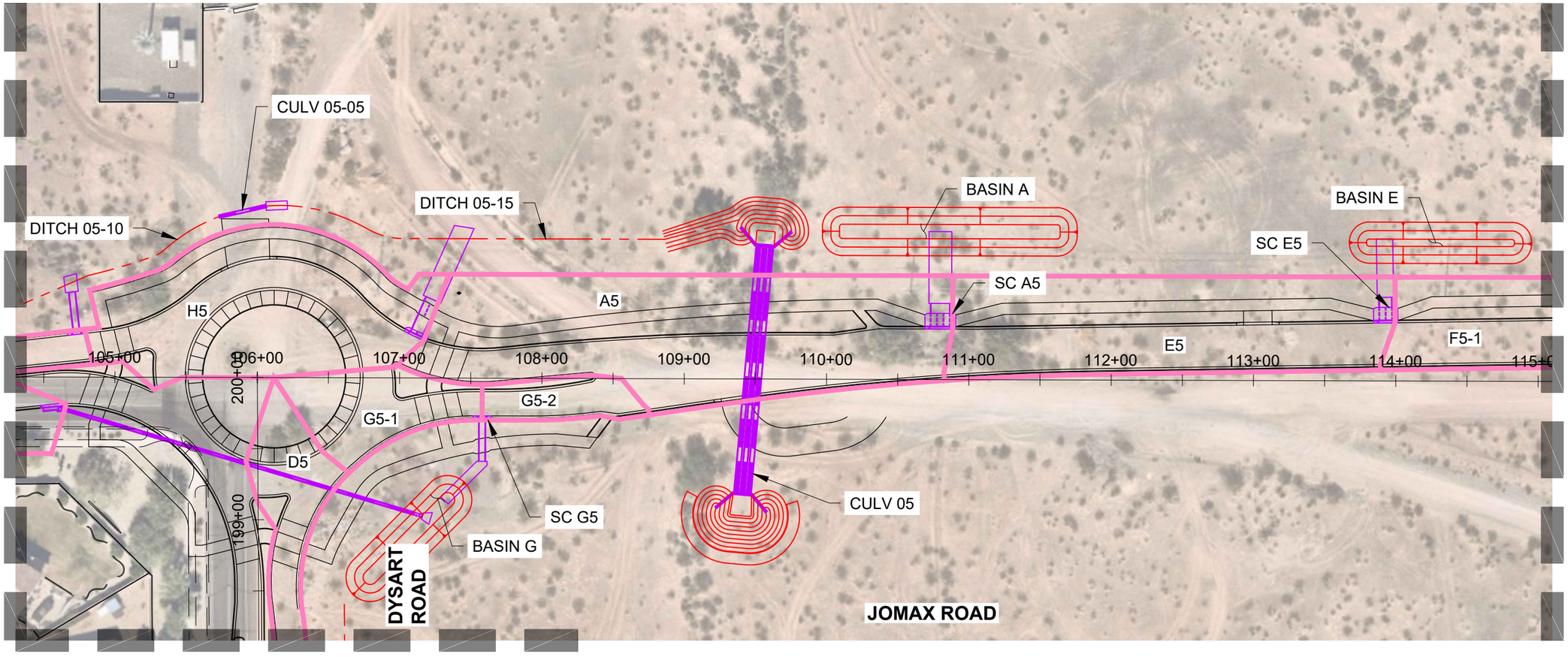
SCALE: 1" = 80'

JOMAX ROAD - DYSART ROAD TO 126TH DRIVE
INTERIM CONDITIONS DRAINAGE EXHIBIT
DATE: 05/11/2026

SHEET 1 OF 7

TYLin
1475 NORTH SCOTTSDALE ROAD
SUITE 450
SCOTTSDALE, AZ 85257

MATCH LINE - SEE SHEET 1



MATCH LINE - SEE SHEET 3

MATCH LINE - SEE SHEET 7

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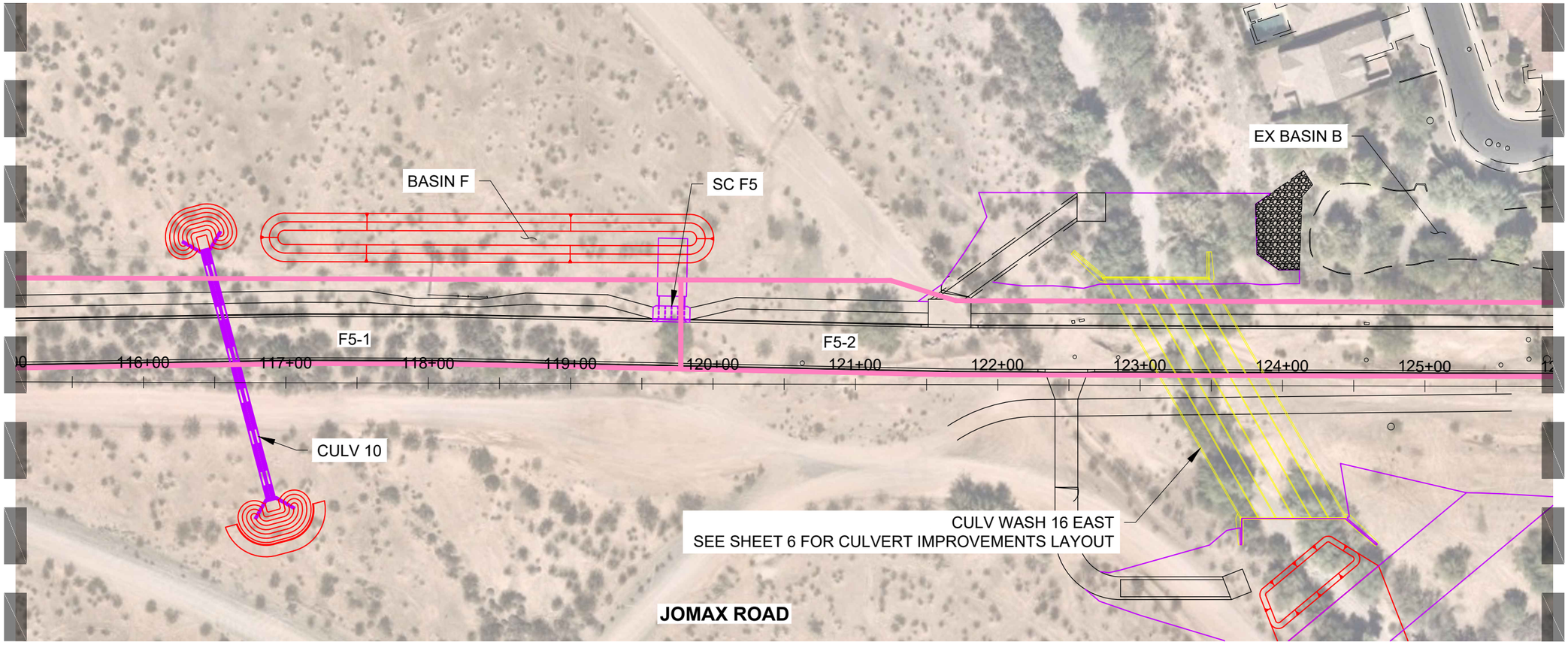
JOMAX ROAD - DYSART ROAD TO 126TH DRIVE
INTERIM CONDITIONS DRAINAGE EXHIBIT
DATE: 05/11/2026

SHEET 2 OF 7

TYLin
1475 NORTH SCOTTSDALE ROAD
SUITE 450
SCOTTSDALE, AZ 85257

MATCH LINE - SEE SHEET 2

MATCH LINE - SEE SHEET 4



LEGEND

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INTERIM CONDITIONS DRAINAGE EXHIBIT
DATE: 05/11/2026

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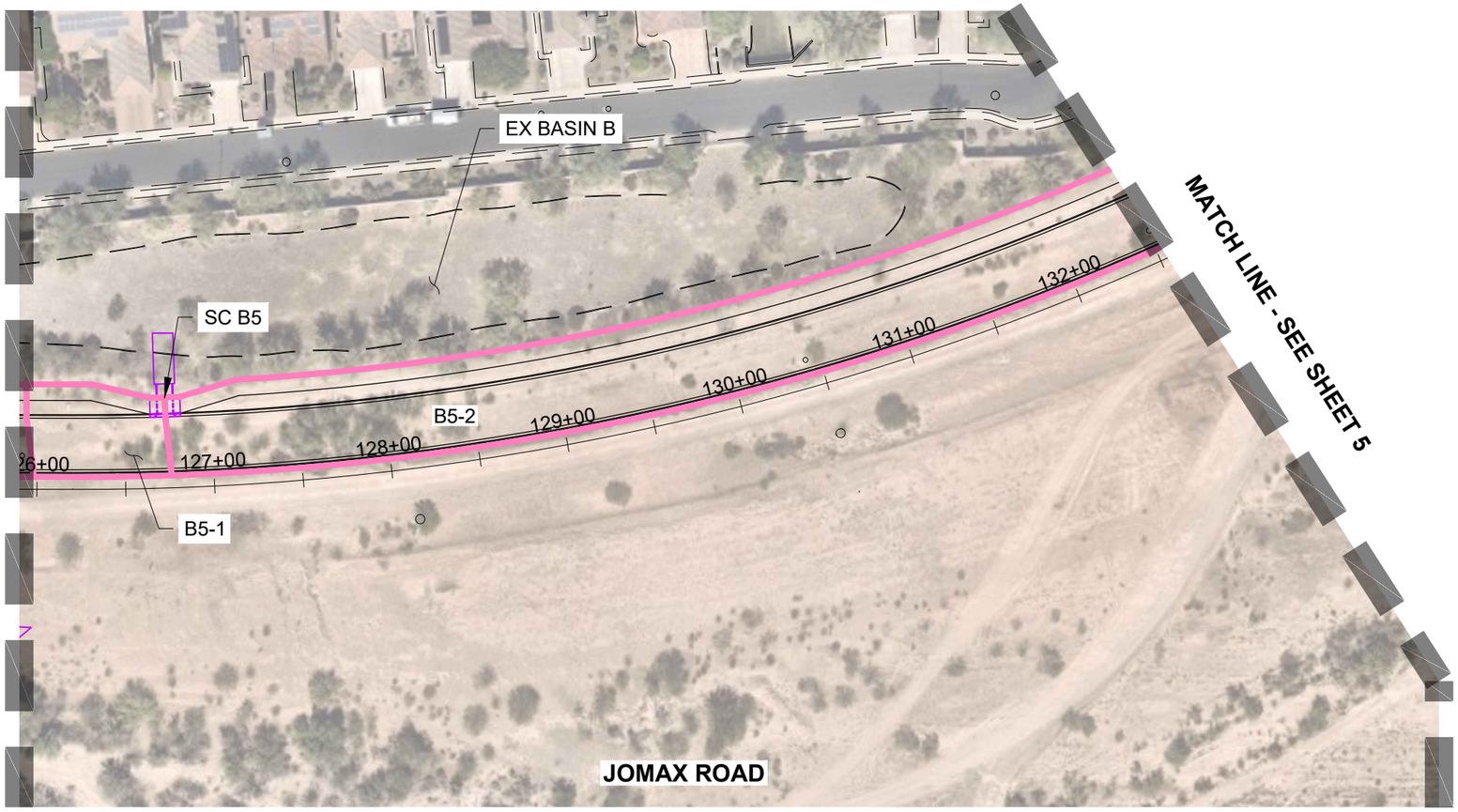
SCOTTSDALE, AZ 85257



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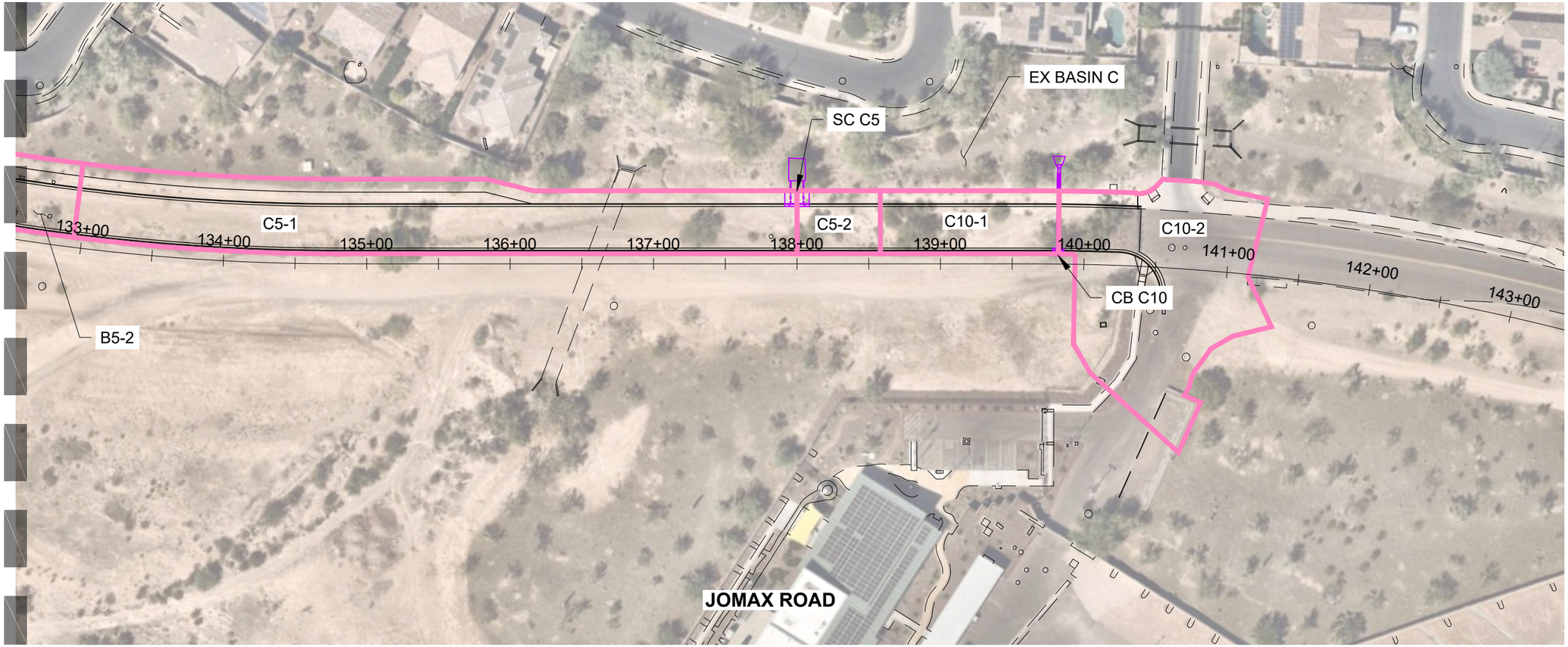
INTERIM CONDITIONS DRAINAGE EXHIBIT
DATE: 05/11/2026

SHEET 4 OF 7

TYLin
1475 NORTH SCOTTSDALE ROAD
SUITE 450
SCOTTSDALE, AZ 85257

MATCH LINE - SEE SHEET 4



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JOMAX ROAD - DYSART ROAD TO 126TH DRIVE
INTERIM CONDITIONS DRAINAGE EXHIBIT
DATE: 05/11/2026

SHEET 5 OF 7

TYLin
1475 NORTH SCOTTSDALE ROAD
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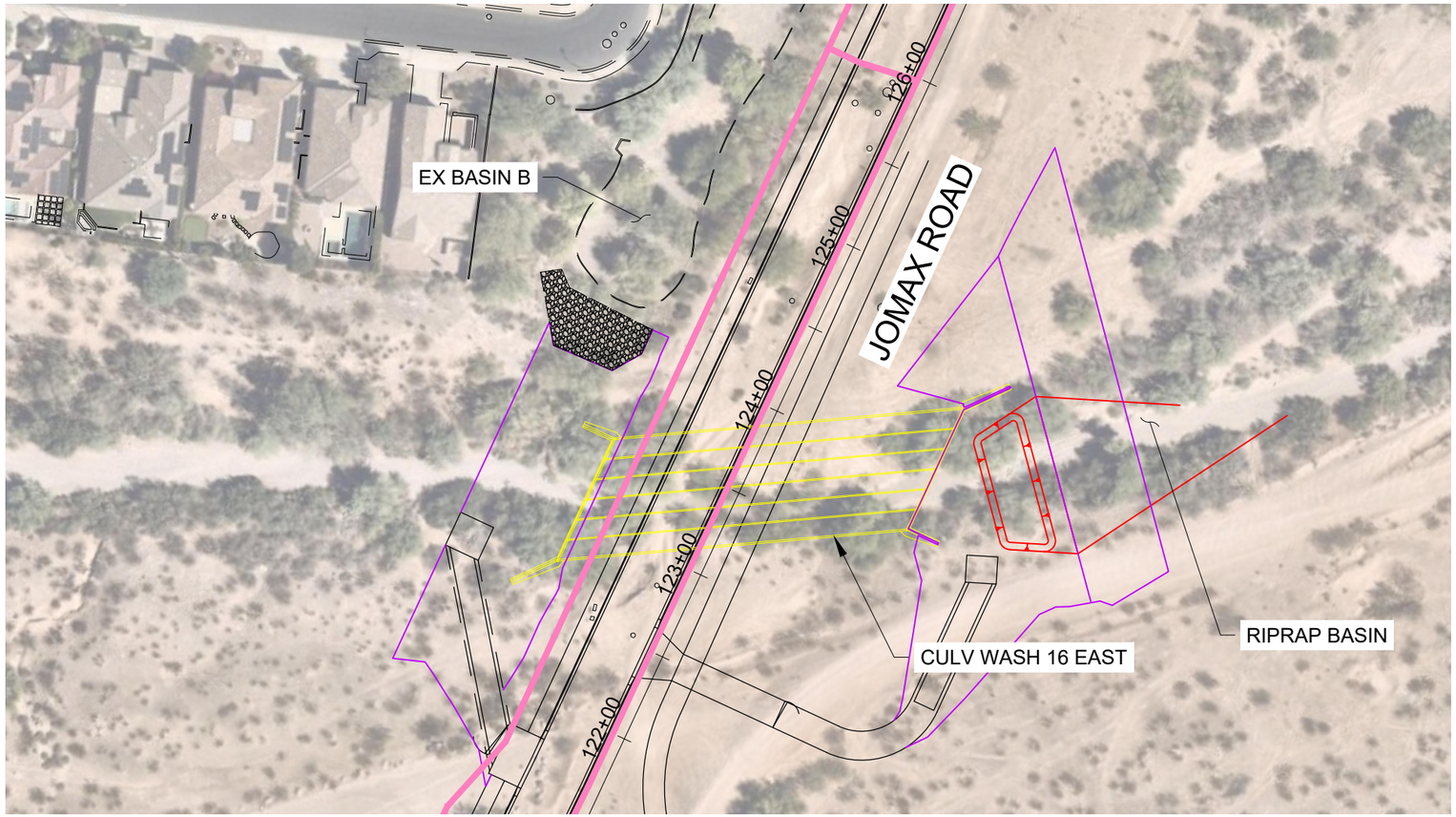
SCOTTSDALE, AZ 85257



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INTERIM CONDITIONS DRAINAGE EXHIBIT
DATE: 05/11/2026

SHEET 6 OF 7

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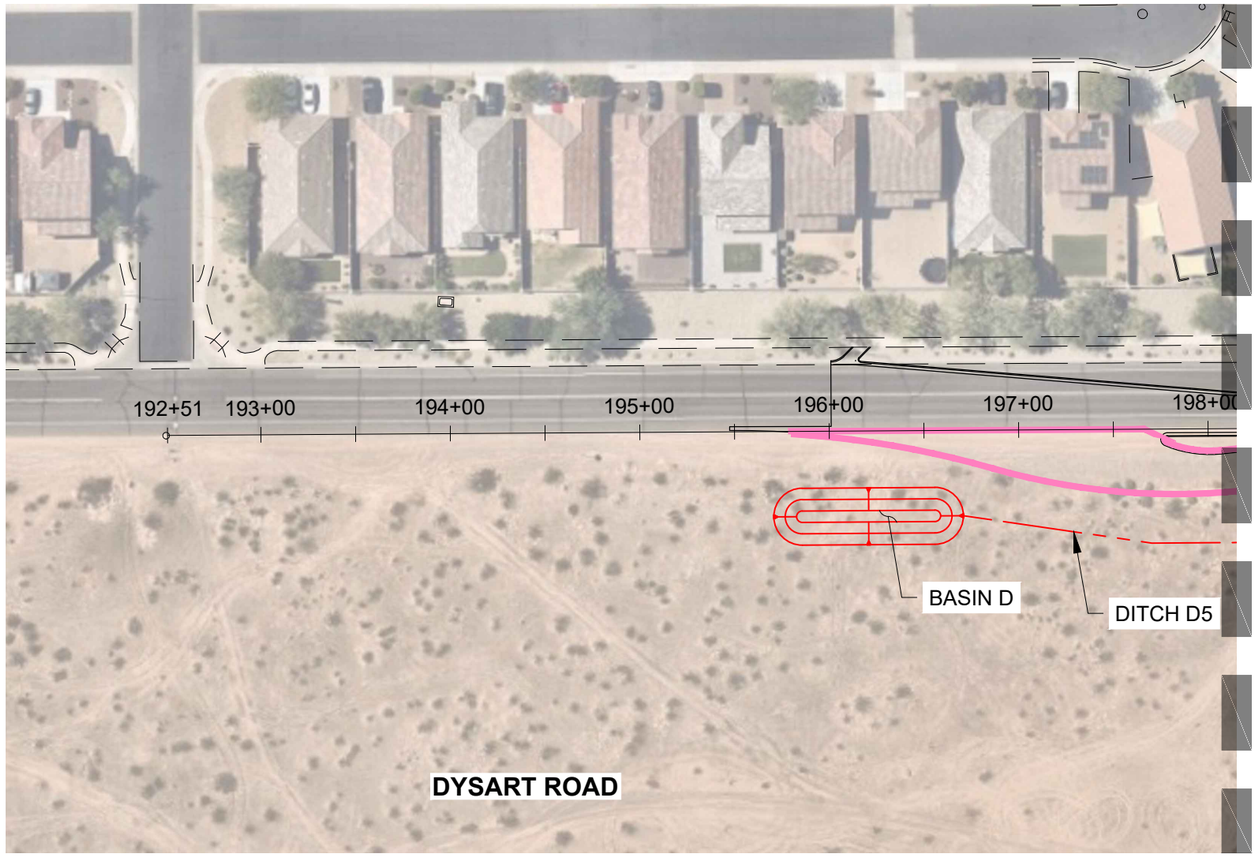

MATCH LINE - SEE SHEET 2

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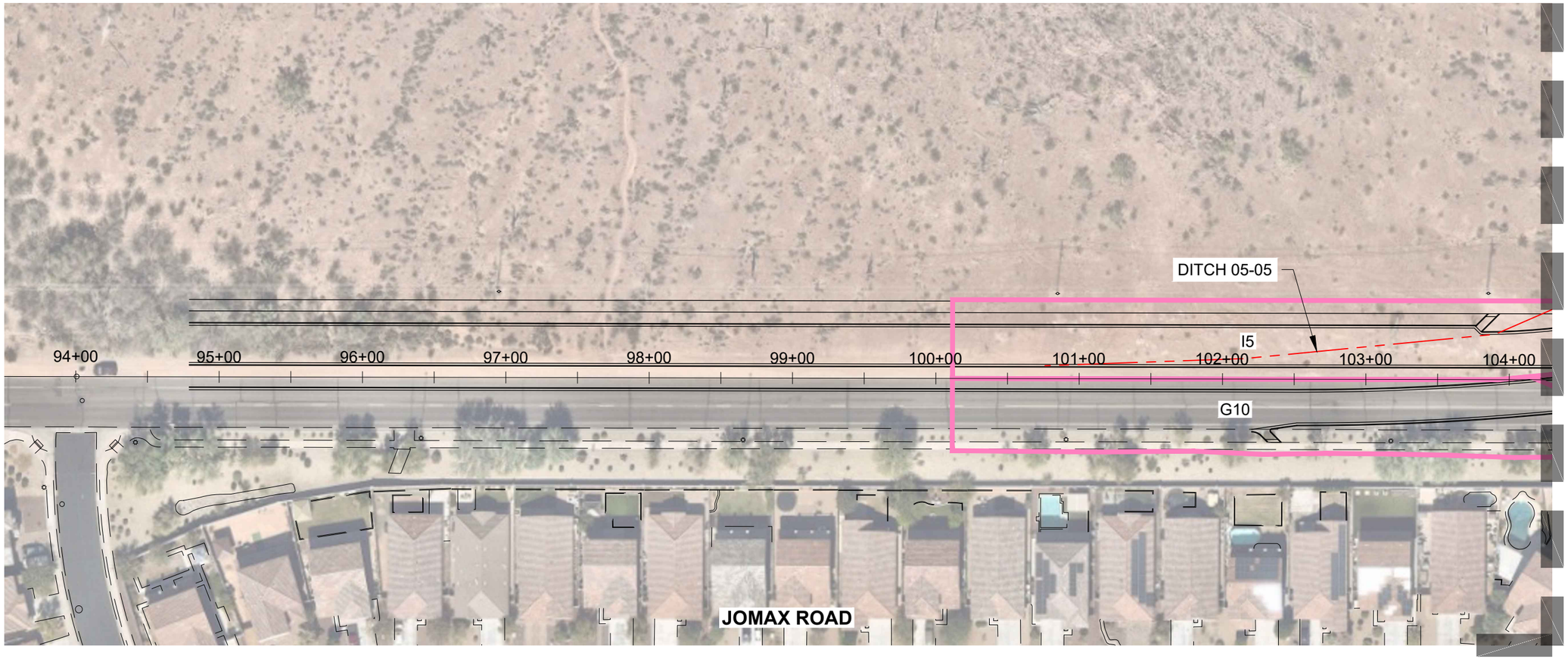
JOMAX ROAD - DYSART ROAD TO 126TH DRIVE
INTERIM CONDITIONS DRAINAGE EXHIBIT
DATE: 05/11/2026

SHEET 7 OF 7

TYLin
1475 NORTH SCOTTSDALE ROAD
SUITE 450
SCOTTSDALE, AZ 85257

Appendix E.2

Ultimate Conditions Drainage Exhibit



MATCH LINE - SEE SHEET 2

MATCH LINE - SEE SHEET 7

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JOMAX ROAD - DYSART ROAD TO 126TH DRIVE
ULTIMATE CONDITIONS DRAINAGE EXHIBIT
DATE: 05/11/2026

SHEET 1 OF 7

TYLin
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SUITE 450
SCOTTSDALE, AZ 85257

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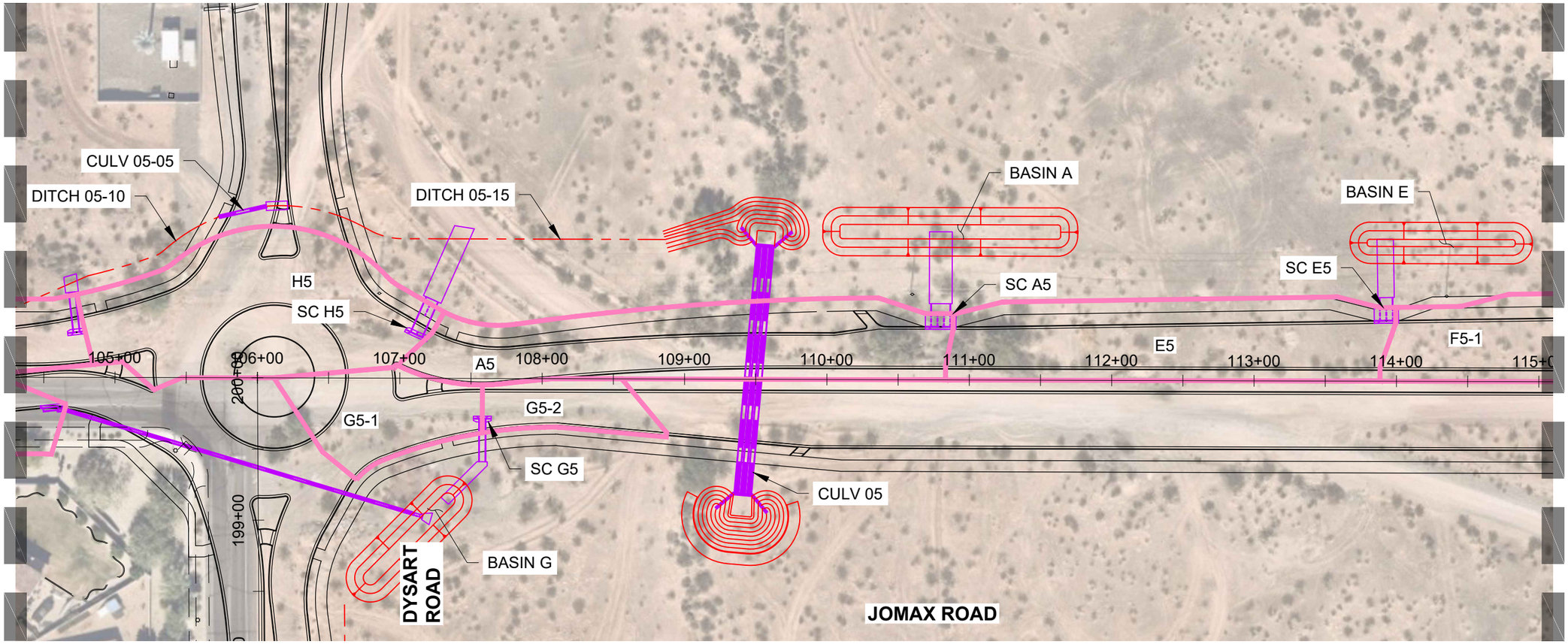

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ULTIMATE CONDITIONS DRAINAGE EXHIBIT
DATE: 05/11/2026

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SCOTTSDALE, AZ 85257

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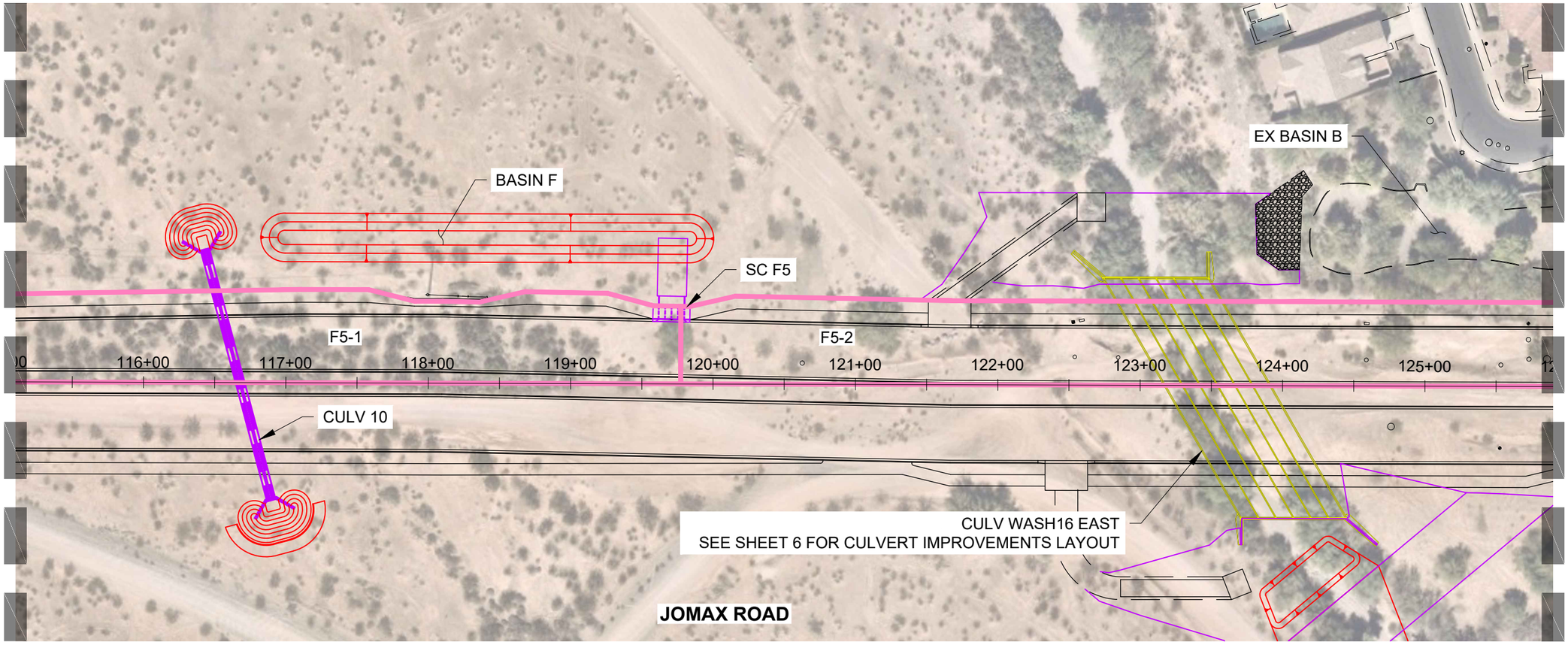
MATCH LINE - SEE SHEET 4



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JOMAX ROAD - DYSART ROAD TO 126TH DRIVE
ULTIMATE CONDITIONS DRAINAGE EXHIBIT
DATE: 05/11/2026

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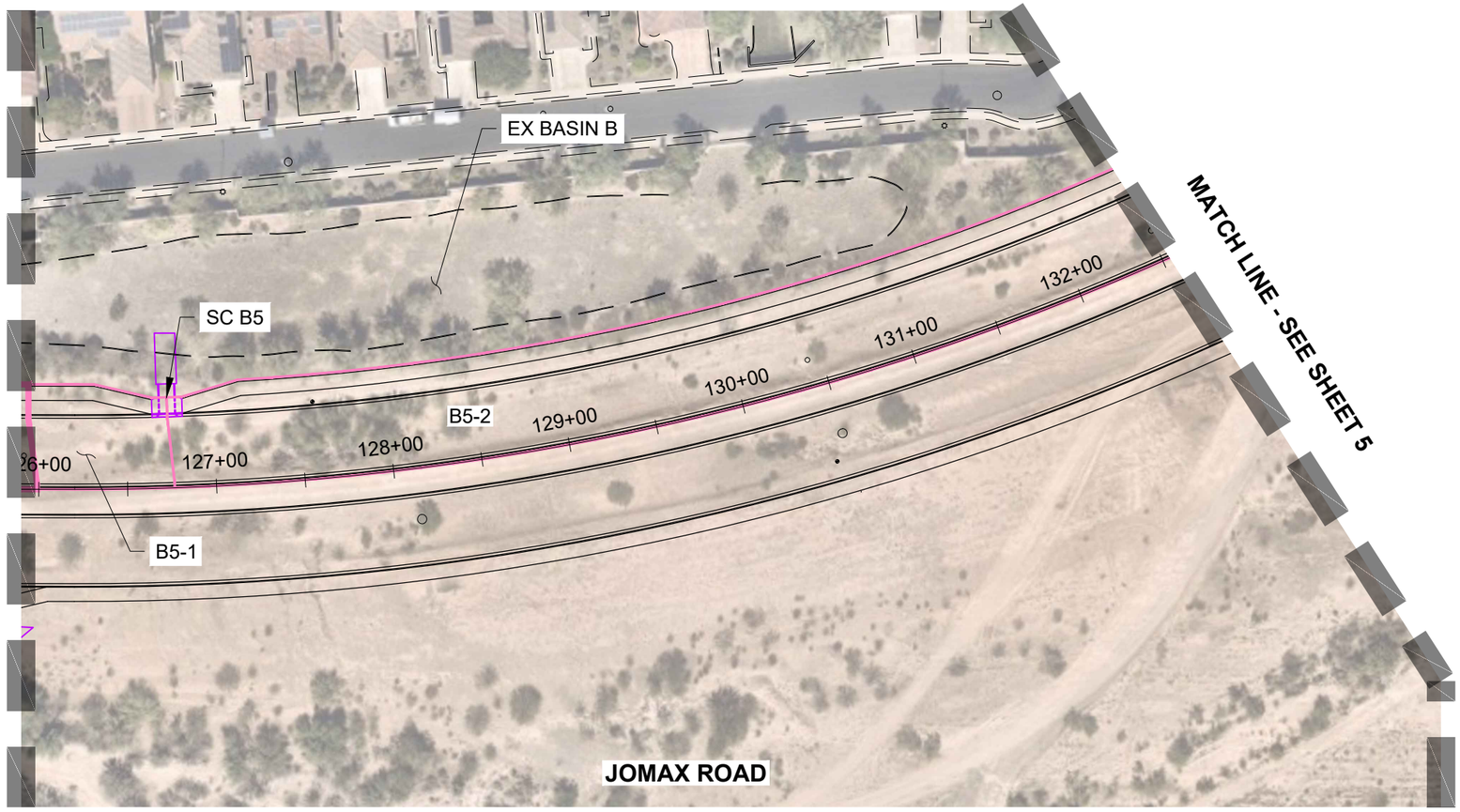

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ULTIMATE CONDITIONS DRAINAGE EXHIBIT
DATE: 05/11/2026

SHEET 4 OF 7

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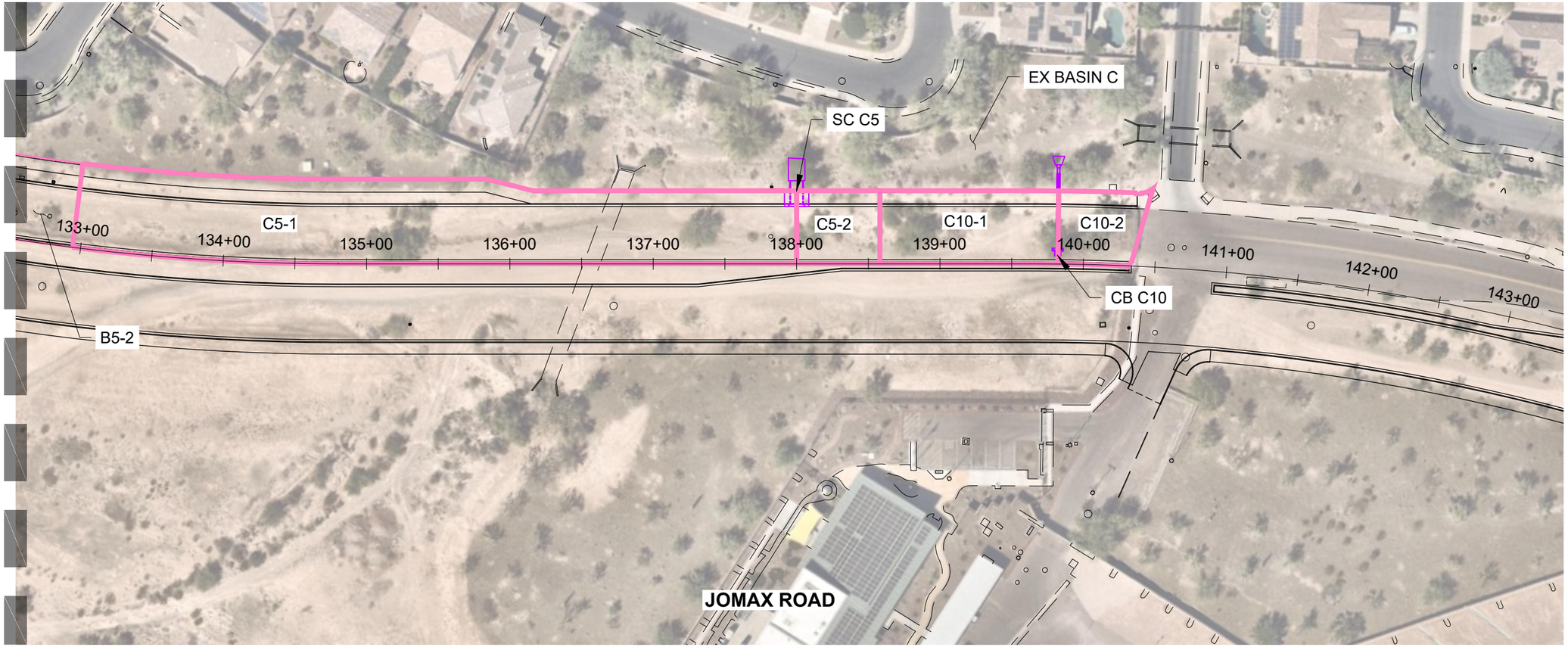
MATCH LINE - SEE SHEET 4



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ULTIMATE CONDITIONS DRAINAGE EXHIBIT
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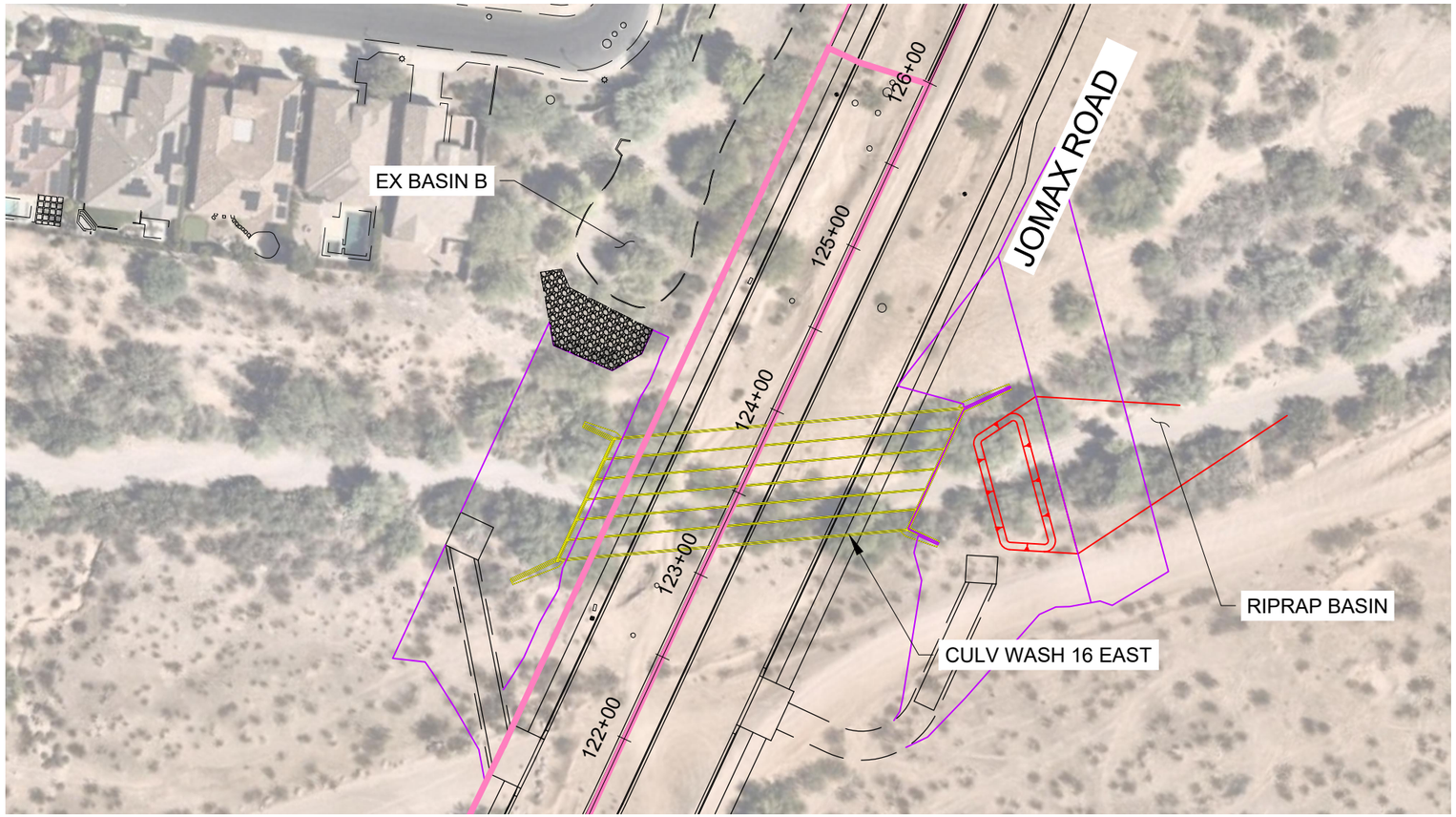

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JOMAX ROAD - DYSART ROAD TO 126TH DRIVE
ULTIMATE CONDITIONS DRAINAGE EXHIBIT
DATE: 05/11/2026

SHEET 6 OF 7

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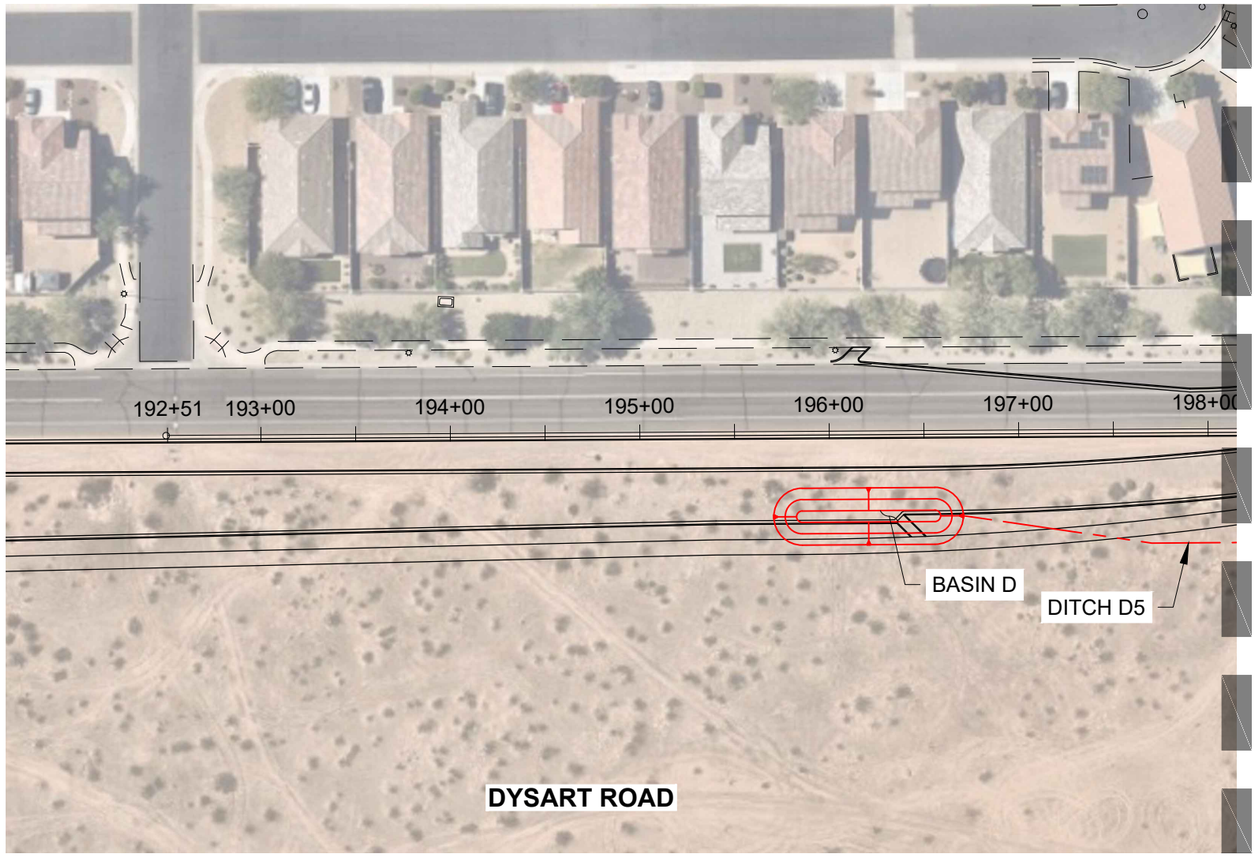

MATCH LINE - SEE SHEET 2

LEGEND

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JOMAX ROAD - DYSART ROAD TO 126TH DRIVE
ULTIMATE CONDITIONS DRAINAGE EXHIBIT
DATE: 05/11/2026

SHEET 7 OF 7

TYLin
1475 NORTH SCOTTSDALE ROAD
SUITE 450
SCOTTSDALE, AZ 85257

Appendix F

Hydraulics

Appendix F.1

Ditch Calculations

Project: **Jomax Road - Dysart Road to 126th Drive**
Location: **City of Peoria, AZ**
Date: **May 11, 2026**
Subject: **Proposed Ditch Design Summary**
Source: Drainage Design Manual for Maricopa County - Hydraulics, December 14, 2018

Ditch ID	Offset (Lt/Rt)	Contributing Drainage Areas	From Station	To Station	Mannings n	Left Side Slope (ft/ft)	Right Side Slope (ft/ft)	Ditch Slope (ft/ft)	Ditch Depth (ft)	Ditch Bottom Width (ft)	Ditch Top Width (ft)	Design Flow (cfs)	Design Velocity (ft/s)	Full Flow (cfs)	Full Flow Velocity (ft/s)	Notes
Jomax Road																
DITCH 05-05	Lt	050005	100+76	104+28	0.035	4/1	6/1	0.0162	1.5	0.0	15.0	17.7	3.4	49.5	4.4	50 yr, 24 hr Flow, Earthen lining
DITCH 05-10	Lt	050005	104+28	105+73	0.049	4/1	6/1	0.0418	1.0	0.0	10.0	17.7	3.8	19.3	3.9	50 yr, 24 hr Flow, 3" Angular riprap lining
DITCH 05-15	Lt	050005	106+06	109+37	0.035	4/1	6/1	0.0046	1.5	0.0	15.0	17.7	2.2	26.4	2.4	50 yr, 24 hr Flow, Earthen lining
Dysart Road																
DITCH D5	Rt	D5	196+71	198+40	0.035	6/1	6/1	0.0490	0.5	0.0	6.0	0.9	2.4	5.5	3.7	10 yr Flow, Earthen lining

Notes:
1) Velocities are below 4 ft/sec for earth lined ditches.
2) Ditch capacity is calculated using Bentley Flowmaster.

Appendix F.2

Bentley FlowMaster Ditch Results

Worksheet for DITCH 05-05, 50 YR, 24 HR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.035
Channel Slope	0.0162 ft/ft
Left Side Slope	4.000 H:V
Right Side Slope	6.000 H:V
Discharge	17.7 cfs

Results	
Normal Depth	12.2 in
Flow Area	5.2 ft²
Wetted Perimeter	10.41 ft
Hydraulic Radius	6.0 in
Top Width	10.20 ft
Critical Depth	11.4 in
Critical Slope	0.0235 ft/ft
Velocity	3.40 ft/s
Velocity Head	0.18 ft
Specific Energy	1.20 ft
Froude Number	0.840
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	12.2 in
Critical Depth	11.4 in
Channel Slope	0.0162 ft/ft
Critical Slope	0.0235 ft/ft

Worksheet for DITCH 05-10, 50 YR, 24 HR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.035
Channel Slope	0.0418 ft/ft
Left Side Slope	4.000 H:V
Right Side Slope	6.000 H:V
Discharge	17.7 cfs

Results	
Normal Depth	10.2 in
Flow Area	3.6 ft²
Wetted Perimeter	8.71 ft
Hydraulic Radius	5.0 in
Top Width	8.54 ft
Critical Depth	11.4 in
Critical Slope	0.0235 ft/ft
Velocity	4.86 ft/s
Velocity Head	0.37 ft
Specific Energy	1.22 ft
Froude Number	1.311
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	10.2 in
Critical Depth	11.4 in
Channel Slope	0.0418 ft/ft
Critical Slope	0.0235 ft/ft

Worksheet for DITCH 05-15, 50 YR, 24 HR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.035
Channel Slope	0.0046 ft/ft
Left Side Slope	4.000 H:V
Right Side Slope	6.000 H:V
Discharge	17.7 cfs

Results	
Normal Depth	15.5 in
Flow Area	8.3 ft²
Wetted Perimeter	13.18 ft
Hydraulic Radius	7.6 in
Top Width	12.92 ft
Critical Depth	11.4 in
Critical Slope	0.0235 ft/ft
Velocity	2.12 ft/s
Velocity Head	0.07 ft
Specific Energy	1.36 ft
Froude Number	0.466
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	15.5 in
Critical Depth	11.4 in
Channel Slope	0.0046 ft/ft
Critical Slope	0.0235 ft/ft

Worksheet for DITCH D5, 10 YR

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.035
Channel Slope	0.0490 ft/ft
Left Side Slope	6.000 H:V
Right Side Slope	6.000 H:V
Discharge	0.9 cfs

Results	
Normal Depth	3.0 in
Flow Area	0.4 ft²
Wetted Perimeter	3.08 ft
Hydraulic Radius	1.5 in
Top Width	3.04 ft
Critical Depth	3.2 in
Critical Slope	0.0355 ft/ft
Velocity	2.34 ft/s
Velocity Head	0.09 ft
Specific Energy	0.34 ft
Froude Number	1.162
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.00 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.0 in
Critical Depth	3.2 in
Channel Slope	0.0490 ft/ft
Critical Slope	0.0355 ft/ft

Appendix F.3

Culvert & Spreader Basin Calculations

Project: **Jomax Road - Dysart Road to 126th Drive**
Location: **City of Peoria, AZ**
Date: **May 11, 2026**
Subject: **Proposed Culvert Design Summary**
Source: City of Peoria Engineering Standards, February 2025 & Drainage Policies and Standards for Maricopa County, August 22, 2018 & Maricopa County Transportation Roadway Design Manual, March 27, 2025

Culvert ID	Road Alignment	Station	Culvert Size	Type	# of Barrels	Inlet Invert (ft)	Outlet Invert (ft)	Culvert Length (ft)	Culvert Slope (ft/ft)	50 yr Q (cfs)	50 yr Outlet Velocity (ft/s)	50 yr HGL Elevation (ft)	Edge of Roadway Elevation (ft)	100 yr Q (cfs)	100 yr Outlet Velocity (ft/s)	100 yr HGL Elevation (ft)	Overtopping Elevation (ft)
CULV 05	Jomax Road	109+48	36"	RGRCP	3	1347.12	1346.24	176.0	0.0050	104.1	4.9	1352.01	1353.01	124.9	5.9	1352.47	1353.01
CULV 05-05	Jomax Road	105+90	30" x 19"	HECP	1	1351.64	1351.15	34.0	0.0144	17.7	8.4	1353.89	1355.39	21.0	8.8	1354.37	1355.39
CULV 10	Jomax Road	116+68	30"	RGRCP	2	1343.42	1342.51	181.5	0.0050	58.4	6.0	1348.43	1348.88	65.8	6.7	1348.90	1348.88

Notes:
1) Culvert capacity is calculated using HY-8.

Project: Jomax Road - Dysart Road to 126th Drive
Location: City of Peoria, AZ
Date: May 11, 2026
Subject: Proposed Culvert Spreader Basin Design Summary

Culvert ID	Road Alignment	Station	Outlet Crest Elevation (ft)	Crest Length (ft)	50 yr Q (cfs)	Headwater Elevation (ft)	Depth Above Crest (ft)
CULV 05	Jomax Road	109+48	1350.50	115.0	104.1	1350.98	0.48
CULV 10	Jomax Road	116+68	1346.25	76.0	58.4	1346.69	0.44

Notes:

1) Weir capacity is calculated using Bentley Flowmaster.

Appendix F.4

HY-8 Culvert Results

HY-8 Culvert Analysis Report

Culvert Data: CULV 05 - RGRCP

Site Data - CULV 05 - RGRCP

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 1347.12 ft

Outlet Station: 176.00 ft

Outlet Elevation: 1346.24 ft

Number of Barrels: 3

Culvert Data Summary - CULV 05 - RGRCP

Barrel Shape: Circular

Barrel Diameter: 3.00 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0130

Culvert Type: Straight

Inlet Configuration: Square Edge with Headwall (Ke=0.5)

Inlet Depression: None

Table 1 - Culvert Summary Table: CULV 05 - RGRCP

Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
50 YR, 24 HR	104.10 cfs	104.10 cfs	1352.01	2.97	4.895	4-FFf	1.91	1.91	3.00	4.74	4.91	0.00
100 YR, 24 HR	124.90 cfs	124.90 cfs	1352.47	3.40	5.350	4-FFf	2.19	2.10	3.00	4.74	5.89	0.00

Culvert Barrel Data

Culvert Barrel Type Straight Culvert

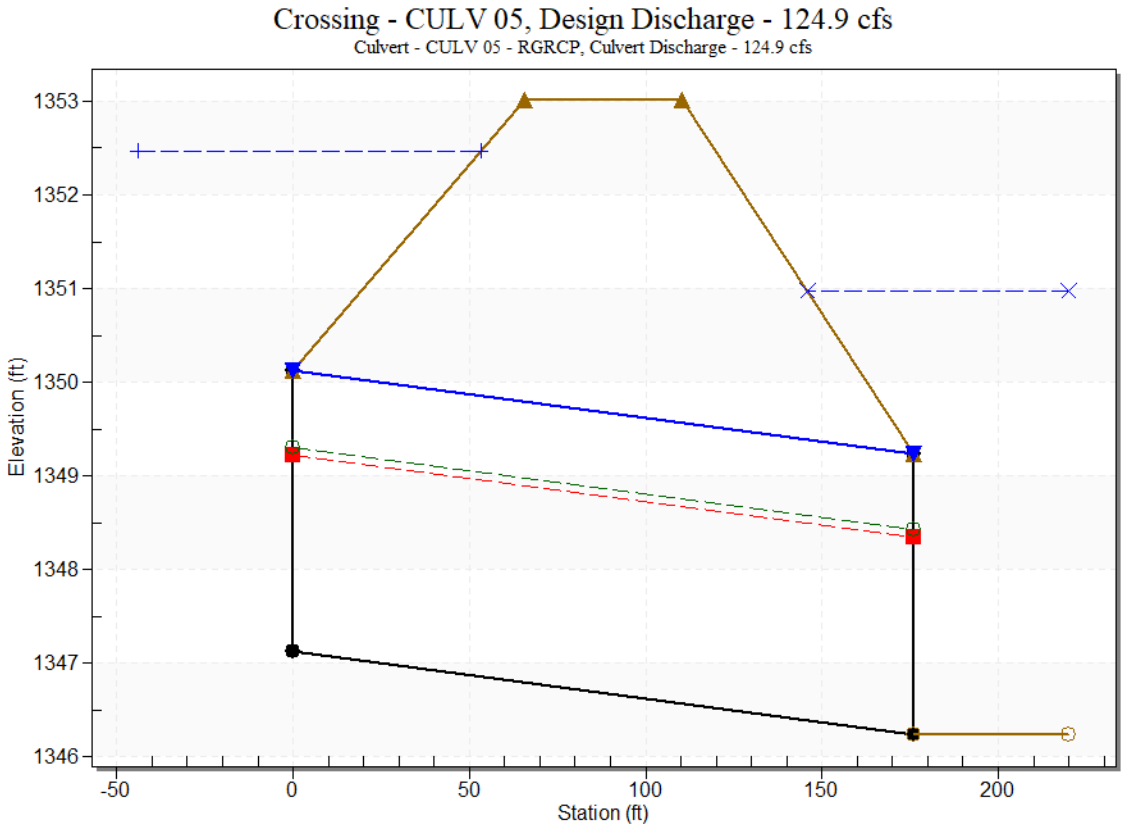
Inlet Elevation (invert): 1347.12 ft,

Outlet Elevation (invert): 1346.24 ft

Culvert Length: 176.00 ft,

Culvert Slope: 0.0050

Water Surface Profile Plot for Culvert: CULV 05 - RGRCP



Crossing Discharge Data

Discharge Selection Method: User Defined

Table 1 - Summary of Culvert Flows at Crossing: CULV 05

Headwater Elevation (ft)	Discharge Names	Total Discharge (cfs)	CULV 05 - RGRCP Discharge (cfs)	Roadway Discharge (cfs)	Iterations
1352.01	50 YR, 24 HR	104.10	104.10	0.00	1
1352.47	100 YR, 24 HR	124.90	124.90	0.00	1
1353.01	Overtopping	145.79	145.79	0.00	Overtopping

Tailwater Data for Crossing: CULV 05

Table 2 - Downstream Channel Rating Curve (Crossing: CULV 05)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)
104.10	1350.98	4.74
124.90	1350.98	4.74

Tailwater Channel Data - CULV 05

Tailwater Channel Option: Enter Constant Tailwater Elevation

Constant Tailwater Elevation: 1350.98 ft

Culvert Data: CULV 10 - RGRCP

Site Data - CULV 10 - RGRCP

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 1343.42 ft

Outlet Station: 181.50 ft

Outlet Elevation: 1342.51 ft

Number of Barrels: 2

Culvert Data Summary - CULV 10 - RGRCP

Barrel Shape: Circular

Barrel Diameter: 2.50 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0130

Culvert Type: Straight

Inlet Configuration: Square Edge with Headwall

Inlet Depression: None

Table 2 - Culvert Summary Table: CULV 10 - RGRCP

Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
50 YR, 24 HR	58.40 cfs	58.40 cfs	1348.43	3.09	5.009	4-FFf	2.06	1.84	2.50	4.18	5.95	0.00
100 YR, 24 HR	67.30 cfs	65.80 cfs	1348.90	3.45	5.477	4-FFf	2.50	1.95	2.50	4.18	6.70	0.00

Culvert Barrel Data

Culvert Barrel Type Straight Culvert

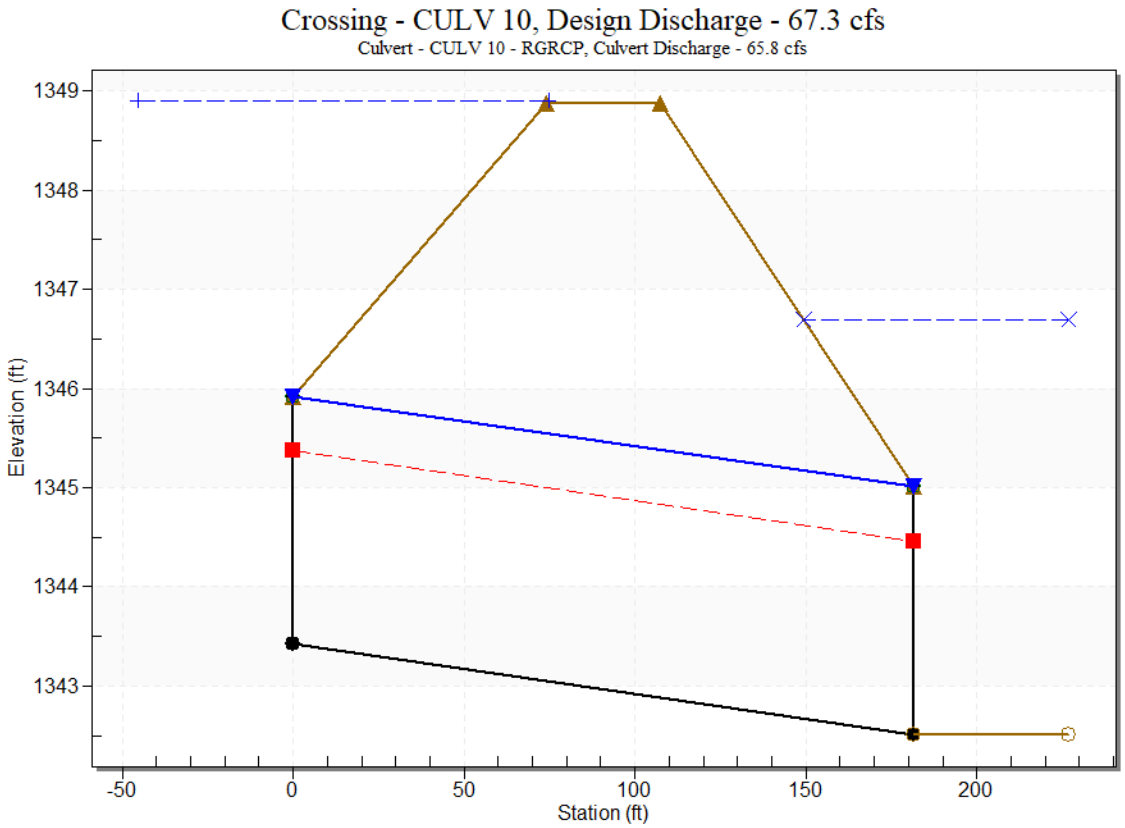
Inlet Elevation (invert): 1343.42 ft,

Outlet Elevation (invert): 1342.51 ft

Culvert Length: 181.50 ft,

Culvert Slope: 0.0050

Water Surface Profile Plot for Culvert: CULV 10 - RGRCP



Crossing Discharge Data

Discharge Selection Method: User Defined

Table 3 - Summary of Culvert Flows at Crossing: CULV 10

Headwater Elevation (ft)	Discharge Names	Total Discharge (cfs)	CULV 10 - RGRCP Discharge (cfs)	Roadway Discharge (cfs)	Iterations
1348.43	50 YR, 24 HR	58.40	58.40	0.00	1
1348.90	100 YR, 24 HR	67.30	65.80	1.33	26
1348.88	Overtopping	65.54	65.54	0.00	Overtopping

Tailwater Data for Crossing: CULV 10

Table 4 - Downstream Channel Rating Curve (Crossing: CULV 10)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)
58.40	1346.69	4.18
67.30	1346.69	4.18

Tailwater Channel Data - CULV 10

Tailwater Channel Option: Enter Constant Tailwater Elevation

Constant Tailwater Elevation: 1346.69 ft

Culvert Data: CULV 05-05 - RGRCP

Site Data - CULV 05-05 - RGRCP

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 1351.64 ft

Outlet Station: 34.00 ft

Outlet Elevation: 1351.15 ft

Number of Barrels: 1

Culvert Data Summary - CULV 05-05 - RGRCP

Barrel Shape: Elliptical

Barrel Span: 30.00 in

Barrel Rise: 19.00 in

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0130

Culvert Type: Straight

Inlet Configuration: Square Edge with Headwall

Inlet Depression: None

Table 3 - Culvert Summary Table: CULV 05-05 - RGRCP

Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
50 YR, 24 HR	17.70 cfs	17.70 cfs	1353.89	2.25	1.853	5-S2n	0.93	1.27	1.00	1.19	8.35	2.08
100 YR, 24 HR	21.00 cfs	21.00 cfs	1354.37	2.73	2.277	5-S2n	1.03	1.37	1.12	1.27	8.77	2.17

Culvert Barrel Data

Culvert Barrel Type Straight Culvert

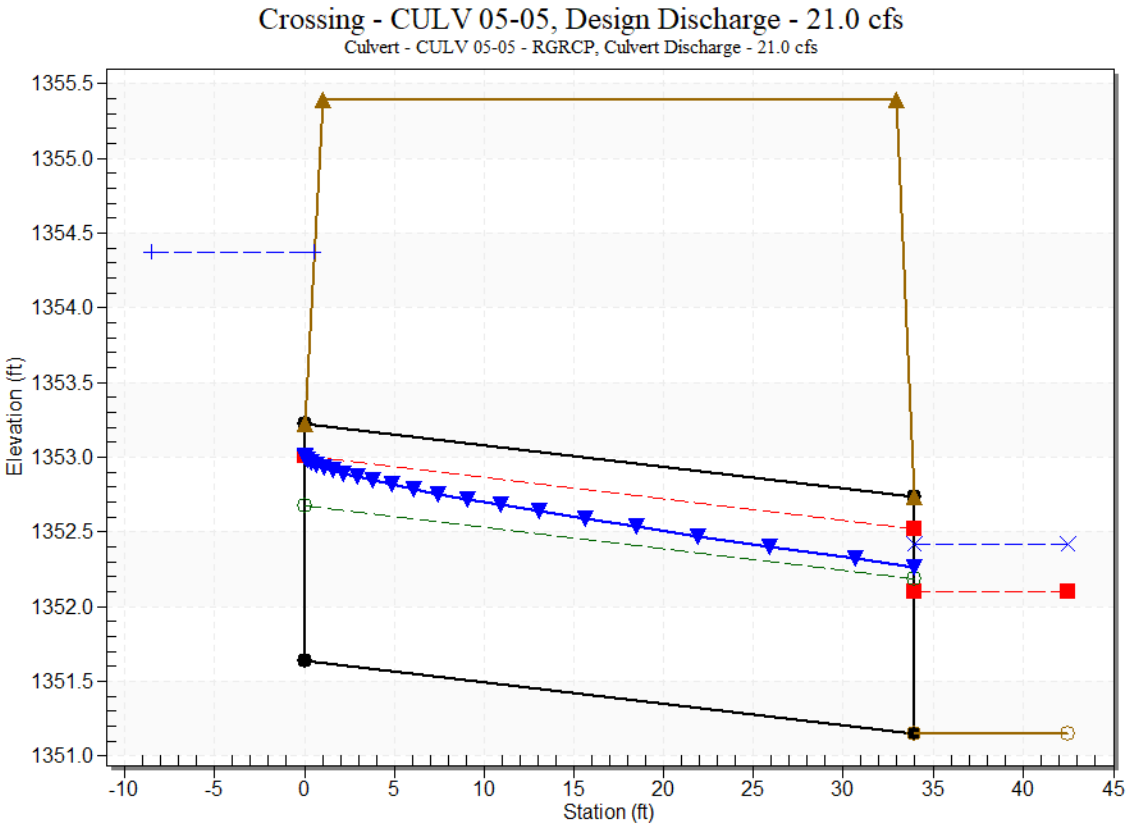
Inlet Elevation (invert): 1351.64 ft,

Outlet Elevation (invert): 1351.15 ft

Culvert Length: 34.00 ft,

Culvert Slope: 0.0144

Water Surface Profile Plot for Culvert: CULV 05-05 - RGRCP



Crossing Discharge Data

Discharge Selection Method: User Defined

Table 5 - Summary of Culvert Flows at Crossing: CULV 05-05

Headwater Elevation (ft)	Discharge Names	Total Discharge (cfs)	CULV 05-05 - RGRCP Discharge (cfs)	Roadway Discharge (cfs)	Iterations
1353.89	50 YR, 24 HR	17.70	17.70	0.00	1
1354.37	100 YR, 24 HR	21.00	21.00	0.00	1
1355.39	Overtopping	26.59	26.59	0.00	Overtopping

Tailwater Data for Crossing: CULV 05-05

Table 6 - Downstream Channel Rating Curve (Crossing: CULV 05-05)

Flow (cfs)	Water Surface Elev (ft)	Velocity (ft/s)	Depth (ft)	Shear (psf)	Froude Number
17.70	1352.34	1.19	2.08	0.36	0.48
21.00	1352.42	1.27	2.17	0.39	0.48

Tailwater Channel Data - CULV 05-05

Tailwater Channel Option: Triangular Channel

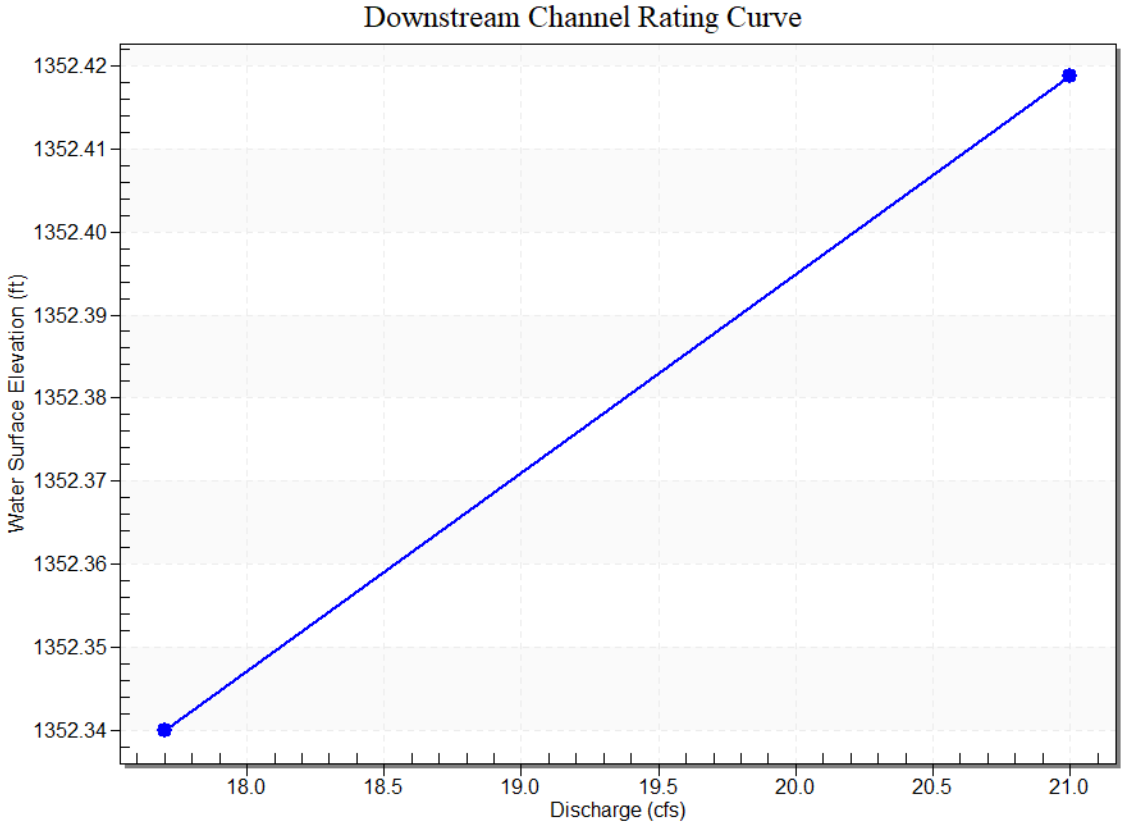
Side Slope (H:V): 6.00 (_:1)

Channel Slope: 0.0049

Channel Manning's n: 0.0350

Channel Invert Elevation: 1351.15 ft

Tailwater Rating Curve Plot for Crossing: CULV 05-05



Appendix F.5

Bentley FlowMaster Spreader Basin Results

Worksheet for CULV 05 SPREADER BASIN

Project Description	
Solve For	Headwater Elevation

Input Data	
Discharge	104.1 cfs
Crest Elevation	1,350.50 ft
Tailwater Elevation	1,350.50 ft
Crest Surface Type	Gravel
Crest Breadth	8.00 ft
Crest Length	115.00 ft

Results	
Headwater Elevation	1,350.98 ft
Headwater Height Above Crest	0.48 ft
Tailwater Height Above Crest	0.00 ft
Weir Coefficient	2.69 ft^(1/2)/s
Submergence Factor	1.000
Adjusted Weir Coefficient	2.69 ft^(1/2)/s
Flow Area	55.7 ft²
Velocity	1.87 ft/s
Wetted Perimeter	115.97 ft
Top Width	115.00 ft

Worksheet for CULV 10 SPREADER BASIN

Project Description	
Solve For	Headwater Elevation

Input Data	
Discharge	58.4 cfs
Crest Elevation	1,346.25 ft
Tailwater Elevation	1,346.25 ft
Crest Surface Type	Gravel
Crest Breadth	8.00 ft
Crest Length	76.00 ft

Results	
Headwater Elevation	1,346.69 ft
Headwater Height Above Crest	0.44 ft
Tailwater Height Above Crest	0.00 ft
Weir Coefficient	2.67 ft^(1/2)/s
Submergence Factor	1.000
Adjusted Weir Coefficient	2.67 ft^(1/2)/s
Flow Area	33.1 ft²
Velocity	1.76 ft/s
Wetted Perimeter	76.87 ft
Top Width	76.00 ft

Appendix F.6

10 yr & 100 yr Spread and Inlet Calculations

Project: Jomax Road - Dysart Road to 126th Drive
Location: City of Peoria, AZ
Date: May 11, 2026
Subject: Proposed 10 Year Inlet Design Summary
Source: City of Peoria Engineering Standards, February 2025 & Drainage Policies and Standards for Maricopa County, August 22, 2018

Inlet ID	Station	Offset	Contributing Drainage Areas	Inlet Type	Wing/Inlet Opening (ft)	Effective Opening (ft)	Profile Slope	Drainage Area 10 yr Flow (cfs)	Total Flow (Including Bypass) (cfs)	Captured Flow (cfs)	Captured Flow (%)	Bypass Flow (cfs)	Bypass To (Inlet ID)	Allowable Spread (ft)	Calculated Spread (ft)	Spread Acceptable? (Yes/No)
Jomax Road																
SC A5	110+80	Lt	A5	Scupper	12	9.6	0.40%	2.1	2.2	2.2	100.0%	0.0	-	15.5	11.0	Yes
SC B5	126+74	Lt	B5-1 + B5-2	Scupper	8	6.4	In Sag	2.5	2.5	2.5	100.0%	0.0	-	18.5	8.1	Yes
SC C5	138+00	Lt	C5-1 + C5-2	Scupper	8	6.4	In Sag	2.0	2.0	2.0	100.0%	0.0	-	18.5	10.7	Yes
CB C10	139+82	Lt	C10-1 + C10-2	Catch Basin	3	2.4	In Sag	2.0	2.0	2.0	100.0%	0.0	-	18.5	15.7	Yes
SC E5	113+95	Lt	E5	Scupper	8	6.4	0.74%	1.6	1.6	1.5	93.8%	0.1	SC F5	18.5	8.3	Yes
SC F5	119+71	Lt	F5-1 + F5-2	Scupper	16	12.8	In Sag	4.5	4.5	4.5	100.0%	0.0	-	18.5	12.1	Yes
SC G5	107+58	Rt	G5-1 + G5-2	Scupper	4	3.2	In Sag	0.8	0.8	0.8	100.0%	0.0	-	6.5	3.8	Yes
CB G10	104+62	Rt	G10	Catch Basin	13	10.4	2.41%	2.0	2.0	1.8	92.4%	0.1	-	11.0	10.9	Yes
SC H5	107+14	Lt	H5	Scupper	8	6.4	0.55%	1.5	1.6	1.5	90.1%	0.2	SC A5	12.5	12.4	Yes
SC I5	104+77	Lt	I5	Scupper	4	3.2	2.64%	0.5	0.5	0.4	80.6%	0.1	SC H5	7.7	4.8	Yes

Notes:
1) Inlet and spread capacity are calculated using Bentley CivilStorm & FlowMaster.

Project: **Jomax Road - Dysart Road to 126th Drive**
Location: **City of Peoria, AZ**
Date: **May 11, 2026**
Subject: **Proposed 100 Year Inlet Design Summary**
Source: City of Peoria Engineering Standards, February 2025 & Drainage Policies and Standards for Maricopa County, August 22, 2018

Inlet ID	Station	Offset	Contributing Drainage Areas	Inlet Type	Wing/Inlet Opening (ft)	Effective Opening (ft)	Profile Slope	Drainage Area 100 yr Flow (cfs)	Total Flow (Including Bypass) (cfs)	Captured Flow (cfs)	Captured Flow (%)	Bypass Flow (cfs)	Bypass To (Inlet ID)	Calculated Depth (in)
Jomax Road														
SC A5	110+80	Lt	A5	Scupper	12	9.6	0.40%	4.1	5.1	4.4	85.8%	0.7	SC E5	4.5
SC B5	126+74	Lt	B5-1 + B5-2	Scupper	8	6.4	In Sag	4.6	4.6	4.6	100.0%	0.0	-	6.9
SC C5	138+00	Lt	C5-1 + C5-2	Scupper	8	6.4	In Sag	4.0	4.0	4.0	100.0%	0.0	-	6.9
CB C10	139+82	Lt	C10-1 + C10-2	Catch Basin	3	2.4	In Sag	3.6	3.6	3.6	100.0%	0.0	-	8.4
SC E5	113+95	Lt	E5	Scupper	8	6.4	0.74%	3.0	3.8	2.5	67.2%	1.2	SC F5	3.7
SC F5	119+71	Lt	F5-1 + F5-2	Scupper	16	12.8	In Sag	8.6	9.6	9.6	100.0%	0.0	-	7.6
SC G5	107+58	Rt	G5-1 + G5-2	Scupper	4	3.2	In Sag	1.4	1.4	1.4	100.0%	0.0	-	5.2
CB G10	104+62	Rt	G10	Catch Basin	13	10.4	2.41%	3.5	3.5	2.6	73.2%	0.9	-	2.7
SC H5	107+14	Lt	H5	Scupper	8	6.4	0.55%	2.8	3.1	2.1	69.2%	1.0	SC A5	3.3
SC I5	104+77	Lt	I5	Scupper	4	3.2	2.64%	0.8	0.8	0.5	62.1%	0.3	SC H5	1.8

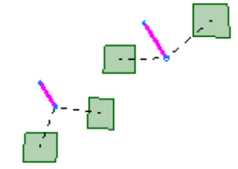
Notes:
1) Inlet and spread capacity are calculated using Bentley CivilStorm & FlowMaster.

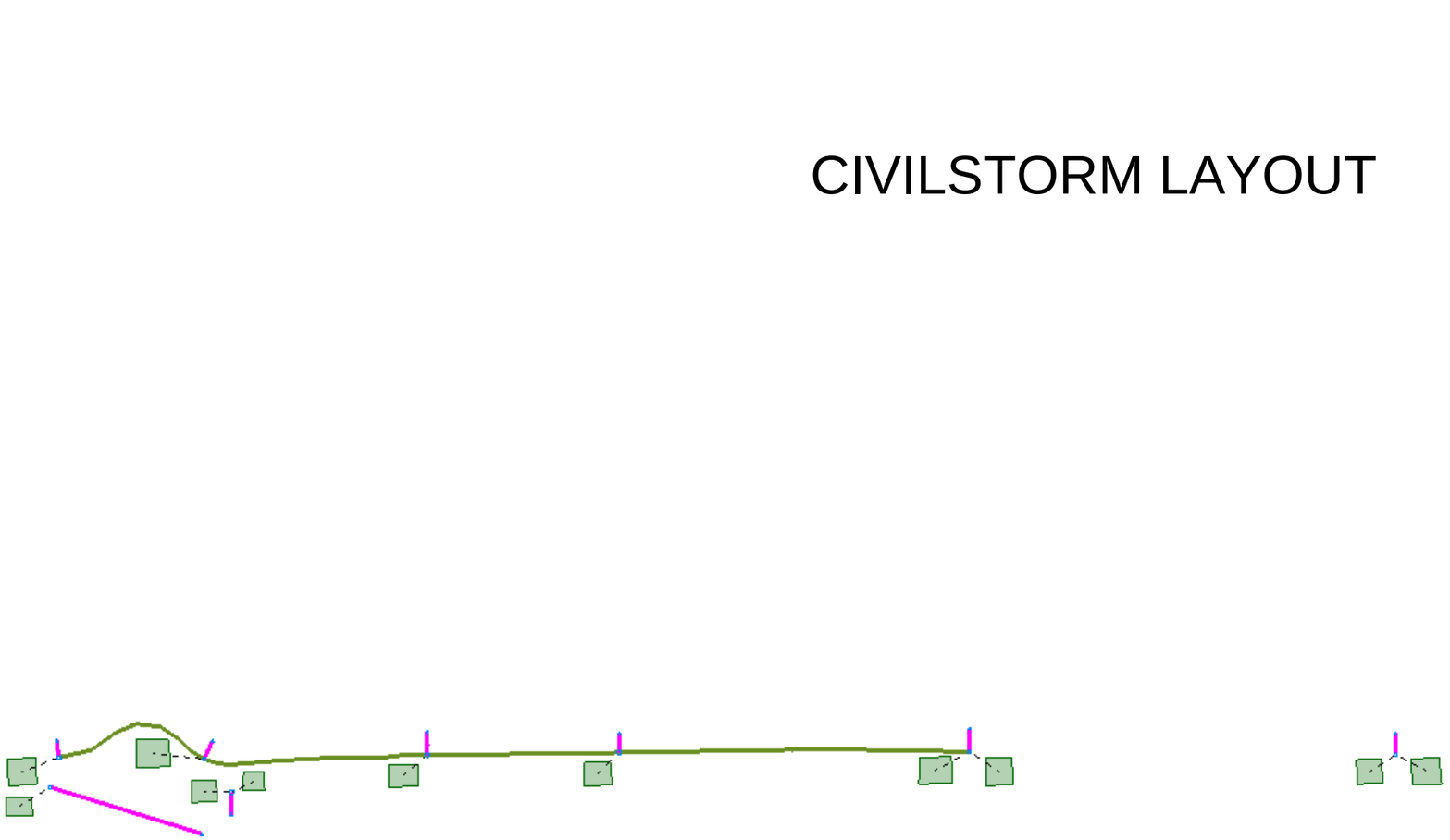
Appendix F.7

Bentley CivilStorm Results

10 yr

CIVILSTORM LAYOUT





Catchment FlexTable: EBPT_CATCHMENT TABLE

Label	Outflow Element	Area (User Defined) (acres)	Runoff Coefficient (Rational)	Time of Concentration (min)	Flow (Total Out) (cfs)
A5	SC A5	0.68	0.66	6.0	2.1
B5-1	SC B5	0.09	0.77	5.0	0.4
B5-2	SC B5	0.72	0.76	9.0	2.2
C5-1	SC C5	0.56	0.78	8.0	1.8
C5-2	SC C5	0.06	0.82	5.0	0.2
C10-1	CB C10	0.13	0.82	5.0	0.5
C10-2	CB C10	0.42	0.69	5.0	1.5
E5	SC E5	0.49	0.68	6.0	1.6
F5-1	SC F5	0.82	0.70	8.0	2.4
F5-2	SC F5	0.79	0.74	10.0	2.2
G5-1	SC G5	0.14	0.71	5.0	0.5
G5-2	SC G5	0.07	0.78	5.0	0.3
G10	CB G10	0.53	0.73	5.0	2.0
H5	SC H5	0.46	0.66	5.0	1.5
I5	SC I5	0.11	0.81	5.0	0.5

Conduit FlexTable: EBPT_CONDUIT TABLE

Label	Start Node	Stop Node	Invert (Start) (ft)	Invert (Stop) (ft)	Length (Unified) (ft)	Slope (Calculated) (ft/ft)	Diameter (in)	Manning's n	Velocity (ft/s)	Flow (cfs)	Capacity (Full Flow) (cfs)	Elevation Ground (Start) (ft)	Elevation Ground (Stop) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
A5 - A5 OUT	SC A5	A5 OUT	1,351.95	1,350.95	10.00	0.1000		0.013	4.41	2.2	83.8	1,352.05	1,351.05	1,352.05	1,350.99	1,352.10	1,351.29
B5 - B5 OUT	SC B5	B5 OUT	1,348.63	1,347.63	10.00	0.1000		0.013	5.33	2.5	55.1	1,348.73	1,347.73	1,348.77	1,347.69	1,348.84	1,348.13
C5 - C5 OUT	SC C5	C5 OUT	1,348.48	1,347.48	10.00	0.1000		0.013	4.96	2.0	55.1	1,348.58	1,347.58	1,348.61	1,347.53	1,348.67	1,347.91
C10 - C10 OUT	CB C10	C10 OUT	1,344.68	1,344.35	65.20	0.0051	18.0	0.013	3.58	2.0	7.5	1,348.41	1,344.35	1,345.21	1,344.88	1,345.41	1,345.08
E5 - E5 OUT	SC E5	E5 OUT	1,350.26	1,349.26	10.00	0.1000		0.013	4.31	1.5	55.1	1,350.36	1,349.36	1,350.36	1,349.30	1,350.41	1,349.59
F5 - F5 OUT	SC F5	F5 OUT	1,346.60	1,345.60	10.00	0.1000		0.013	5.18	4.5	112.4	1,346.70	1,345.70	1,346.74	1,345.65	1,346.80	1,346.07
G5 - G5 OUT	SC G5	G5 OUT	1,352.81	1,352.61	10.00	0.0200		0.013	2.72	0.8	11.9	1,352.91	1,352.71	1,352.92	1,352.68	1,352.97	1,352.80
G10 - G10 OUT	CB G10	G10 OUT	1,352.03	1,349.00	252.80	0.0120	18.0	0.013	4.74	1.8	11.5	1,357.31	1,349.00	1,352.54	1,350.00	1,352.72	1,350.03
H5 - H5 OUT	SC H5	H5 OUT	1,353.58	1,353.38	10.00	0.0200		0.013	2.67	1.5	24.6	1,353.68	1,353.48	1,353.68	1,353.45	1,353.73	1,353.56
I5 - I5 OUT	SC I5	I5 OUT	1,356.52	1,355.52	10.00	0.1000		0.013	3.28	0.4	26.5	1,356.62	1,355.62	1,356.58	1,355.55	1,356.62	1,355.71

Gutter FlexTable: EBPT_GUTTER TABLE

Label	Start Node	Stop Node	Length (User Defined) (ft)	Slope (Calculated) (ft/ft)	Manning's n (Gutter)	Rational Flow (Gutter) (cfs)	Road Cross Slope (ft/ft)	Depressed Gutter?	Gutter Cross Slope (ft/ft)	Gutter Width (ft)
H5 - A5	SC H5	SC A5		0.0044	0.015	0.2	0.0200	True	0.0704	1.42
A5 - E5	SC A5	SC E5		0.0054	0.015	0.0	0.0200	True	0.0704	1.42
E5 - F5	SC E5	SC F5		0.0064	0.015	0.1	0.0200	True	0.0704	1.42
GU-4	SC I5	SC H5		0.0109	0.015	0.1	0.0200	True	0.0704	1.42

Catch Basin FlexTable: EBPT_INLET PROPERTIES TABLE

Label	Inlet	Inlet Location	Longitudinal Slope (Inlet) (ft/ft)	Manning's n (Inlet)	Curb Opening Length (ft)	Grate Length (ft)	Grate Width (ft)	Grating Type	Road Cross Slope (ft/ft)	Depressed Gutter?	Gutter Cross Slope (ft/ft)	Gutter Width (ft)
CB C10	MAG STD DTL 542-2 - 0' WING	In Sag	0.0000	0.000	2.40		(N/A)	<None>	0.0200	True	0.0704	1.42
CB G10	MAG STD DTL 542-2 - 10' WING	On Grade	0.0241	0.015	10.40		(N/A)	<None>	0.0100	True	0.0704	1.42
SC A5	MAG STD DTL 206 - 3 CELL	On Grade	0.0040	0.015	9.60		(N/A)	<None>	0.0200	True	0.0704	1.42
SC B5	MAG STD DTL 206 - 2 CELL	In Sag	0.0000	0.000	6.40		(N/A)	<None>	0.0400	True	0.0704	1.42
SC C5	MAG STD DTL 206 - 2 CELL	In Sag	0.0000	0.000	6.40		(N/A)	<None>	0.0200	True	0.0704	1.42
SC E5	MAG STD DTL 206 - 2 CELL	On Grade	0.0074	0.015	6.40		(N/A)	<None>	0.0200	True	0.0704	1.42
SC F5	MAG STD DTL 206 - 4 CELL	In Sag	0.0000	0.000	12.80		(N/A)	<None>	0.0200	True	0.0704	1.42
SC G5	MAG STD DTL 206 - 1 CELL	In Sag	0.0000	0.000	3.20		(N/A)	<None>	0.0400	True	0.0704	1.42
SC H5	MAG STD DTL 206 - 2 CELL	On Grade	0.0055	0.015	6.40		(N/A)	<None>	0.0120	True	0.0704	1.42
SC I5	MAG STD DTL 206 - 1 CELL	On Grade	0.0264	0.015	3.20		(N/A)	<None>	0.0100	True	0.0704	1.42

Catch Basin FlexTable: EBPT_INLET TABLE

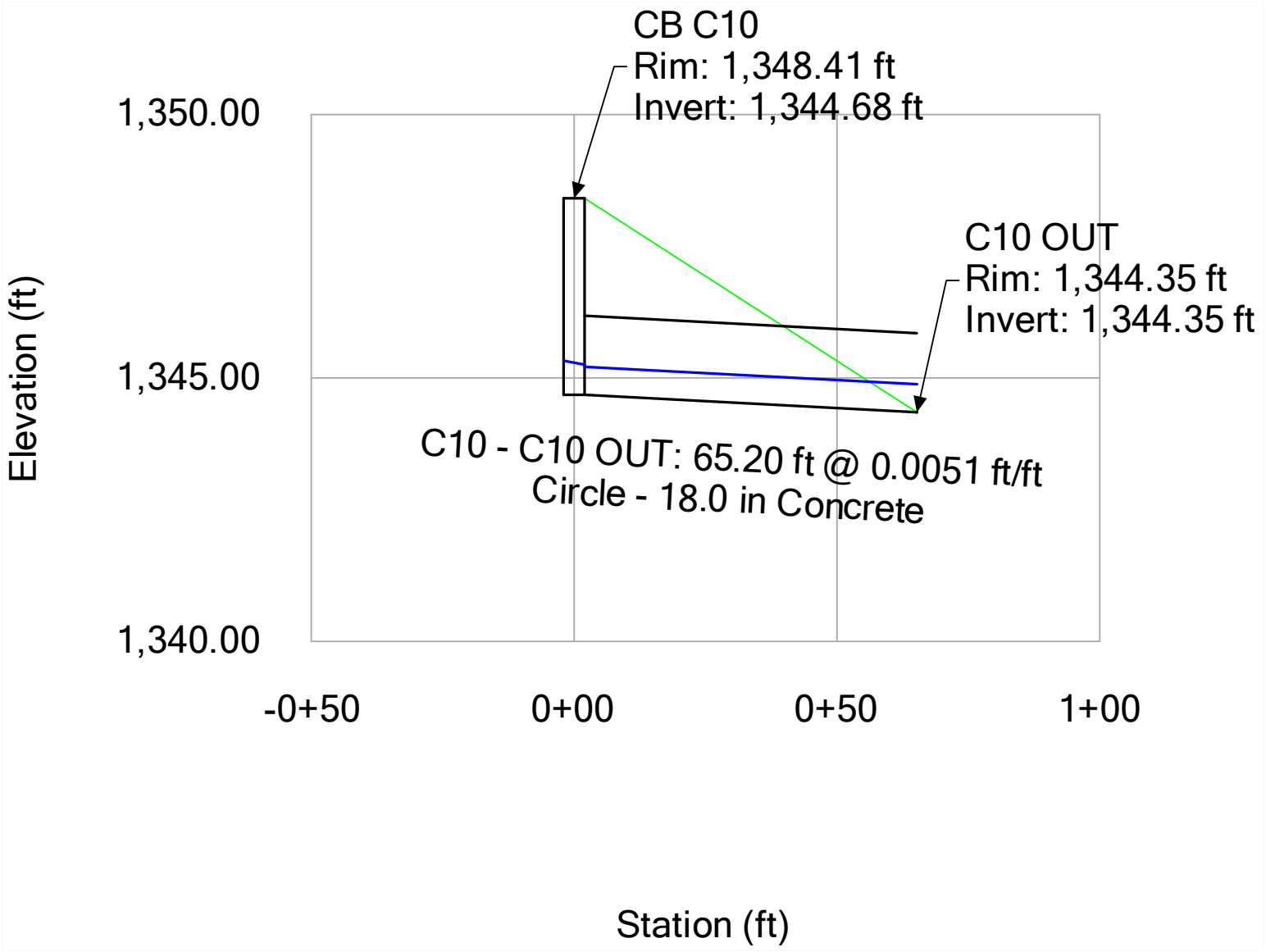
Label	Elevation (Ground) (ft)	Elevation (Invert) (ft)	Inlet Location	Headloss Method	HEC-22 Benching Method	Total Structure Energy Losses (ft)	Local Rational Flow (cfs)	Carryover Rational Flow (cfs)	Total Rational Flow to Inlet (cfs)	Flow (Captured) (cfs)	Capture Efficiency (Calculated) (%)	Flow (Total Bypassed) (cfs)	Spread / Top Width (ft)	Depth (Gutter) (in)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
CB C10	1,348.41	1,344.68	In Sag	HEC-22 Energy (Third Edition)	Flat	0.11	2.0	0.0	2.0	2.0	100.0	0.0	15.69	6.6	1,345.33	1,345.25	1,345.52	1,345.45
CB G10	1,357.31	1,352.03	On Grade	HEC-22 Energy (Third Edition)	Flat	0.15	2.0	0.0	2.0	1.8	92.4	0.1	10.88	2.3	1,352.68	1,352.57	1,352.87	1,352.76
SC A5	1,352.05	1,351.95	On Grade	HEC-22 Energy (Third Edition)	Flat	0.00	2.1	0.1	2.2	2.2	100.0	0.0	10.93	3.5	1,352.05	1,352.05	1,352.10	1,352.10
SC B5	1,348.73	1,348.63	In Sag	HEC-22 Energy (Third Edition)	Flat	0.00	2.5	0.0	2.5	2.5	100.0	0.0	6.05	5.4	1,348.73	1,348.73	1,348.80	1,348.80
SC C5	1,348.58	1,348.48	In Sag	HEC-22 Energy (Third Edition)	Flat	0.00	2.0	0.0	2.0	2.0	100.0	0.0	10.62	5.4	1,348.58	1,348.58	1,348.64	1,348.64
SC E5	1,350.36	1,350.26	On Grade	HEC-22 Energy (Third Edition)	Flat	0.00	1.6	0.0	1.6	1.5	93.8	0.1	8.28	2.8	1,350.36	1,350.36	1,350.41	1,350.41
SC F5	1,346.70	1,346.60	In Sag	HEC-22 Energy (Third Edition)	Flat	0.00	4.5	0.1	4.5	4.5	100.0	0.0	12.04	5.7	1,346.70	1,346.70	1,346.77	1,346.77
SC G5	1,352.91	1,352.81	In Sag	HEC-22 Energy (Third Edition)	Flat	0.00	0.8	0.0	0.8	0.8	100.0	0.0	3.78	4.3	1,352.91	1,352.91	1,352.96	1,352.96
SC H5	1,353.68	1,353.58	On Grade	HEC-22 Energy (Third Edition)	Flat	0.00	1.5	0.1	1.6	1.5	90.1	0.2	12.32	2.8	1,353.68	1,353.68	1,353.73	1,353.73
SC I5	1,356.62	1,356.52	On Grade	HEC-22 Energy (Third Edition)	Flat	0.04	0.5	0.0	0.5	0.4	80.6	0.1	4.71	1.6	1,356.62	1,356.62	1,356.65	1,356.65

Outfall FlexTable: EBPT_OUTFALL TABLE

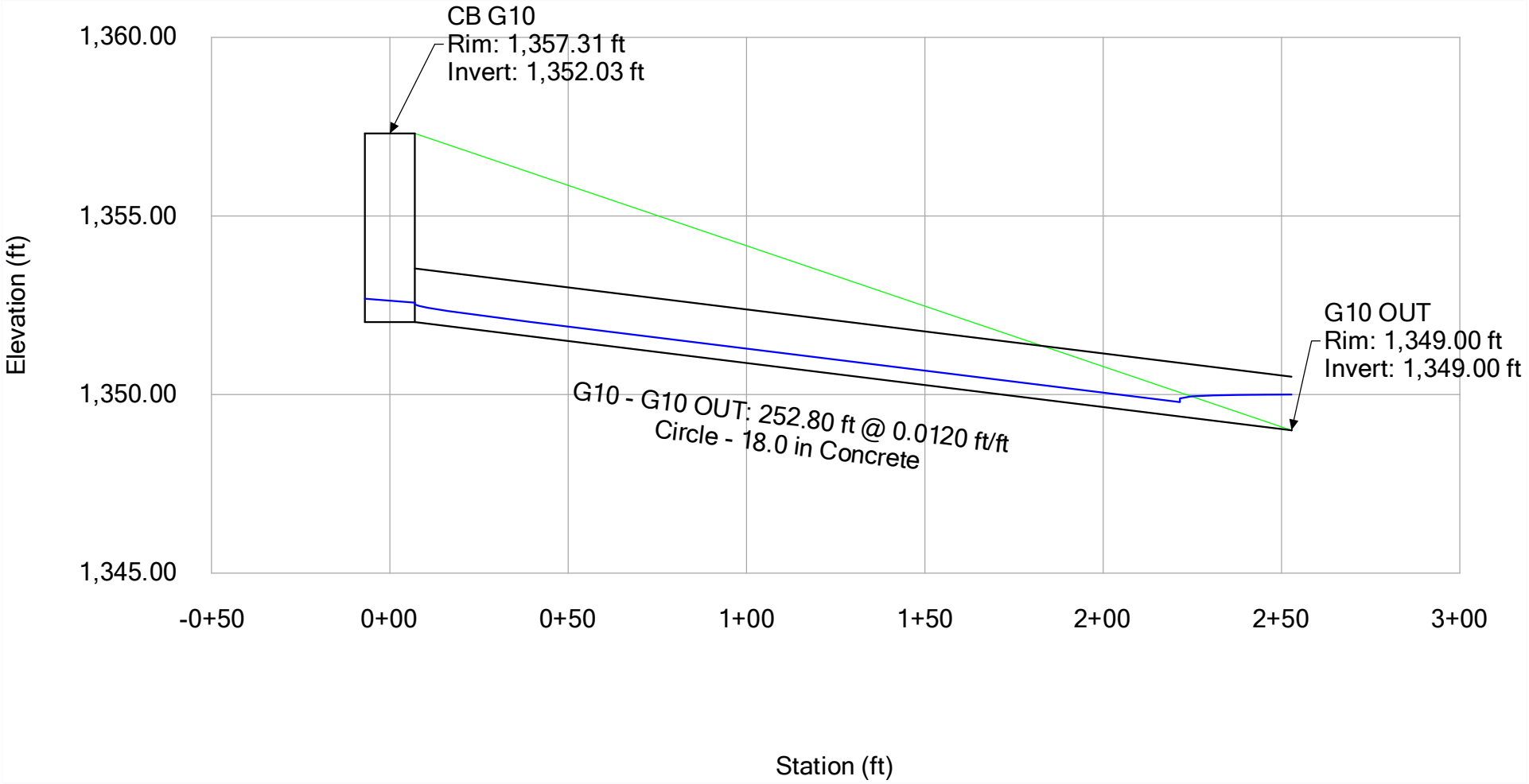
Label	Elevation (Ground) (ft)	Elevation (Invert) (ft)	Boundary Condition Type	Elevation (User Defined Tailwater) (ft)	Hydraulic Grade (ft)	Flow (Total Out) (cfs)
A5 OUT	1,351.05	1,350.95	Free Outfall		1,350.99	2.2
B5 OUT	1,347.73	1,347.63	Free Outfall		1,347.69	2.5
C5 OUT	1,347.58	1,347.48	User Defined Tailwater	1,344.80	1,347.53	2.0
C10 OUT	1,344.35	1,344.35	User Defined Tailwater	1,344.80	1,344.88	2.0
E5 OUT	1,349.36	1,349.26	Free Outfall		1,349.30	1.5
F5 OUT	1,345.70	1,345.60	Free Outfall		1,345.65	4.5
G5 OUT	1,352.71	1,352.61	Free Outfall		1,352.68	0.8
G10 OUT	1,349.00	1,349.00	User Defined Tailwater	1,350.00	1,350.00	1.7
H5 OUT	1,353.48	1,353.38	Free Outfall		1,353.45	1.5
I5 OUT	1,355.62	1,355.52	Free Outfall		1,355.55	0.4

Profile Report

Engineering Profile - C10 - C10 OUT (JRDRT126_INTERIM CAPACITY CALCS.stsw)



Profile Report
Engineering Profile - G10 - G10 OUT (JRDRT126_INTERIM CAPACITY CALCS.stsw)

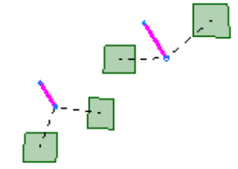


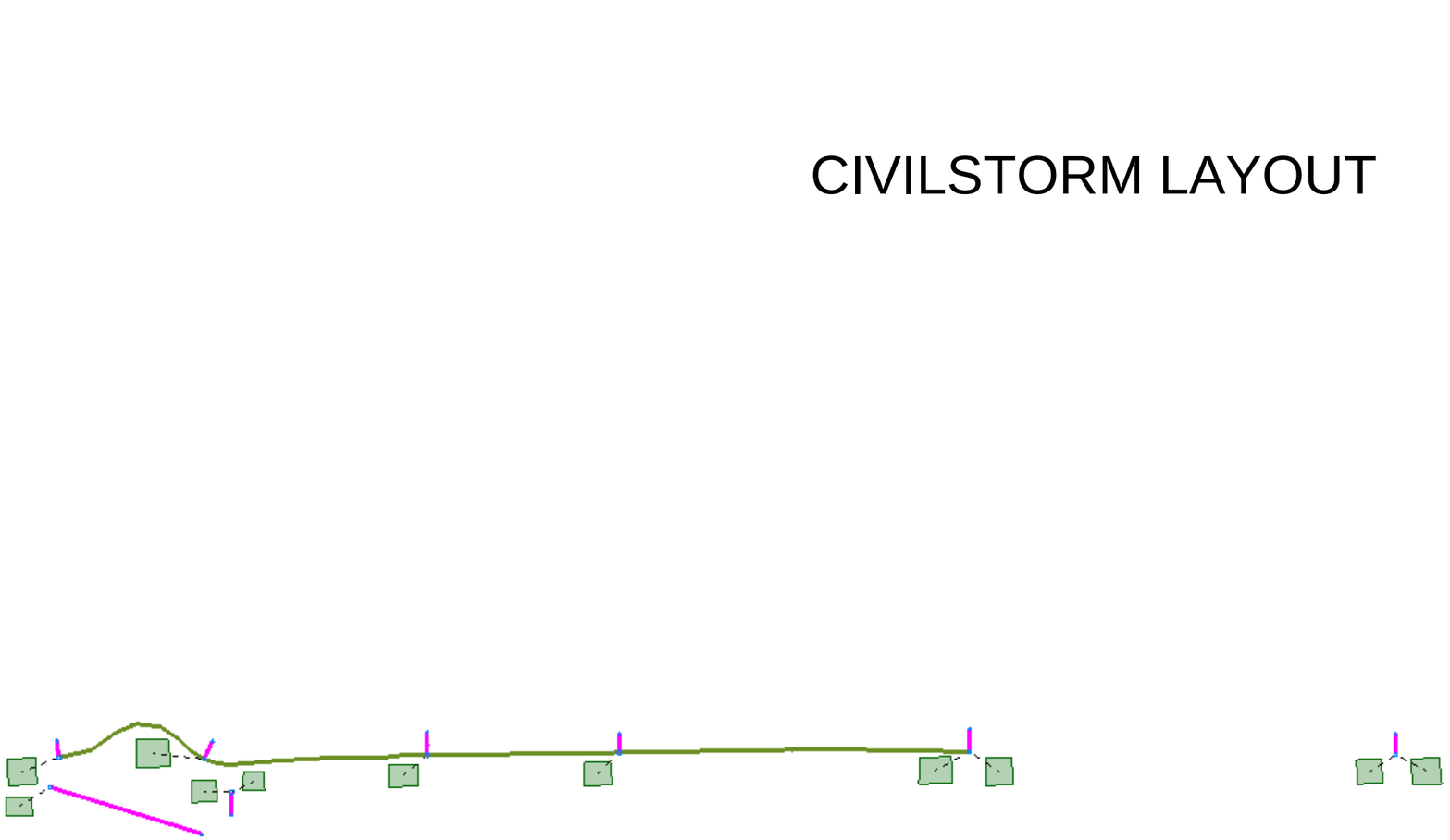
Appendix F.8

Bentley CivilStorm Results

100 yr

CIVILSTORM LAYOUT





Catchment FlexTable: EBPT_CATCHMENT TABLE

Label	Outflow Element	Area (User Defined) (acres)	Runoff Coefficient (Rational)	Time of Concentration (min)	Flow (Total Out) (cfs)
A5	SC A5	0.68	0.76	5.0	4.1
B5-1	SC B5	0.09	0.87	5.0	0.6
B5-2	SC B5	0.72	0.86	8.0	4.0
C5-1	SC C5	0.56	0.88	6.0	3.6
C5-2	SC C5	0.06	0.92	5.0	0.4
C10-1	CB C10	0.13	0.92	5.0	1.0
C10-2	CB C10	0.42	0.79	5.0	2.6
E5	SC E5	0.49	0.78	5.0	3.0
F5-1	SC F5	0.82	0.80	7.0	4.5
F5-2	SC F5	0.79	0.84	8.0	4.3
G5-1	SC G5	0.14	0.81	5.0	0.9
G5-2	SC G5	0.07	0.88	5.0	0.5
G10	CB G10	0.53	0.83	5.0	3.5
H5	SC H5	0.46	0.76	5.0	2.8
I5	SC I5	0.11	0.91	5.0	0.8

Conduit FlexTable: EBPT_CONDUIT TABLE

Label	Start Node	Stop Node	Invert (Start) (ft)	Invert (Stop) (ft)	Length (Unified) (ft)	Slope (Calculated) (ft/ft)	Diameter (in)	Manning's n	Velocity (ft/s)	Flow (cfs)	Capacity (Full Flow) (cfs)	Elevation Ground (Start) (ft)	Elevation Ground (Stop) (ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
A5 - A5 OUT	SC A5	A5 OUT	1,351.95	1,350.95	10.00	0.1000		0.013	5.71	4.4	83.8	1,352.05	1,351.05	1,352.11	1,351.01	1,352.19	1,351.52
B5 - B5 OUT	SC B5	B5 OUT	1,348.63	1,347.63	10.00	0.1000		0.013	6.82	4.6	55.1	1,348.73	1,347.73	1,348.85	1,347.72	1,348.95	1,348.40
C5 - C5 OUT	SC C5	C5 OUT	1,348.48	1,347.48	10.00	0.1000		0.013	6.48	4.0	55.1	1,348.58	1,347.58	1,348.68	1,347.56	1,348.78	1,348.20
C10 - C10 OUT	CB C10	C10 OUT	1,344.68	1,344.35	65.20	0.0051	18.0	0.013	4.19	3.6	7.5	1,348.41	1,344.35	1,345.41	1,345.07	1,345.69	1,345.36
E5 - E5 OUT	SC E5	E5 OUT	1,350.26	1,349.26	10.00	0.1000		0.013	5.40	2.5	55.1	1,350.36	1,349.36	1,350.41	1,349.32	1,350.48	1,349.77
F5 - F5 OUT	SC F5	F5 OUT	1,346.60	1,345.60	10.00	0.1000		0.013	7.00	9.6	112.4	1,346.70	1,345.70	1,346.82	1,345.69	1,346.94	1,346.40
G5 - G5 OUT	SC G5	G5 OUT	1,352.81	1,352.61	10.00	0.0200		0.013	3.41	1.4	11.9	1,352.91	1,352.71	1,352.97	1,352.71	1,353.04	1,352.89
G10 - G10 OUT	CB G10	G10 OUT	1,352.03	1,349.00	252.80	0.0120	18.0	0.013	5.24	2.6	11.5	1,357.31	1,349.00	1,352.64	1,350.00	1,352.86	1,350.07
H5 - H5 OUT	SC H5	H5 OUT	1,353.58	1,353.38	10.00	0.0200		0.013	3.11	2.1	24.6	1,353.68	1,353.48	1,353.71	1,353.47	1,353.78	1,353.62
I5 - I5 OUT	SC I5	I5 OUT	1,356.52	1,355.52	10.00	0.1000		0.013	3.70	0.5	26.5	1,356.62	1,355.62	1,356.60	1,355.55	1,356.64	1,355.77

Gutter FlexTable: EBPT_GUTTER TABLE

Label	Start Node	Stop Node	Length (User Defined) (ft)	Slope (Calculated) (ft/ft)	Manning's n (Gutter)	Rational Flow (Gutter) (cfs)	Road Cross Slope (ft/ft)	Depressed Gutter?	Gutter Cross Slope (ft/ft)	Gutter Width (ft)
H5 - A5	SC H5	SC A5		0.0044	0.015	1.0	0.0200	True	0.0704	1.42
A5 - E5	SC A5	SC E5		0.0054	0.015	0.7	0.0200	True	0.0704	1.42
E5 - F5	SC E5	SC F5		0.0064	0.015	1.2	0.0200	True	0.0704	1.42
GU-4	SC I5	SC H5		0.0109	0.015	0.3	0.0200	True	0.0704	1.42

Catch Basin FlexTable: EBPT_INLET PROPERTIES TABLE

Label	Inlet	Inlet Location	Longitudinal Slope (Inlet) (ft/ft)	Manning's n (Inlet)	Curb Opening Length (ft)	Grate Length (ft)	Grate Width (ft)	Grating Type	Road Cross Slope (ft/ft)	Depressed Gutter?	Gutter Cross Slope (ft/ft)	Gutter Width (ft)
CB C10	MAG STD DTL 542-2 - 0' WING	In Sag	0.0000	0.000	2.40		(N/A)	<None>	0.0200	True	0.0704	1.42
CB G10	MAG STD DTL 542-2 - 10' WING	On Grade	0.0241	0.015	10.40		(N/A)	<None>	0.0100	True	0.0704	1.42
SC A5	MAG STD DTL 206 - 3 CELL	On Grade	0.0040	0.015	9.60		(N/A)	<None>	0.0200	True	0.0704	1.42
SC B5	MAG STD DTL 206 - 2 CELL	In Sag	0.0000	0.000	6.40		(N/A)	<None>	0.0400	True	0.0704	1.42
SC C5	MAG STD DTL 206 - 2 CELL	In Sag	0.0000	0.000	6.40		(N/A)	<None>	0.0200	True	0.0704	1.42
SC E5	MAG STD DTL 206 - 2 CELL	On Grade	0.0074	0.015	6.40		(N/A)	<None>	0.0200	True	0.0704	1.42
SC F5	MAG STD DTL 206 - 4 CELL	In Sag	0.0000	0.000	12.80		(N/A)	<None>	0.0200	True	0.0704	1.42
SC G5	MAG STD DTL 206 - 1 CELL	In Sag	0.0000	0.000	3.20		(N/A)	<None>	0.0400	True	0.0704	1.42
SC H5	MAG STD DTL 206 - 2 CELL	On Grade	0.0055	0.015	6.40		(N/A)	<None>	0.0120	True	0.0704	1.42
SC I5	MAG STD DTL 206 - 1 CELL	On Grade	0.0264	0.015	3.20		(N/A)	<None>	0.0100	True	0.0704	1.42

Catch Basin FlexTable: EBPT_INLET TABLE

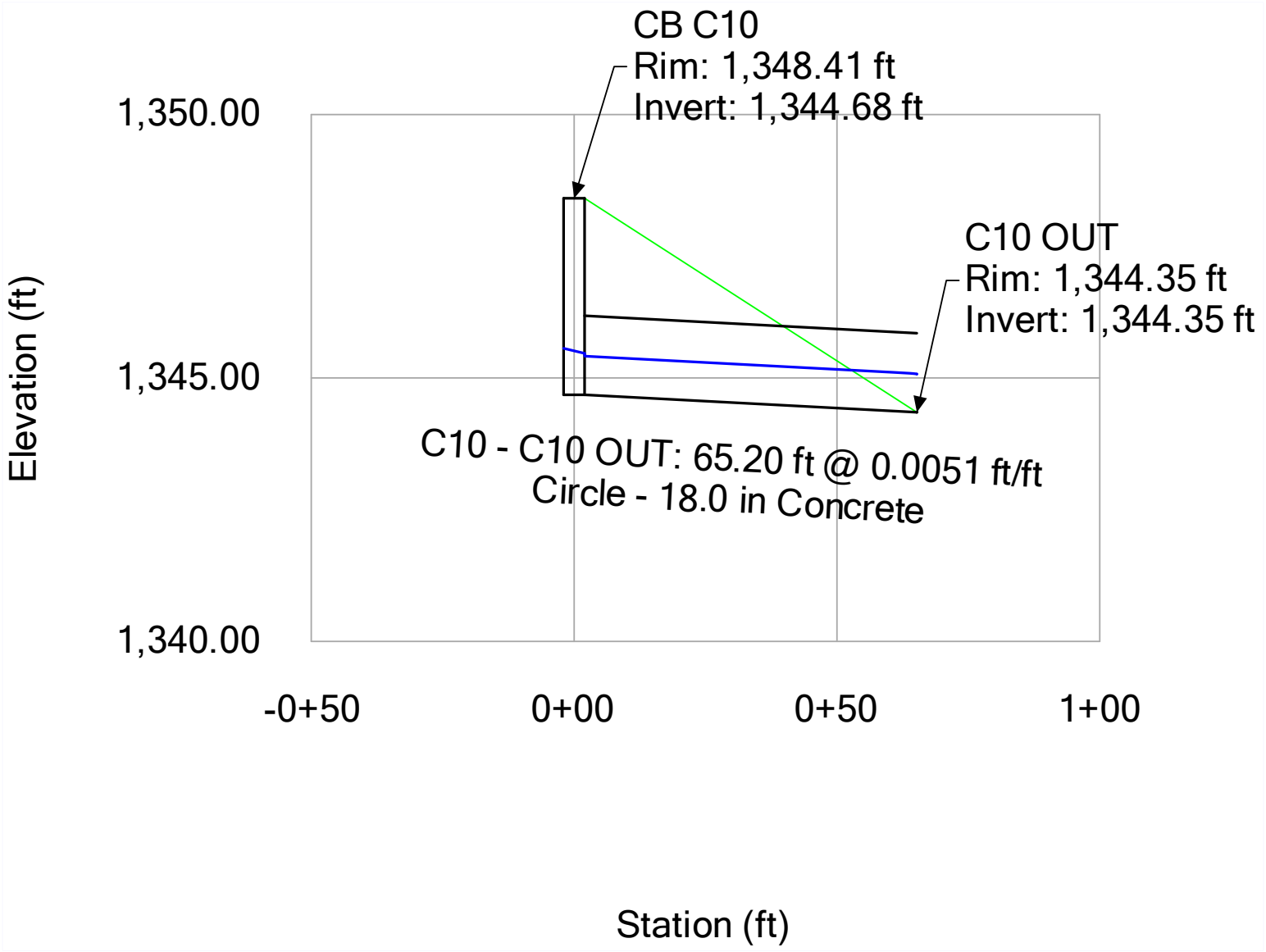
Label	Elevation (Ground) (ft)	Elevation (Invert) (ft)	Inlet Location	Headloss Method	HEC-22 Benching Method	Total Structure Energy Losses (ft)	Local Rational Flow (cfs)	Carryover Rational Flow (cfs)	Total Rational Flow to Inlet (cfs)	Flow (Captured) (cfs)	Capture Efficiency (Calculated) (%)	Flow (Total Bypassed) (cfs)	Spread / Top Width (ft)	Depth (Gutter) (in)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
CB C10	1,348.41	1,344.68	In Sag	HEC-22 Energy (Third Edition)	Flat	0.15	3.6	0.0	3.6	3.6	100.0	0.0	23.18	8.4	1,345.56	1,345.47	1,345.84	1,345.74
CB G10	1,357.31	1,352.03	On Grade	HEC-22 Energy (Third Edition)	Flat	0.18	3.5	0.0	3.5	2.6	73.2	0.9	13.99	2.7	1,352.81	1,352.68	1,353.04	1,352.91
SC A5	1,352.05	1,351.95	On Grade	HEC-22 Energy (Third Edition)	Flat	0.00	4.1	1.0	5.1	4.4	85.8	0.7	15.10	4.5	1,352.05	1,352.05	1,352.13	1,352.13
SC B5	1,348.73	1,348.63	In Sag	HEC-22 Energy (Third Edition)	Flat	0.00	4.6	0.0	4.6	4.6	100.0	0.0	9.14	6.9	1,348.73	1,348.73	1,348.84	1,348.84
SC C5	1,348.58	1,348.48	In Sag	HEC-22 Energy (Third Edition)	Flat	0.00	4.0	0.0	4.0	4.0	100.0	0.0	16.81	6.9	1,348.58	1,348.58	1,348.68	1,348.68
SC E5	1,350.36	1,350.26	On Grade	HEC-22 Energy (Third Edition)	Flat	0.00	3.0	0.7	3.8	2.5	67.2	1.2	11.90	3.7	1,350.36	1,350.36	1,350.43	1,350.43
SC F5	1,346.70	1,346.60	In Sag	HEC-22 Energy (Third Edition)	Flat	0.00	8.6	1.0	9.6	9.6	100.0	0.0	19.88	7.6	1,346.70	1,346.70	1,346.81	1,346.81
SC G5	1,352.91	1,352.81	In Sag	HEC-22 Energy (Third Edition)	Flat	0.00	1.4	0.0	1.4	1.4	100.0	0.0	5.58	5.2	1,352.91	1,352.91	1,352.99	1,352.99
SC H5	1,353.68	1,353.58	On Grade	HEC-22 Energy (Third Edition)	Flat	0.00	2.8	0.3	3.1	2.1	69.2	1.0	16.03	3.3	1,353.68	1,353.68	1,353.75	1,353.75
SC I5	1,356.62	1,356.52	On Grade	HEC-22 Energy (Third Edition)	Flat	0.02	0.8	0.0	0.8	0.5	62.1	0.3	6.82	1.8	1,356.62	1,356.62	1,356.66	1,356.66

Outfall FlexTable: EBPT_OUTFALL TABLE

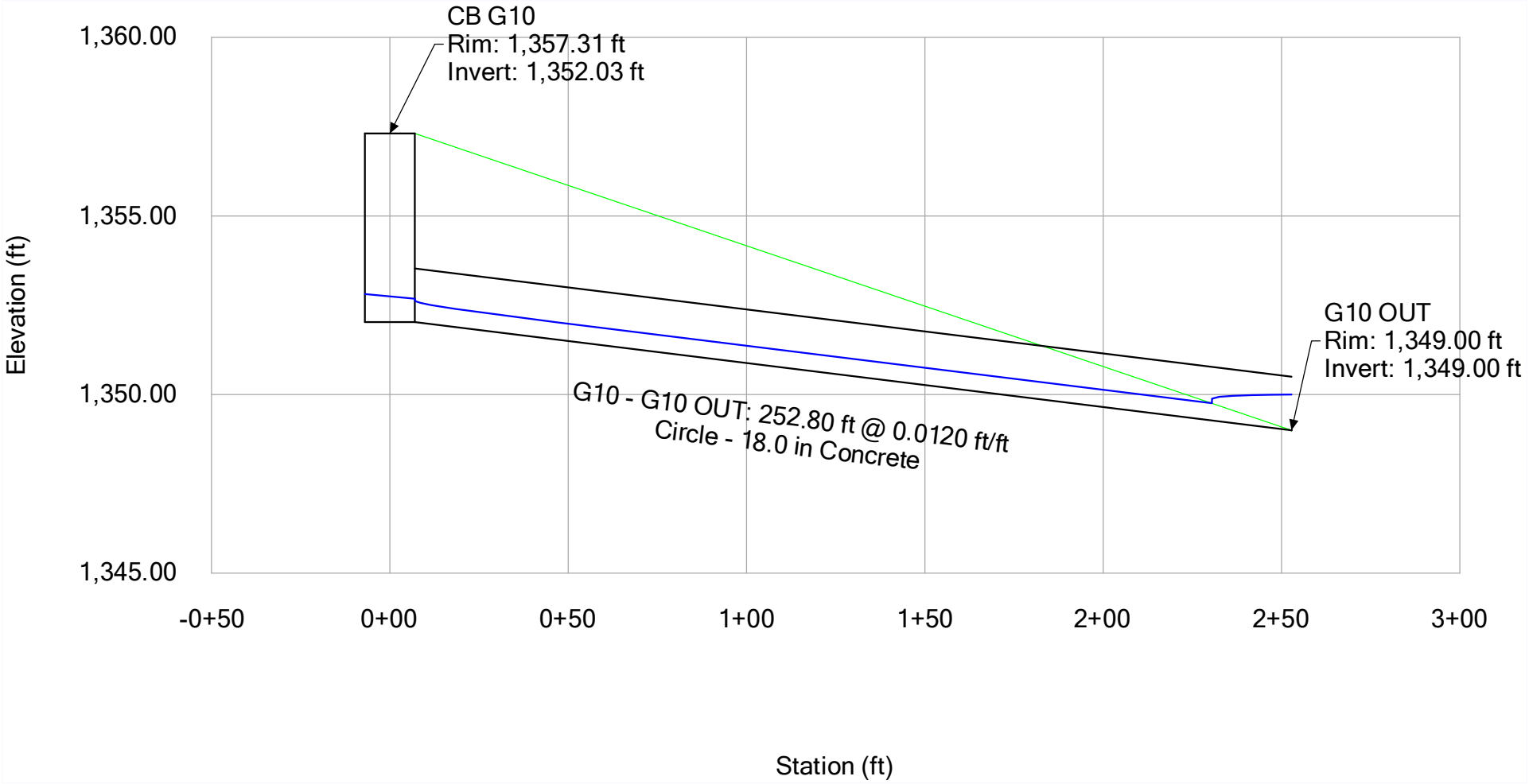
Label	Elevation (Ground) (ft)	Elevation (Invert) (ft)	Boundary Condition Type	Elevation (User Defined Tailwater) (ft)	Hydraulic Grade (ft)	Flow (Total Out) (cfs)
A5 OUT	1,351.05	1,350.95	Free Outfall		1,351.01	4.3
B5 OUT	1,347.73	1,347.63	Free Outfall		1,347.72	4.5
C5 OUT	1,347.58	1,347.48	User Defined Tailwater	1,344.80	1,347.56	4.0
C10 OUT	1,344.35	1,344.35	User Defined Tailwater	1,344.80	1,345.07	3.5
E5 OUT	1,349.36	1,349.26	Free Outfall		1,349.32	2.5
F5 OUT	1,345.70	1,345.60	Free Outfall		1,345.69	9.6
G5 OUT	1,352.71	1,352.61	Free Outfall		1,352.71	1.4
G10 OUT	1,349.00	1,349.00	User Defined Tailwater	1,350.00	1,350.00	2.4
H5 OUT	1,353.48	1,353.38	Free Outfall		1,353.47	2.1
I5 OUT	1,355.62	1,355.52	Free Outfall		1,355.55	0.5

Profile Report

Engineering Profile - C10 - C10 OUT (JRDRT126_INTERIM CAPACITY CALCS.stsw)



Profile Report
Engineering Profile - G10 - G10 OUT (JRDRT126_INTERIM CAPACITY CALCS.stsw)



Appendix F.9

Bentley FlowMaster Spread Results

Rating Table for GENERAL SPREAD_2% CROSS SLOPE

Project Description	
Solve For	Spread

Input Data	
Channel Slope	0.0050 ft/ft
Discharge	0.10 cfs
Gutter Width	1.42 ft
Gutter Cross Slope	0.0704 ft/ft
Road Cross Slope	0.0200 ft/ft
Roughness Coefficient	0.015

Channel Slope (ft/ft)	Discharge (cfs)	Spread (ft)	Velocity (ft/s)
0.0020	0.10	2.77	0.78
0.0020	0.20	4.30	0.85
0.0020	0.30	5.30	0.90
0.0020	0.40	6.08	0.95
0.0020	0.50	6.73	0.99
0.0020	0.60	7.29	1.03
0.0020	0.70	7.80	1.06
0.0020	0.80	8.25	1.09
0.0020	0.90	8.67	1.12
0.0020	1.00	9.06	1.15
0.0020	1.10	9.43	1.17
0.0020	1.20	9.77	1.19
0.0020	1.30	10.09	1.22
0.0020	1.40	10.40	1.24
0.0020	1.50	10.70	1.26
0.0020	1.60	10.98	1.27
0.0020	1.70	11.25	1.29
0.0020	1.80	11.51	1.31
0.0020	1.90	11.76	1.33
0.0020	2.00	12.00	1.34
0.0020	2.10	12.24	1.36
0.0020	2.20	12.46	1.37
0.0020	2.30	12.69	1.39
0.0020	2.40	12.90	1.40
0.0020	2.50	13.11	1.41
0.0020	2.60	13.31	1.43
0.0020	2.70	13.51	1.44
0.0020	2.80	13.71	1.45
0.0020	2.90	13.90	1.46
0.0020	3.00	14.08	1.48
0.0020	3.10	14.26	1.49
0.0020	3.20	14.44	1.50
0.0020	3.30	14.62	1.51
0.0020	3.40	14.79	1.52
0.0020	3.50	14.95	1.53
0.0020	3.60	15.12	1.54
0.0020	3.70	15.28	1.55
0.0020	3.80	15.44	1.56

Rating Table for GENERAL SPREAD_2% CROSS SLOPE

Channel Slope (ft/ft)	Discharge (cfs)	Spread (ft)	Velocity (ft/s)
0.0020	13.70	25.24	2.13
0.0020	13.80	25.31	2.14
0.0020	13.90	25.38	2.14
0.0020	14.00	25.45	2.14
0.0020	14.10	25.52	2.15
0.0020	14.20	25.59	2.15
0.0020	14.30	25.65	2.16
0.0020	14.40	25.72	2.16
0.0020	14.50	25.79	2.16
0.0020	14.60	25.86	2.17
0.0020	14.70	25.92	2.17
0.0020	14.80	25.99	2.17
0.0020	14.90	26.06	2.18
0.0020	15.00	26.12	2.18
0.0030	0.10	2.36	0.94
0.0030	0.20	3.83	1.01
0.0030	0.30	4.79	1.07
0.0030	0.40	5.53	1.12
0.0030	0.50	6.14	1.17
0.0030	0.60	6.67	1.21
0.0030	0.70	7.14	1.25
0.0030	0.80	7.57	1.28
0.0030	0.90	7.96	1.31
0.0030	1.00	8.33	1.34
0.0030	1.10	8.67	1.37
0.0030	1.20	8.99	1.40
0.0030	1.30	9.29	1.42
0.0030	1.40	9.58	1.45
0.0030	1.50	9.85	1.47
0.0030	1.60	10.11	1.49
0.0030	1.70	10.37	1.51
0.0030	1.80	10.61	1.53
0.0030	1.90	10.84	1.55
0.0030	2.00	11.07	1.57
0.0030	2.10	11.29	1.59
0.0030	2.20	11.50	1.60
0.0030	2.30	11.70	1.62
0.0030	2.40	11.90	1.63
0.0030	2.50	12.10	1.65
0.0030	2.60	12.29	1.67
0.0030	2.70	12.47	1.68
0.0030	2.80	12.65	1.69
0.0030	2.90	12.83	1.71
0.0030	3.00	13.00	1.72
0.0030	3.10	13.17	1.74
0.0030	3.20	13.34	1.75
0.0030	3.30	13.50	1.76
0.0030	3.40	13.66	1.77
0.0030	3.50	13.82	1.79

Rating Table for GENERAL SPREAD_2% CROSS SLOPE

Channel Slope (ft/ft)	Discharge (cfs)	Spread (ft)	Velocity (ft/s)
0.0030	13.40	23.17	2.47
0.0030	13.50	23.24	2.48
0.0030	13.60	23.30	2.48
0.0030	13.70	23.37	2.49
0.0030	13.80	23.43	2.49
0.0030	13.90	23.50	2.49
0.0030	14.00	23.56	2.50
0.0030	14.10	23.63	2.50
0.0030	14.20	23.69	2.51
0.0030	14.30	23.75	2.51
0.0030	14.40	23.82	2.52
0.0030	14.50	23.88	2.52
0.0030	14.60	23.94	2.52
0.0030	14.70	24.00	2.53
0.0030	14.80	24.07	2.53
0.0030	14.90	24.13	2.54
0.0030	15.00	24.19	2.54
0.0040	0.10	2.07	1.07
0.0040	0.20	3.51	1.15
0.0040	0.30	4.44	1.21
0.0040	0.40	5.15	1.27
0.0040	0.50	5.74	1.32
0.0040	0.60	6.25	1.36
0.0040	0.70	6.70	1.40
0.0040	0.80	7.11	1.44
0.0040	0.90	7.48	1.47
0.0040	1.00	7.83	1.51
0.0040	1.10	8.16	1.54
0.0040	1.20	8.46	1.56
0.0040	1.30	8.75	1.59
0.0040	1.40	9.02	1.62
0.0040	1.50	9.29	1.64
0.0040	1.60	9.54	1.67
0.0040	1.70	9.78	1.69
0.0040	1.80	10.01	1.71
0.0040	1.90	10.23	1.73
0.0040	2.00	10.44	1.75
0.0040	2.10	10.65	1.77
0.0040	2.20	10.85	1.79
0.0040	2.30	11.05	1.81
0.0040	2.40	11.24	1.83
0.0040	2.50	11.43	1.84
0.0040	2.60	11.61	1.86
0.0040	2.70	11.78	1.88
0.0040	2.80	11.95	1.89
0.0040	2.90	12.12	1.91
0.0040	3.00	12.29	1.92
0.0040	3.10	12.45	1.94
0.0040	3.20	12.60	1.95

Rating Table for GENERAL SPREAD_2% CROSS SLOPE

Channel Slope (ft/ft)	Discharge (cfs)	Spread (ft)	Velocity (ft/s)
0.0040	3.30	12.76	1.97
0.0040	3.40	12.91	1.98
0.0040	3.50	13.06	1.99
0.0040	3.60	13.20	2.01
0.0040	3.70	13.35	2.02
0.0040	3.80	13.49	2.03
0.0040	3.90	13.62	2.05
0.0040	4.00	13.76	2.06
0.0040	4.10	13.89	2.07
0.0040	4.20	14.03	2.08
0.0040	4.30	14.16	2.09
0.0040	4.40	14.28	2.10
0.0040	4.50	14.41	2.12
0.0040	4.60	14.53	2.13
0.0040	4.70	14.66	2.14
0.0040	4.80	14.78	2.15
0.0040	4.90	14.90	2.16
0.0040	5.00	15.01	2.17
0.0040	5.10	15.13	2.18
0.0040	5.20	15.24	2.19
0.0040	5.30	15.36	2.20
0.0040	5.40	15.47	2.21
0.0040	5.50	15.58	2.22
0.0040	5.60	15.69	2.23
0.0040	5.70	15.80	2.24
0.0040	5.80	15.90	2.25
0.0040	5.90	16.01	2.26
0.0040	6.00	16.11	2.27
0.0040	6.10	16.22	2.28
0.0040	6.20	16.32	2.28
0.0040	6.30	16.42	2.29
0.0040	6.40	16.52	2.30
0.0040	6.50	16.62	2.31
0.0040	6.60	16.72	2.32
0.0040	6.70	16.82	2.33
0.0040	6.80	16.91	2.34
0.0040	6.90	17.01	2.34
0.0040	7.00	17.10	2.35
0.0040	7.10	17.20	2.36
0.0040	7.20	17.29	2.37
0.0040	7.30	17.38	2.38
0.0040	7.40	17.47	2.38
0.0040	7.50	17.56	2.39
0.0040	7.60	17.65	2.40
0.0040	7.70	17.74	2.41
0.0040	7.80	17.83	2.41
0.0040	7.90	17.92	2.42
0.0040	8.00	18.01	2.43
0.0040	8.10	18.09	2.44

Rating Table for GENERAL SPREAD_2% CROSS SLOPE

Channel Slope (ft/ft)	Discharge (cfs)	Spread (ft)	Velocity (ft/s)
0.0060	12.50	19.77	3.16
0.0060	12.60	19.83	3.16
0.0060	12.70	19.89	3.17
0.0060	12.80	19.95	3.18
0.0060	12.90	20.01	3.18
0.0060	13.00	20.07	3.19
0.0060	13.10	20.13	3.19
0.0060	13.20	20.19	3.20
0.0060	13.30	20.24	3.21
0.0060	13.40	20.30	3.21
0.0060	13.50	20.36	3.22
0.0060	13.60	20.42	3.22
0.0060	13.70	20.48	3.23
0.0060	13.80	20.53	3.23
0.0060	13.90	20.59	3.24
0.0060	14.00	20.65	3.25
0.0060	14.10	20.70	3.25
0.0060	14.20	20.76	3.26
0.0060	14.30	20.81	3.26
0.0060	14.40	20.87	3.27
0.0060	14.50	20.92	3.27
0.0060	14.60	20.98	3.28
0.0060	14.70	21.03	3.28
0.0060	14.80	21.09	3.29
0.0060	14.90	21.14	3.30
0.0060	15.00	21.20	3.30
0.0070	0.10	1.52	1.35
0.0070	0.20	2.91	1.47
0.0070	0.30	3.79	1.54
0.0070	0.40	4.46	1.60
0.0070	0.50	5.01	1.66
0.0070	0.60	5.48	1.71
0.0070	0.70	5.89	1.76
0.0070	0.80	6.27	1.80
0.0070	0.90	6.61	1.84
0.0070	1.00	6.93	1.88
0.0070	1.10	7.23	1.92
0.0070	1.20	7.51	1.95
0.0070	1.30	7.77	1.98
0.0070	1.40	8.02	2.02
0.0070	1.50	8.26	2.05
0.0070	1.60	8.49	2.07
0.0070	1.70	8.71	2.10
0.0070	1.80	8.92	2.13
0.0070	1.90	9.12	2.15
0.0070	2.00	9.32	2.18
0.0070	2.10	9.51	2.20
0.0070	2.20	9.69	2.22
0.0070	2.30	9.87	2.25

Rating Table for GENERAL SPREAD_2% CROSS SLOPE

Channel Slope (ft/ft)	Discharge (cfs)	Spread (ft)	Velocity (ft/s)
0.0070	2.40	10.04	2.27
0.0070	2.50	10.21	2.29
0.0070	2.60	10.37	2.31
0.0070	2.70	10.53	2.33
0.0070	2.80	10.69	2.35
0.0070	2.90	10.84	2.37
0.0070	3.00	10.99	2.38
0.0070	3.10	11.13	2.40
0.0070	3.20	11.28	2.42
0.0070	3.30	11.42	2.44
0.0070	3.40	11.55	2.45
0.0070	3.50	11.69	2.47
0.0070	3.60	11.82	2.49
0.0070	3.70	11.95	2.50
0.0070	3.80	12.08	2.52
0.0070	3.90	12.20	2.53
0.0070	4.00	12.32	2.55
0.0070	4.10	12.45	2.56
0.0070	4.20	12.56	2.58
0.0070	4.30	12.68	2.59
0.0070	4.40	12.80	2.61
0.0070	4.50	12.91	2.62
0.0070	4.60	13.02	2.63
0.0070	4.70	13.13	2.65
0.0070	4.80	13.24	2.66
0.0070	4.90	13.35	2.67
0.0070	5.00	13.46	2.69
0.0070	5.10	13.56	2.70
0.0070	5.20	13.67	2.71
0.0070	5.30	13.77	2.72
0.0070	5.40	13.87	2.73
0.0070	5.50	13.97	2.75
0.0070	5.60	14.07	2.76
0.0070	5.70	14.17	2.77
0.0070	5.80	14.26	2.78
0.0070	5.90	14.36	2.79
0.0070	6.00	14.45	2.80
0.0070	6.10	14.55	2.82
0.0070	6.20	14.64	2.83
0.0070	6.30	14.73	2.84
0.0070	6.40	14.82	2.85
0.0070	6.50	14.91	2.86
0.0070	6.60	15.00	2.87
0.0070	6.70	15.09	2.88
0.0070	6.80	15.18	2.89
0.0070	6.90	15.26	2.90
0.0070	7.00	15.35	2.91
0.0070	7.10	15.43	2.92
0.0070	7.20	15.52	2.93

Rating Table for GENERAL SPREAD_4% CROSS SLOPE

Project Description	
Solve For	Spread

Input Data	
Channel Slope	0.0050 ft/ft
Discharge	0.10 cfs
Gutter Width	1.42 ft
Gutter Cross Slope	0.0704 ft/ft
Road Cross Slope	0.0400 ft/ft
Roughness Coefficient	0.015

Channel Slope (ft/ft)	Discharge (cfs)	Spread (ft)	Velocity (ft/s)
0.0020	0.10	2.13	0.82
0.0020	0.20	3.01	0.94
0.0020	0.30	3.62	1.03
0.0020	0.40	4.10	1.09
0.0020	0.50	4.50	1.15
0.0020	0.60	4.86	1.19
0.0020	0.70	5.17	1.24
0.0020	0.80	5.46	1.28
0.0020	0.90	5.73	1.31
0.0020	1.00	5.97	1.34
0.0020	1.10	6.21	1.37
0.0020	1.20	6.42	1.40
0.0020	1.30	6.63	1.43
0.0020	1.40	6.83	1.45
0.0020	1.50	7.02	1.48
0.0020	1.60	7.20	1.50
0.0020	1.70	7.37	1.52
0.0020	1.80	7.54	1.54
0.0020	1.90	7.70	1.56
0.0020	2.00	7.85	1.58
0.0020	2.10	8.00	1.60
0.0020	2.20	8.15	1.62
0.0020	2.30	8.29	1.64
0.0020	2.40	8.43	1.65
0.0020	2.50	8.56	1.67
0.0020	2.60	8.70	1.69
0.0020	2.70	8.82	1.70
0.0020	2.80	8.95	1.72
0.0020	2.90	9.07	1.73
0.0020	3.00	9.19	1.74
0.0020	3.10	9.31	1.76
0.0020	3.20	9.42	1.77
0.0020	3.30	9.53	1.79
0.0020	3.40	9.64	1.80
0.0020	3.50	9.75	1.81
0.0020	3.60	9.86	1.82
0.0020	3.70	9.96	1.84
0.0020	3.80	10.06	1.85

Rating Table for GENERAL SPREAD_4% CROSS SLOPE

Channel Slope (ft/ft)	Discharge (cfs)	Spread (ft)	Velocity (ft/s)
0.0030	13.40	15.06	2.94
0.0030	13.50	15.10	2.94
0.0030	13.60	15.14	2.95
0.0030	13.70	15.18	2.95
0.0030	13.80	15.23	2.96
0.0030	13.90	15.27	2.96
0.0030	14.00	15.31	2.97
0.0030	14.10	15.35	2.97
0.0030	14.20	15.39	2.98
0.0030	14.30	15.43	2.98
0.0030	14.40	15.47	2.99
0.0030	14.50	15.51	2.99
0.0030	14.60	15.55	3.00
0.0030	14.70	15.59	3.00
0.0030	14.80	15.63	3.01
0.0030	14.90	15.67	3.01
0.0030	15.00	15.71	3.02
0.0040	0.10	1.75	1.09
0.0040	0.20	2.55	1.25
0.0040	0.30	3.09	1.35
0.0040	0.40	3.52	1.43
0.0040	0.50	3.88	1.50
0.0040	0.60	4.20	1.56
0.0040	0.70	4.48	1.62
0.0040	0.80	4.74	1.67
0.0040	0.90	4.97	1.71
0.0040	1.00	5.19	1.75
0.0040	1.10	5.40	1.79
0.0040	1.20	5.59	1.83
0.0040	1.30	5.78	1.86
0.0040	1.40	5.95	1.89
0.0040	1.50	6.12	1.93
0.0040	1.60	6.28	1.95
0.0040	1.70	6.43	1.98
0.0040	1.80	6.58	2.01
0.0040	1.90	6.72	2.04
0.0040	2.00	6.86	2.06
0.0040	2.10	6.99	2.08
0.0040	2.20	7.12	2.11
0.0040	2.30	7.24	2.13
0.0040	2.40	7.37	2.15
0.0040	2.50	7.48	2.17
0.0040	2.60	7.60	2.19
0.0040	2.70	7.71	2.21
0.0040	2.80	7.82	2.23
0.0040	2.90	7.93	2.25
0.0040	3.00	8.04	2.27
0.0040	3.10	8.14	2.29
0.0040	3.20	8.24	2.30

Rating Table for GENERAL SPREAD_4% CROSS SLOPE

Channel Slope (ft/ft)	Discharge (cfs)	Spread (ft)	Velocity (ft/s)
0.0040	3.30	8.34	2.32
0.0040	3.40	8.44	2.34
0.0040	3.50	8.53	2.36
0.0040	3.60	8.62	2.37
0.0040	3.70	8.72	2.39
0.0040	3.80	8.81	2.40
0.0040	3.90	8.90	2.42
0.0040	4.00	8.98	2.43
0.0040	4.10	9.07	2.45
0.0040	4.20	9.15	2.46
0.0040	4.30	9.24	2.48
0.0040	4.40	9.32	2.49
0.0040	4.50	9.40	2.50
0.0040	4.60	9.48	2.52
0.0040	4.70	9.56	2.53
0.0040	4.80	9.64	2.54
0.0040	4.90	9.71	2.56
0.0040	5.00	9.79	2.57
0.0040	5.10	9.86	2.58
0.0040	5.20	9.94	2.59
0.0040	5.30	10.01	2.60
0.0040	5.40	10.08	2.62
0.0040	5.50	10.15	2.63
0.0040	5.60	10.22	2.64
0.0040	5.70	10.29	2.65
0.0040	5.80	10.36	2.66
0.0040	5.90	10.43	2.67
0.0040	6.00	10.50	2.68
0.0040	6.10	10.57	2.70
0.0040	6.20	10.63	2.71
0.0040	6.30	10.70	2.72
0.0040	6.40	10.76	2.73
0.0040	6.50	10.83	2.74
0.0040	6.60	10.89	2.75
0.0040	6.70	10.95	2.76
0.0040	6.80	11.01	2.77
0.0040	6.90	11.08	2.78
0.0040	7.00	11.14	2.79
0.0040	7.10	11.20	2.80
0.0040	7.20	11.26	2.81
0.0040	7.30	11.32	2.82
0.0040	7.40	11.38	2.83
0.0040	7.50	11.43	2.84
0.0040	7.60	11.49	2.84
0.0040	7.70	11.55	2.85
0.0040	7.80	11.61	2.86
0.0040	7.90	11.66	2.87
0.0040	8.00	11.72	2.88
0.0040	8.10	11.77	2.89

Appendix F.10

Storm Water Storage Calculations

Project: Jomax Road - Dysart Road to 126th Drive
Location: City of Peoria, AZ
Date: May 11, 2026
Subject: Proposed Storm Water Storage Design Summary

Source: City of Peoria Engineering Standards, February 2025 & Drainage Policies and Standards for Maricopa County, August 22, 2018 & Drainage Design Manual for Maricopa County - Hydraulics, December 14, 2018

Basin ID	Road Alignment	Station	Storm Water Storage	Contributing Drainage Areas	Basin Invert (ft)	Basin Highwater (ft)	Volume Required (cf)	Volume Provided (cf)	Percolation Area (sf)	Surface Perc Rate (in/hr)	# of Drywells	Drywell Percolation Rate (cfs)	Drain Time (hrs)	Notes
BASIN A	Jomax Road	110+80	Interim First Flush	A5 + BASIN A	1349.0	1350.0	1,380	2,583	1,547	0.3	0	0.1	32.0	1 ft depth
EX BASIN B	Jomax Road	126+74	Ultimate 100 yr, 2 hr	B5-1 + B5-2	1342.2	1344.6	5,813	13,583	-	-	-	-	-	Existing basin outfalls to 16 East (McMicken Wash)
EX BASIN C	Jomax Road	138+00	Ultimate 100 yr, 2 hr	C5-1 + C5-2 + C10-1 + C10-2	1342.8	1345.8	8,318	12,677	-	-	-	-	-	Existing basin outlets to the south via an existing culver
BASIN D	Dysart Road	197+00	Interim First Flush	D5 + BASIN D	1348.0	1349.0	495	981	448	0.05	1	0.1	1.4	1 ft depth
BASIN E	Jomax Road	114+95	Interim First Flush	E5 + BASIN E	1347.5	1348.5	959	1,217	516	0.7	0	0.1	33.4	1 ft depth
BASIN F	Jomax Road	119+71	Interim First Flush	F5-1 + F5-2 + BASIN F	1344.5	1345.5	3,178	4,774	2,919	0.7	0	0.1	19.6	1 ft depth
BASIN G	Jomax Road	107+58	Interim First Flush	G5-1 + G5-2 + G10 + BASIN G	1349.0	1350.0	1,423	1,462	849	0.05	1	0.1	3.9	1 ft depth

Notes:
1) Surface percolation rate is based on the minimum allowed rate in the Drainage Design Manual for Maricopa County - Hydraulics
2) Basins have 6:1 maximum side slopes and 1 foot of freeboard.
3) The average end area method was utilized for calculating the volume.

BASIN A

Contour Elevation	Area (sf)	Incremental Volume (cf)	Cumulative Volume (cf)	Cumulative Volume (ac-ft)
1349	1,547	0	0	0
1350	3,619	2,583	2,583	0.06
		TOTAL	**2,583**	**0.06**

EX BASIN B

Contour Elevation	Area (sf)	Incremental Volume (cf)	Cumulative Volume (cf)	Cumulative Volume (ac-ft)
1342.2	15	0	0	0
1342.6	365	76	76	0.00
1343.6	7,026	3,696	3,771	0.09
1344.6	12,597	9,812	13,583	0.31
		TOTAL	**13,583**	**0.31**

EX BASIN C

Contour Elevation	Area (sf)	Incremental Volume (cf)	Cumulative Volume (cf)	Cumulative Volume (ac-ft)
1342.8	8	0	0	0
1343.8	1,800	904	904	0.02
1344.8	6,210	4,005	4,909	0.11
1345.8	9,326	7,768	12,677	0.29
		TOTAL	**12,677**	**0.29**

BASIN D

Contour Elevation	Area (sf)	Incremental Volume (cf)	Cumulative Volume (cf)	Cumulative Volume (ac-ft)
1348	448	0	0	0
1349	1,514	981	981	0.02
		TOTAL	**981**	**0.02**

BASIN E

Contour Elevation	Area (sf)	Incremental Volume (cf)	Cumulative Volume (cf)	Cumulative Volume (ac-ft)
1347.5	516	0	0	0
1348.5	1,917	1,217	1,217	0.03
		TOTAL	**1,217**	**0.03**

BASIN F

Contour Elevation	Area (sf)	Incremental Volume (cf)	Cumulative Volume (cf)	Cumulative Volume (ac-ft)
1344.5	2,919	0	0	0
1345.5	6,628	4,774	4,774	0.11
		TOTAL	**4,774**	**0.11**

BASIN G

Contour Elevation	Area (sf)	Incremental Volume (cf)	Cumulative Volume (cf)	Cumulative Volume (ac-ft)
1349	849	0	0	0
1350	2,074	1,462	1,462	0.03
		TOTAL	**1,462**	**0.03**

Appendix G

Digital Data