3 DRAINAGE MANAGEMENT

3.1 INTRODUCTION

This Drainage Infrastructure summary provides information in support of the EIR for the proposed Palomino Place development by David Taormino.

This presents the results of a preliminary, feasibility-level storm drain analysis related to the development of the project. The primary purpose of this effort is to identify feasible stormwater/flood management mitigation measures for the project, and to provide a first approximation of sizing for such facilities in support of the project EIR. The analysis considers the project's potential stormwater impacts and provides a general description of the mitigation measures that that the project could implement to mitigate those impacts.

It is anticipated that at a later date (during Tentative Map application and the initial design of site improvements) this preliminary analysis will be developed further as part of a detailed Master Drainage Plan (MDP) for the project. The purpose of that MDP will be to further define the configuration and sizing of the mitigation measures recommended herein, and to provide more detail on how they will be integrated into the final project site plan.

3.2 EXISTING CONDITIONS AND DRAINAGE INFRASTRUCTURE

The site is located within the City of Davis Wild Horse Basin, which is a sub basin of the Channel A Basin. The site lies immediately north of the Covell Blvd, adjacent to the existing Wildhorse Development. Channel A lies approximately ¼ mile north of the project site within the Wildhorse Golf Course.

The project site is currently located within FEMA Zone X (see Attached FEMA Maps), which are areas determined to be outside the 500-year floodplain.

The City of Davis maintains a storm drainpipe network in the Wildhorse development to the west and north area which discharges to Channel A. Storm drain pipes in the adjacent Caravaggio are15" diameter, connecting to a 36" pipe on the east edge of the Wildhorse development located within the existing Agricultural Buffer discharging into Channel A.

3.3 PROPOSED DRAINAGE INFRASTRUCTURE

A guiding stormwater management principle for project should be that it does not result in new impacts to properties downstream or upstream. Potential impacts include considerations of both stormwater quantity and quality. Regarding stormwater quality, the project will be designed to conform with current City of Davis standard requirements, as discussed below. For water quantity, the objective of this preliminary analysis will be to identify the basic post-project storage volumes needed onsite in order to limit post-project peak discharges to estimated existing levels offsite.

As such, the proposed project will provide stormwater storage and conveyance facilities that will likely consist of the following components:

3.3.1 Water Quality Mitigation

The project intends to integrate Low Impact Development (LID) measures throughout the project to provide stormwater quality treatment. These LID measures will likely include both volume-based BMPs (bioretention, infiltration features, pervious pavement, etc.) and flow-based BMPs (vegetated swales, stormwater planter, etc.). The use of these features will be dependent upon the location and setting within the project. These treatment measures will be designed in accordance with the City of Davis Storm Water Quality Control Standards. Additionally, the project detention basin has been sized to accommodate the 85th percentile 24-hour storm event (0.65 inches). Based on the proposed impervious area of the site (see drainage shed map attached) the 85th percentile treatment volume is 48,370 CF (1.11 ac-ft). While no site specific infiltration data has been collected, the existing site is classified as "Sycamore silty clay loam" which has a standard infiltration of 0.35in/hr. The proposed detention basin has been sized with the water outlet elevated above the pond bottom by 18" which provides the required SWQ treatment volume. Based on the projected infiltration rate and the depth of water, it is estimated that the storm water quality volume will infiltrate in approximately 52 hours. Further refinement of sizing and configuration of these treatment measures will be developed with the improvement plans for the project.

3.3.2 Mitigation for increase in project site discharge due to development

In addition to the water quality treatment measures, the project proposes to provide mitigation for the expected increase in the site's post-project peak discharge relative to pre-project conditions. As a result of the project development, the effective impervious area for the site will increase, which in turn will increase the peak rate of runoff from the site. In order to estimate the increased peak discharge associated with development of the proposed project, a local HEC-HMS model was constructed to simulate the pre- and post-project runoff conditions for the site in the 100-year/24-hour storm, in accordance with the City of Davis design standards.

The project site comprises a drainage area of about 25 acres. The existing site generally drains from south to north, discharging to an inlet near the site's northeast corner. The inlet drains to an existing 36" storm drain pipe, which outfalls into Channel A near the northeast corner of the adjacent Wildhorse residential development. The 36" pipe was originally sized to convey the project site's 10-year peak discharge, assuming agricultural use (Wildhorse Units 2 & 3, 10-Year Storm Drainage Calculations, Psomas, 1-25-99). The pipe's design discharge was 6.2 cubic feet per second (cfs).

Upon development of the project site for residential use, it is proposed that the existing outlet pipe continue to be used as the site's outlet conveyance to Channel A. The conversion of agricultural land to residential use will increase the stormwater runoff generated onsite. Specifically, the 10-year post-developed peak flow will exceed the existing 36" outlet pipe's design discharge of 6.2 cfs. In order to mitigate the increase in peak discharge, distributed stormwater detention will be incorporated into the project site. It is proposed that sufficient detention ponding volume be provided to reduce the project site's post-development 100-year 24-hour peak flow to a maximum of 6.2 cfs. Using the HEC-HMS computer program, preliminary hydrologic calculations for the project site indicate a 100-year 24-hour post-development peak flow of 54 cfs. This will be attenuated to 6.2 cfs by the provision of approximately 3 acre-feet (ac-ft) of onsite detention storage.

Onsite runoff will be conveyed to local detention areas via overland drainage and underground piping. The required 3 ac-ft of detention storage will be within the proposed on-site detention area with peak flows overflowing into the adjacent urban forest. In addition to accommodating detention for the 100-year event, these open areas may include stormwater Best Management Practice (BMP) facilities in combination with other BMPs throughout the site. It is not envisioned that dedicated, stormwater detention 'ponds' will be required, rather current designs emphasizing Low Impact Development such as vegetative swales, rain gardens and pervious pavements will be incorporated into the site design.

In order to assess the potential effects of the post-development 100-year peak flows on the flows in Channel A, the estimated timing of the project site's peak outflow was compared with Channel A's peak flow timing. This was accomplished by referring to a previously completed hydraulic analysis for Channel A (Covell Village Master Drainage Plan, Mead & Hunt, December 2004).

In comparing the timing of peaks for the 100-year 10-day storm, the site's peak outflow (nominally 6 cfs) preceded Channel A's peak flow (over 1000 cfs) by about 6 hours. By the time Channel A's peak flow was attained, the site's outflow had receded by almost 50%. As such, the site's post-development flow is not expected to have an effect on 100-year peak flows in Channel A.

3.3.3 MITIGATION FOR FLOODPLAIN DISPLACEMENT

As noted above, the project is not within the existing flood plain and will not require any mitigation for impacts to existing flood water.

3.3.4 EAST DAVIS PONDING

The existing Covell Drain outflows through a culvert and flap gate into the Willow Slough Bypass. During peak storms, flow conditions may result in the high-water levels within the Willow Slough Bypass preventing flow from the Covell Drain from entering the Bypass. When this occurs, flow spills to the east ultimately ponding in the East Davis watershed at the levee adjacent to the Yolo Bypass. Based on the HEC-1 hydrologic model prepared by Borcalli and Associates dated September 1993 and referenced in the Village Farms Hydraulic Modeling report, the existing 100-year 24-hour ponded volume storage in the East Davis shed is 4,373 ac-ft.

East Davis Ponding	
	Volume(ac-ft)
Existing East Davis	4,373
Existing Palomino	7.33
Proposed Palomino	8.54
Pond Discharge	7.68
DELTA	0.35
Proposed East Davis	4373.35

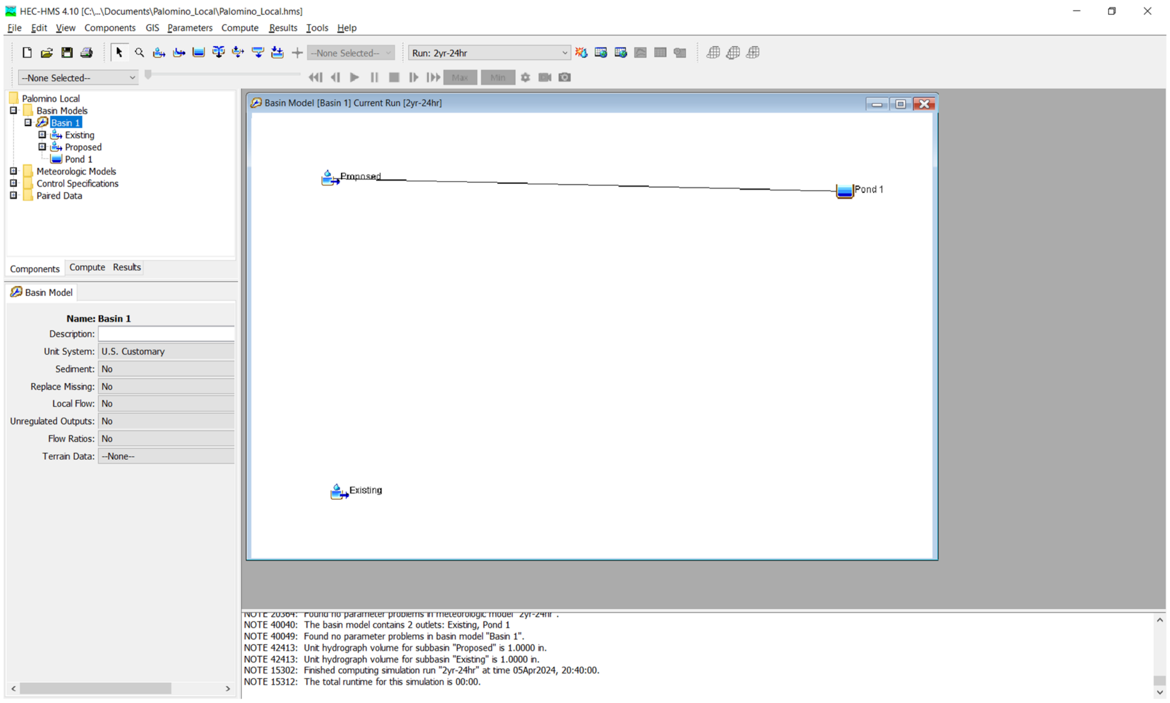
As shown in the attached HEC HMS results, the Palomino Place project site discharges 7.33 ac-ft based on existing conditions. The proposed project increases the impervious area of the site resulting is 8.54 ac-ft of discharge; the proposed detention basin provides mitigation of this discharge volume to 7.68 ac-ft. The net increase in the discharge from the project site is 0.35 ac-ft. Based on the existing ponded volume within the East Davis basin and the increase in volume as a result of the project, the project contributes 0.008% toward the East Davis Ponding; this increase is considered de-minimis with no measurable impact to the peak water surface elevation or limits of ponding downstream.

3.4 Conclusion

Based on the hydrology and hydraulic modeling effort described herein, construction of the proposed project with the above-mentioned improvements, mitigation of the proposed project storm water flows can be achieved. As the project advances to the subdivision map and improvement plan stages, the modeling effort conducted to-date will be refined with the City of Davis staff.

HEC-HMS Results

Basin Model



2-year 24-hour -Results

Global Summary Results for Run "2yr-24hr"

Project: Palomino Local Simulation Run: 2yr-24hr

Start of Run: 25May1995, 00:00 Basin Model: Basin 1
End of Run: 03Jun1995, 23:50 Meteorologic Model: 2yr-24hr
Compute Time: 05Apr2024, 20:40:00 Control Specifications: Control 1

Show Elements: All Elements Volume Units: ○ ... ◉ ACRE-FT Sorting: Hydrologic

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (ACRE-FT)
Existing	0.0403125	5.808	25May1995, 12:50	2.055
Proposed	0.0403125	11.382	25May1995, 12:25	2.820
Pond 1	0.0403125	4.134	25May1995, 13:25	1.963

Summary Results for Subbasin "Existing"

Project: Palomino Local   Simulation Run: 2yr-24hr
Subbasin: Existing

Start of Run:	25May1995, 00:00	Basin Model:	Basin 1
End of Run:	03Jun1995, 23:50	Meteorologic Model:	2yr-24hr
Compute Time:	05Apr2024, 20:40:00	Control Specifications:	Control 1

Volume Units: ○ IN ◉ ACRE-FT

Computed Results

Peak Discharge:	5.808 (CFS)	Date/Time of Peak Discharge:	25May1995, 12:50
Precipitation Volume:	4.859 (ACRE-FT)	Direct Runoff Volume:	2.055 (ACRE-FT)
Loss Volume:	2.804 (ACRE-FT)	Baseflow Volume:	0.000 (ACRE-FT)
Excess Volume:	2.055 (ACRE-FT)	Discharge Volume:	2.055 (ACRE-FT)

Summary Results for Subbasin "Proposed"

Project: Palomino Local   Simulation Run: 2yr-24hr
Subbasin: Proposed

Start of Run:	25May1995, 00:00	Basin Model:	Basin 1
End of Run:	03Jun1995, 23:50	Meteorologic Model:	2yr-24hr
Compute Time:	05Apr2024, 20:40:00	Control Specifications:	Control 1

Volume Units: ○ IN ◉ ACRE-FT

Computed Results

Peak Discharge:	11.382 (CFS)	Date/Time of Peak Discharge:	25May1995, 12:25
Precipitation Volume:	4.859 (ACRE-FT)	Direct Runoff Volume:	2.820 (ACRE-FT)
Loss Volume:	2.039 (ACRE-FT)	Baseflow Volume:	0.000 (ACRE-FT)
Excess Volume:	2.820 (ACRE-FT)	Discharge Volume:	2.820 (ACRE-FT)

Summary Results for Reservoir "Pond 1"

Project: Palomino Local   Simulation Run: 2yr-24hr
Reservoir: Pond 1

Start of Run:	25May1995, 00:00	Basin Model:	Basin 1
End of Run:	03Jun1995, 23:50	Meteorologic Model:	2yr-24hr
Compute Time:	05Apr2024, 20:40:00	Control Specifications:	Control 1

Volume Units: ○ IN ◉ ACRE-FT

Computed Results

Peak Inflow:	11.382 (CFS)	Date/Time of Peak Inflow:	25May1995, 12:25
Peak Discharge:	4.134 (CFS)	Date/Time of Peak Discharge:	25May1995, 13:25
Inflow Volume:	2.820 (ACRE-FT)	Peak Storage:	1.152 (ACRE-FT)
Discharge Volume:	1.963 (ACRE-FT)	Peak Elevation:	32.856 (FT)

10-year 24-hour -Results

Global Summary Results for Run "10yr-24hr"

Project: Palomino Local   Simulation Run: 10yr-24hr

Start of Run: 25May1995, 00:00   Basin Model: Basin 1
End of Run: 03Jun1995, 23:50   Meteorologic Model: 10yr-24hr
Compute Time: 05Apr2024, 20:43:27   Control Specifications: Control 1

Show Elements: All Elements   Volume Units: ○ ... ◉ ACRE-FT   Sorting: Hydrologic

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (ACRE-FT)
Existing	0.0403125	11.652	25May1995, 12:50	3.973
Proposed	0.0403125	20.187	25May1995, 12:25	4.963
Pond 1	0.0403125	6.200	25May1995, 12:20	4.106

Summary Results for Subbasin "Existing"

Project: Palomino Local   Simulation Run: 10yr-24hr
Subbasin: Existing

Start of Run: 25May1995, 00:00   Basin Model: Basin 1
End of Run: 03Jun1995, 23:50   Meteorologic Model: 10yr-24hr
Compute Time: 05Apr2024, 20:43:27   Control Specifications: Control 1

Volume Units: ○ IN ◉ ACRE-FT

Computed Results

Peak Discharge:	11.652 (CFS)	Date/Time of Peak Discharge:	25May1995, 12:50
Precipitation Volume:	7.224 (ACRE-FT)	Direct Runoff Volume:	3.973 (ACRE-FT)
Loss Volume:	3.251 (ACRE-FT)	Baseflow Volume:	0.000 (ACRE-FT)
Excess Volume:	3.973 (ACRE-FT)	Discharge Volume:	3.973 (ACRE-FT)

Summary Results for Subbasin "Proposed"

Project: Palomino Local   Simulation Run: 10yr-24hr
Subbasin: Proposed

Start of Run:	25May1995, 00:00	Basin Model:	Basin 1
End of Run:	03Jun1995, 23:50	Meteorologic Model:	10yr-24hr
Compute Time:	05Apr2024, 20:43:27	Control Specifications:	Control 1

Volume Units: ○ IN ◉ ACRE-FT

Computed Results

Peak Discharge:	20.187 (CFS)	Date/Time of Peak Discharge:	25May1995, 12:25
Precipitation Volume:	7.224 (ACRE-FT)	Direct Runoff Volume:	4.963 (ACRE-FT)
Loss Volume:	2.261 (ACRE-FT)	Baseflow Volume:	0.000 (ACRE-FT)
Excess Volume:	4.963 (ACRE-FT)	Discharge Volume:	4.963 (ACRE-FT)

Summary Results for Reservoir "Pond 1"

Project: Palomino Local   Simulation Run: 10yr-24hr
Reservoir: Pond 1

Start of Run:	25May1995, 00:00	Basin Model:	Basin 1
End of Run:	03Jun1995, 23:50	Meteorologic Model:	10yr-24hr
Compute Time:	05Apr2024, 20:43:27	Control Specifications:	Control 1

Volume Units: ○ IN ◉ ACRE-FT

Computed Results

Peak Inflow:	20.187 (CFS)	Date/Time of Peak Inflow:	25May1995, 12:25
Peak Discharge:	6.200 (CFS)	Date/Time of Peak Discharge:	25May1995, 12:20
Inflow Volume:	4.963 (ACRE-FT)	Peak Storage:	1.907 (ACRE-FT)
Discharge Volume:	4.106 (ACRE-FT)	Peak Elevation:	33.729 (FT)

100-year 24-hour -Results

Global Summary Results for Run "100yr-24hr"

Project: Palomino Local Simulation Run: 100yr-24hr

Start of Run: 25May1995, 00:00 Basin Model: Basin 1
End of Run: 03Jun1995, 23:50 Meteorologic Model: 100yr-24hr
Compute Time: 05Apr2024, 20:47:21 Control Specifications: Control 1

Show Elements: All Elements Volume Units: ○ IN ◉ ACRE-FT Sorting: Hydrologic

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (ACRE-FT)
Existing	0.0403125	23.280	25May1995, 12:50	7.333
Proposed	0.0403125	37.307	25May1995, 12:25	8.540
Pond 1	0.0403125	12.405	25May1995, 13:20	7.683

Summary Results for Subbasin "Existing"

Project: Palomino Local Simulation Run: 100yr-24hr
Subbasin: Existing

Start of Run: 25May1995, 00:00 Basin Model: Basin 1
End of Run: 03Jun1995, 23:50 Meteorologic Model: 100yr-24hr
Compute Time: 05Apr2024, 20:47:21 Control Specifications: Control 1

Volume Units: ○ IN ◉ ACRE-FT

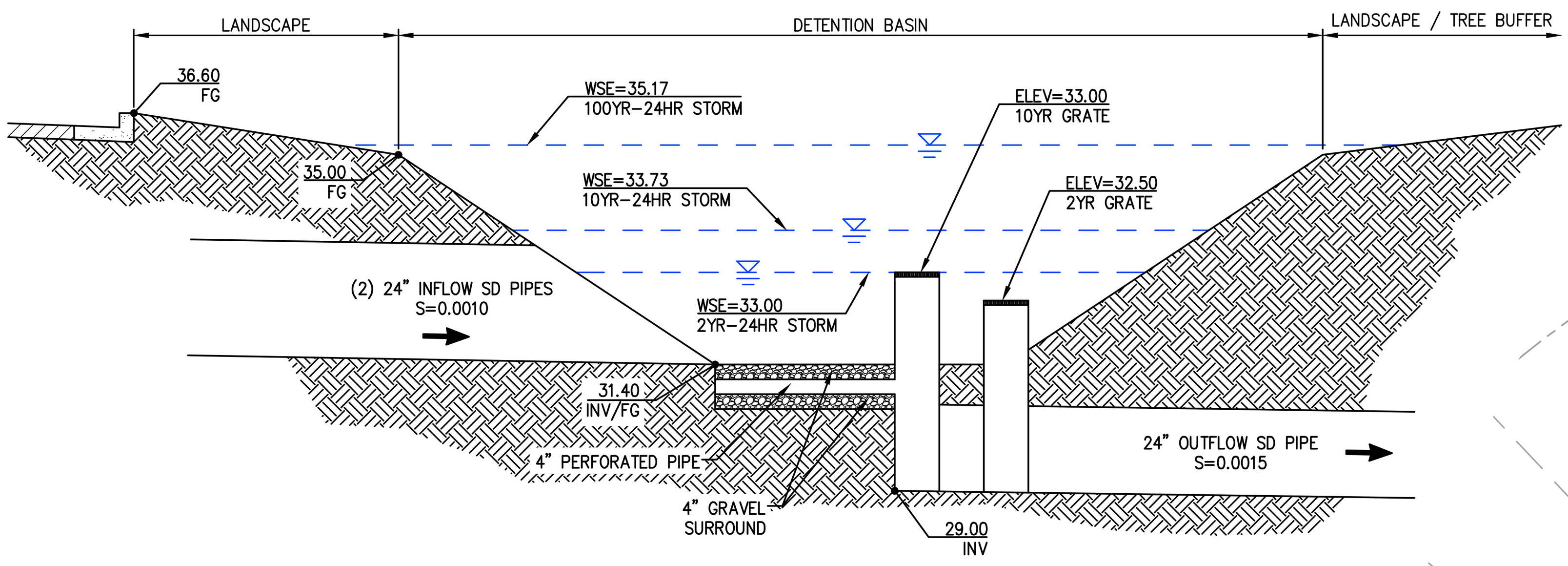
Computed Results

Peak Discharge: 23.280 (CFS) Date/Time of Peak Discharge: 25May1995, 12:50
Precipitation Volume: 10.986 (ACRE-FT) Direct Runoff Volume: 7.333 (ACRE-FT)
Loss Volume: 3.654 (ACRE-FT) Baseflow Volume: 0.000 (ACRE-FT)
Excess Volume: 7.333 (ACRE-FT) Discharge Volume: 7.333 (ACRE-FT)

ATTACHMENT A – NRCS SOILS MAP

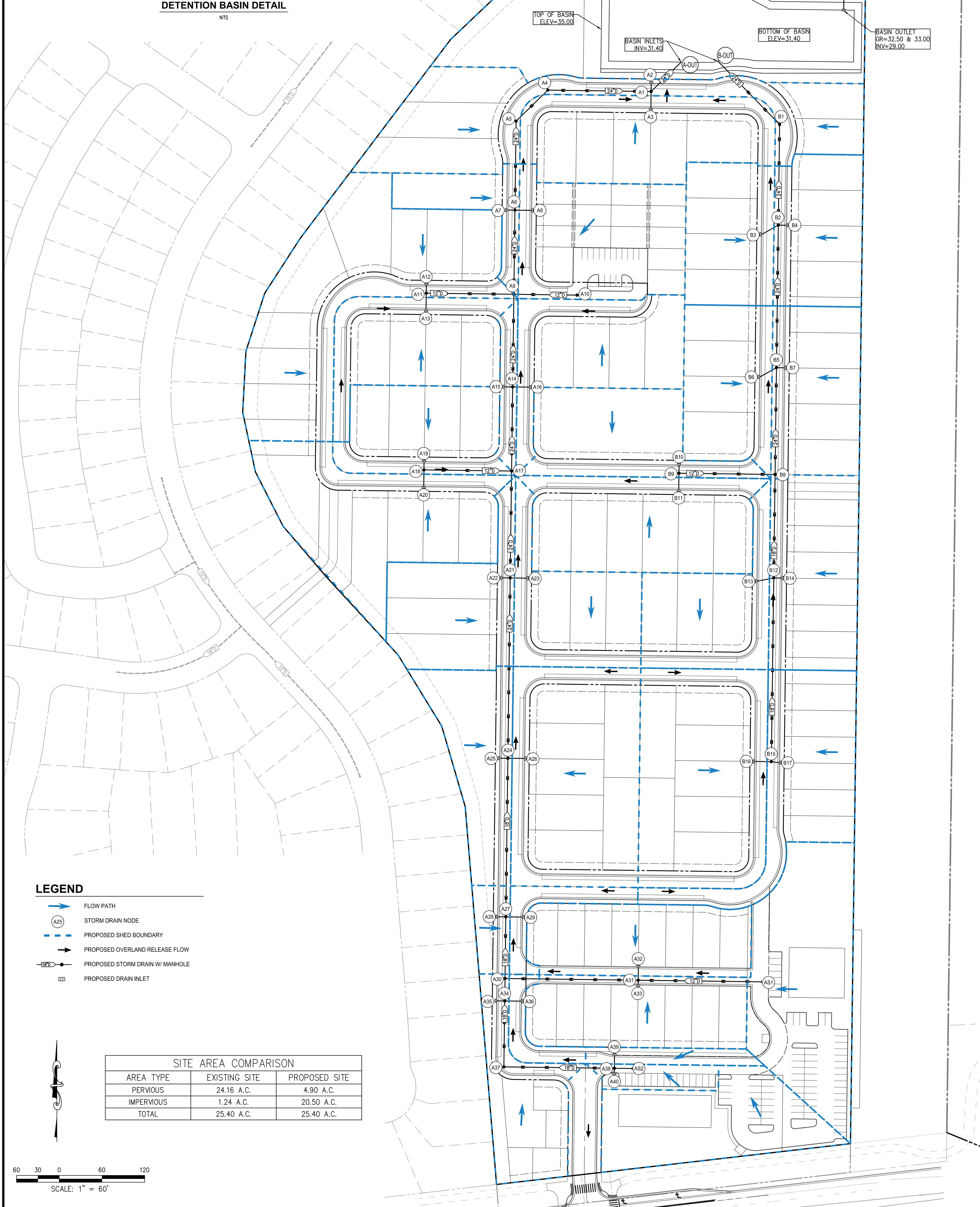
Table — Hydrologic Soil Group — Summary By Map Unit

Summary by Map Unit — Yolo County, California (CA113)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
Sp	Sycamore silty loam, drained	B	16.3	64.17%
St	Sycamore silty clay loam, drained	C	6.5	25.59%
Tc	Tyndall very fine sandy loam, drained	A	2.6	10.24%
Totals for Area of Interest			25.4	100.00%



DETENTION BASIN DETAIL

NTS



LEGEND

- FLOW PATH
- A25 STORM DRAIN NODE
- PROPOSED SHED BOUNDARY
- PROPOSED OVERLAND RELEASE FLOW
- 18"D PROPOSED STORM DRAIN W/ MANHOLE
- PROPOSED DRAIN INLET

SITE AREA COMPARISON		
AREA TYPE	EXISTING SITE	PROPOSED SITE
PERVIOUS	24.16 A.C.	4.90 A.C.
IMPERVIOUS	1.24 A.C.	20.50 A.C.
TOTAL	25.40 A.C.	25.40 A.C.

60 30 0 60 120

SCALE: 1" = 60'

DESIGNED BY: BF
DRAWN BY: BF
CHECKED BY: BF

SCALE
AS SHOWN

PALOMINO PLACE DRAINAGE EXHIBIT

CITY OF DAVIS CALIFORNIA

CUNNINGHAM ENGINEERING
CECWEST.COM
Project Planning ■ Civil Engineering ■ Landscape Architecture
■ Sacramento Office
2120 20th Street, Suite Three
Sacramento, CA 95818
(916) 455-2026
■ Davis Office
2940 Spafford Street, Suite 200
Davis, CA 95618
(530) 758-2026

ATTACHMENT B

SHEET 1 OF 1

DATE: 03/30/2024

PROJECT NO: 1807.10

1807 Palomino Place
PRELIMINARY 10-YR PEAK FLOW CALCULATIONS & STORM DRAIN HYDRAULICS

LOCATION: Davis, California
RETURN INTERVAL: 10 year, UNO
FLOW CALC. METHOD: City of Davis Rational Method
PIPE CAP. & HGL METHOD: Manning Formula for full pipe flow
Q=(1.486/n)*A*(R^(2/3))*(S^0.5)

NOTES: n= 0.010
(Note: The "n" value of 0.010 includes pipe friction and minor losses)
Vmin= 2.0 for pipes < 40% full; 2.5 for pipes >= 40% full
i= As noted, per City of Davis Drainage Design Guidelines
C= As noted, per City of Davis Drainage Design Guidelines
Starting Tc= As noted. Minimum starting Tc = 10 minutes

Date: 3/30/2024
Prepared By: BF

STORM	ANALYSIS PT.		AREA	AREA	C	CA	CUM	SUM	Tcum (min.)		i	Q=CiA	CONDUIT										HGL CALCS.			Grup/Flup	Grup -	CHECKS		INVERT		Cover
DRAIN ID	FROM	TO	(SF)	(AC)			AREA	CA	Tcond.	Tc	(in/hr)	(cfs)	Qc (full)	% Full	Scond.	D	d (ft)	d/D (%)	V	V @ Full	L	Tcond.	Shgl	HGLup	HGLdn		HGLup	V	Q	INVup	INVdn	
	AS2	A38	33,089	0.76	0.45	0.34	0.76	0.34	n/a	16.00	1.33	0.46	4.32	11%	0.0010	18	0.32	21%	1.7	2.4	155	1.53	0.0000	34.16	34.16	39.57	5.4	FIX	OK	34.86	34.70	3.21
	A40	A38	6,036	0.14	0.45	0.06	0.14	0.06	n/a	10.00	1.67	0.10	4.32	2%	0.0010	18	0.15	10%	1.1	2.4	155	2.29	0.0000	34.16	34.16	39.57	5.4	FIX	OK	34.60	34.44	3.47
	A39	A38	5,607	0.13	0.45	0.06	0.13	0.06	n/a	10.00	1.67	0.10	4.32	2%	0.0010	18	0.15	10%	1.0	2.4	155	2.47	0.0000	34.16	34.16	39.57	5.4	FIX	OK	34.34	34.18	3.73
	A38	A37	0	0.00	0.45	0.00	1.03	0.46	2.47	18.47	1.25	0.58	4.32	13%	0.0010	18	0.36	24%	1.8	2.4	155	1.46	0.0000	34.16	34.16	39.57	5.4	FIX	OK	34.08	33.92	3.99
	A37	A34	0	0.00	0.45	0.00	1.03	0.46	1.46	19.93	1.20	0.56	4.32	13%	0.0010	18	0.36	24%	1.7	2.4	93	0.90	0.0000	34.16	34.16	39.18	5.0	FIX	OK	33.82	33.73	3.86
	A36	A34	5,145	0.12	0.45	0.05	0.12	0.05	n/a	10.00	1.67	0.09	4.32	2%	0.0010	18	0.14	9%	1.1	2.4	23	0.34	0.0000	34.16	34.16	38.64	4.5	FIX	OK	33.75	33.73	3.39
	A35	A34	22,707	0.52	0.45	0.23	0.52	0.23	n/a	10.00	1.67	0.39	4.32	9%	0.0010	18	0.30	20%	1.6	2.4	11	0.12	0.0000	34.16	34.16	38.64	4.5	FIX	OK	33.74	33.73	3.40
	A34	A30	0	0.00	0.45	0.00	1.67	0.75	0.90	20.83	1.18	0.88	4.32	20%	0.0010	18	0.45	30%	2.0	2.4	32	0.27	0.0000	34.16	34.15	38.86	4.7	FIX	OK	33.73	33.70	3.63
	AS1	A31	48,550	1.11	0.45	0.50	1.11	0.50	n/a	14.00	1.42	0.71	2.74	26%	0.0035	12	0.34	34%	3.0	3.5	6	0.03	0.0002	34.38	34.38	39.32	4.9	OK	OK	34.66	34.64	3.66
	A33	A31	30,831	0.71	0.45	0.32	0.71	0.32	n/a	10.00	1.67	0.53	2.74	19%	0.0035	12	0.29	29%	2.8	3.5	6	0.04	0.0001	34.38	34.38	39.32	4.9	OK	OK	34.59	34.57	3.73
	A32	A31	30,831	0.71	0.45	0.32	0.71	0.32	n/a	10.00	1.67	0.53	2.93	18%	0.0040	12	0.28	28%	2.9	3.7	18	0.10	0.0001	34.38	34.38	39.32	4.9	OK	OK	34.64	34.57	3.68
	A31	A30	0	0.00	0.45	0.00	2.53	1.14	0.10	14.10	1.42	1.61	2.07	78%	0.0020	12	0.66	66%	2.9	2.6	187	1.06	0.0012	34.38	34.15	39.44	5.1	OK	OK	34.57	34.20	3.87
	A30	A27	0	0.00	0.45	0.00	4.20	1.89	1.06	21.90	1.15	2.17	4.73	46%	0.0012	18	0.71	47%	2.7	2.7	87	0.54	0.0003	34.15	34.13	39.00	4.8	OK	OK	33.70	33.60	3.80
	A29	A27	6,942	0.16	0.45	0.07	0.16	0.07	n/a	10.00	1.67	0.12	2.54	5%	0.0030	12	0.14	14%	1.7	3.2	23	0.22	0.0000	34.13	34.13	38.33	4.2	FIX	OK	34.17	34.10	3.16
	A28	A27	6,009	0.14	0.45	0.06	0.14	0.06	n/a	10.00	1.67	0.10	2.93	4%	0.0040	12	0.12	12%	1.9	3.7	11	0.09	0.0000	34.13	34.13	38.33	4.2	FIX	OK	34.14	34.10	3.19
	A27	A24	0	0.00	0.45	0.00	4.49	2.02	0.54	22.44	1.14	2.30	4.36	53%	0.0010	18	0.77	51%	2.5	2.5	223	1.47	0.0003	34.13	34.07	38.55	4.4	OK	OK	33.60	33.37	3.45
	A26	A24	55,132	1.27	0.45	0.57	1.27	0.57	n/a	10.00	1.67	0.95	2.07	46%	0.0020	12	0.47	47%	2.6	2.6	23	0.15	0.0004	34.08	34.07	37.29	3.2	OK	OK	33.92	33.87	2.37
	A25	A24	25,831	0.59	0.45	0.27	0.59	0.27	n/a	10.00	1.67	0.44	2.07	21%	0.0020	12	0.31	31%	2.1	2.6	11	0.09	0.0001	34.07	34.07	37.29	3.2	OK	OK	33.89	33.87	2.40
	A24	A21	0	0.00	0.45	0.00	6.35	2.86	1.47	23.91	1.10	3.15	9.30	34%	0.0010	24	0.80	40%	2.7	3.0	253	1.57	0.0001	34.07	34.04	37.51	3.4	OK	OK	32.87	32.62	2.64
	A23	A21	26,957	0.62	0.45	0.28	0.62	0.28	n/a	10.00	1.67	0.46	1.79	26%	0.0015	12	0.34	34%	2.0	2.3	23	0.19	0.0001	34.04	34.04	37.07	3.0	FIX	OK	33.65	33.62	2.42
System A	A22	A21	28,819	0.66	0.45	0.30	0.66	0.30	n/a	10.00	1.67	0.50	1.79	28%	0.0015	12	0.35	35%	2.0	2.3	11	0.09	0.0001	34.04	34.04	37.07	3.0	OK	OK	33.64	33.62	2.43
10-year	A21	A17	0	0.00	0.45	0.00	7.63	3.43	1.57	25.48	1.07	3.68	9.30	40%	0.0010	24	0.86	43%	2.8	3.0	150	0.88	0.0002	34.04	34.02	37.29	3.2	OK	OK	32.62	32.47	2.67
	A20	A18	48,955	1.12	0.45	0.51	1.12	0.51	n/a	10.00	1.67	0.84	2.07	41%	0.0020	12	0.44	44%	2.5	2.6	23	0.15	0.0003	34.12	34.11	37.14	3.0	OK	OK	33.87	33.82	2.27
	A19	A18	27,174	0.62	0.45	0.28	0.62	0.28	n/a	10.00	1.67	0.47	2.32	20%	0.0025	12	0.30	30%	2.4	3.0	11	0.08	0.0001	34.12	34.11	37.14	3.0	OK	OK	33.85	33.82	2.29
	A18	A17	0	0.00	0.45	0.00	1.75	0.79	0.15	10.15	1.65	1.30	2.07	63%	0.0020	12	0.57	57%	2.8	2.6	123	0.73	0.0008	34.11	34.02	37.36	3.2	OK	OK	33.72	33.47	2.64
	A17	A14	0	0.00	0.45	0.00	9.38	4.22	0.73	26.21	1.06	4.46	9.30	48%	0.0010	24	0.96	48%	3.0	3.0	118	0.66	0.0002	34.02	33.99	38.02	4.0	OK	OK	32.47	32.35	3.55
	A16	A14	32,198	0.74	0.45	0.33	0.74	0.33	n/a	10.00	1.67	0.55	2.07	27%	0.0020	12	0.35	35%	2.3	2.6	23	0.17	0.0001	33.99	33.99	36.55	2.6	OK	OK	33.40	33.35	2.15
	A15	A14	5,462	0.13	0.45	0.06	0.13	0.06	n/a	10.00	1.67	0.09	2.54	4%	0.0030	12	0.13	13%	1.6	3.2	11	0.12	0.0000	33.99	33.99	36.55	2.6	FIX	OK	33.38	33.35	2.17
	A14	A9	0	0.00	0.45	0.00	10.25	4.61	0.66	26.86	1.04	4.81	9.30	52%	0.0010	24	1.00	50%	3.1	3.0	130	0.71	0.0003	33.99	33.96	36.77	2.8	OK	OK	32.35	32.22	2.42
	A13	A11	30,816	0.71	0.45	0.32	0.71	0.32	n/a	10.00	1.67	0.53	2.07	26%	0.0020	12	0.34	34%	2.3	2.6	23	0.17	0.0001	34.11	34.11	36.57	2.5	OK	OK	33.62	33.57	1.95
	A12	A11	65,178	1.50	0.45	0.67	1.50	0.67	n/a	10.00	1.67	1.12	2.07	54%	0.0020	12	0.52	52%	2.7	2.6	11	0.07	0.0006	34.12	34.11	36.57	2.5	OK	OK	33.59	33.57	1.98
	A11	A9	0	0.00	0.45	0.00	2.20	0.99	0.17	10.17	1.65	1.64	2.07	79%	0.0020	12	0.66	66%	3.0	2.6	123	0.69	0.0013	34.11	33.96	36.68	2.6	OK	OK	33.47	33.22	2.21
	A10	A9	0	0.00	0.45	0.00	0.00	0.00	n/a	10.00	1.67	0.00	2.07	0%	0.0020	12	0.00	0%	0.0	2.6	90	0.00	0.0000	33.96	33.96	37.31	3.4	FIX	OK	33.40	33.22	2.91
	A9	A6	0	0.00	0.45	0.00	12.45	5.60	0.71	27.57	1.03	5.78	9.30	62%	0.0010	24	1.12	56%	3.2	3.0	118	0.62	0.0004	33.96	33.91	37.32	3.4	OK	OK	32.22	32.10	3.10
	A8	A6	38,315	0.88	0.45	0.40	0.88	0.40	n/a	10.00	1.67	0.66	2.32	28%	0.0025	12	0.36	36%	2.6	3.0	23	0.15	0.0002	33.91	33.91	36.12	2.2	OK	OK	33.16	33.10	1.96
	A7	A6	12,041	0.28	0.45	0.12	0.28	0.12	n/a	10.00	1.67	0.21	2.32	9%	0.0025	12	0.20	20%	1.9	3.0	11	0.10	0.0000	33.91	33.91	36.12	2.2	FIX	OK	33.13	33.10	1.99
	A6	A5	0	0.00	0.45	0.00	13.60	6.12	0.62	28.19	1.02	6.25	9.30	67%	0.0010	24	1.18	59%	3.2	3.0	125	0.64	0.0005	33.91	33.85	36.34	2.4	OK	OK	32.10	31.97	2.24
	A5	A4	0	0.00	0.45	0.00	13.60	6.12	0.64	28.83	1.01	6.18	9.30	66%	0.0010	24	1.18	59%	3.2	3.0	62	0.32	0.0004	33.85	33.83	37.07	3.2	OK	OK	31.87	31.81	3.20
	A4	A1	0	0.00	0.45	0.00	13.60	6.12	0.32	29.15	1.00	6.15	9.30	66%	0.0010	24	1.18	59%	3.2	3.0	145	0.76	0.0004	33.83	33.76	37.07	3.2	OK	OK	31.71	31.56	3.36
	A3	A1	39,334	0.90	0.45	0.41	0.90	0.41	n/a	10.00	1.67	0.68	2.07	33%	0.0020	12	0.39	39%	2.4	2.6	23	0.16	0.0002	33.77	33.76	36.10	2.3	OK	OK	32.61	32.56	2.49
	A2	A1	49,263	1.13	0.45	0.51	1.13	0.51	n/a	10.00	1.67	0.85	1.79	47%	0.0015	12	0.48	48%	2.3	2.3	11	0.08	0.0003	33.77	33.76	36.10	2.3	FIX	OK	32.58	32.56	2.52
	A1	A-out	0	0.00	0.45	0.00	15.64	7.04	0.76	29.91	0.99	6.98	9.30	75%	0.0010	24	1.28	64%	3.3	3.0	59	0.30	0.0006	33.76	33.73	36.32	2.6	OK	OK	31.46	31.40	2.86
	B17	B15	36,260	0.83	0.45	0.37	0.83	0.37	n/a	10.00	1.67	0.62	2.07	30%	0.0020	12	0.37	37%	2.4	2.6	11	0.08	0.0002	33.94	33.94	37.22	3.3	OK	OK	33.53	33.51	2.69
	B16	B15	54,789	1.26	0.45	0.57	1.26	0.57	n/a	10.00	1.67	0.94	2.07	46%	0.0020	12	0.47	47%	2.6	2.6	23	0.15	0.0004	33.94	33.93	37.22	3.3	OK	OK	33.56	33.51	2.66
	B15	B12	0	0.00	0.45	0.00	2.09	0.94	0.15	10.15	1.65	1.56	4.32	36%	0.0010	18	0.62	41%	2.3	2.4	258	1.88	0.0001	33.93	33.90	37.44	3.5	OK	OK	33.01	32.75	2.93
	B14	B12	33,811	0.78	0.45	0.35	0.78	0.35	n/a	10.00	1.67	0.58	1.79	32%	0.0015	12	0.39	39%	2.1	2.3	11	0.09	0.0002	33.90	33.90	36.79	2.9	OK	OK	33.27	33.25	2.52
	B13	B12	26,957	0.62	0.45	0.28	0.62	0.28	n/a	10.00	1.67	0.46	1.79	26%	0.0015	12	0.34	34%	2.0	2.3	24	0.20	0.0001	33.90	33.90	36.77	2.9	FIX	OK	33.29	33.25	2.48
	B12	B8	0	0.00	0.45	0.00	3.49	1.57	1.88	12.03	1.53	2.39	4.32	55%	0.0010	18	0.80	53%	2.5	2.4	133	0.88	0.0003	33.90	33.86	37.01	3.1	OK	OK	32.75	32.62	2.76
	B11	B9	42,030	0.96	0.45	0.43	0.96	0.43	n/a	10.00	1.67	0.72	2.07	35%	0.0020	12	0.40	40%	2.5	2.6	11	0.07	0.0002	33.95	33.95	36.64	2.7	OK	OK	33.51	33.49	2.13
System B	B10	B9	29,016	0.67	0.45	0.30	0.67	0.30	n/a	10.00	1.67	0.50	2.07	24%	0.0020	12	0.33	33%	2.2	2.6	23	0.18	0.0001	33.95	33.95	36.64	2.7	OK	OK	33.54	33.49	2.10
10-year	B9	B8	0	0.00	0.45	0.00	1.63	0.73	0.18	10.18	1.65	1.21	2.07	59%	0.0020	12	0.54	54%	2.8	2.6	135	0.80	0.0007	33.95	33.86	36.86	2.9	OK	OK	33.39	33.12	2.47
	B8	B5	0	0.00	0.45	0.00	5.12	2.30	0.80	12.83	1.48	3.41	9.30	37%	0.0010	24	0.82	41%	2.8	3.0	162	0.96	0.0001	33.86	33.84	37.68	3.8	OK	OK	32.12	31.96	3.56
	B7	B5	29,491	0.68	0.45	0.30	0.68	0.30	n/a	10.00	1.67	0.51	1.79	28%	0.0015	12	0.36	36%	2.0	2.3	11	0.09	0.0001	33.84	33.84	36.63	2.8	FIX	OK	32.98	32.96	2.65
	B6	B5	27,339	0.63	0.45	0.28	0.63	0.28	n/a	10.00	1.67	0.47	2.07	23%	0.0020	12	0.32	32%	2.2	2.6	27	0.20	0.0001	33.84	33.84	36.56	2.7	OK	OK	33.01	32.96	2.55
	B5	B2	0	0.00	0.45	0.00	6.42	2.89	0.96	13.79	1.43	4.13	9.30	44%	0.0010	24	0.92	46%	2.9	3.0	200	1.14	0.0002	33.84	33.80	36.85	3.0	OK	OK	31.96	31.76	2.89
	B4	B2	26,017	0.60	0.45	0.27	0.60	0.27	n/a	10.00	1.67	0.45	2.07	22%	0.0020	12	0.31	31%	2.2	2.6	11	0.08	0.0001	33.80	33.80	36.08	2.3	OK	OK	32.78	32.76	2.30
	B3	B2	24,709	0.57	0.45	0.26	0.57	0.26	n/a	10.00	1.67	0.43	2.07	21%	0.0020	12	0.30	30%	2.1	2.6	27	0.21	0.0001	33.80	33.80	36.01	2.2	OK	OK	32.81	32.76	2.20
	B2	B1	0	0.00	0.45	0.00	7.59	3.41	1.14	14.93	1.38	4.70	9.30	51%	0.0010	24	1.00	50%	3.0	3.0	141	0.79	0.0003	33.80	33.76	36.30	2.5	OK	OK	31.76	31.62	2.54
	B1	B-out	0	0.00	0.45	0.00	7.59	3.41	0.79	15.72	1.35	4.59	9.30	49%	0.0010	24	0.98	49%	3.0	3.0	124	0.69	0.0002	33.76	33.73	37.03	3.3	OK	OK	31.52	31.40	3.51

Notes:
1 Time of Concentration (Tc) determined by using 10 minutes for the overland and gutter flow time then adding the corresponding time of flow in the conduit (Tcond).
2 Rainfall Intensity per City of Davis Design Guidelines using the 10-year design frequency.
3 Q = CiA is the design flow seen in the corresponding pipe segment.
4 Qcap is the capacity of the corresponding pipe segment with the listed conduit parameters: Scond = slope; D = diameter; and n = Mannings "n"
5 V = velocity of flow in the pipe segment based upon Q
6 L = length of the pipe segment
7 Tcond = time of concentration for the corresponding pipe segment calculated using V and L

Summary Results for Subbasin "Proposed"

Project: Palomino Local   Simulation Run: 100yr-24hr
Subbasin: Proposed

Start of Run:	25May1995, 00:00	Basin Model:	Basin 1
End of Run:	03Jun1995, 23:50	Meteorologic Model:	100yr-24hr
Compute Time:	05Apr2024, 20:47:21	Control Specifications:	Control 1

Volume Units: ○ IN ◉ ACRE-FT

Computed Results

Peak Discharge:	37.307 (CFS)	Date/Time of Peak Discharge:	25May1995, 12:25
Precipitation Volume:	10.986 (ACRE-FT)	Direct Runoff Volume:	8.540 (ACRE-FT)
Loss Volume:	2.447 (ACRE-FT)	Baseflow Volume:	0.000 (ACRE-FT)
Excess Volume:	8.540 (ACRE-FT)	Discharge Volume:	8.540 (ACRE-FT)

Summary Results for Reservoir "Pond 1"

Project: Palomino Local   Simulation Run: 100yr-24hr
Reservoir: Pond 1

Start of Run:	25May1995, 00:00	Basin Model:	Basin 1
End of Run:	03Jun1995, 23:50	Meteorologic Model:	100yr-24hr
Compute Time:	05Apr2024, 20:47:21	Control Specifications:	Control 1

Volume Units: ○ IN ◉ ACRE-FT

Computed Results

Peak Inflow:	37.307 (CFS)	Date/Time of Peak Inflow:	25May1995, 12:25
Peak Discharge:	12.405 (CFS)	Date/Time of Peak Discharge:	25May1995, 13:20
Inflow Volume:	8.540 (ACRE-FT)	Peak Storage:	3.257 (ACRE-FT)
Discharge Volume:	7.683 (ACRE-FT)	Peak Elevation:	35.169 (FT)