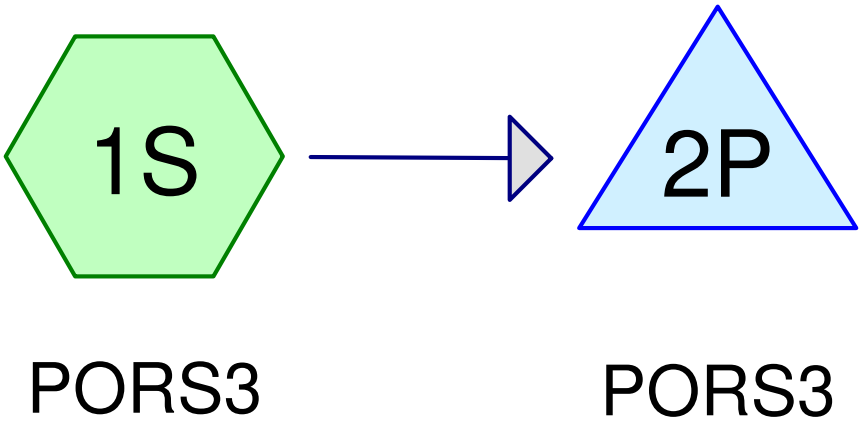

Subcat Reach Pond Link

Routing Diagram for Carneros Vista Res Overflow
Prepared by PPI Engineering, Printed 4/11/2023

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	100-Year	Type IA 24-hr		Default	24.00	1	6.24	2
2	500-Year	Type IA 24-hr		Default	24.00	1	7.77	2
3	1000-Year	Type IA 24-hr		Default	24.00	1	8.45	2

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)
1	2P	101.50	101.10	20.0	0.0200	0.013	0.0	15.0	0.0

Summary for Subcatchment 1S: PORS3

Runoff = 7.12 cfs @ 7.78 hrs, Volume= 2.359 af, Depth= 6.00"
Routed to Pond 2P : PORS3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type IA 24-hr 100-Year Rainfall=6.24"

	Area (ac)	CN	Description
*	4.717	98	Top of Dike + Water Surface
	4.717		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1					**Direct Entry, PORS 3**

Summary for Pond 2P: PORS3

Inflow Area = 4.717 ac,100.00% Impervious, Inflow Depth = 6.00" for 100-Year event
Inflow = 7.12 cfs @ 7.78 hrs, Volume= 2.359 af
Outflow = 1.52 cfs @ 9.96 hrs, Volume= 2.017 af, Atten= 79%, Lag= 131.1 min
Primary = 1.52 cfs @ 9.96 hrs, Volume= 2.017 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Starting Elev= 104.00' Surf.Area= 4.074 ac Storage= 79.749 af
Peak Elev= 104.22' @ 9.96 hrs Surf.Area= 4.094 ac Storage= 80.656 af (0.908 af above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 308.1 min (953.6 - 645.4)

Volume	Invert	Avail.Storage	Storage Description
#1	75.00'	88.080 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
75.00	0.089	0.000	0.000
76.00	0.168	0.129	0.129
77.00	0.887	0.528	0.656
78.00	2.006	1.447	2.103
79.00	2.073	2.040	4.142
80.00	2.142	2.108	6.250
81.00	2.211	2.176	8.426
82.00	2.281	2.246	10.672
83.00	2.352	2.317	12.989
84.00	2.425	2.388	15.377
85.00	2.498	2.462	17.839
86.00	2.573	2.536	20.374
87.00	2.648	2.611	22.985
88.00	2.725	2.686	25.671
89.00	2.802	2.764	28.435
90.00	2.881	2.842	31.276
91.00	2.960	2.921	34.197
92.00	3.040	3.000	37.197
93.00	3.121	3.081	40.277
94.00	3.203	3.162	43.439
95.00	3.286	3.244	46.684
96.00	3.370	3.328	50.012
97.00	3.455	3.412	53.424
98.00	3.541	3.498	56.922
99.00	3.627	3.584	60.506
100.00	3.715	3.671	64.177
101.00	3.803	3.759	67.936
102.00	3.892	3.847	71.784
103.00	3.982	3.937	75.721
104.00	4.074	4.028	79.749
105.00	4.165	4.120	83.868
106.00	4.258	4.211	88.080

Device	Routing	Invert	Outlet Devices
#1	Device 2	104.00'	**15.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	101.50'	**15.0" Round Culvert** L= 20.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 101.50' / 101.10' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.35 cfs @ 9.96 hrs HW=104.22' (Free Discharge)
↑—**2=Culvert** (Passes 1.35 cfs of 8.56 cfs potential flow)
↑—**1=Orifice/Grate** (Weir Controls 1.35 cfs @ 1.54 fps)

Summary for Subcatchment 1S: PORS3

Runoff = 8.88 cfs @ 7.78 hrs, Volume= 2.960 af, Depth= 7.53"
Routed to Pond 2P : PORS3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type IA 24-hr 500-Year Rainfall=7.77"

	Area (ac)	CN	Description
*	4.717	98	Top of Dike + Water Surface
	4.717		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1					**Direct Entry, PORS 3**

Summary for Pond 2P: PORS3

Inflow Area = 4.717 ac,100.00% Impervious, Inflow Depth = 7.53" for 500-Year event
Inflow = 8.88 cfs @ 7.78 hrs, Volume= 2.960 af
Outflow = 2.03 cfs @ 9.66 hrs, Volume= 2.580 af, Atten= 77%, Lag= 113.1 min
Primary = 2.03 cfs @ 9.66 hrs, Volume= 2.580 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Starting Elev= 104.00' Surf.Area= 4.074 ac Storage= 79.749 af
Peak Elev= 104.27' @ 9.66 hrs Surf.Area= 4.099 ac Storage= 80.858 af (1.109 af above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 293.9 min (936.0 - 642.1)

Volume	Invert	Avail.Storage	Storage Description
#1	75.00'	88.080 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
75.00	0.089	0.000	0.000
76.00	0.168	0.129	0.129
77.00	0.887	0.528	0.656
78.00	2.006	1.447	2.103
79.00	2.073	2.040	4.142
80.00	2.142	2.108	6.250
81.00	2.211	2.176	8.426
82.00	2.281	2.246	10.672
83.00	2.352	2.317	12.989
84.00	2.425	2.388	15.377
85.00	2.498	2.462	17.839
86.00	2.573	2.536	20.374
87.00	2.648	2.611	22.985
88.00	2.725	2.686	25.671
89.00	2.802	2.764	28.435
90.00	2.881	2.842	31.276
91.00	2.960	2.921	34.197
92.00	3.040	3.000	37.197
93.00	3.121	3.081	40.277
94.00	3.203	3.162	43.439
95.00	3.286	3.244	46.684
96.00	3.370	3.328	50.012
97.00	3.455	3.412	53.424
98.00	3.541	3.498	56.922
99.00	3.627	3.584	60.506
100.00	3.715	3.671	64.177
101.00	3.803	3.759	67.936
102.00	3.892	3.847	71.784
103.00	3.982	3.937	75.721
104.00	4.074	4.028	79.749
105.00	4.165	4.120	83.868
106.00	4.258	4.211	88.080

Device	Routing	Invert	Outlet Devices
#1	Device 2	104.00'	**15.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	101.50'	**15.0" Round Culvert** L= 20.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 101.50' / 101.10' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.82 cfs @ 9.66 hrs HW=104.27' (Free Discharge)
↑—**2=Culvert** (Passes 1.82 cfs of 8.66 cfs potential flow)
↑—**1=Orifice/Grate** (Weir Controls 1.82 cfs @ 1.70 fps)

Summary for Subcatchment 1S: PORS3

Runoff = 9.67 cfs @ 7.78 hrs, Volume= 3.227 af, Depth= 8.21"
Routed to Pond 2P : PORS3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type IA 24-hr 1000-Year Rainfall=8.45"

	Area (ac)	CN	Description
*	4.717	98	Top of Dike + Water Surface
	4.717		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1					**Direct Entry, PORS 3**

Summary for Pond 2P: PORS3

Inflow Area = 4.717 ac,100.00% Impervious, Inflow Depth = 8.21" for 1000-Year event
Inflow = 9.67 cfs @ 7.78 hrs, Volume= 3.227 af
Outflow = 2.25 cfs @ 9.40 hrs, Volume= 2.831 af, Atten= 77%, Lag= 97.4 min
Primary = 2.25 cfs @ 9.40 hrs, Volume= 2.831 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Starting Elev= 104.00' Surf.Area= 4.074 ac Storage= 79.749 af
Peak Elev= 104.29' @ 9.40 hrs Surf.Area= 4.101 ac Storage= 80.946 af (1.198 af above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 289.4 min (930.3 - 640.9)

Volume	Invert	Avail.Storage	Storage Description
#1	75.00'	88.080 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
75.00	0.089	0.000	0.000
76.00	0.168	0.129	0.129
77.00	0.887	0.528	0.656
78.00	2.006	1.447	2.103
79.00	2.073	2.040	4.142
80.00	2.142	2.108	6.250
81.00	2.211	2.176	8.426
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87.00	2.648	2.611	22.985
88.00	2.725	2.686	25.671
89.00	2.802	2.764	28.435
90.00	2.881	2.842	31.276
91.00	2.960	2.921	34.197
92.00	3.040	3.000	37.197
93.00	3.121	3.081	40.277
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98.00	3.541	3.498	56.922
99.00	3.627	3.584	60.506
100.00	3.715	3.671	64.177
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106.00	4.258	4.211	88.080

Device	Routing	Invert	Outlet Devices
#1	Device 2	104.00'	**15.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	101.50'	**15.0" Round Culvert** L= 20.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 101.50' / 101.10' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.04 cfs @ 9.40 hrs HW=104.29' (Free Discharge)
↑—**2=Culvert** (Passes 2.04 cfs of 8.70 cfs potential flow)
↑—**1=Orifice/Grate** (Weir Controls 2.04 cfs @ 1.77 fps)

NOAA Atlas 14, Volume 6, Version 2
Location name: Sonoma, California, USA*
Latitude: 38.2294°, Longitude: -122.3605°
Elevation: 92.39 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	**0.120** (0.107-0.136)	**0.149** (0.133-0.170)	**0.189** (0.167-0.215)	**0.222** (0.195-0.255)	**0.268** (0.226-0.320)	**0.304** (0.251-0.373)	**0.342** (0.274-0.431)	**0.382** (0.296-0.497)	**0.437** (0.323-0.597)	**0.481** (0.342-0.684)
10-min	**0.172** (0.153-0.195)	**0.214** (0.190-0.243)	**0.271** (0.240-0.308)	**0.318** (0.279-0.366)	**0.384** (0.324-0.459)	**0.436** (0.359-0.534)	**0.490** (0.393-0.618)	**0.547** (0.424-0.713)	**0.627** (0.463-0.856)	**0.690** (0.490-0.980)
15-min	**0.208** (0.185-0.236)	**0.259** (0.230-0.294)	**0.327** (0.290-0.373)	**0.384** (0.337-0.442)	**0.464** (0.392-0.555)	**0.527** (0.434-0.646)	**0.593** (0.475-0.747)	**0.662** (0.513-0.862)	**0.758** (0.560-1.03)	**0.834** (0.593-1.19)
30-min	**0.293** (0.260-0.332)	**0.364** (0.324-0.413)	**0.460** (0.408-0.524)	**0.540** (0.474-0.621)	**0.652** (0.551-0.780)	**0.741** (0.610-0.908)	**0.833** (0.667-1.05)	**0.930** (0.721-1.21)	**1.07** (0.787-1.46)	**1.17** (0.833-1.67)
60-min	**0.418** (0.372-0.474)	**0.520** (0.462-0.591)	**0.657** (0.583-0.749)	**0.772** (0.678-0.888)	**0.932** (0.787-1.12)	**1.06** (0.872-1.30)	**1.19** (0.953-1.50)	**1.33** (1.03-1.73)	**1.52** (1.13-2.08)	**1.68** (1.19-2.38)
2-hr	**0.625** (0.556-0.709)	**0.771** (0.686-0.876)	**0.966** (0.856-1.10)	**1.13** (0.989-1.30)	**1.35** (1.14-1.61)	**1.52** (1.25-1.87)	**1.70** (1.36-2.15)	**1.89** (1.46-2.46)	**2.14** (1.58-2.93)	**2.34** (1.67-3.33)
3-hr	**0.793** (0.706-0.900)	**0.978** (0.869-1.11)	**1.22** (1.08-1.39)	**1.42** (1.25-1.64)	**1.70** (1.44-2.03)	**1.91** (1.58-2.35)	**2.13** (1.71-2.69)	**2.36** (1.83-3.08)	**2.67** (1.98-3.65)	**2.92** (2.07-4.14)
6-hr	**1.16** (1.03-1.31)	**1.43** (1.27-1.62)	**1.79** (1.59-2.04)	**2.08** (1.83-2.40)	**2.48** (2.10-2.97)	**2.79** (2.30-3.42)	**3.10** (2.49-3.92)	**3.43** (2.66-4.46)	**3.86** (2.86-5.28)	**4.20** (2.99-5.97)
12-hr	**1.55** (1.38-1.76)	**1.96** (1.74-2.23)	**2.49** (2.21-2.84)	**2.92** (2.57-3.36)	**3.51** (2.96-4.19)	**3.95** (3.25-4.84)	**4.40** (3.52-5.55)	**4.86** (3.77-6.32)	**5.47** (4.04-7.47)	**5.94** (4.22-8.44)
24-hr	**2.07** (1.86-2.35)	**2.68** (2.41-3.05)	**3.47** (3.11-3.95)	**4.10** (3.66-4.70)	**4.95** (4.29-5.83)	**5.59** (4.76-6.70)	**6.24** (5.21-7.63)	**6.90** (5.62-8.63)	**7.77** (6.12-10.1)	**8.45** (6.46-11.3)
2-day	**2.66** (2.39-3.02)	**3.44** (3.09-3.91)	**4.45** (4.00-5.07)	**5.27** (4.69-6.03)	**6.35** (5.51-7.48)	**7.18** (6.11-8.60)	**8.01** (6.68-9.79)	**8.85** (7.21-11.1)	**9.97** (7.85-12.9)	**10.8** (8.28-14.5)
3-day	**3.09** (2.78-3.50)	**3.99** (3.59-4.53)	**5.16** (4.63-5.87)	**6.09** (5.43-6.98)	**7.34** (6.36-8.64)	**8.29** (7.06-9.93)	**9.23** (7.70-11.3)	**10.2** (8.31-12.8)	**11.5** (9.03-14.9)	**12.5** (9.52-16.6)
4-day	**3.45** (3.10-3.91)	**4.46** (4.01-5.06)	**5.76** (5.16-6.55)	**6.80** (6.05-7.78)	**8.17** (7.08-9.62)	**9.21** (7.84-11.0)	**10.2** (8.55-12.5)	**11.3** (9.20-14.1)	**12.7** (9.98-16.4)	**13.7** (10.5-18.3)
7-day	**4.25** (3.82-4.81)	**5.53** (4.97-6.28)	**7.16** (6.42-8.15)	**8.44** (7.52-9.67)	**10.1** (8.76-11.9)	**11.3** (9.66-13.6)	**12.6** (10.5-15.4)	**13.8** (11.2-17.2)	**15.3** (12.1-19.9)	**16.5** (12.6-22.0)
10-day	**4.83** (4.35-5.48)	**6.32** (5.68-7.18)	**8.19** (7.35-9.32)	**9.64** (8.59-11.0)	**11.5** (9.98-13.6)	**12.9** (11.0-15.4)	**14.2** (11.9-17.4)	**15.5** (12.7-19.4)	**17.2** (13.6-22.3)	**18.5** (14.1-24.7)
20-day	**6.30** (5.67-7.15)	**8.27** (7.43-9.38)	**10.7** (9.58-12.2)	**12.5** (11.2-14.4)	**14.9** (12.9-17.5)	**16.6** (14.1-19.9)	**18.2** (15.2-22.3)	**19.8** (16.1-24.8)	**21.8** (17.1-28.2)	**23.2** (17.7-31.0)
30-day	**7.59** (6.83-8.61)	**9.90** (8.90-11.2)	**12.7** (11.4-14.5)	**14.9** (13.3-17.0)	**17.6** (15.3-20.7)	**19.6** (16.7-23.4)	**21.4** (17.9-26.2)	**23.2** (18.9-29.0)	**25.4** (20.0-32.9)	**27.0** (20.6-36.0)
45-day	**9.36** (8.42-10.6)	**12.1** (10.9-13.7)	**15.4** (13.8-17.5)	**17.9** (16.0-20.5)	**21.1** (18.3-24.8)	**23.3** (19.9-27.9)	**25.4** (21.2-31.1)	**27.5** (22.4-34.4)	**30.0** (23.6-38.9)	**31.7** (24.3-42.4)
60-day	**11.2** (10.1-12.7)	**14.3** (12.9-16.2)	**18.1** (16.2-20.5)	**20.9** (18.6-23.9)	**24.4** (21.2-28.8)	**26.9** (22.9-32.3)	**29.3** (24.5-35.8)	**31.6** (25.7-39.5)	**34.3** (27.0-44.5)	**36.3** (27.7-48.5)

[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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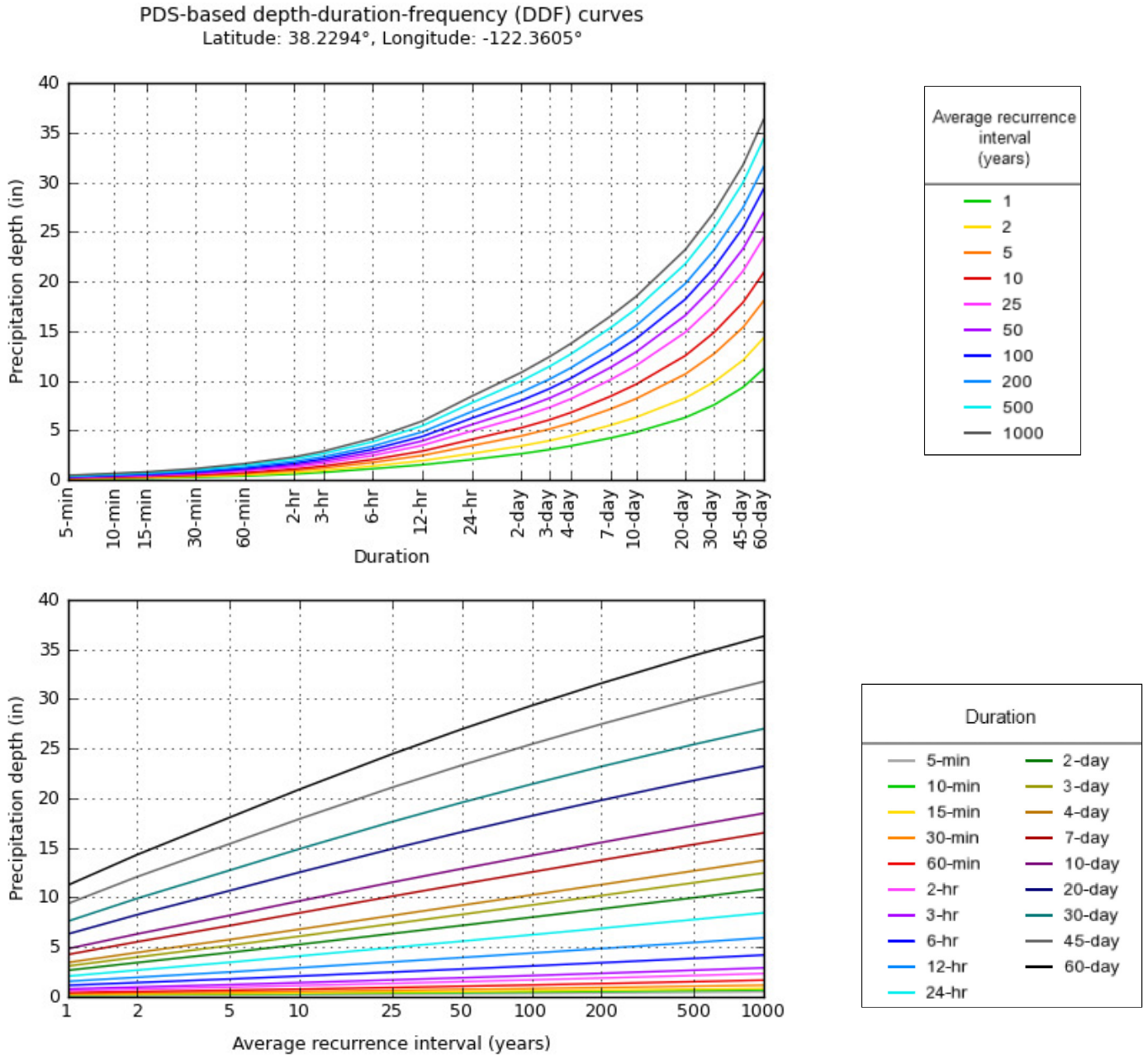
PF graphical



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Created (GMT): Tue Jan 10 22:11:43 2023

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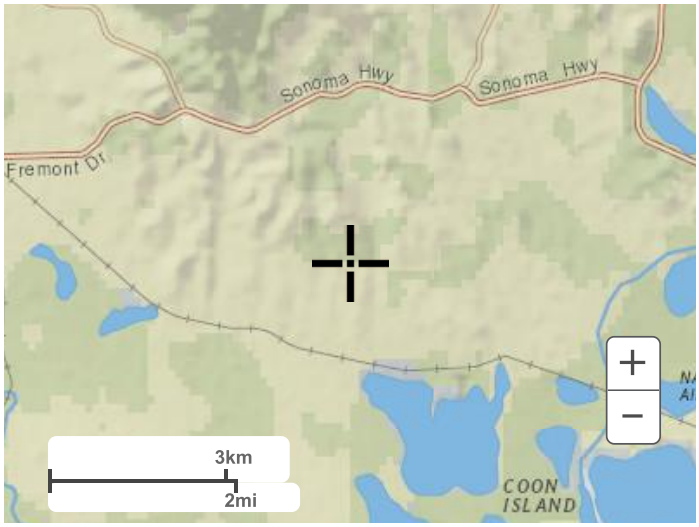
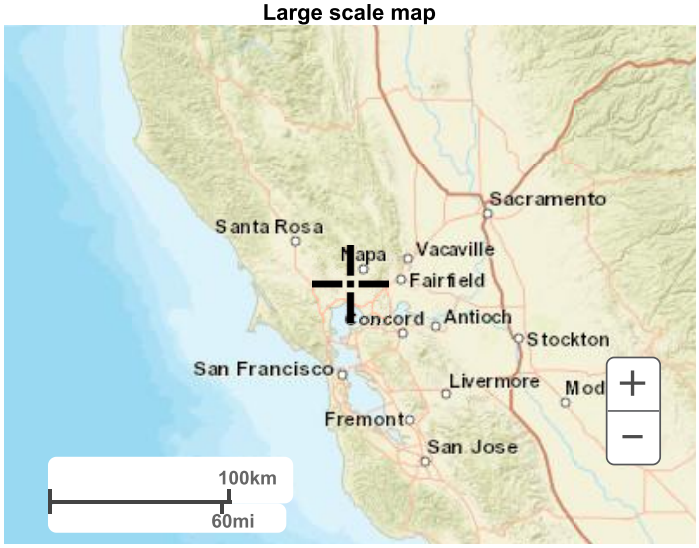
Maps & aerials

Small scale terrain



Large scale terrain

Large scale map



Large scale aerial

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