

Appendix A: Major Outfall Station Fact Sheets (Updated 2019)

Camarillo

Station: MO-CAM (Camarillo-1)

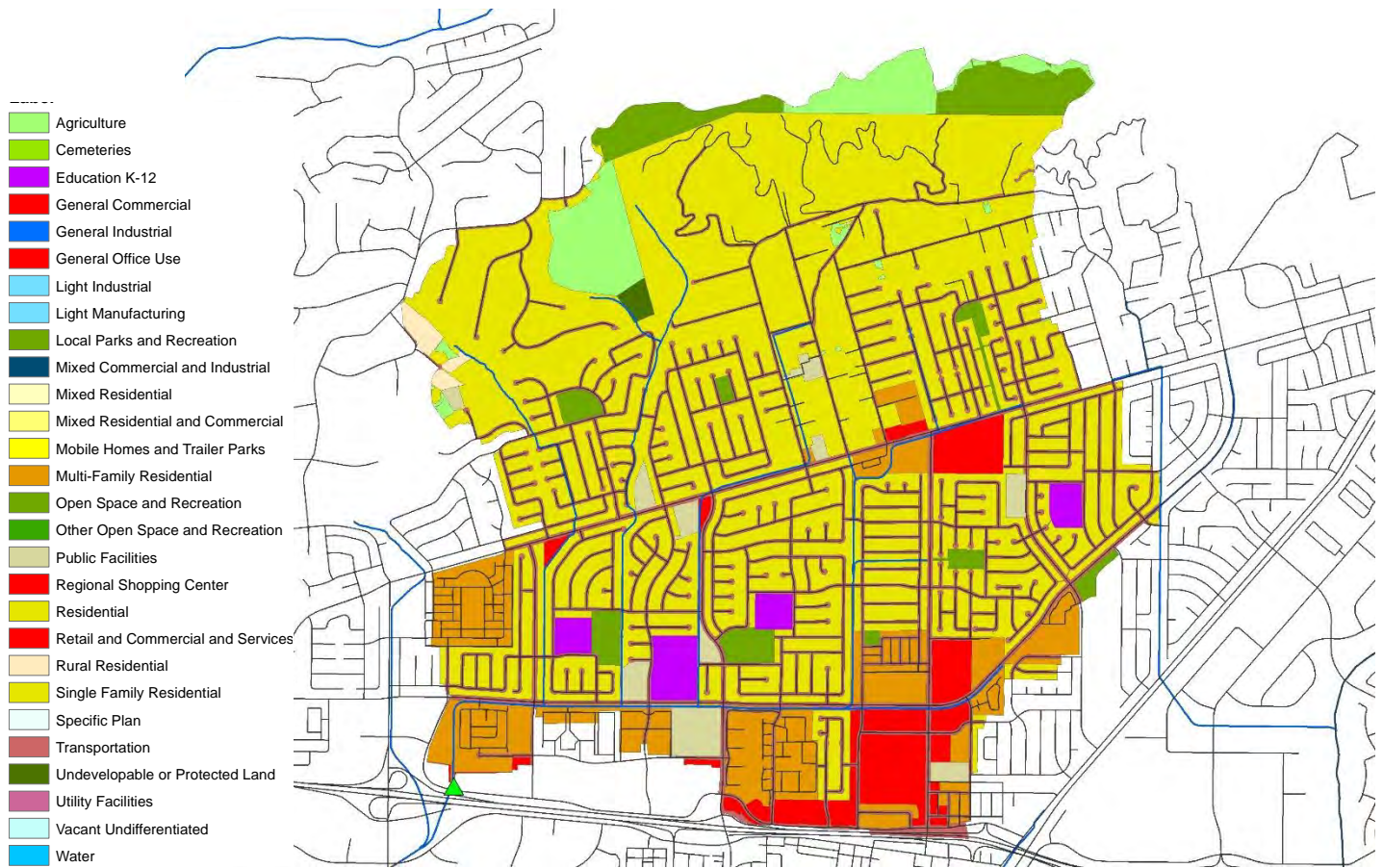
Waterbody: Camarillo Hills Drain (tributary to Revolon Slough)

Location: Daily Rd. overcrossing (34°13'10.40"N, 119° 3'58.00"W)

Known Issues: None

Dry Season Flow: Low flow typically present year-round in dry weather due to urban runoff.





Entire City

Land Use	Acres	% of Total Watershed
Agriculture	1358.6	10.7%
Education K-12	202.0	1.6%
General Office Use	73.8	0.6%
Light Industrial	950.1	7.5%
Local Parks and Recreation	230.4	1.8%
Mixed Commercial and Industrial	7.2	0.1%
Mobile Homes and Trailer Parks	137.4	1.1%
Multi-Family Residential	1521.5	12.0%
Open Space and Recreation	3.0	0.02%
Public Facilities	454.7	3.6%
Retail and Commercial and Services	479.4	3.8%
Rural Residential	18.9	0.1%
Single Family Residential	3814.3	30.2%
Transportation	2581.6	20.4%
Undevelopable or Protected Land	461.8	3.7%
Utility Facilities	353.5	2.8%
Totals	12648.2	100.0%

Selected Subwatershed

Land Use	Acres	% of Total Watershed
Agriculture	109.8	3.9%
Education K-12	47.6	1.7%
General Office Use	9.4	0.3%
Local Parks and Recreation	48.9	1.7%
Multi-Family Residential	272.9	9.6%
Open Space and Recreation	74.5	2.6%
Public Facilities	58.2	2.1%
Retail and Commercial and Services	118.3	4.2%
Rural Residential	12.1	0.4%
Single Family Residential	1598.2	56.5%
Transportation	468.4	16.5%
Undevelopable or Protected Land	6.4	0.2%
Utility Facilities	6.0	0.2%
Totals	2830.7	100.0%

Fillmore

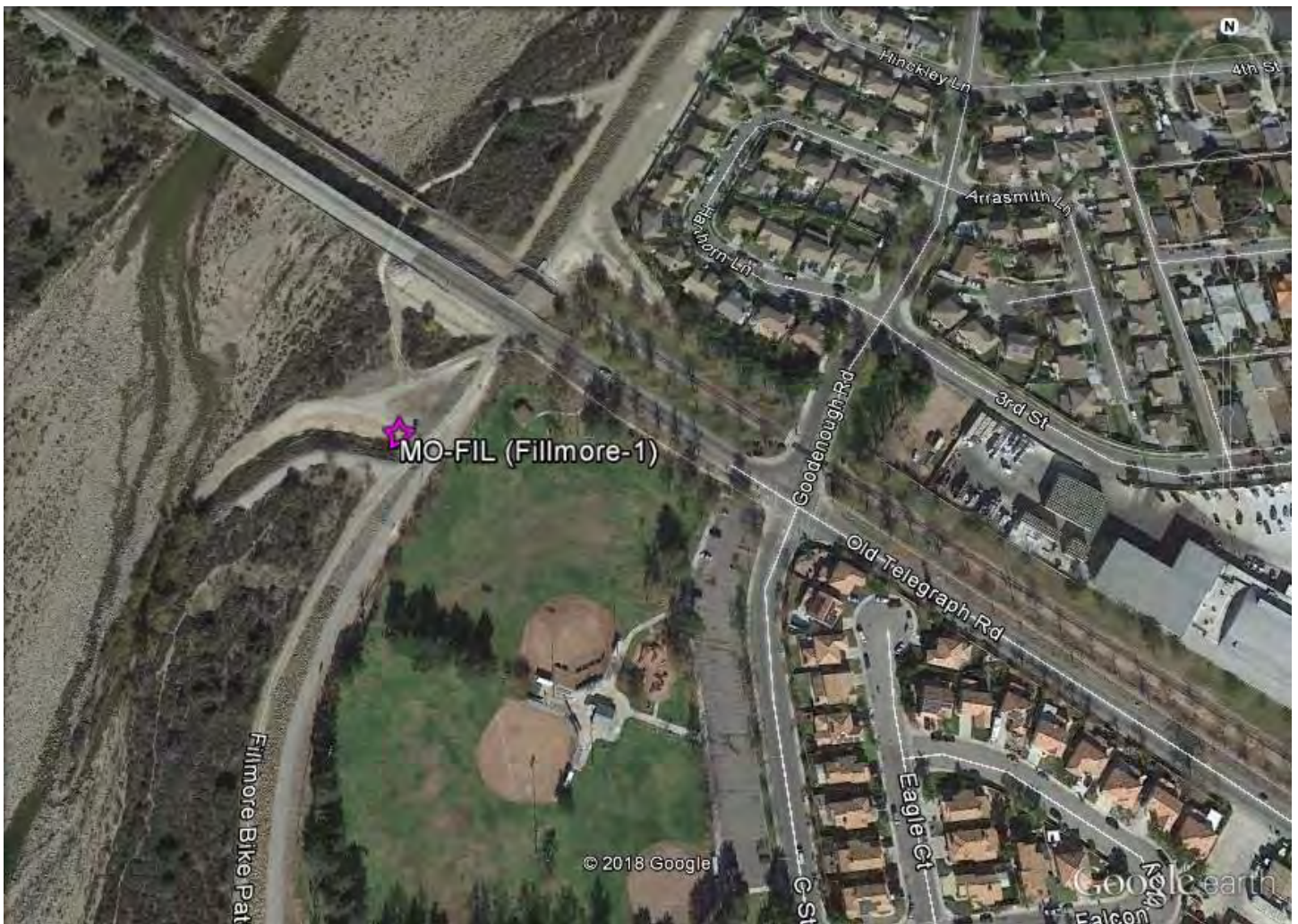
Station: MO-FIL (Fillmore-1)

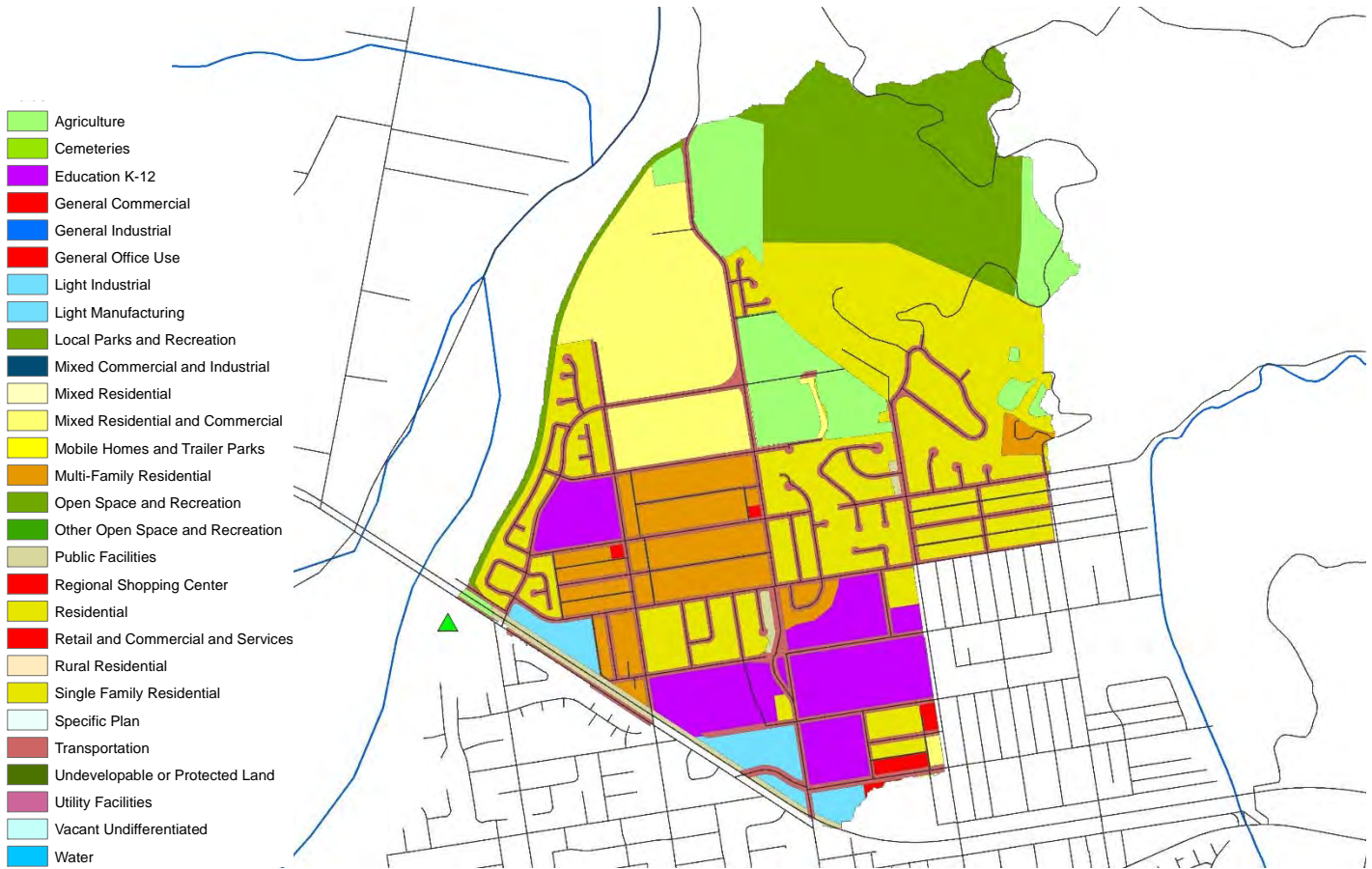
Waterbody: North Fillmore Drain (tributary to Sespe Creek)

Location: 75 yds. southwest of Old Telegraph Rd.
(34°24'16.70"N, 118°55'50.80"W)

Known Issues: Sediment build up around intake

Dry Season Flow Potential: Typically year-round low flow due to urban runoff





Entire City

Land Use	Acres	% of Total Watershed
Agriculture	140.9	6.7%
Education K-12	81.9	3.9%
General Commercial	108.2	5.1%
General Industrial	2.1	0.1%
Light Industrial	132.5	6.3%
Local Parks and Recreation	70.7	3.3%
Mixed Residential and Commercial	120.6	5.7%
Multi-Family Residential	175.7	8.3%
Open Space and Recreation	0.2	0.01%
Transportation	311.5	14.8%
Public Facilities	53.6	2.5%
Single Family Residential	528.4	25.0%
Specific Plan	282.7	13.4%
Undevelopable or Protected Land	102.2	4.8%
Totals	2111.1	100.0%

Selected Subwatershed

Land Use	Acres	% of Total Watershed
Agriculture	66.6	9.4%
Education K-12	69.7	9.8%
General Commercial	3.8	0.5%
Light Industrial	17.7	2.5%
Mixed Residential and Commercial	84.2	11.9%
Multi-Family Residential	58.9	8.3%
Open Space and Recreation	111.7	15.7%
Public Facilities	8.7	1.2%
Single Family Residential	197.6	27.8%
Transportation	90.6	12.8%
Totals	709.5	100.0%

Meiners Oaks (Unincorporated)

Station: MO-MEI (Unincorporated-1)

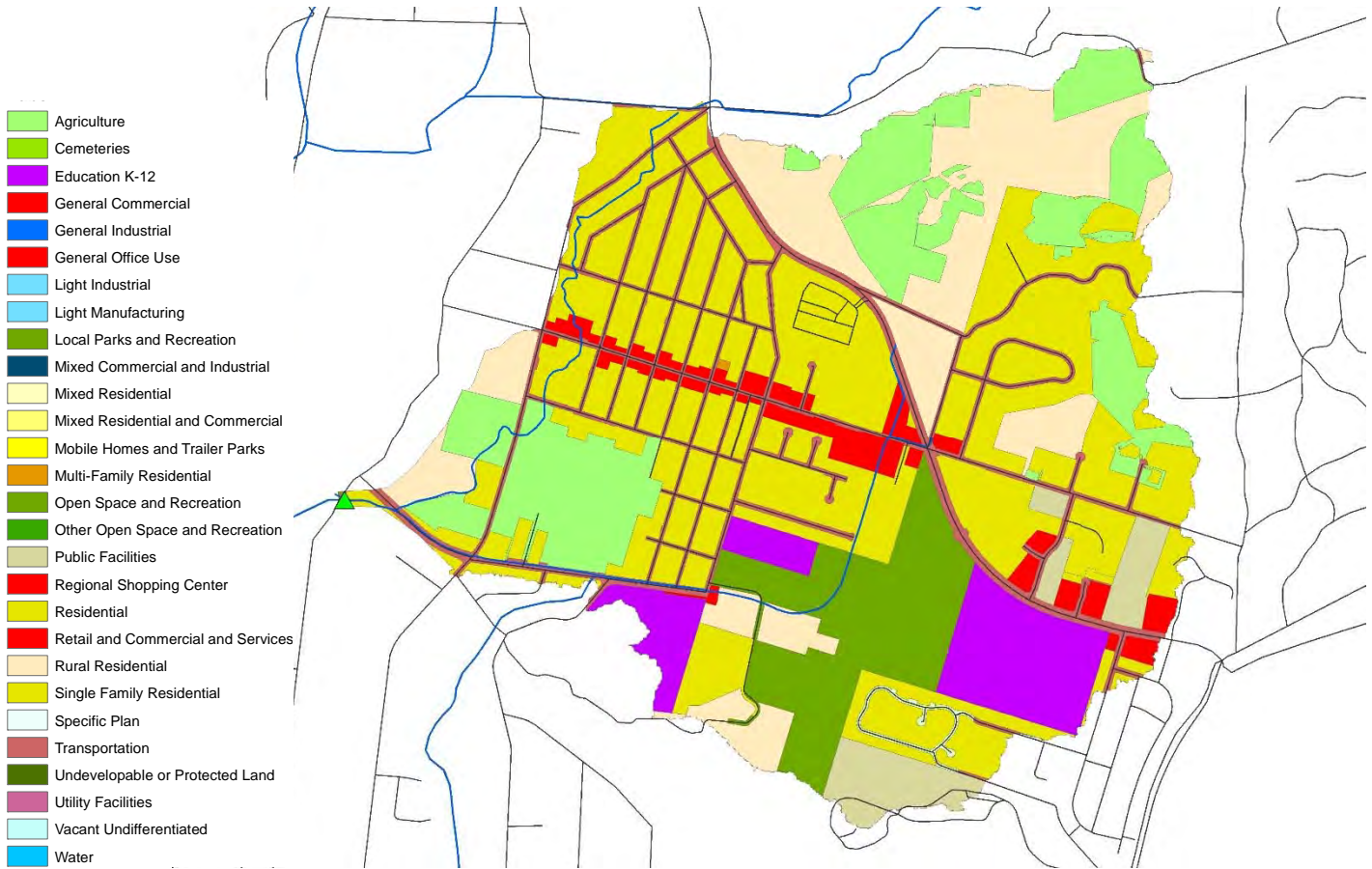
Waterbody: Happy Valley Drain (tributary to Ventura River)

Location: Southwest of Lomita Rd. and Rice Rd. intersection (34°26'43.94"N, 119°17'25.15"W)

Known Issues: Homeless occasionally present under bridge at site.

Dry Season Flow Potential: Dries up quickly after storms. Typically dry during dry weather events.





Entire City

Land Use	Acres	% of Total Watershed
Agriculture	69.2	2.1%
Education K-12	7.4	0.2%
General Commercial	94.2	2.8%
General Industrial	323.3	9.6%
Heavy Industrial	113.1	3.4%
Multi-Family Residential	35.0	1.0%
Open Space and Recreation	118.2	3.5%
Transportation	498.4	14.9%
Rural Residential	26.8	0.8%
Single Family Residential	2063.7	61.6%
Undevelopable or Protected Land	2.4	0.1%
Totals	3351.6	100.0%

Selected Subwatershed

Land Use	Acres	% of Total Watershed
Agriculture	140.3	14.8%
Education K-12	60.0	6.3%
General Commercial	34.6	3.7%
Multi-Family Residential	0.2	0.0%
Open Space and Recreation	80.2	8.5%
Public Facilities	33.0	3.5%
Residential	0.9	0.1%
Rural Residential	139.6	14.8%
Single Family Residential	367.9	38.9%
Transportation	88.4	9.4%
Totals	945.2	100.0%

Moorpark

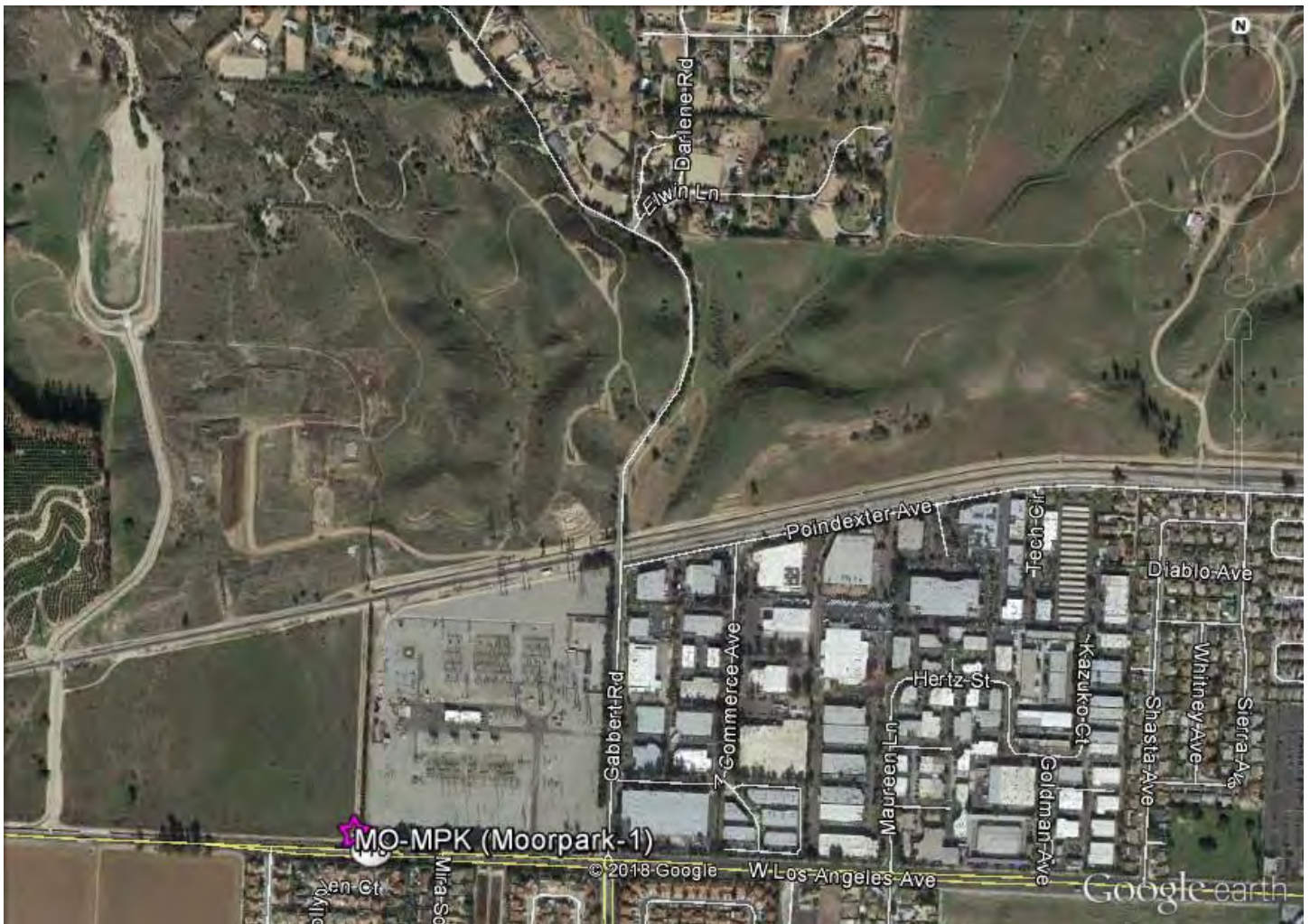
Station: MO-MPK (Moorpark-1)

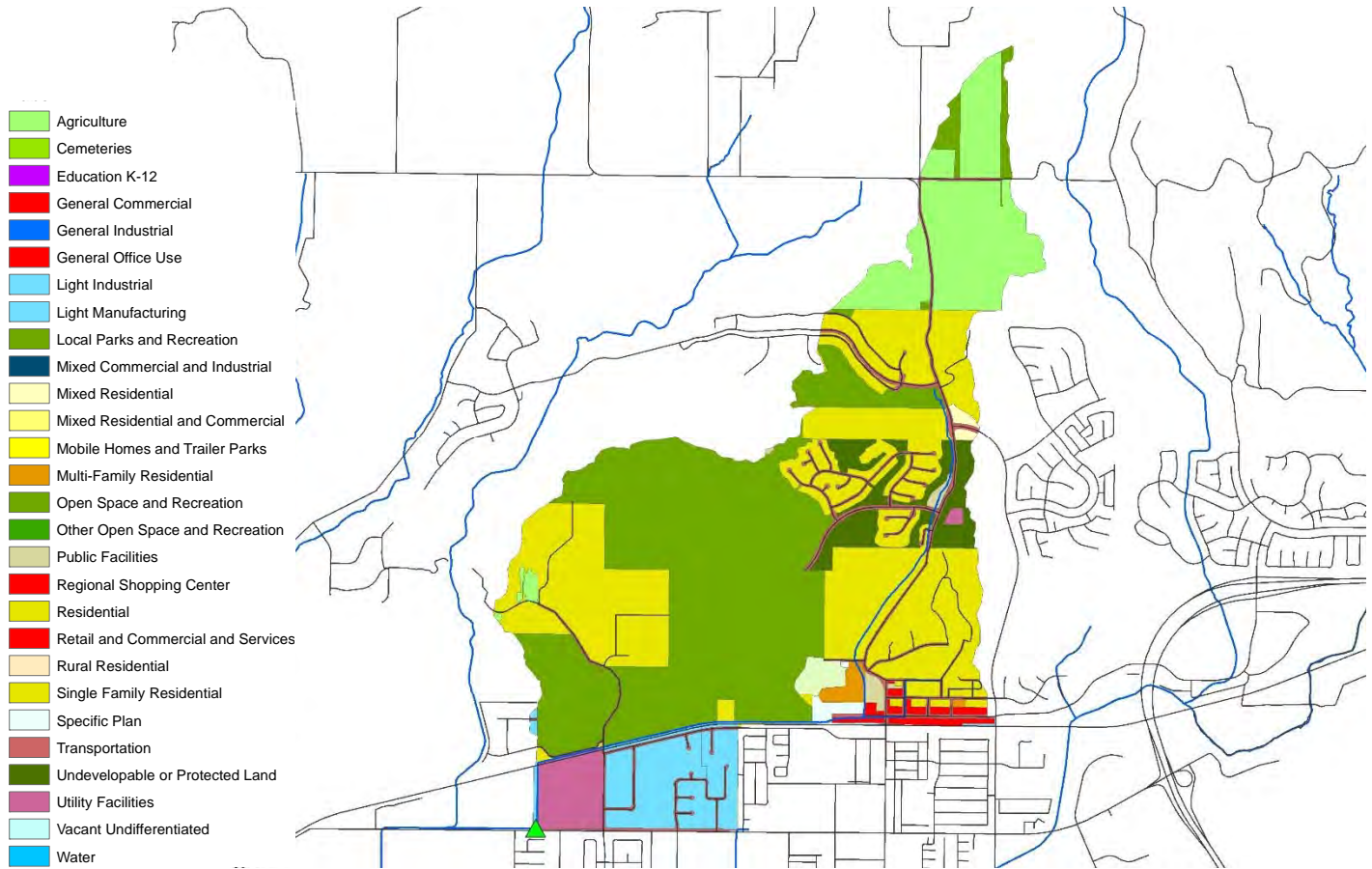
Waterbody: Walnut Canyon (tributary to Arroyo Simi)

Location: North side of SR 118 near southwest corner of So. Cal. Edison property (34°16'44.14"N, 118°54'19.21"W)

Known Issues: None

Dry Season Flow Potential: Intermittent year-round flow due to urban runoff





Entire City

Land Use	Acres	% of Total Watershed
Agriculture	81.1	1.0%
Education K-12	263.1	3.3%
General Commercial	158.1	2.0%
General Office Use	3.6	0.05%
Light Industrial	250.4	3.1%
Light Manufacturing	205.3	2.6%
Local Parks and Recreation	128.9	1.6%
Mixed Residential	396.0	5.0%
Mixed Residential and Commercial	450.1	5.6%
Multi-Family Residential	197.0	2.5%
Open Space and Recreation	1836.6	23.0%
Public Facilities	18.3	0.2%
Retail and Commercial and Services	7.3	0.1%
Single Family Residential	2405.6	30.1%
Specific Plan	10.0	0.1%
Transportation	1125.1	14.1%
Undevelopable or Protected Land	219.4	2.7%
Utility Facilities	47.1	0.6%
Water	178.4	2.2%
Totals	7981.6	100.0%

Selected Subwatershed

Land Use	Acres	% of Total Watershed
Agriculture	206.2	11.53%
Education K-12	13.1	0.73%
General Commercial	17.8	0.99%
General Office Use	0.5	0.03%
Light Industrial	27.9	1.56%
Light Manufacturing	82.9	4.63%
Mixed Residential	5.4	0.30%
Multi-Family Residential	11.4	0.64%
Open Space and Recreation	629.6	35.20%
Public Facilities	9.3	0.52%
Single Family Residential	561.7	31.40%
Specific Plan	8.0	0.45%
Transportation	96.4	5.39%
Undevelopable or Protected Land	71.4	3.99%
Utility Facilities	47.1	2.64%
Totals	1788.7	100.0%

Ojai

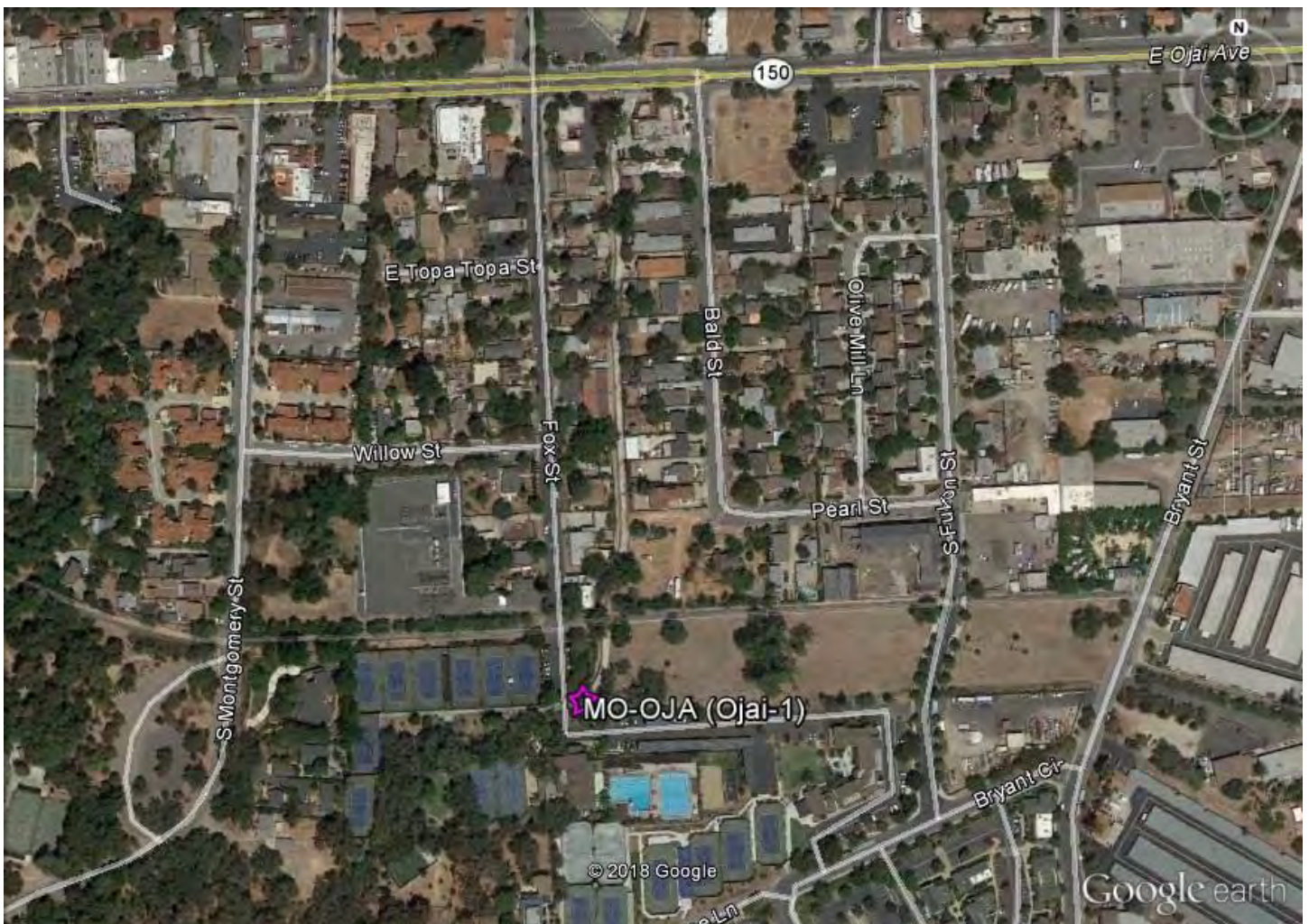
Station: MO-OJA (Ojai-1)

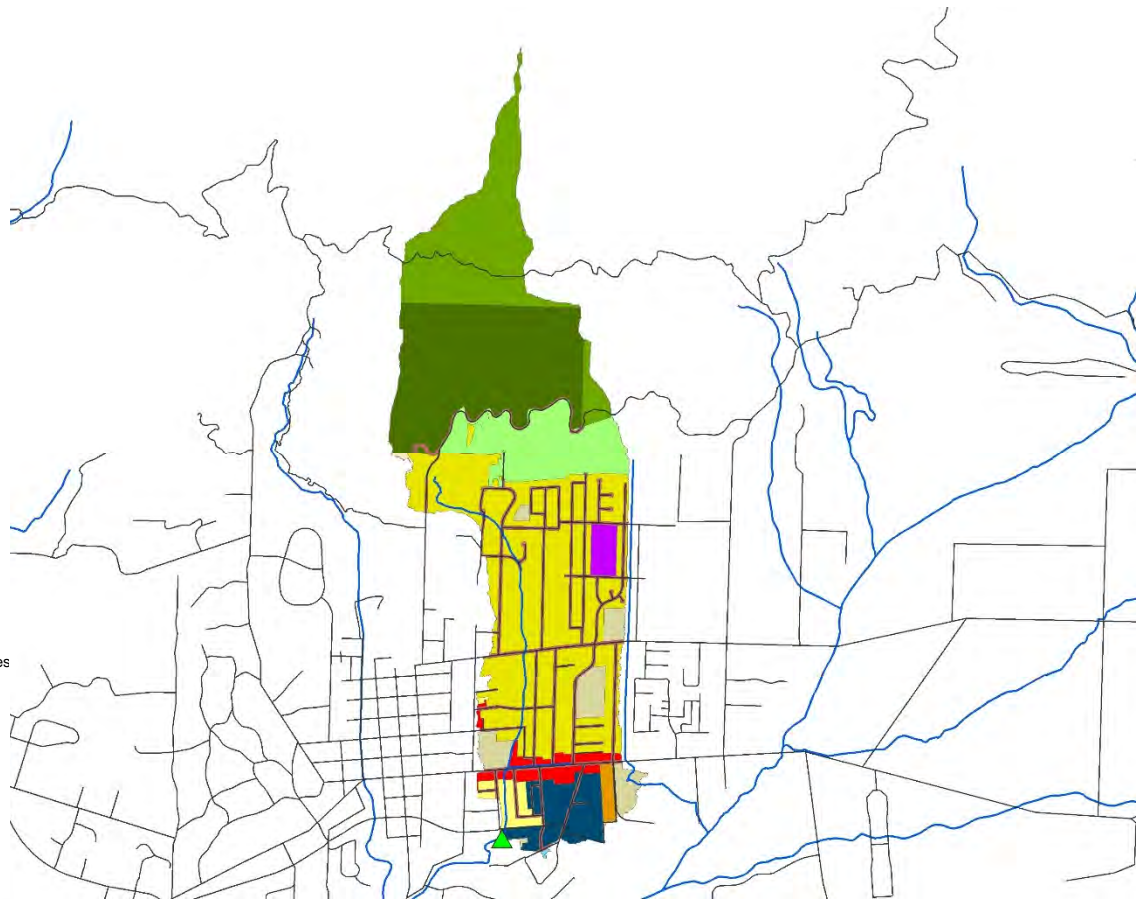
Waterbody: Fox Canyon Barranca (tributary to San Antonio Creek)

Location: Concrete box channel upstream Ojai Valley Athletic Club and downstream pedestrian walkway (34°26'41.26"N, 119°14'28.32"W)

Known Issues: Repeated discharges directly upstream of station from Ojai Valley Athletic Club swimming pool.

Dry Season Flow Potential: Frequently dry outside of wet season storms.





Entire Watershed

Land Use	Acres	% of Total Watershed
Agriculture	100.0	3.6%
Education K-12	48.5	1.7%
General Commercial	98.0	3.5%
Light Manufacturing	18.6	0.7%
Mixed Commercial and Industrial	39.7	1.4%
Mixed Residential and Commercial	64.0	2.3%
Multi-Family Residential	9.8	0.4%
Open Space and Recreation	244.9	8.8%
Public Facilities	530.2	19.0%
Rural Residential	0.1	0.0018%
Single Family Residential	1158.3	41.4%
Transportation	273.9	9.8%
Undevelopable or Protected Land	208.6	7.5%
Totals	2794.8	100.0%

Selected Subwatershed

Land Use	Acres	% of Total Watershed
Agriculture	69.4	9.38%
Education K-12	9.2	1.25%
General Commercial	15.9	2.15%
Light Manufacturing	0.3	0.04%
Mixed Commercial and Industrial	32.4	4.38%
Mixed Residential and Commercial	11.2	1.52%
Multi-Family Residential	5.1	0.69%
Open Space and Recreation	115	15.54%
Public Facilities	31.7	4.28%
Rural Residential	0.9	0.12%
Single Family Residential	228.1	30.83%
Transportation	65.2	8.81%
Undevelopable or Protected Land	155.4	21.00%
Totals	739.7	100.00%

Oxnard

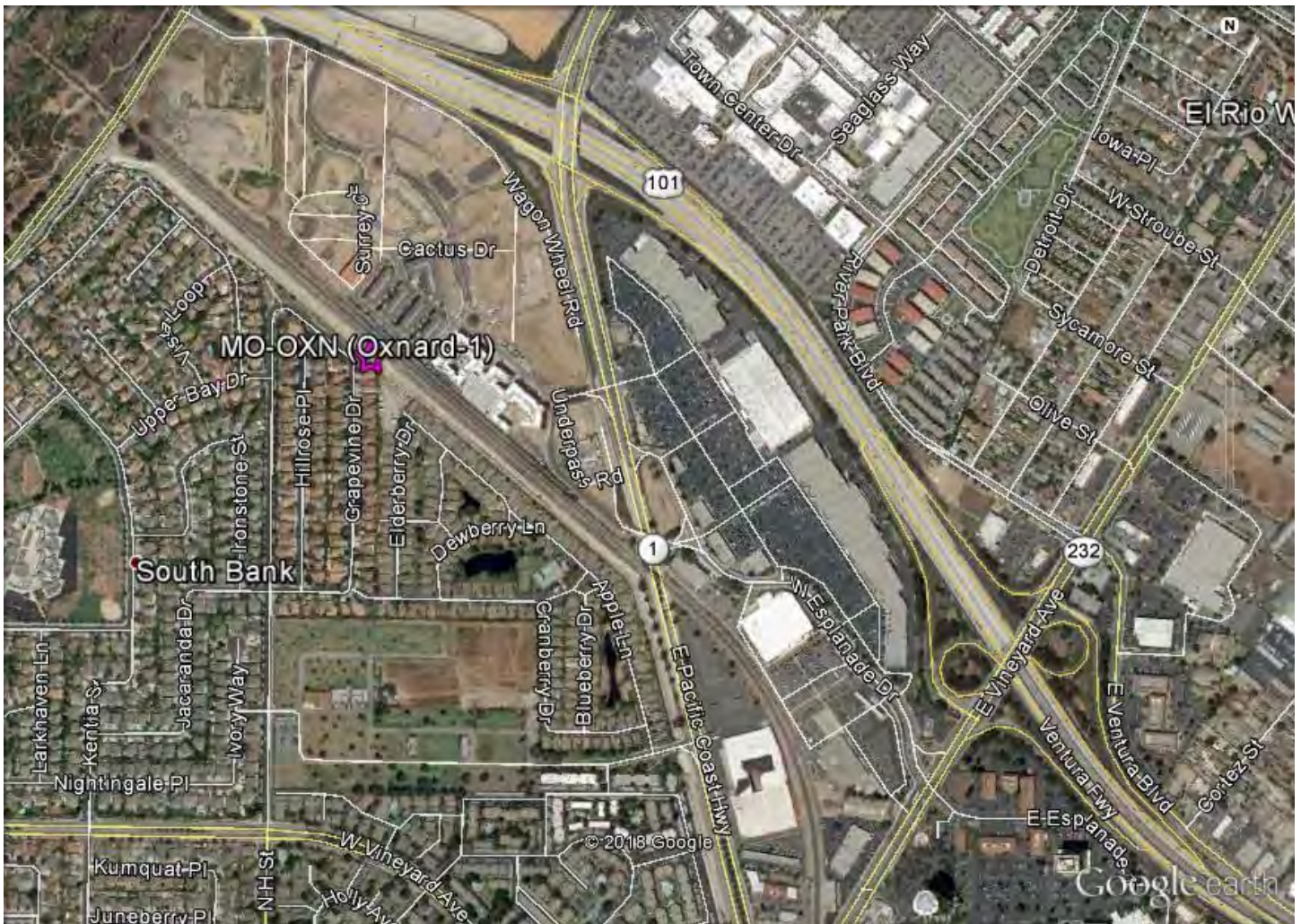
Station: MO-OXN (Oxnard-1)

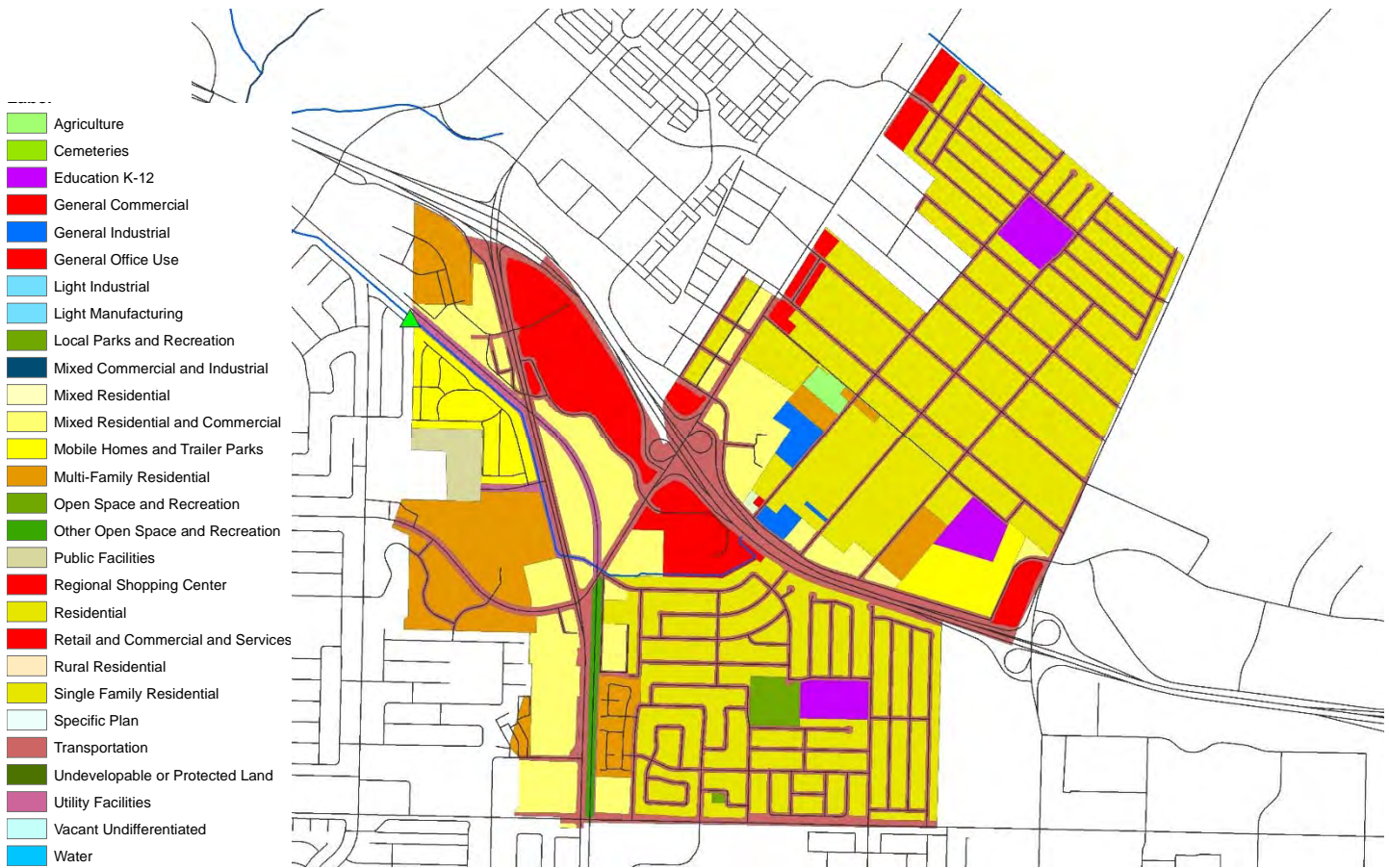
Waterbody: El Rio Drain (tributary to Santa Clara River)

Location: Pedestrian bridge 50 yds. southwest bend of Winchester Dr. (34°14'10.13"N, 119°11'3.88"W)

Known Issues: Frequent presence of homeless and vandals in area.

Dry Season Flow Potential: Intermittent year-round flow due to urban runoff but is typically dry in the dry season.





Entire City

Land Use	Acres	% of Total Watershed
Agriculture	864.4	5.0%
Education K-12	644.7	3.7%
General Commercial	19.1	0.1%
General Industrial	73.3	0.4%
General Office Use	54.9	0.3%
Heavy Industrial	231.7	1.3%
Light Manufacturing	1555.7	9.0%
Military Installations	0.4	0.0%
Mixed Commercial and Industrial	346.5	2.0%
Mixed Residential and Commercial	814.3	4.7%
Mobile Homes and Trailer Parks	242.7	1.4%
Multi-Family Residential	1446.2	8.3%
Open Space and Recreation	807.3	4.7%
Other Open Space and Recreation	441.7	2.5%
Public Facilities	99.9	0.6%
Regional Shopping Center	339.3	2.0%
Residential	524.3	3.0%
Single Family Residential	3706.4	21.4%
Transportation	3718.5	21.4%
Undevelopable or Protected Land	1000.7	5.8%
Utility Facilities	413.9	2.4%
Totals	17346.1	100.0%

Selected Subwatershed

Land Use	Acres	% of Total Watershed
Agriculture	3.9	0.3%
Education K-12	28.8	2.3%
General Commercial	14.7	1.2%
General Industrial	9.5	0.8%
General Office Use	23.7	1.9%
Mixed Residential and Commercial	141.3	11.3%
Mobile Homes and Trailer Parks	53.1	4.3%
Multi-Family Residential	103.7	8.3%
Open Space and Recreation	9.0	0.7%
Other Open Space and Recreation	7.2	0.6%
Public Facilities	11.9	1.0%
Regional Shopping Center	52.8	4.2%
Single Family Residential	503.9	40.5%
Transportation	264.7	21.3%
Utility Facilities	17.4	1.4%
Totals	1245.6	100.0%

Port Hueneme

Station: MO-HUE (Port Hueneme-1)

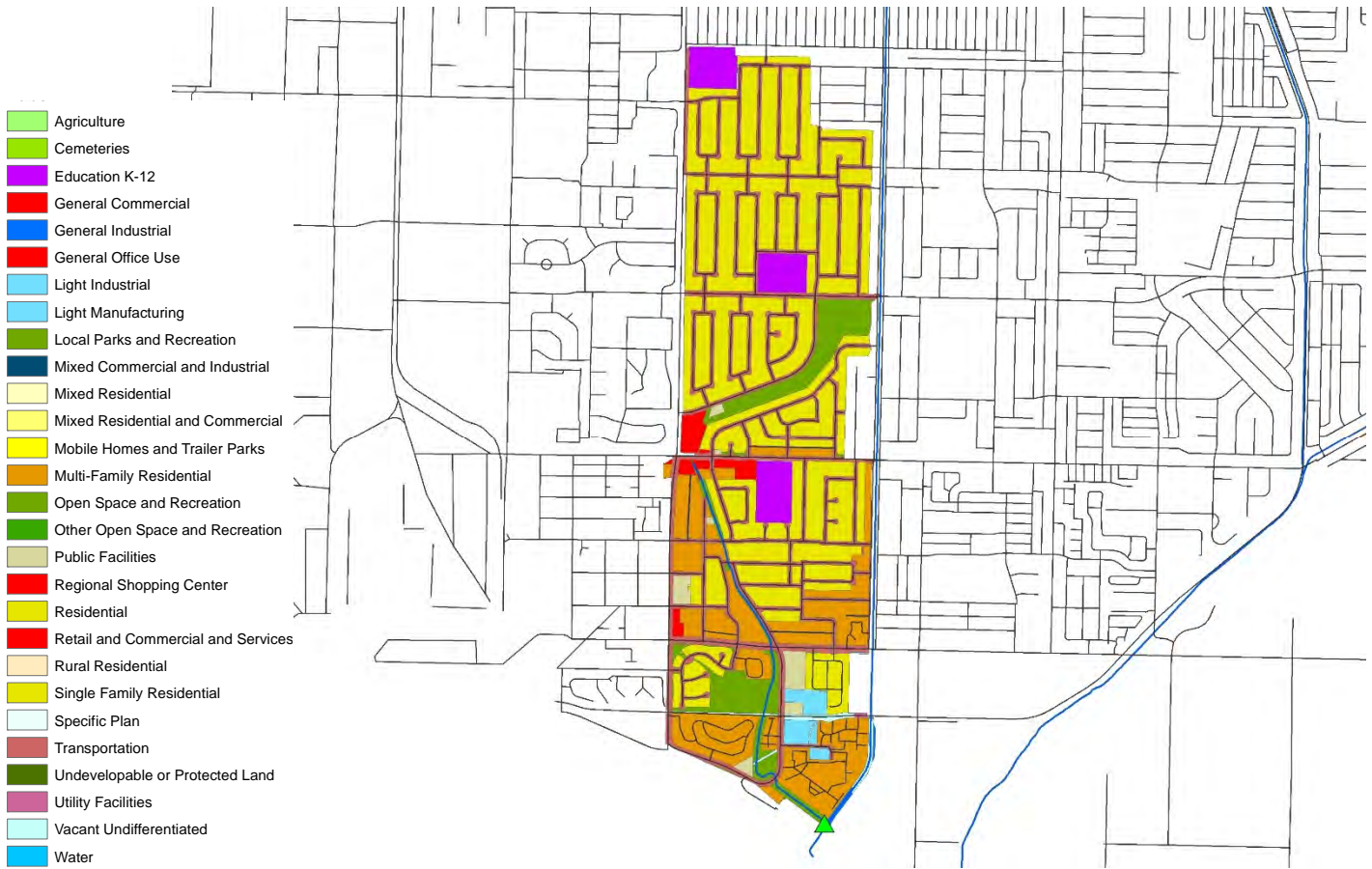
Waterbody: Hueneme Drain (tributary to Pacific Ocean)

Location: Pump Station 300 yds. downstream Surfside Dr. (34°8'27.06"N, 119°11'17.72"W)

Known Issues: Water tends to back up at pump station when pumps are off. Salinity varies due to ocean influence.

Dry Season Flow Potential: Year-round flow due to urban runoff and groundwater contribution





Entire City

Land Use	Acres	% of Total Watershed
Education K-12	33.4	1.2%
General Commercial	71.6	2.5%
Light Manufacturing	13.4	0.5%
Military Installations	1574.1	54.6%
Mixed Residential and Commercial	11.7	0.4%
Multi-Family Residential	330.1	11.4%
Open Space and Recreation	122.6	4.3%
Other Commercial	1.5	0.1%
Public Facilities	9.5	0.3%
Single Family Residential	317.0	11.0%
Transportation	386.4	13.4%
Undevelopable or Protected Land	12.4	0.4%
Utility Facilities	0.3	0.01%
Totals	2884.1	100.0%

Selected Subwatershed

Land Use	Acres	% of Total Watershed
Education K-12	27.1	4.5%
General Commercial	9.7	1.6%
General Industrial	1.3	0.2%
Light Manufacturing	8.1	1.3%
Multi-Family Residential	97.1	16.2%
Open Space and Recreation	44.6	7.4%
Public Facilities	8.9	1.5%
Single Family Residential	265.3	44.2%
Transportation	132.6	22.1%
Undevelopable or Protected Land	0.0	0.0%
Utility Facilities	0.3	0.1%
Vacant Undifferentiated	5.1	0.8%
Totals	599.9	100.0%

Santa Paula

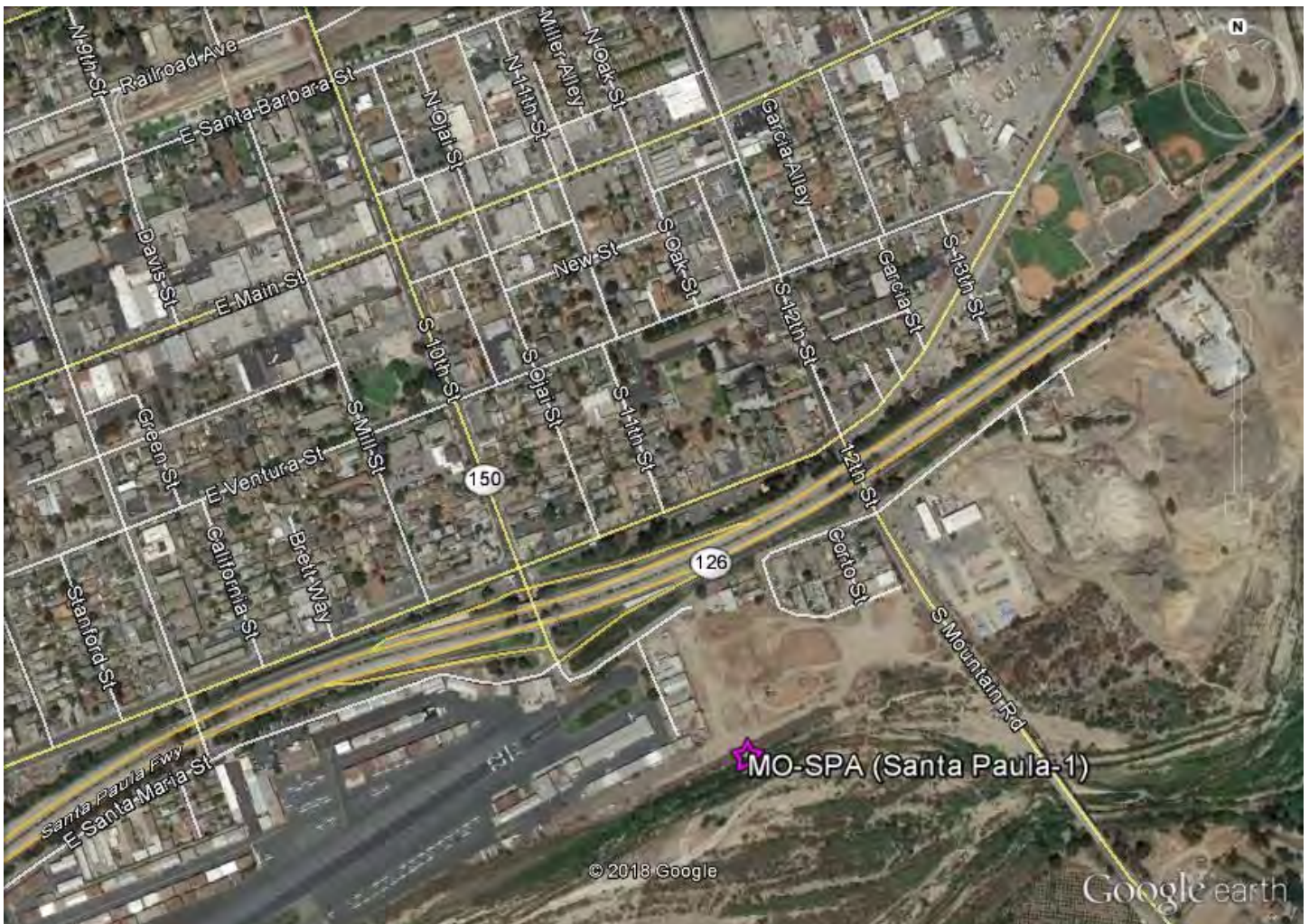
Station: MO-SPA (Santa Paula-1)

Waterbody: 11th Street Drain (tributary to Santa Clara River)

Location: Upstream Santa Paula Airport
(34°20'54.98"N, 119° 3'20.10"W)

Known Issues: Homeless presence and vandalism frequent in area.

Dry Season Flow Potential: Typically dry between storms. Very infrequent dry weather flow.





Entire City

Land Use	Acres	% of Total Watershed
Agriculture	454.6	12.4%
Education K-12	8.3	0.2%
General Office Use	24.2	0.7%
Light Industrial	145.6	4.0%
Light Manufacturing	80.6	2.2%
Local Parks and Recreation	68.8	1.9%
Mixed Commercial and Industrial	200.1	5.5%
Mixed Residential and Commercial	20.3	0.6%
Mobile Homes and Trailer Parks	82.1	2.2%
Multi-Family Residential	330.6	9.0%
Open Space and Recreation	298.4	8.2%
Public Facilities	159.2	4.4%
Retail and Commercial and Services	144.3	4.0%
Single Family Residential	828.0	22.7%
Specific Plan	211.0	5.8%
Transportation	597.3	16.3%
Totals	3653.5	100.0%

Selected Subwatershed

Land Use	Acres	% of Total Watershed
Agriculture	8.0	2.2%
Education K-12	8.3	2.2%
General Office Use	0.8	0.2%
Light Industrial	1.5	0.4%
Local Parks and Recreation	11.0	3.0%
Mixed Commercial and Industrial	18.6	5.0%
Mixed Residential and Commercial	0.9	0.2%
Mobile Homes and Trailer Parks	12.8	3.5%
Multi-Family Residential	71.2	19.3%
Open Space and Recreation	0.6	0.2%
Public Facilities	11.3	3.1%
Retail and Commercial and Services	9.7	2.6%
Single Family Residential	141.9	38.4%
Transportation	72.7	19.7%
Totals	369.2	100.0%

Simi Valley

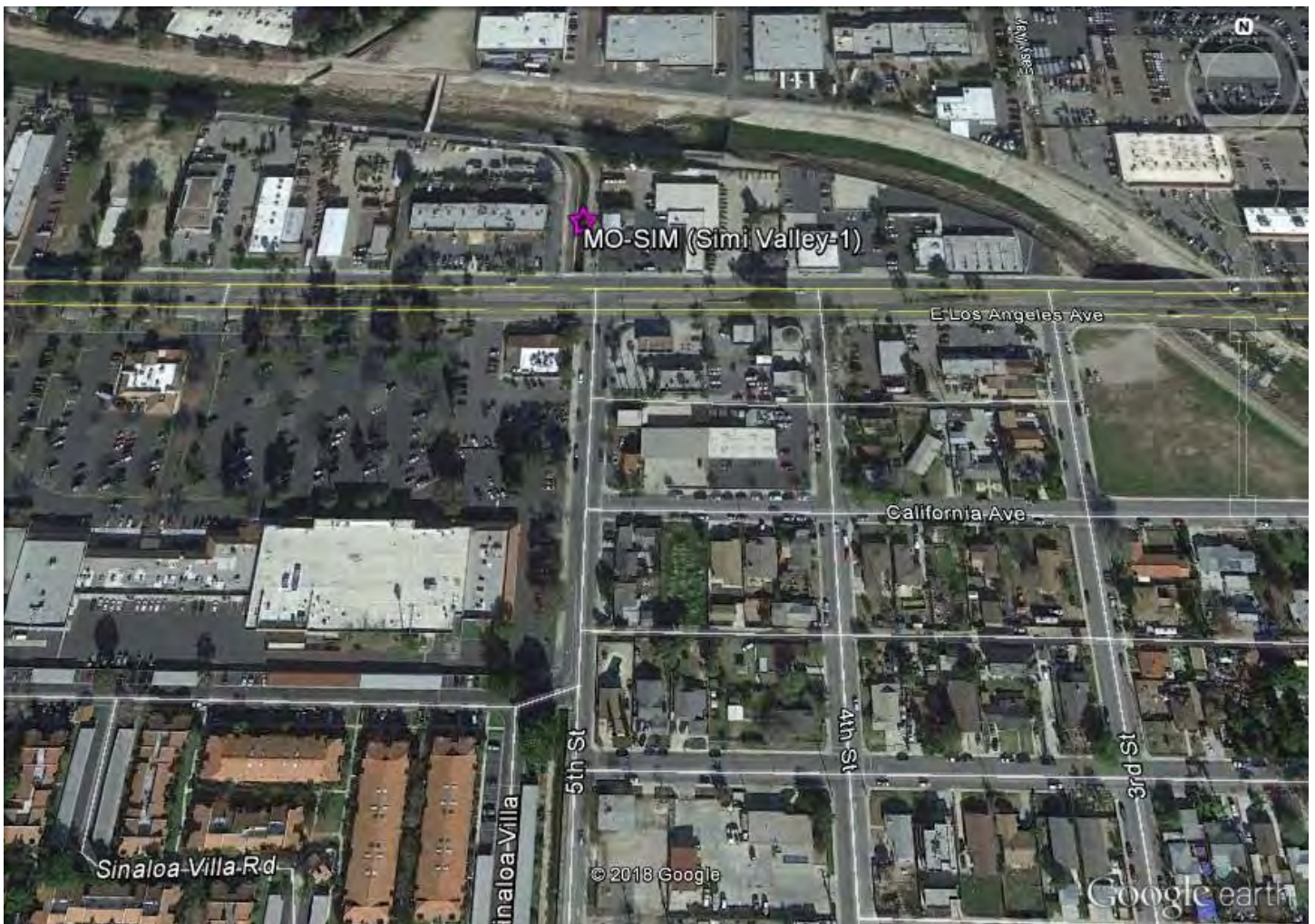
Station: MO-SIM (Simi Valley-1)

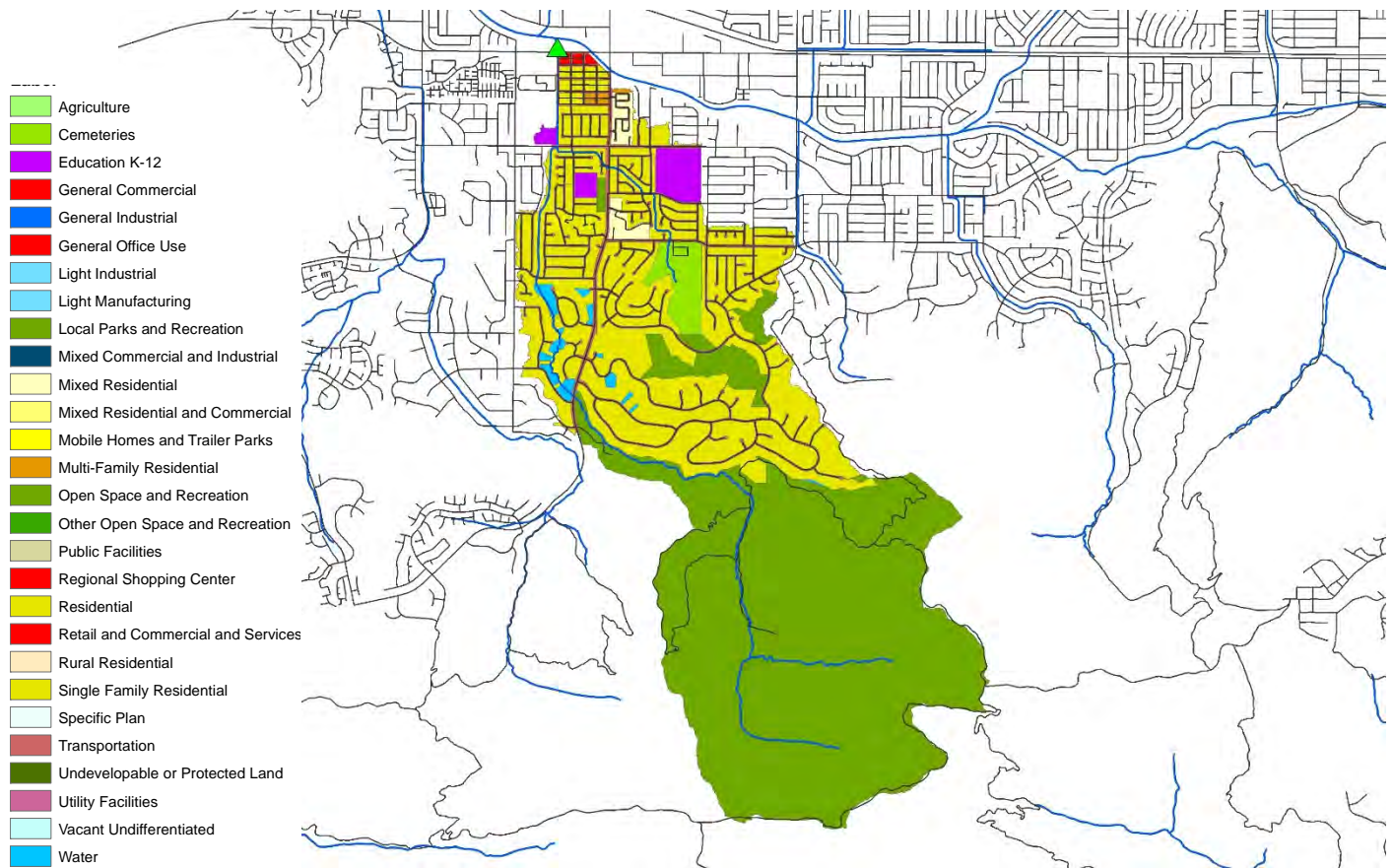
Waterbody: Bus Canyon Drain (tributary to Arroyo Simi)

Location: North of intersection at 5th St. and Los Angeles Ave. (34°16'19.55"N, 118°47'1.41"W)

Known Issues: Homeless have been known to camp in area. High salinity due to groundwater discharge

Dry Season Flow Potential: Year-round flow due to urban runoff and/or groundwater discharge upstream





Entire City

Land Use	Acres	% of Total Watershed
Agriculture	134.2	0.5%
Cemeteries	234.0	0.9%
Education College	84.9	0.3%
Education K-12	75.8	0.3%
General Office Use	97.4	0.4%
Golf Courses	856.8	3.2%
Light Industrial	1173.7	4.3%
Local Parks and Recreation	555.2	2.1%
Mixed Residential	987.4	3.6%
Mixed Residential and Commercial	143.6	0.5%
Mobile Homes and Trailer Parks	68.1	0.3%
Multi-Family Residential	550.7	2.0%
Open Space and Recreation	9693.6	35.8%
Other Commercial	39.5	0.1%
Public Facilities	87.9	0.3%
Retail and Commercial and Services	653.6	2.4%
Single Family Residential	7712.5	28.5%
State and National Parks and Recreation	54.5	0.2%
Transportation	3536.0	13.1%
Water	313.2	1.2%
Totals	27052.5	100.0%

Selected Subwatershed

Land Use	Acres	% of Total Watershed
Cemeteries	62.3	2.0%
Education K-12	59.4	1.9%
Local Parks and Recreation	5.5	0.2%
Mixed Residential	32.7	1.0%
Multi-Family Residential	5.7	0.2%
Open Space and Recreation	1747.4	55.3%
Retail and Commercial and Services	5.6	0.2%
Single Family Residential	967.4	30.6%
Transportation	239.7	7.6%
Water	34.6	1.1%
Totals	3160.2	100.0%

Thousand Oaks

Station: MO-THO (Thousand Oaks-1)

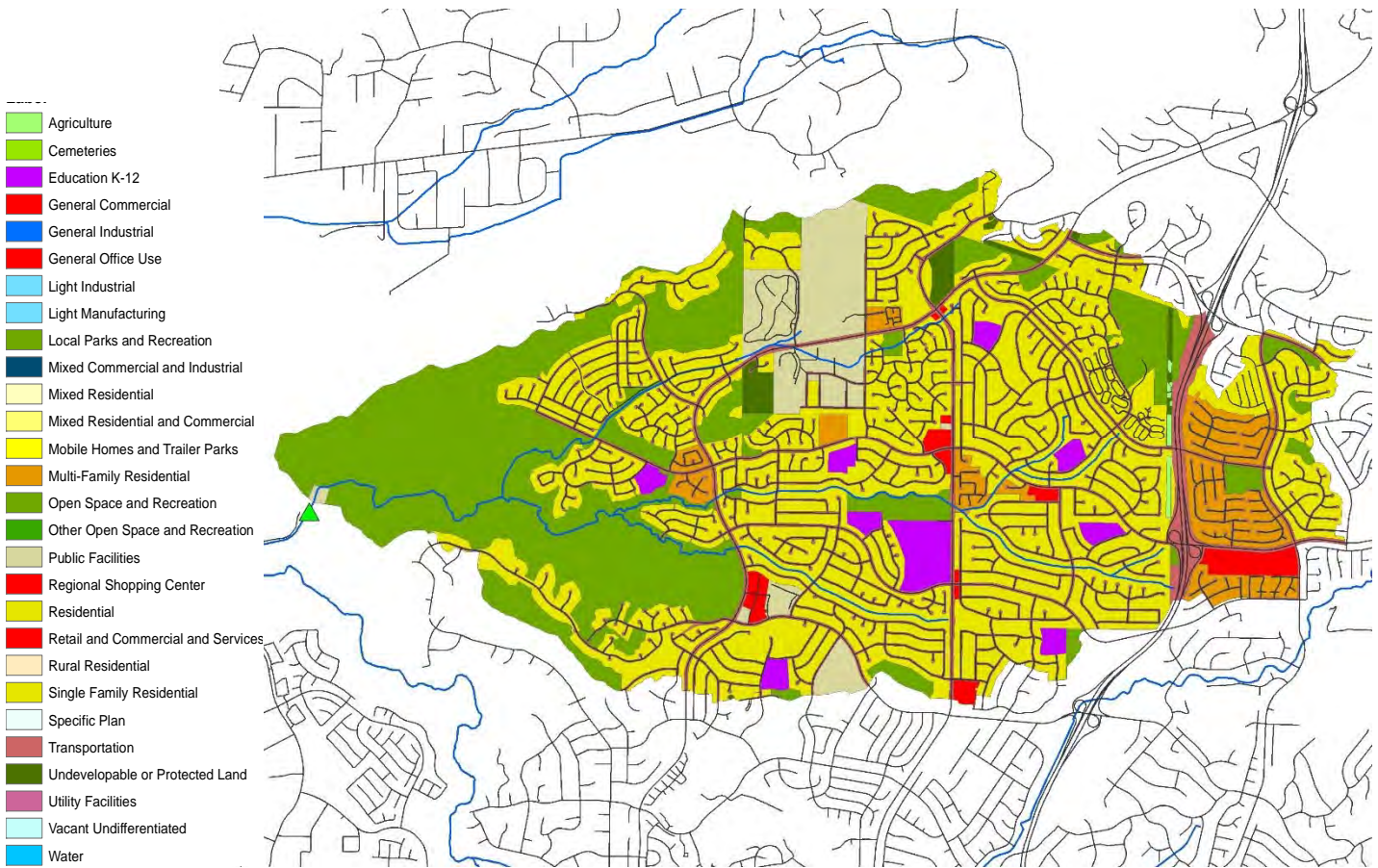
Waterbody: North Fork Arroyo Conejo (tributary to Conejo Creek)

Location: Hill Canyon WWTP sampling location R-1 (34°12'48.03"N, 118°55'17.09"W)

Known Issues: Rare access issues due to locked gates.

Dry Season Flow Potential: Year-round flow due to urban runoff however site does experience backwater effects from WWTP discharge in very dry weather.





Entire City

Land Use	Acres	% of Total Watershed
Agriculture	61.1	0.2%
Education K-12	423.0	1.2%
General Commercial	1049.4	3.0%
General Industrial	945.2	2.7%
Local Parks and Recreation	11.3	0.03%
Mixed Residential and Commercial	254.0	0.7%
Mobile Homes and Trailer Parks	144.2	0.4%
Multi-Family Residential	2068.3	5.8%
Open Space and Recreation	15007.8	42.3%
Other Open Space and Recreation	40.6	0.1%
Public Facilities	518.2	1.5%
Residential	633.8	1.8%
Single Family Residential	9531.2	26.9%
Transportation	4041.7	11.4%
Undevelopable or Protected Land	725.4	2.0%
Water	30.7	0.1%
Totals	35485.7	100.0%

Selected Subwatershed

Land Use	Acres	% of Total Watershed
Agriculture	7.9	0.2%
Education K-12	123.6	2.4%
General Commercial	73.7	1.4%
Local Parks and Recreation	3.5	0.1%
Multi-Family Residential	221.0	4.3%
Open Space and Recreation	1329.0	26.0%
Public Facilities	300.1	5.9%
Residential	8.4	0.2%
Single Family Residential	2175.4	42.6%
Transportation	818.1	16.0%
Undevelopable or Protected Land	50.6	1.0%
Totals	5111.4	100.0%

Ventura

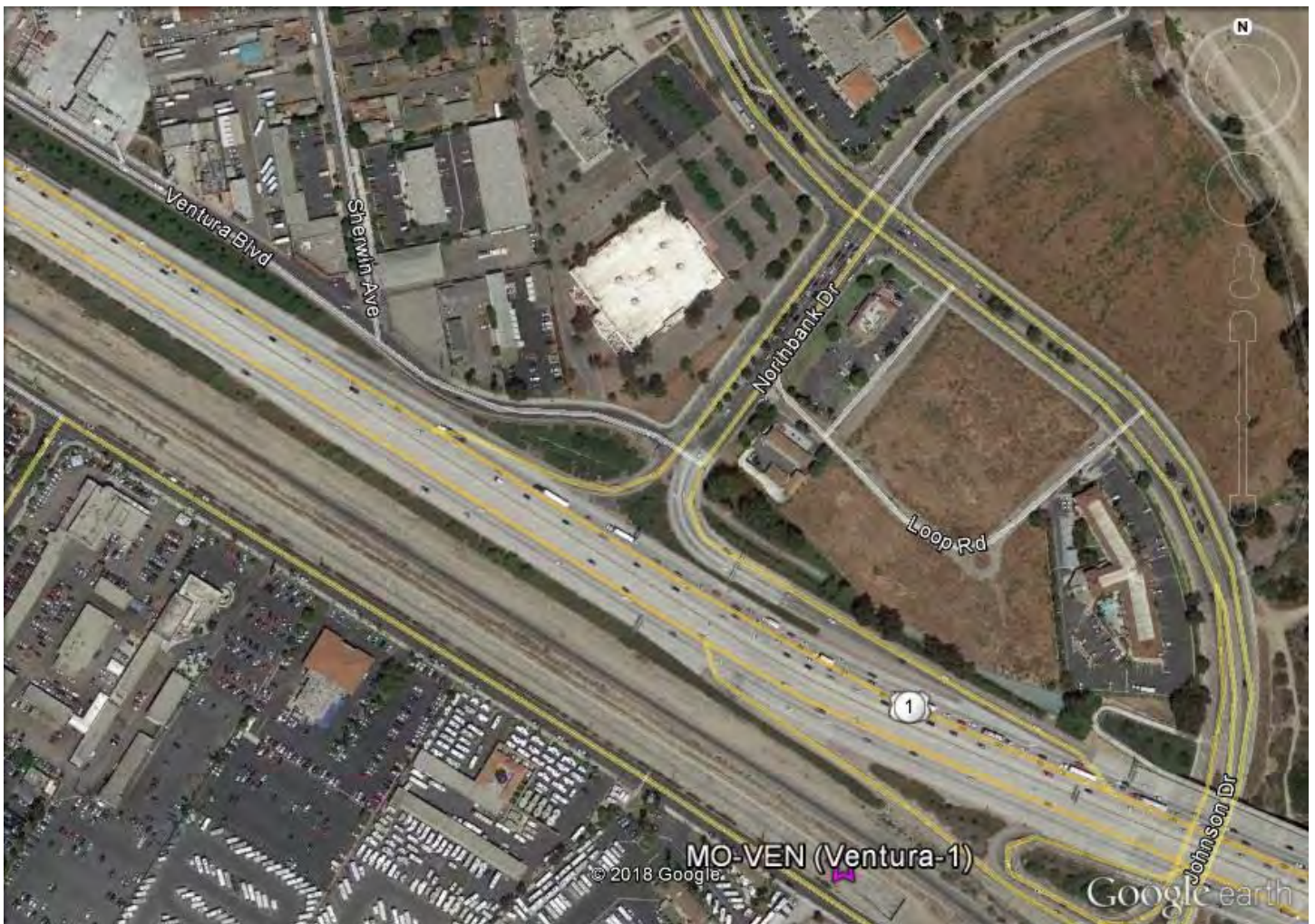
Station: MO-VEN (Ventura-1)

Waterbody: Moon Ditch (tributary to Santa Clara River)

Location: Between Leland St. and US 101, north of Johnson Dr. (34°14'36.69"N, 119°11'42.06"W)

Known Issues: Wide concrete bottom spreads out low flows.

Dry Season Flow Potential: Intermittent year-round flow due to urban runoff and/or groundwater discharge





Entire City

Land Use	Acres	% of Total Watershed
Agriculture	482.9	3.4%
Education K-12	6.8	0.05%
General Industrial	937.7	6.6%
Mixed Residential and Commercial	1447.0	10.2%
Multi-Family Residential	994.7	7.0%
Open Space and Recreation	1432.5	10.1%
Public Facilities/Schools	561.1	3.9%
Rural Residential	0.4	0.0%
Single Family Residential	4806.2	33.8%
Specific Plan	548.9	3.9%
Transportation	2989.6	21.0%
Totals	14207.8	100.0%

Selected Subwatershed

Land Use	Acres	% of Total Watershed
Agriculture	6.3	0.8%
Education K-12	6.8	0.9%
General Industrial	94.4	12.5%
Mixed Residential and Commercial	158.2	20.9%
Multi-Family Residential	161.0	21.3%
Open Space and Recreation	1.8	0.2%
Single Family Residential	123.7	16.4%
Transportation	203.1	26.9%
Totals	755.3	100.0%

Appendix B. Event Hydrographs

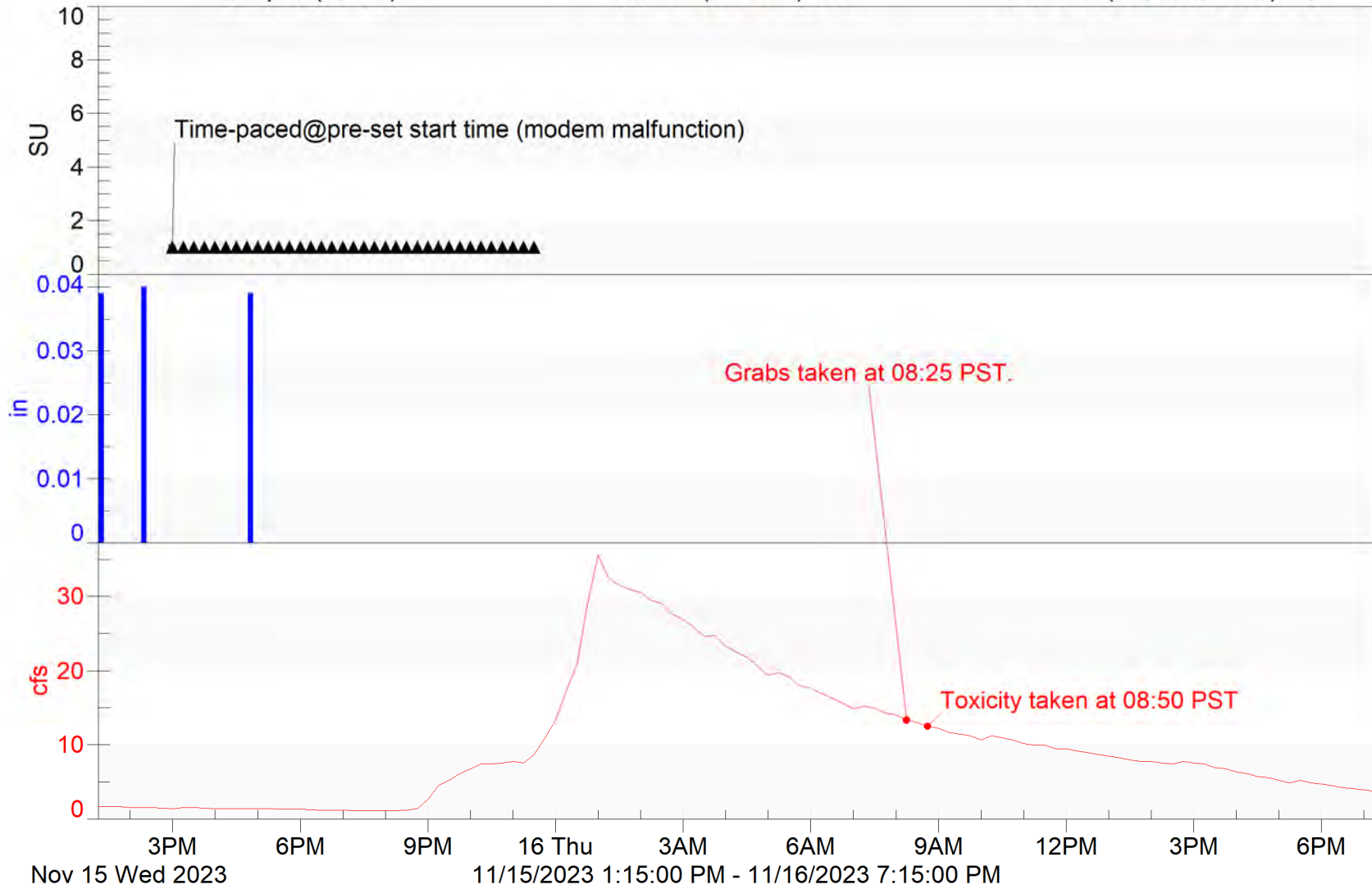
ME-CC

2023/24 NPDES Event 1 (Wet)

Sampler (35 SU):

Rainfall (0.118 in):0.00

Flow Rate (1099913.40 cf):1.67



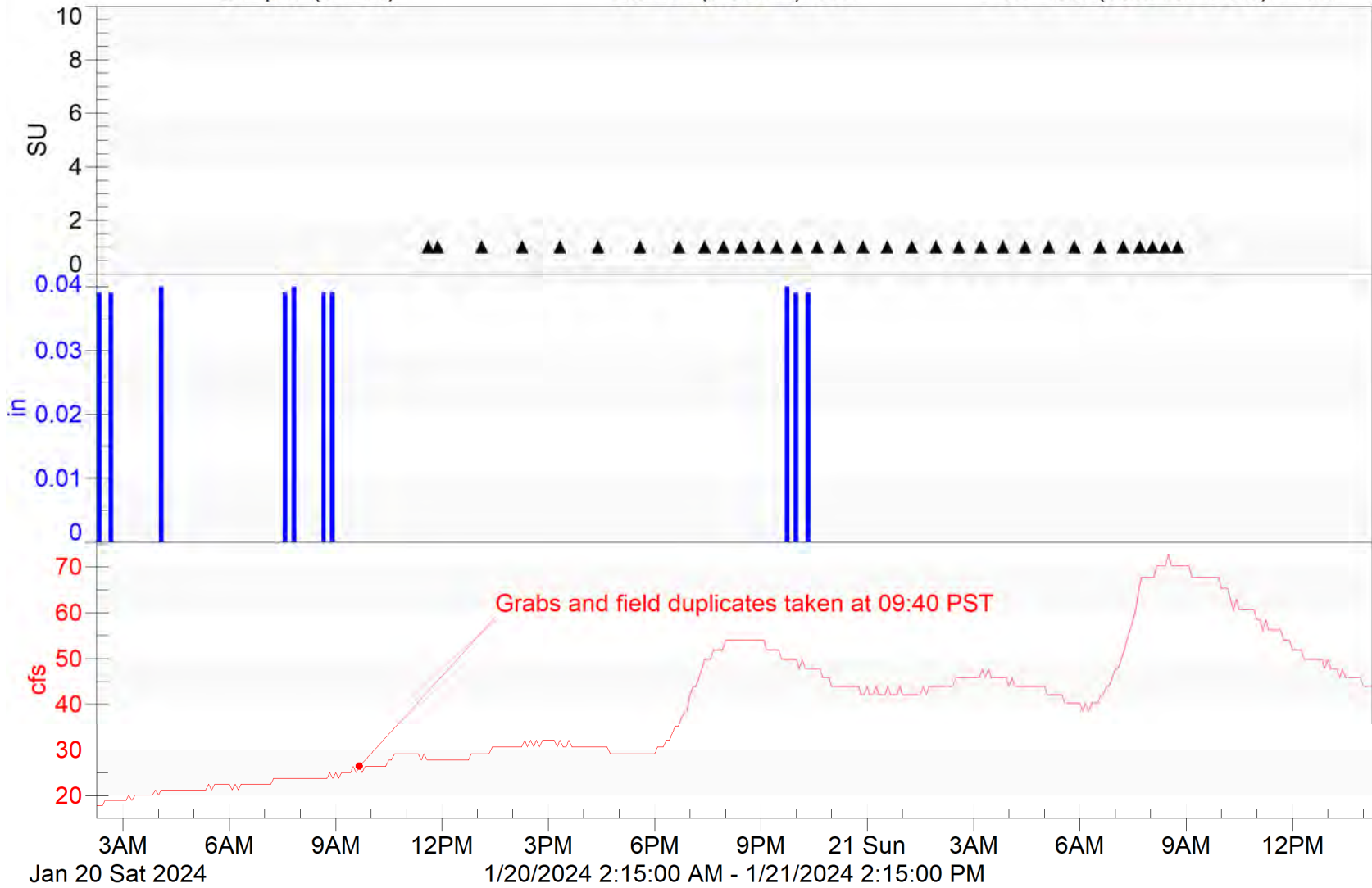
ME-CC

2023/24 NPDES Event 3 (Wet)

Sampler (32 SU):

Rainfall (0.393 in):0.00

Flow Rate (5098181.09 cf):17.89



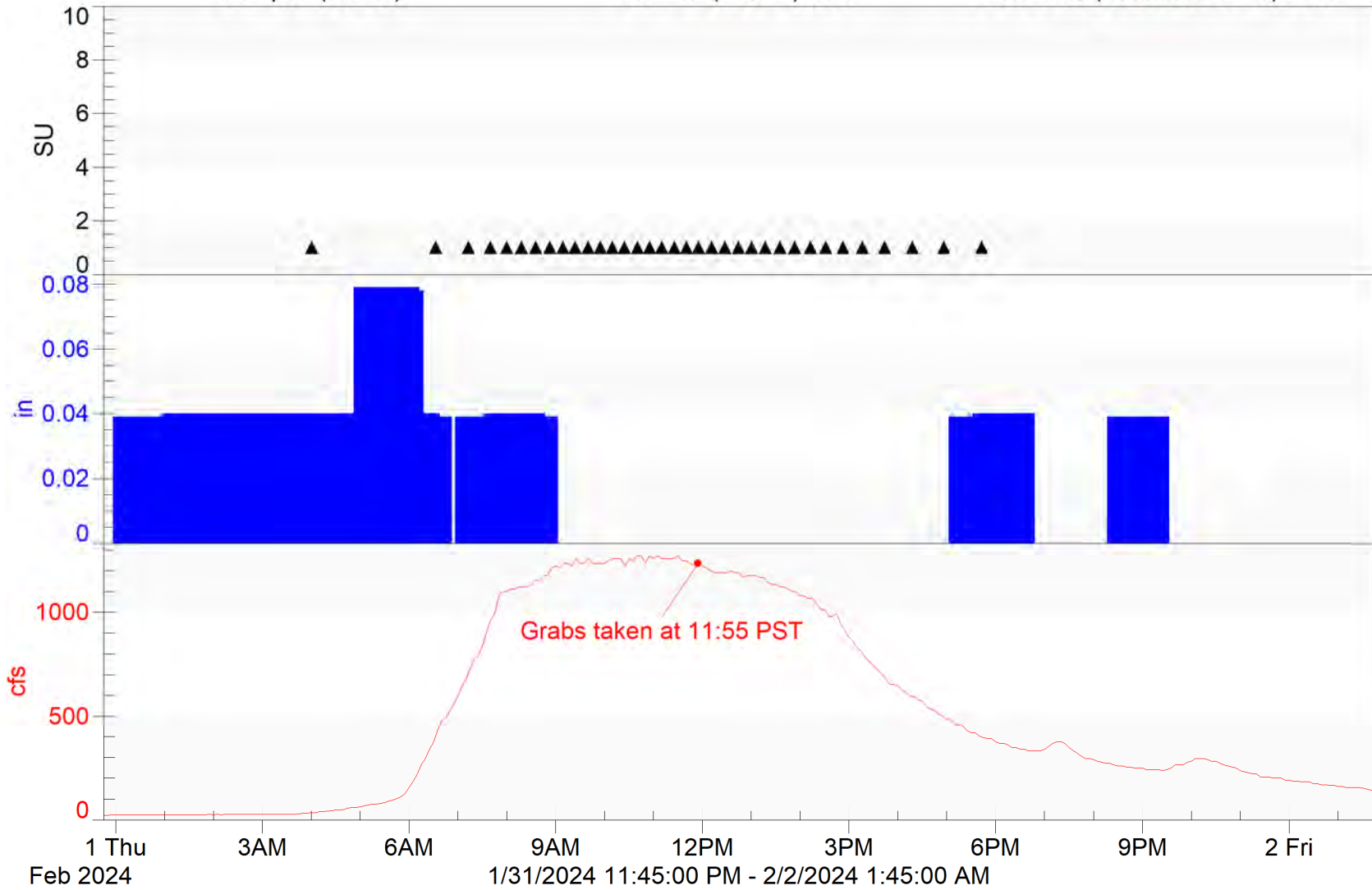
ME-CC

2023/24 NPDES Event 4 (Wet)

Sampler (35 SU):

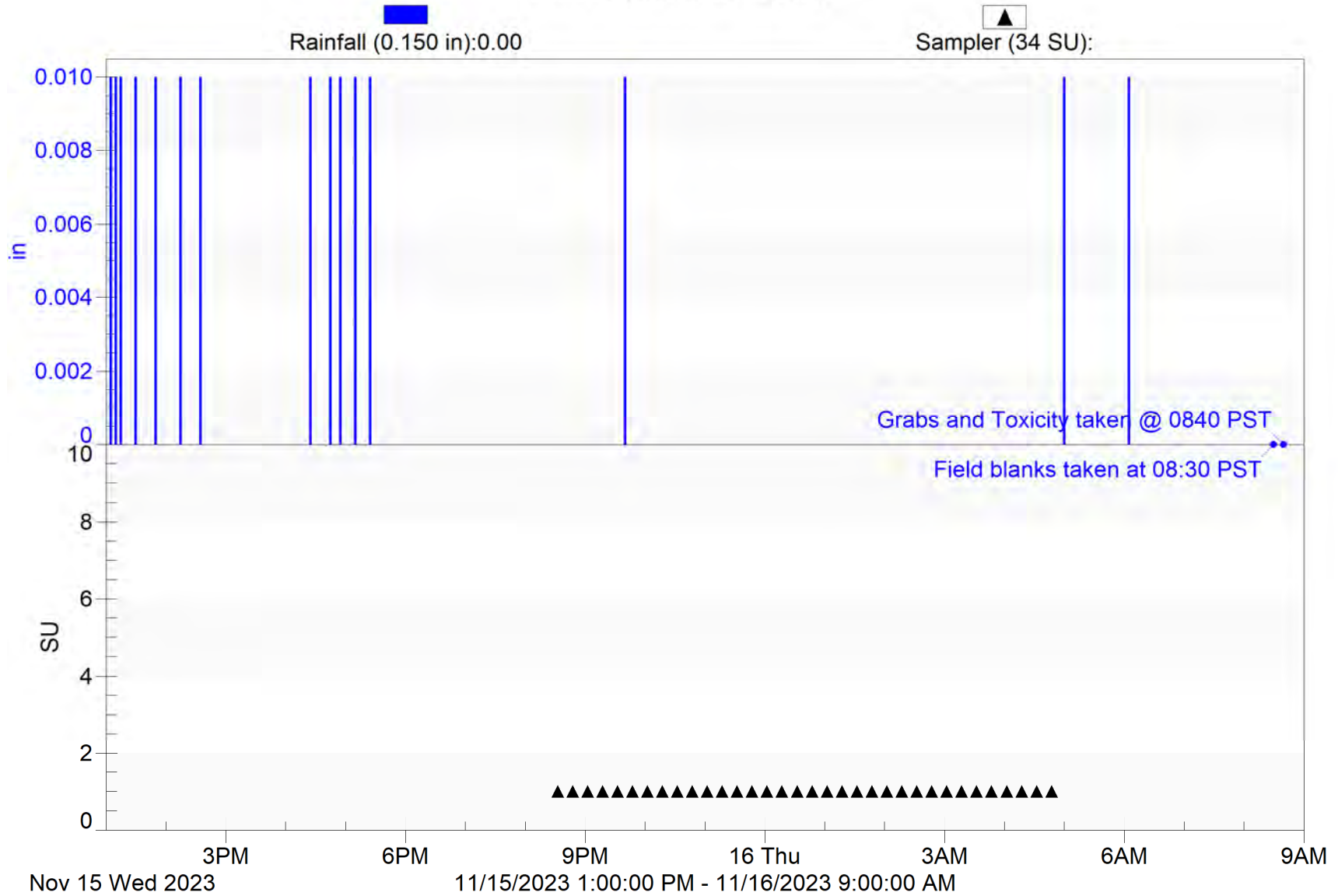
Rainfall (1.65 in):0.00

Flow Rate (48330926.07 cf):22.54



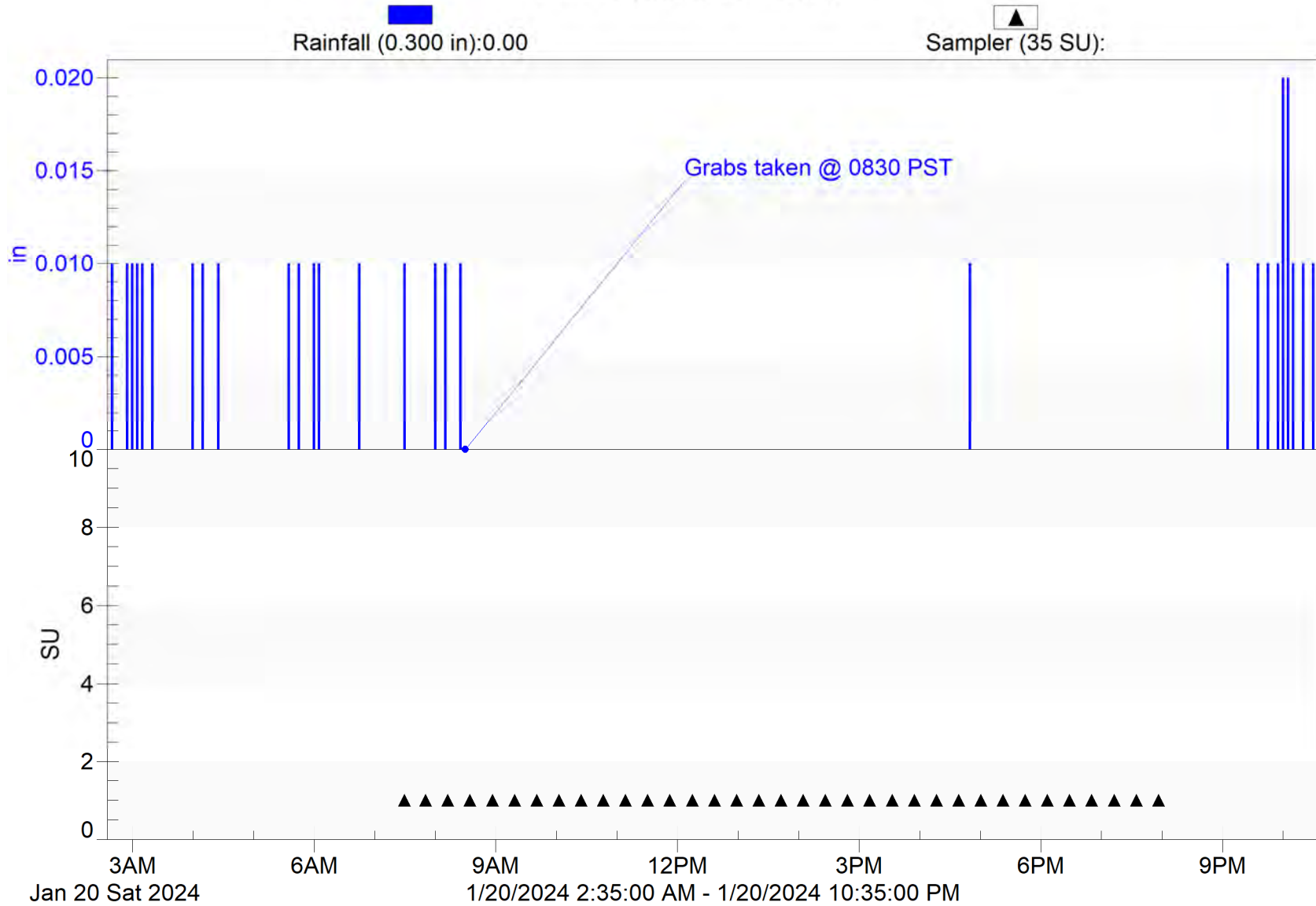
ME-SCR

2023/24 NPDES Event #1 (Wet)



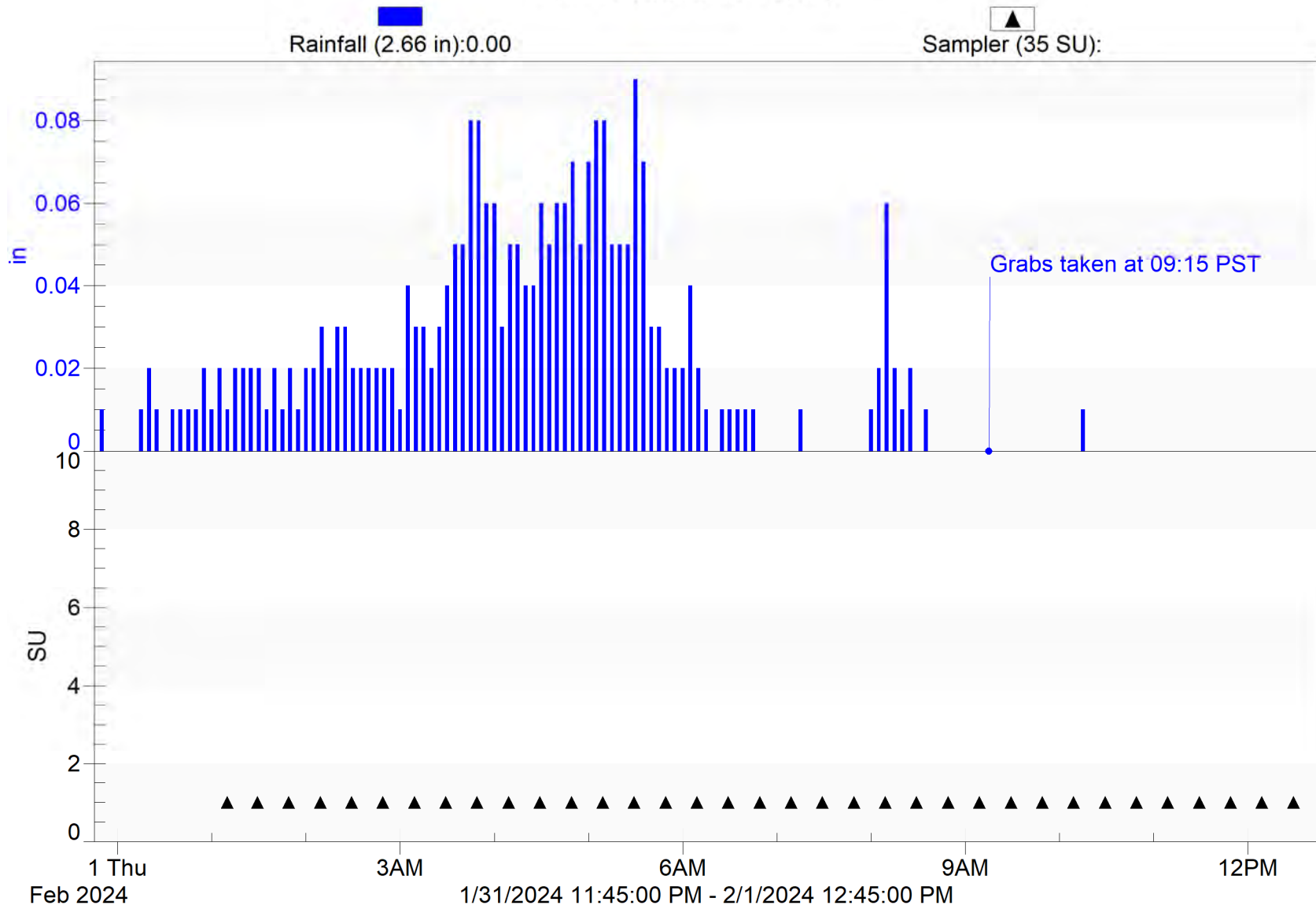
ME-SCR

2023/24 NPDES Event #3 (Wet)



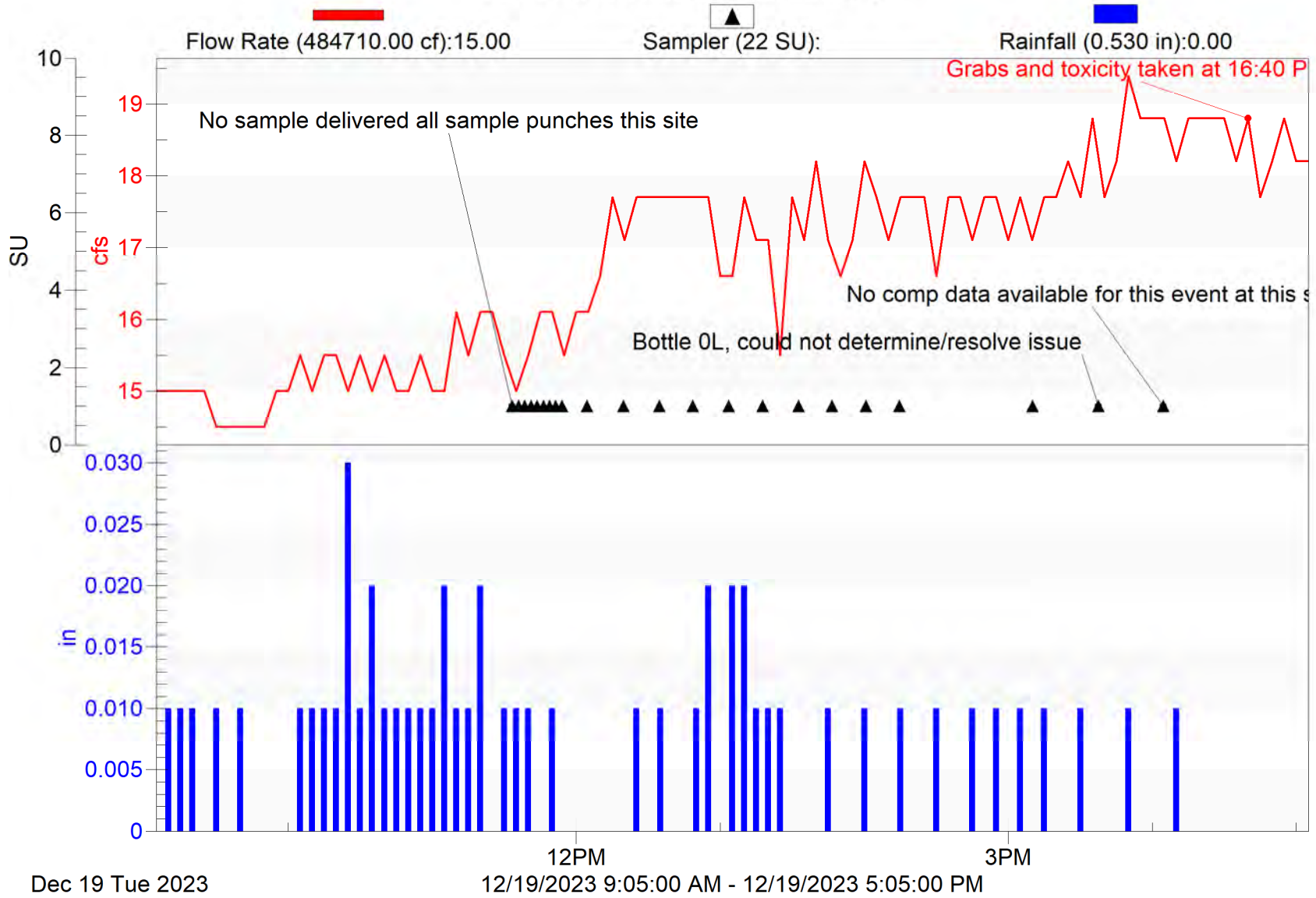
ME-SCR

2023/24 NPDES Event #4 (Wet)



ME-VR2

2023/24 NPDES Event #2 (Wet-First Flush)



ME-VR2

2023/24 NPDES Event #3 (Wet)

Sampler (35 SU):

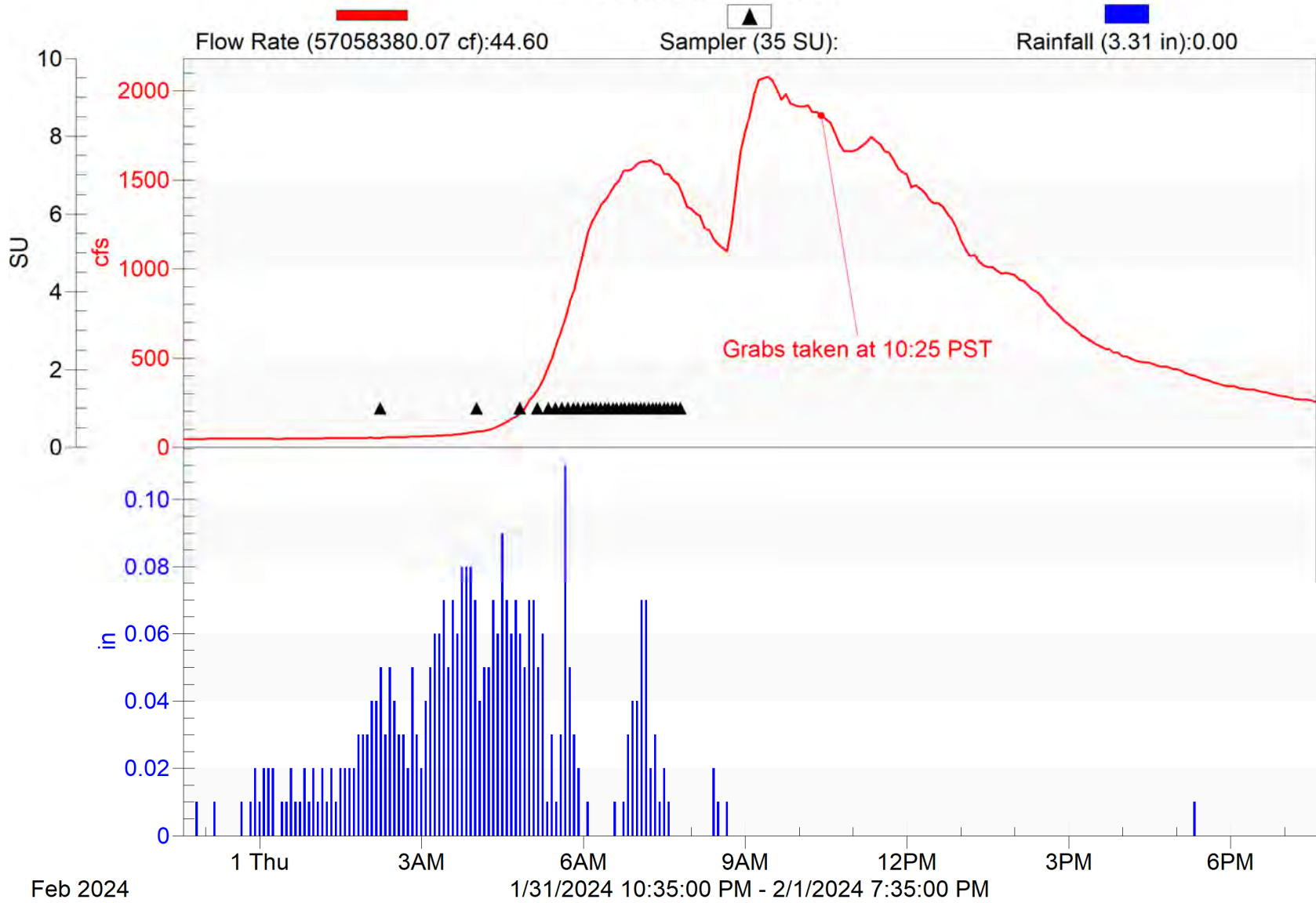
Rainfall (0.380 in):0.00

Flow Rate (2656020.03 cf):38.30



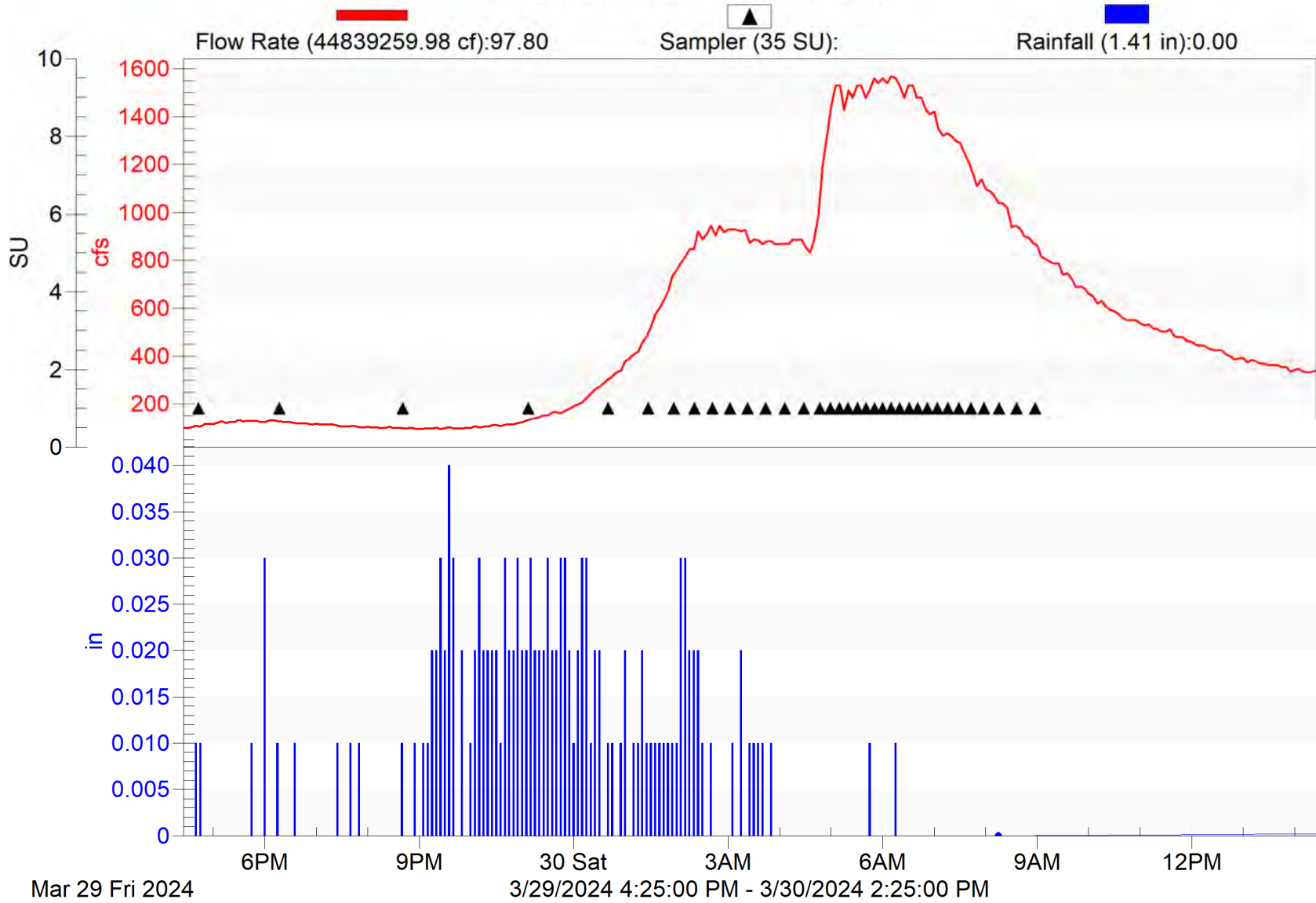
ME-VR2

2023/24 NPDES Event #4 (Wet)



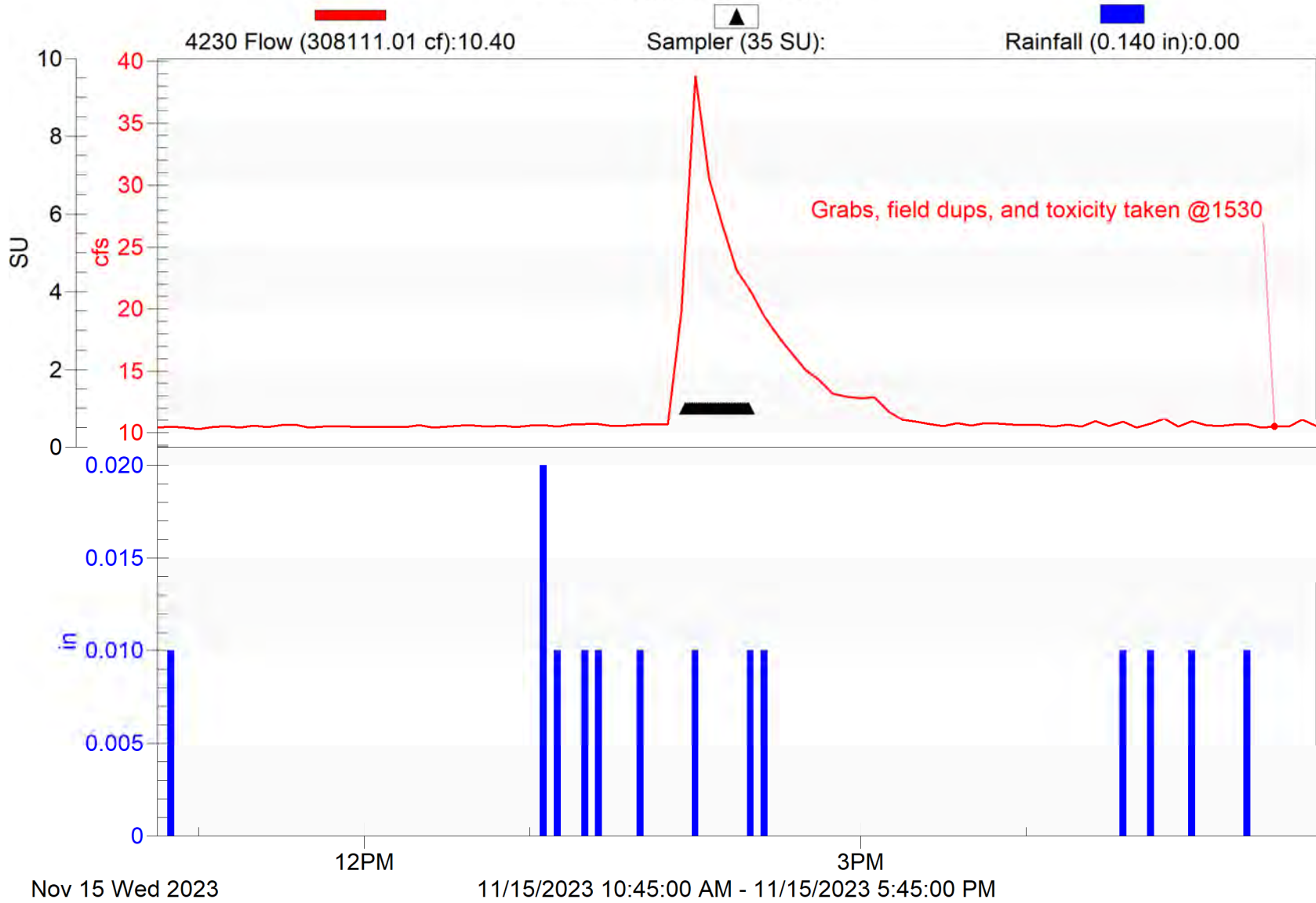
ME-VR2

2023/24 NPDES Event #5 (Wet - No Grabs)



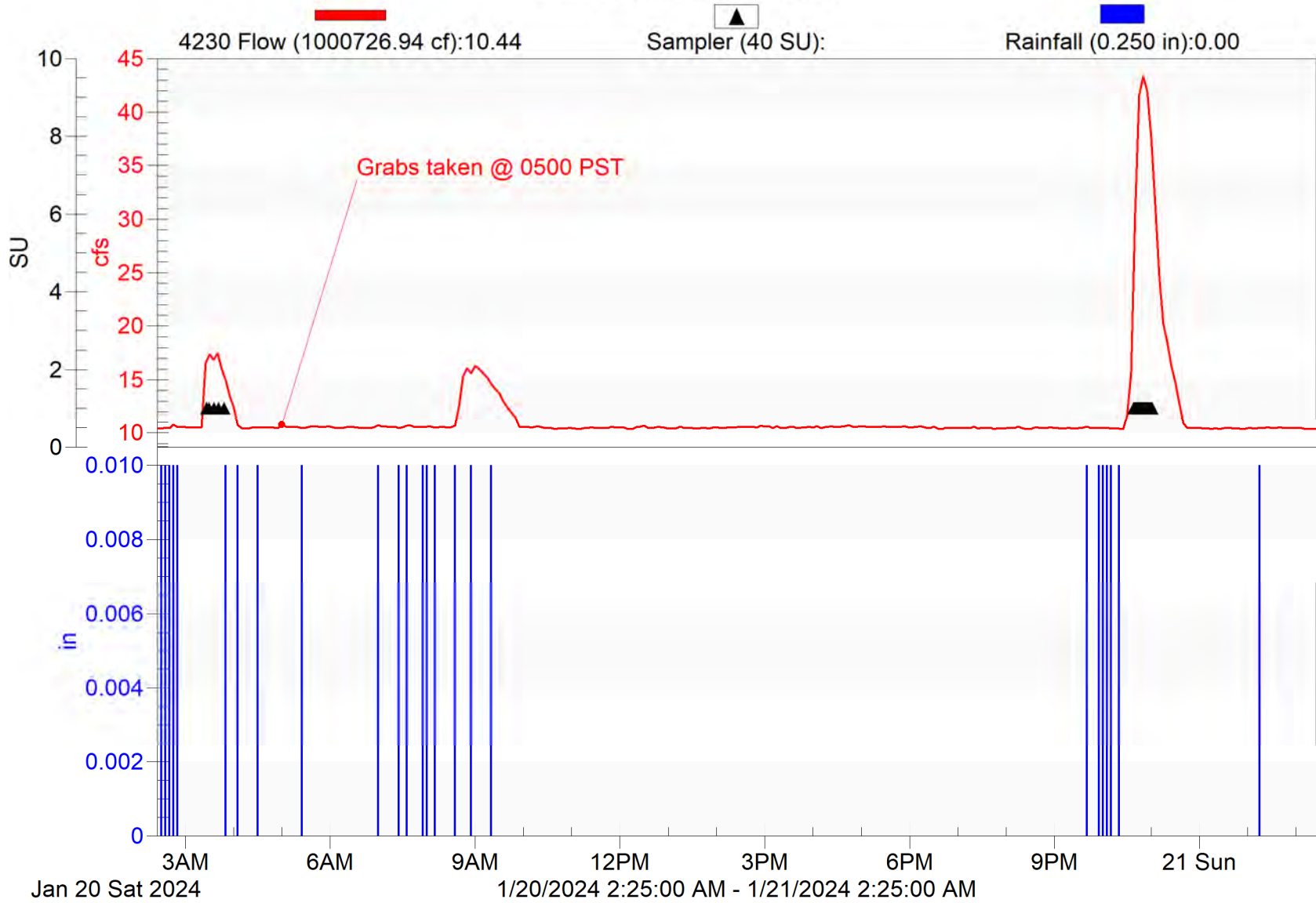
Camarillo-1

2023/24 NPDES Event #1 (Wet)



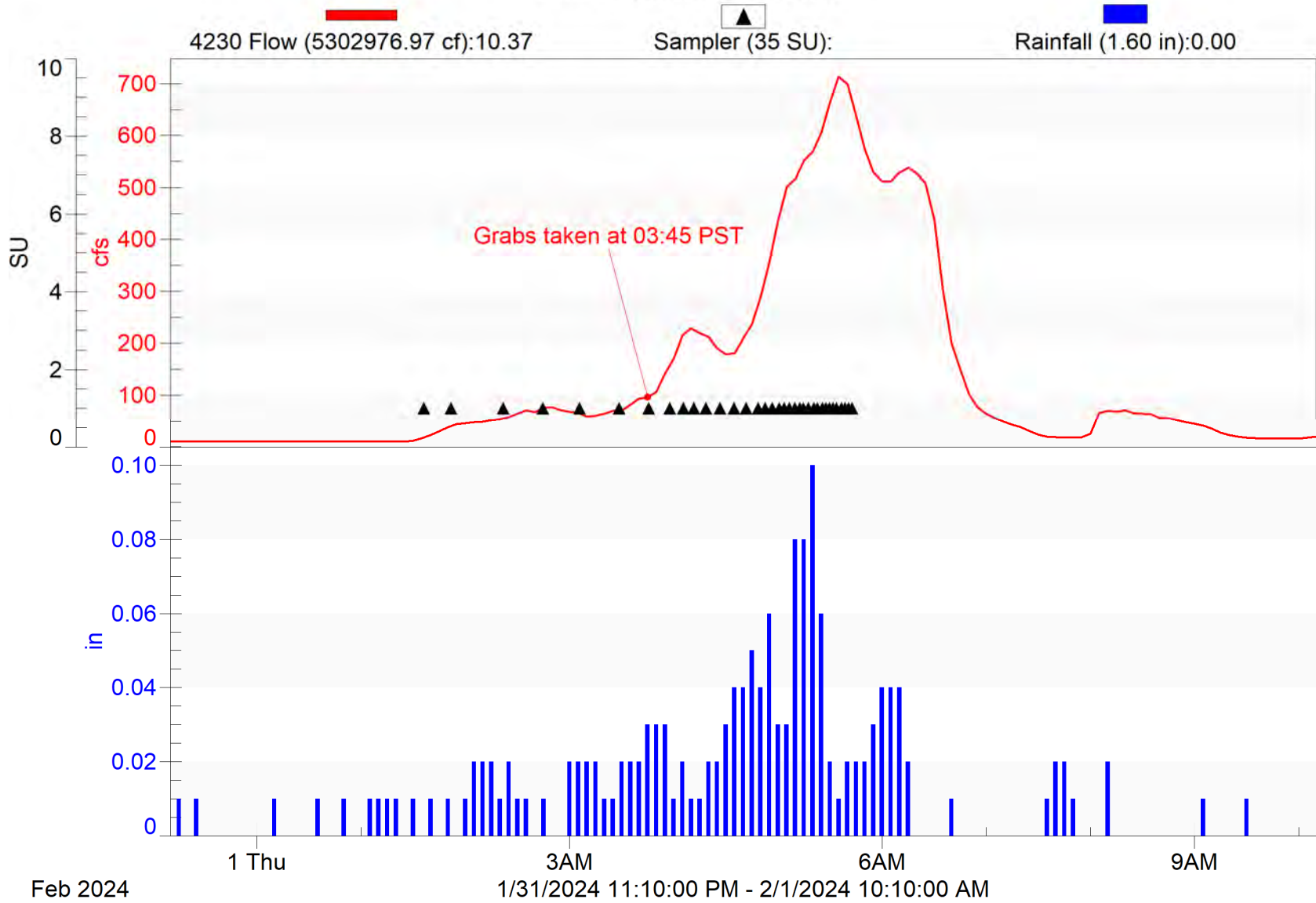
Camarillo-1

2023/24 NPDES Event #3 (Wet)



Camarillo-1

2023/24 NPDES Event #4 (Wet)



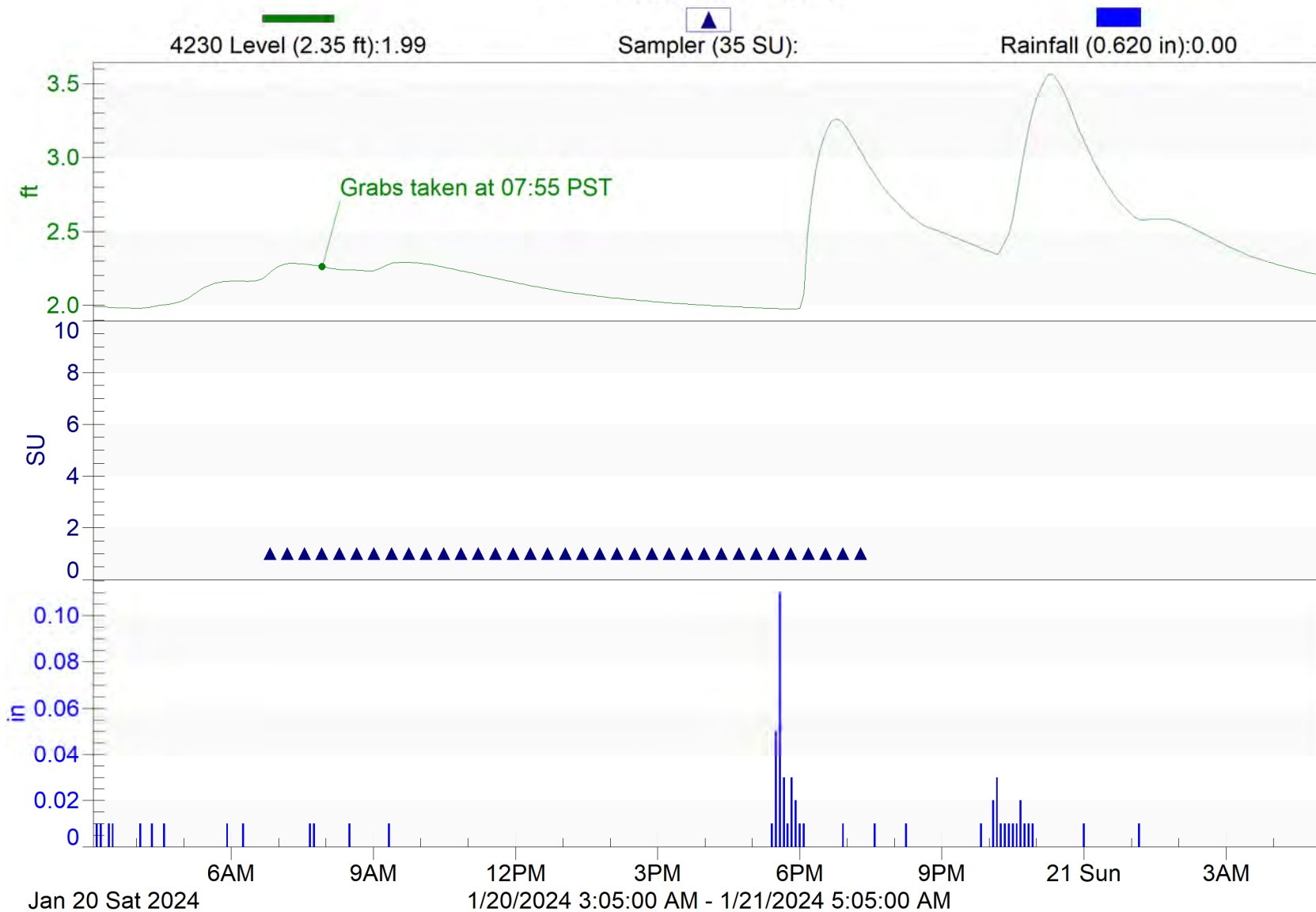
Fillmore-1

2023/24 NPDES Event #1 (Wet)



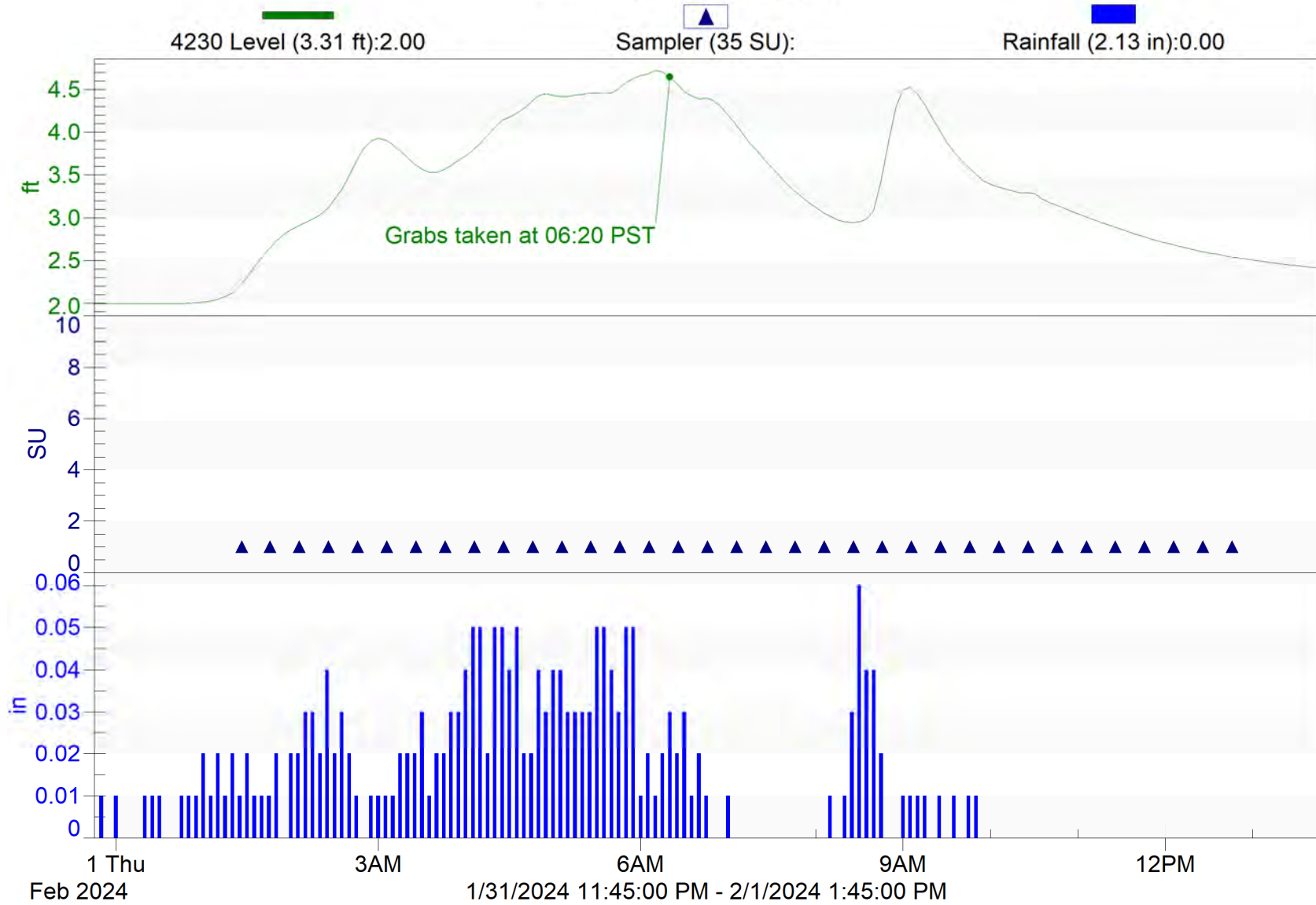
Fillmore-1

2023/24 NPDES Event #3 (Wet)



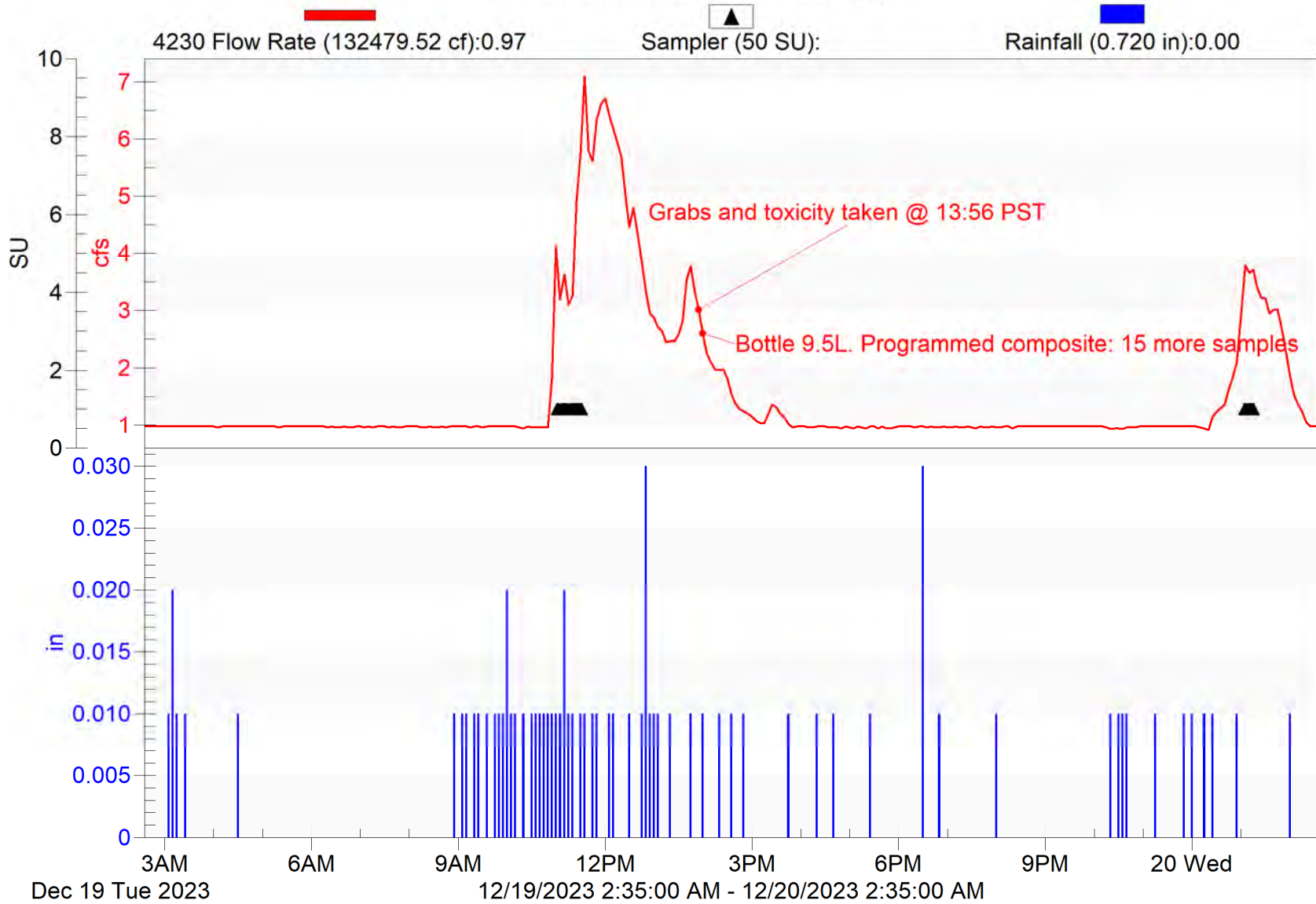
Fillmore-1

2023/24 NPDES Event #4 (Wet)



Meiners Oaks-1

2023/24 NPDES Event #2 (Wet-First Flush)

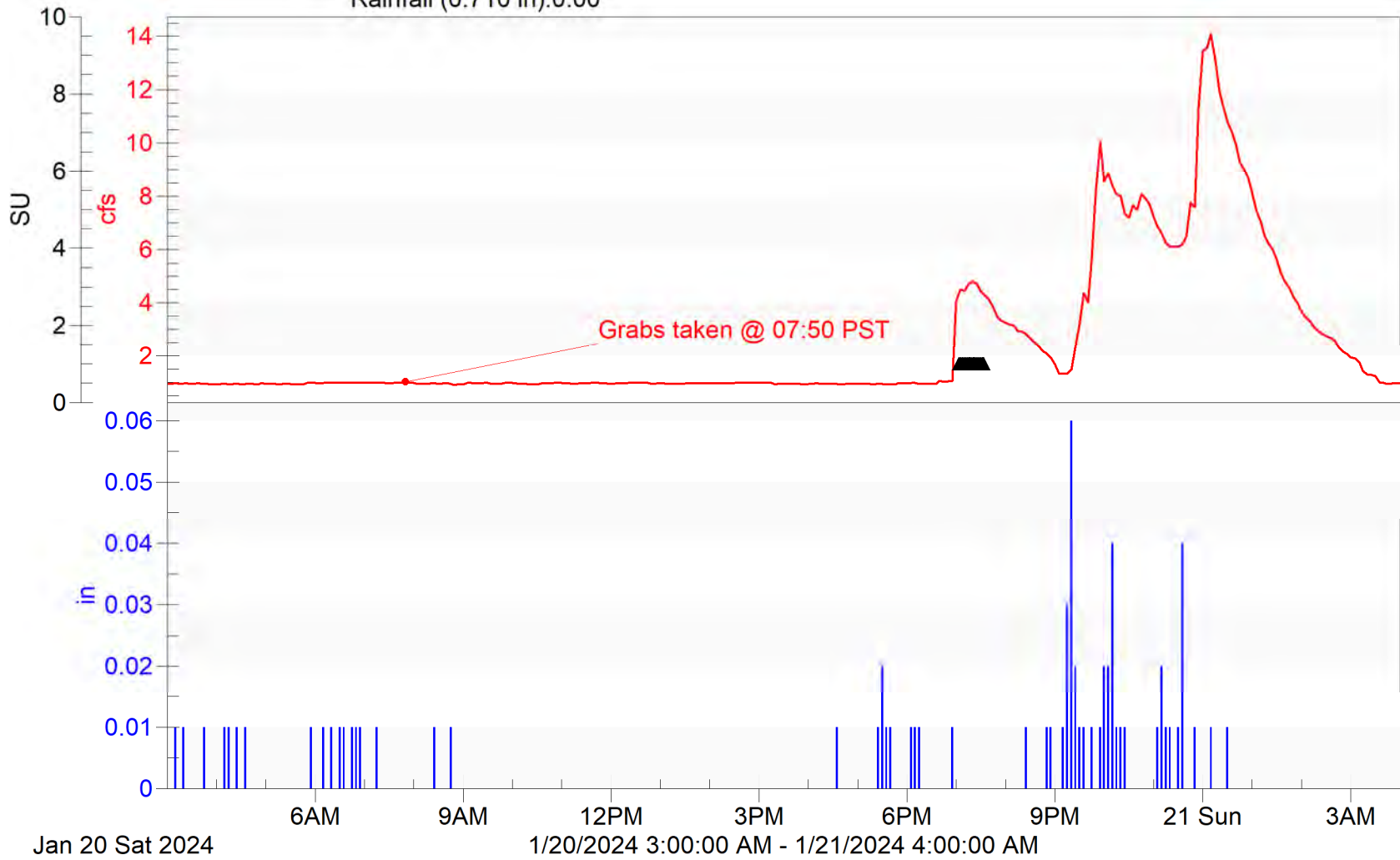


Meiners Oaks-1

2023/24 NPDES Event #3 (Wet)

4230 Flow Rate (223884.11 cf):0.94
Rainfall (0.710 in):0.00

Sampler (35 SU):

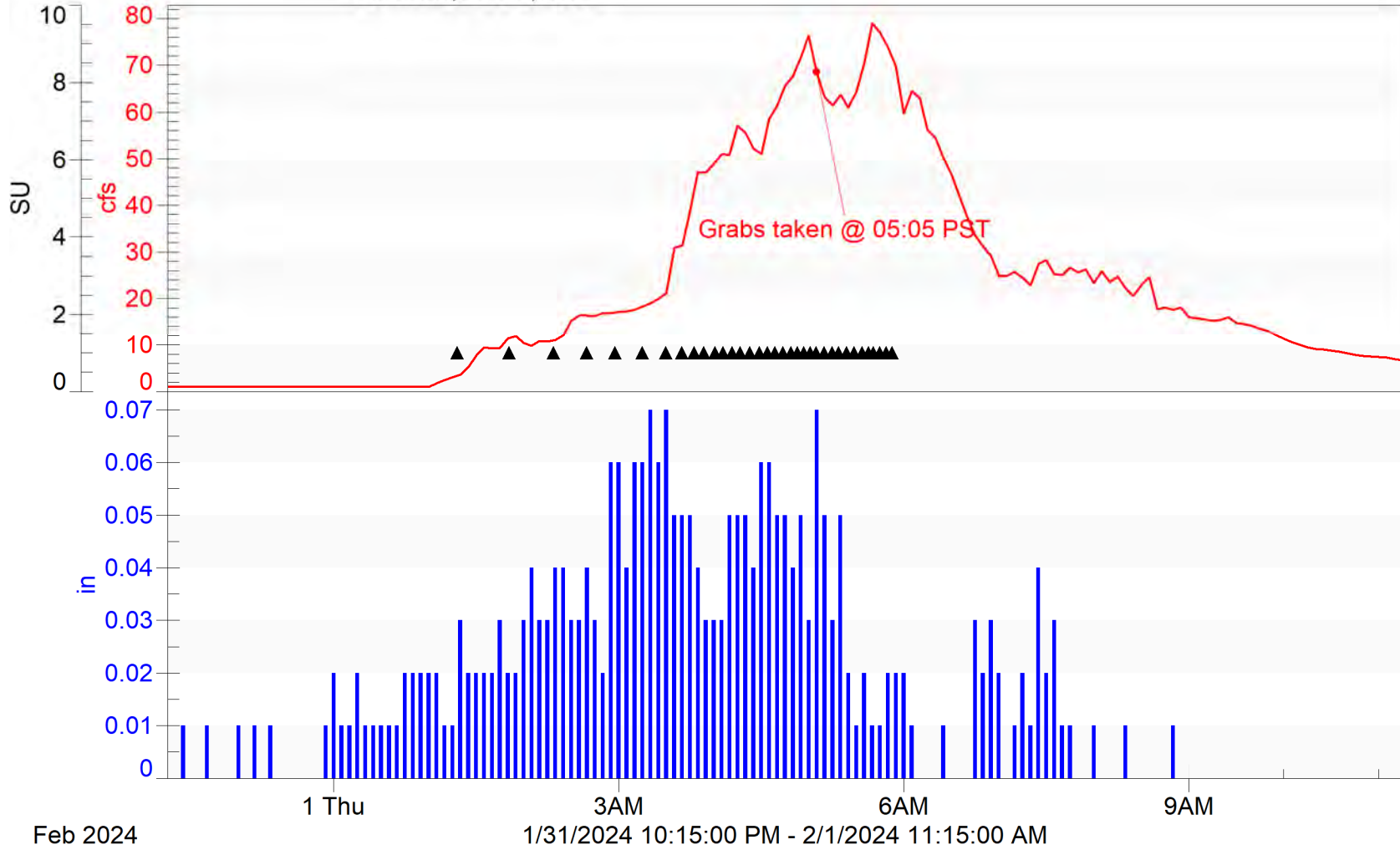


Meiners Oaks-1

2023/24 NPDES Event #4 (Wet)

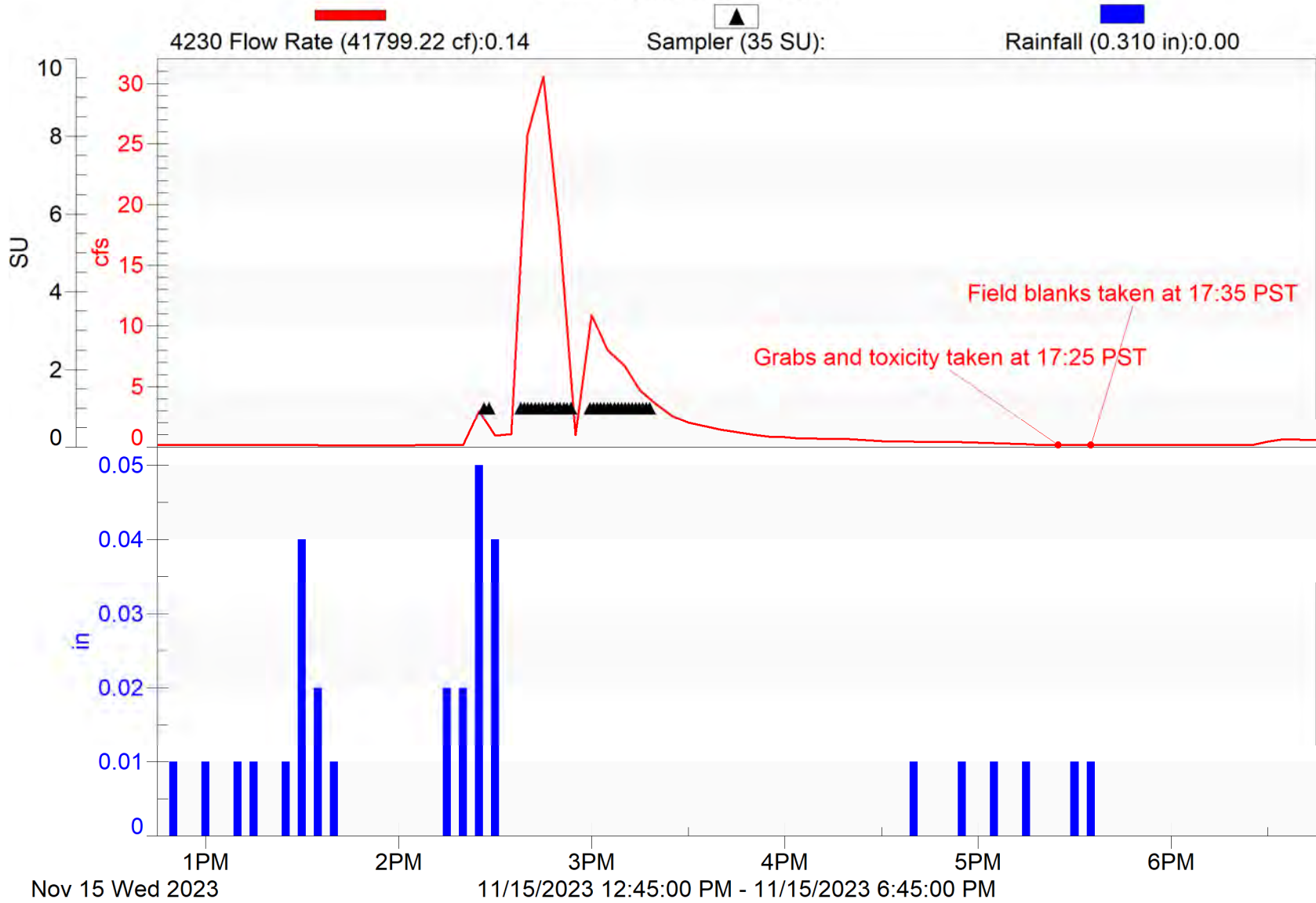
4230 Flow Rate (1068676.44 cf):0.97
Rainfall (2.75 in):0.00

Sampler (35 SU):



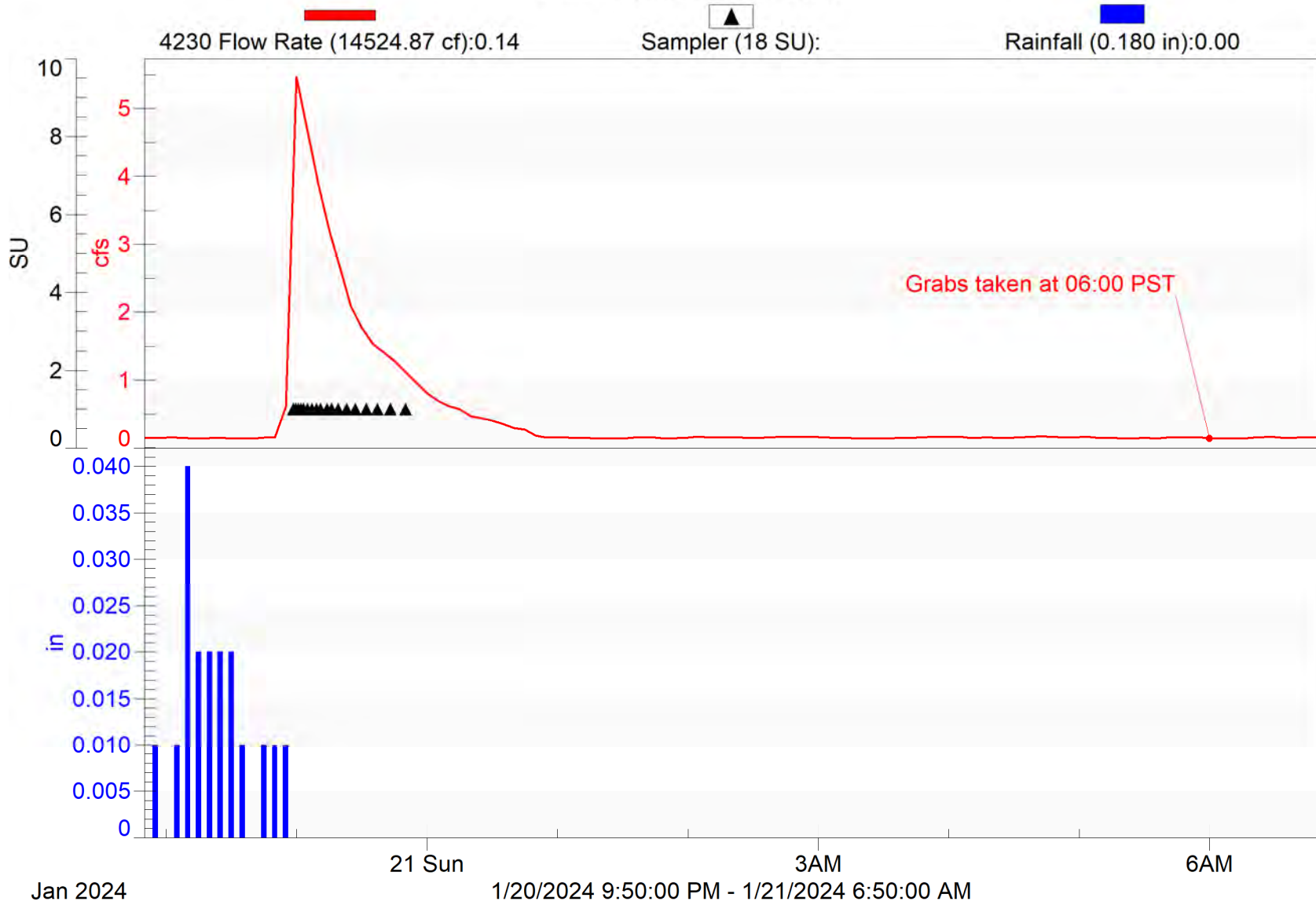
Moorpark-1

2023/24 NPDES Event #1 (Wet)



Moorpark-1

2023/24 NPDES Event #3 (Wet)

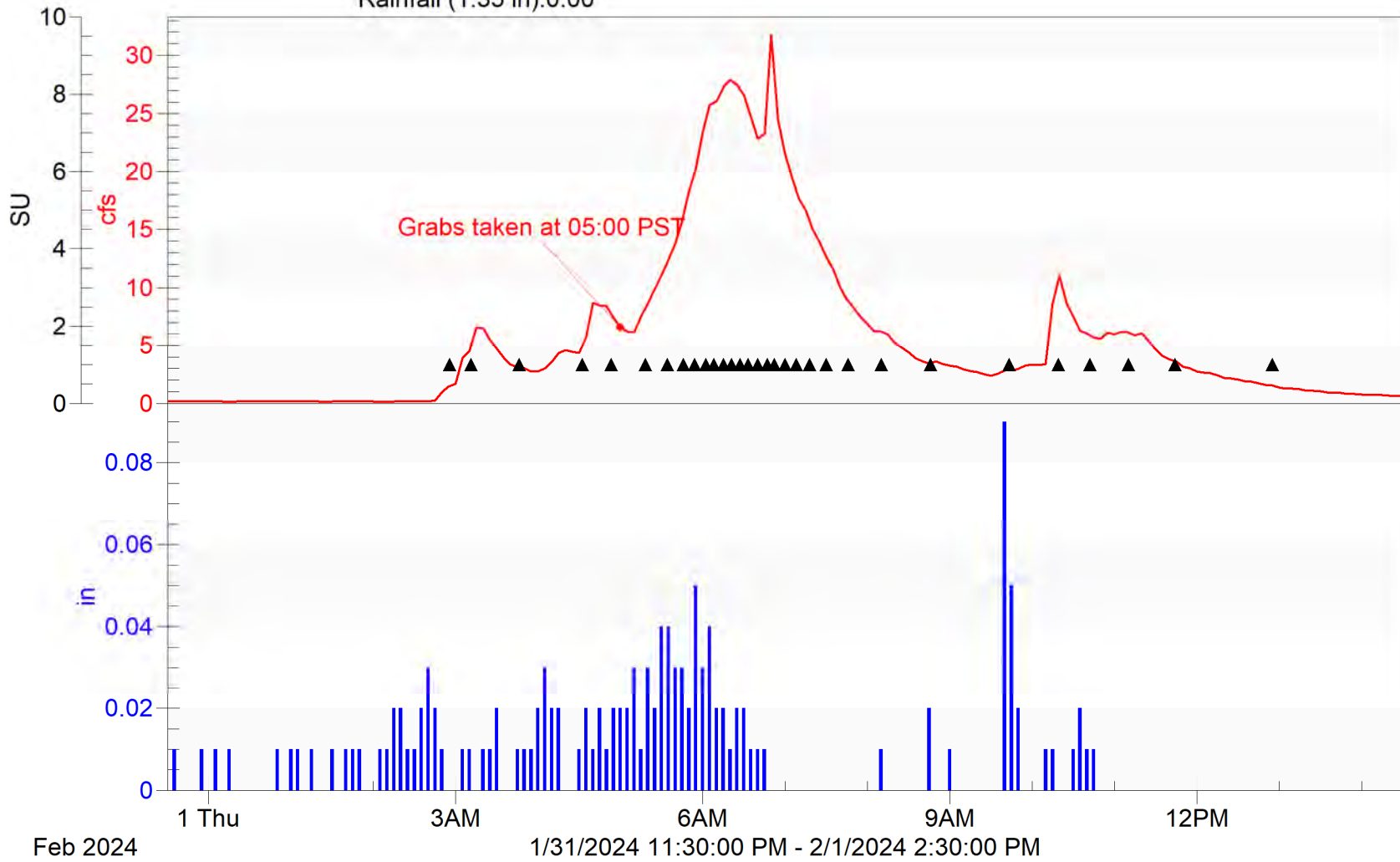


Moorpark-1

2023/24 NPDES Event #4 (Wet)

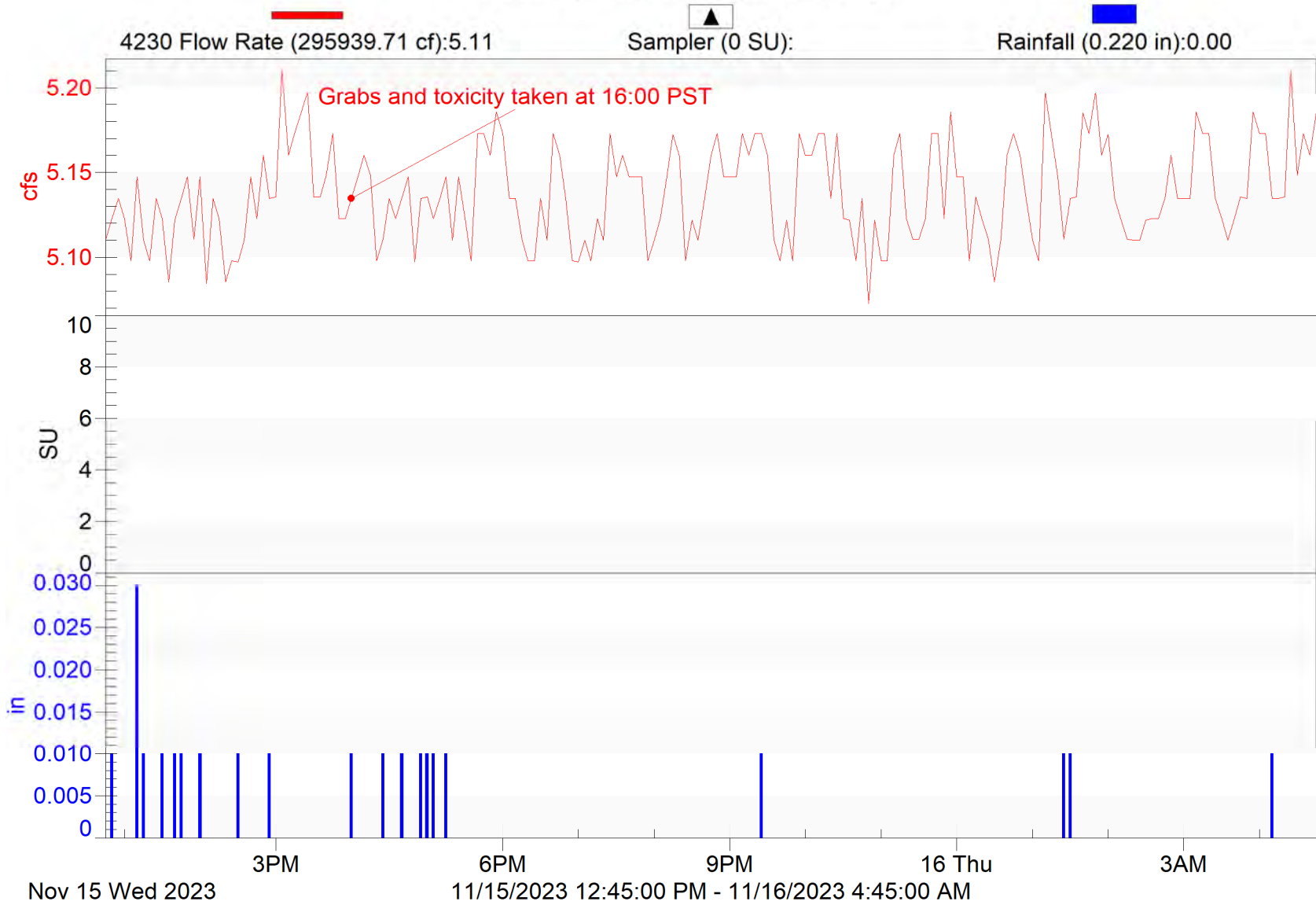
4230 Flow Rate (300874.18 cf):0.14
Rainfall (1.35 in):0.00

Sampler (31 SU):



Ojai-1

2023/24 NPDES Event #1 (Wet-Grabs Only)



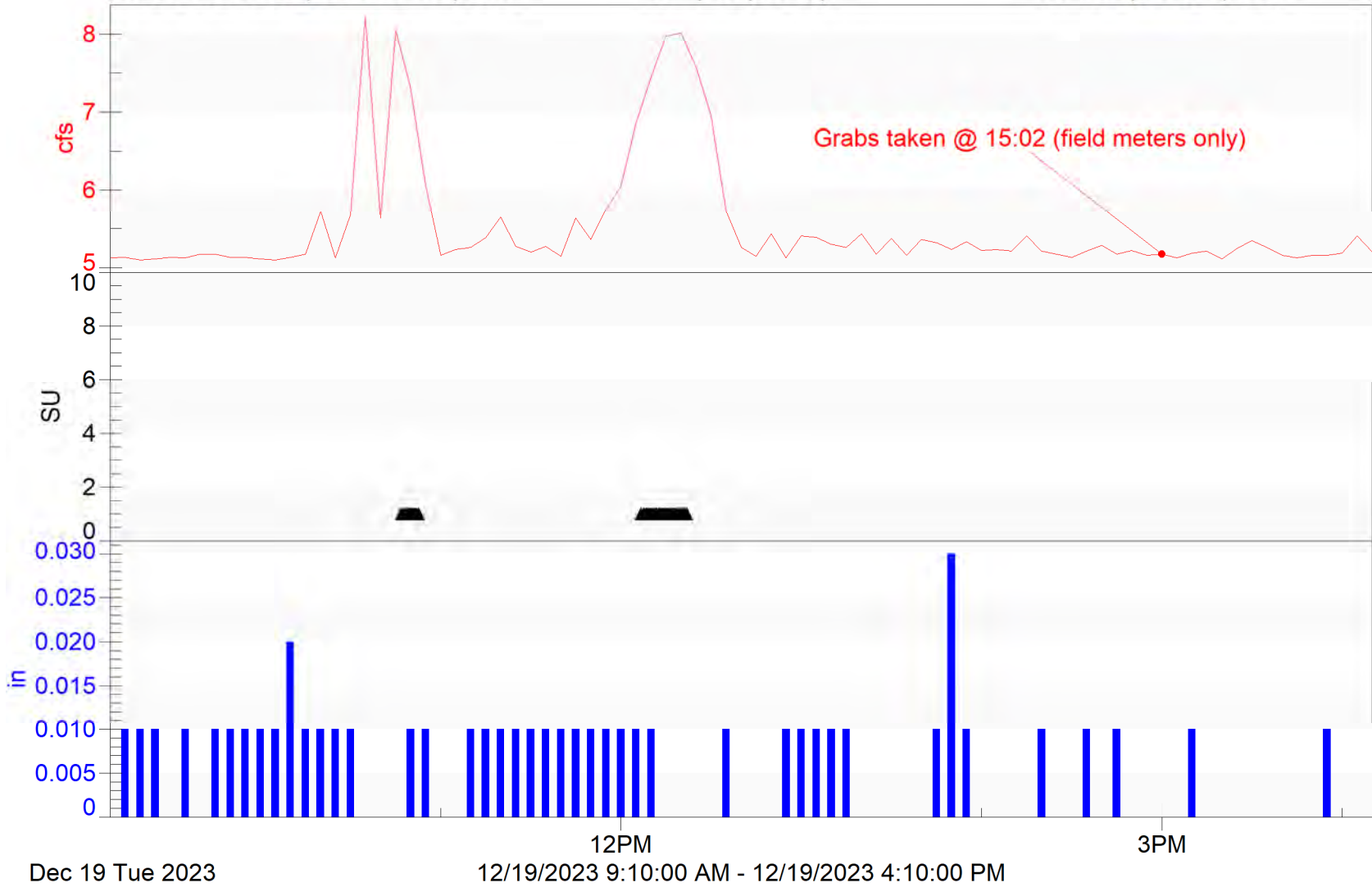
Ojai-1

2023/24 NPDES Event #2 (Wet-First Flush)

4230 Flow Rate (139465.74 cf):5.12

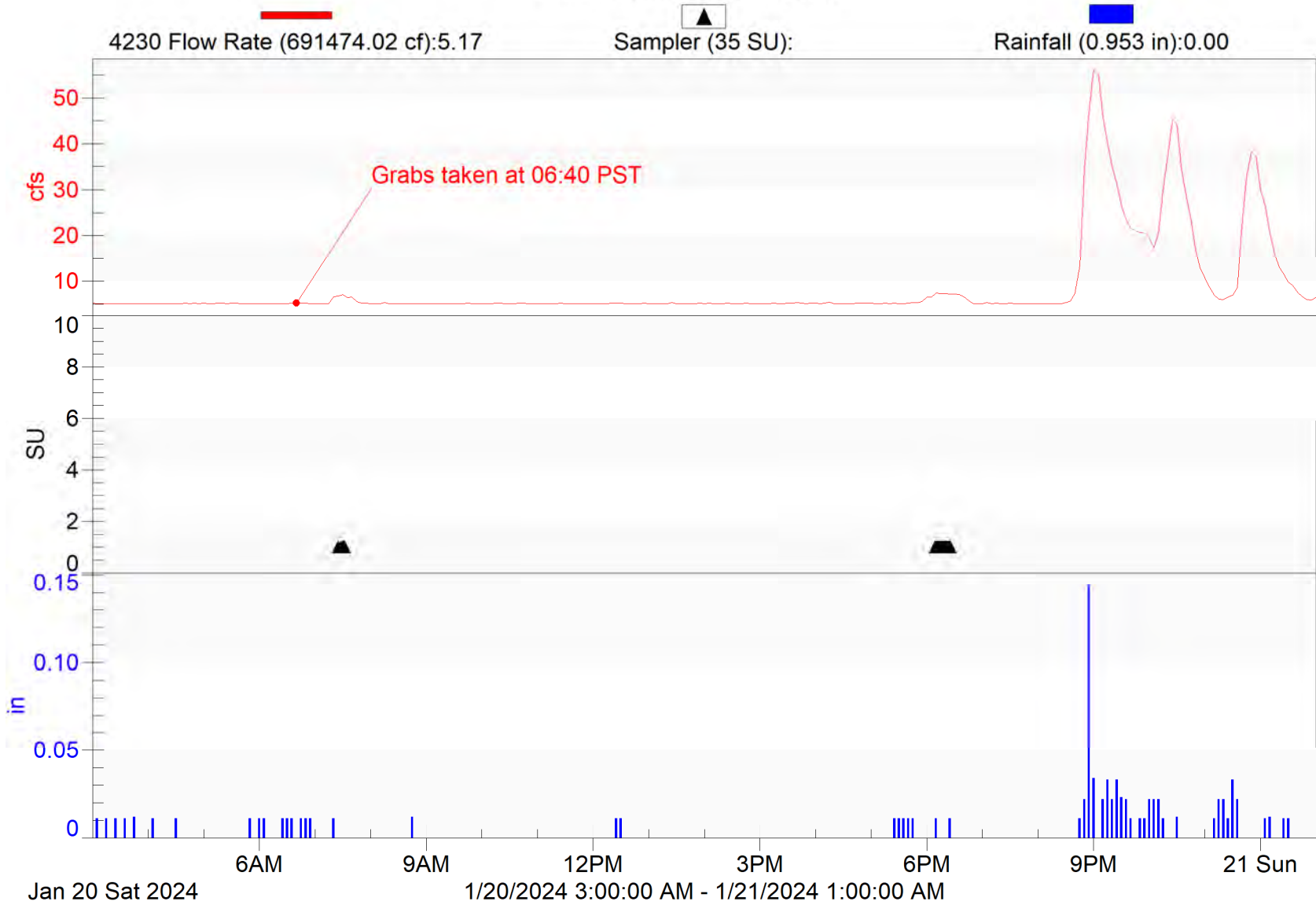
Sampler (35 SU):

Rainfall (0.460 in):0.00



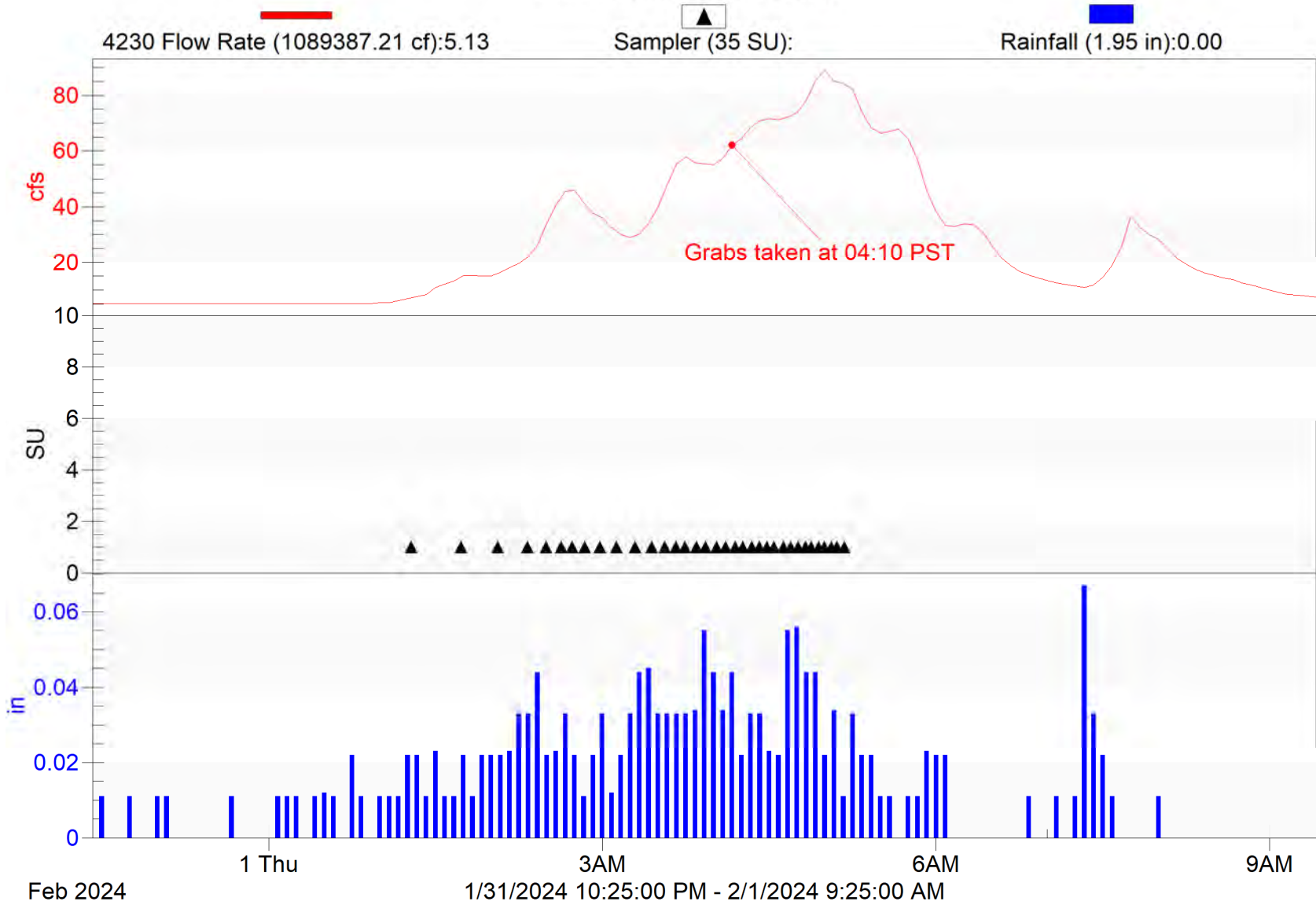
Ojai-1

2023/24 NPDES Event #3 (Wet)



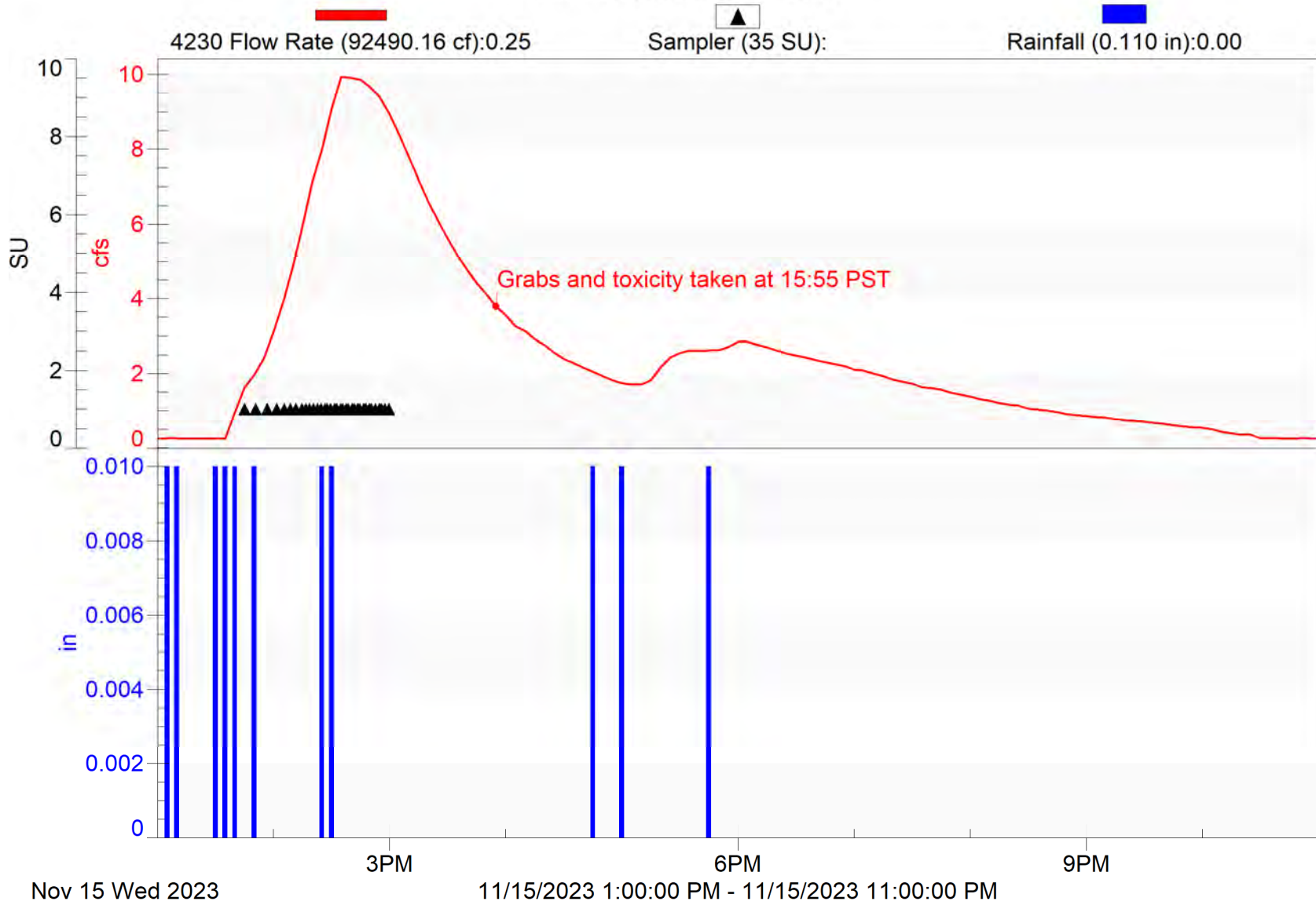
Ojai-1

2023/24 NPDES Event #4 (Wet)



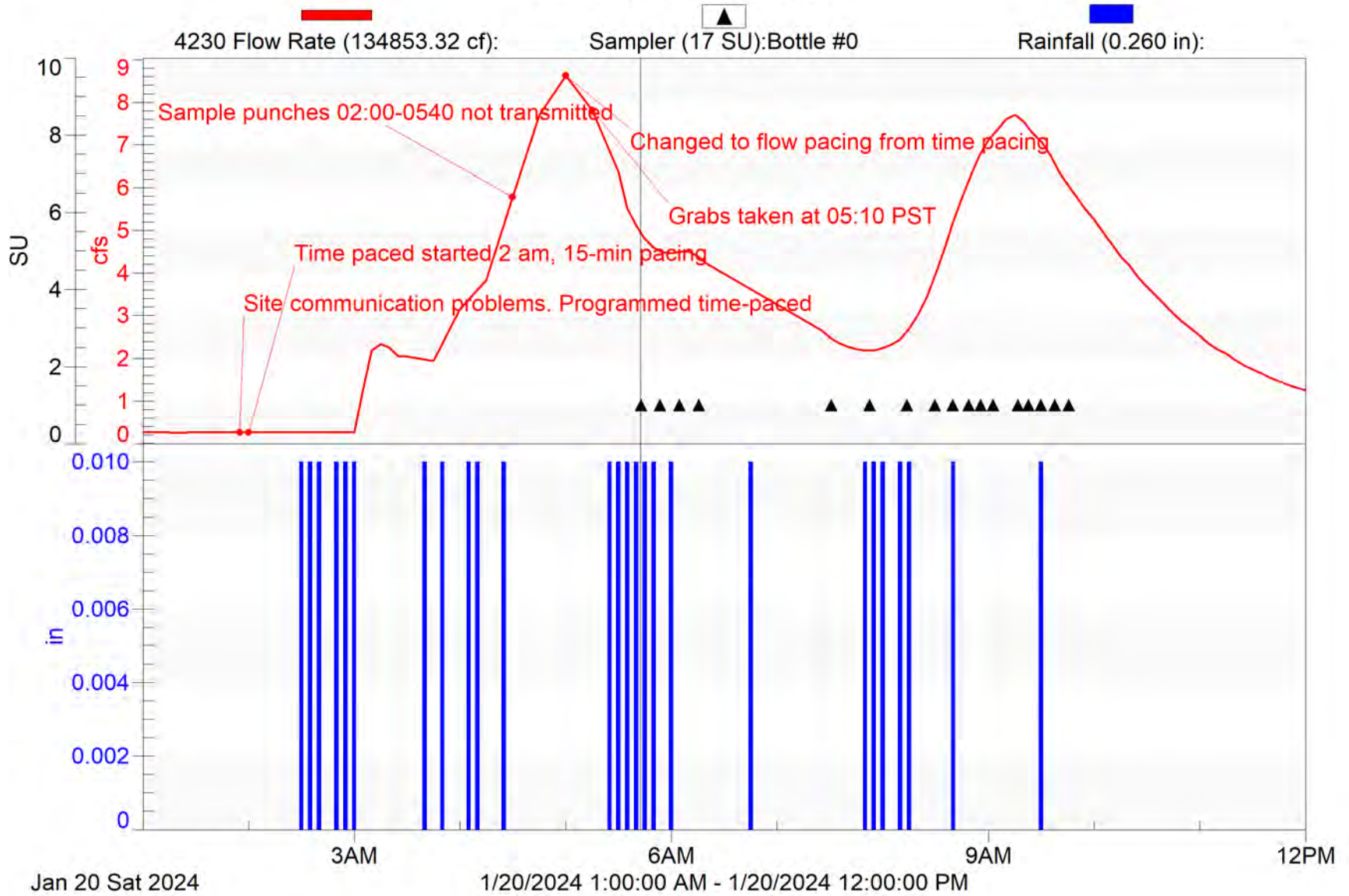
Oxnard-1

2023/24 NPDES Event #1 (Wet)



Oxnard-1

2023/24 NPDES Event #3 (Wet)



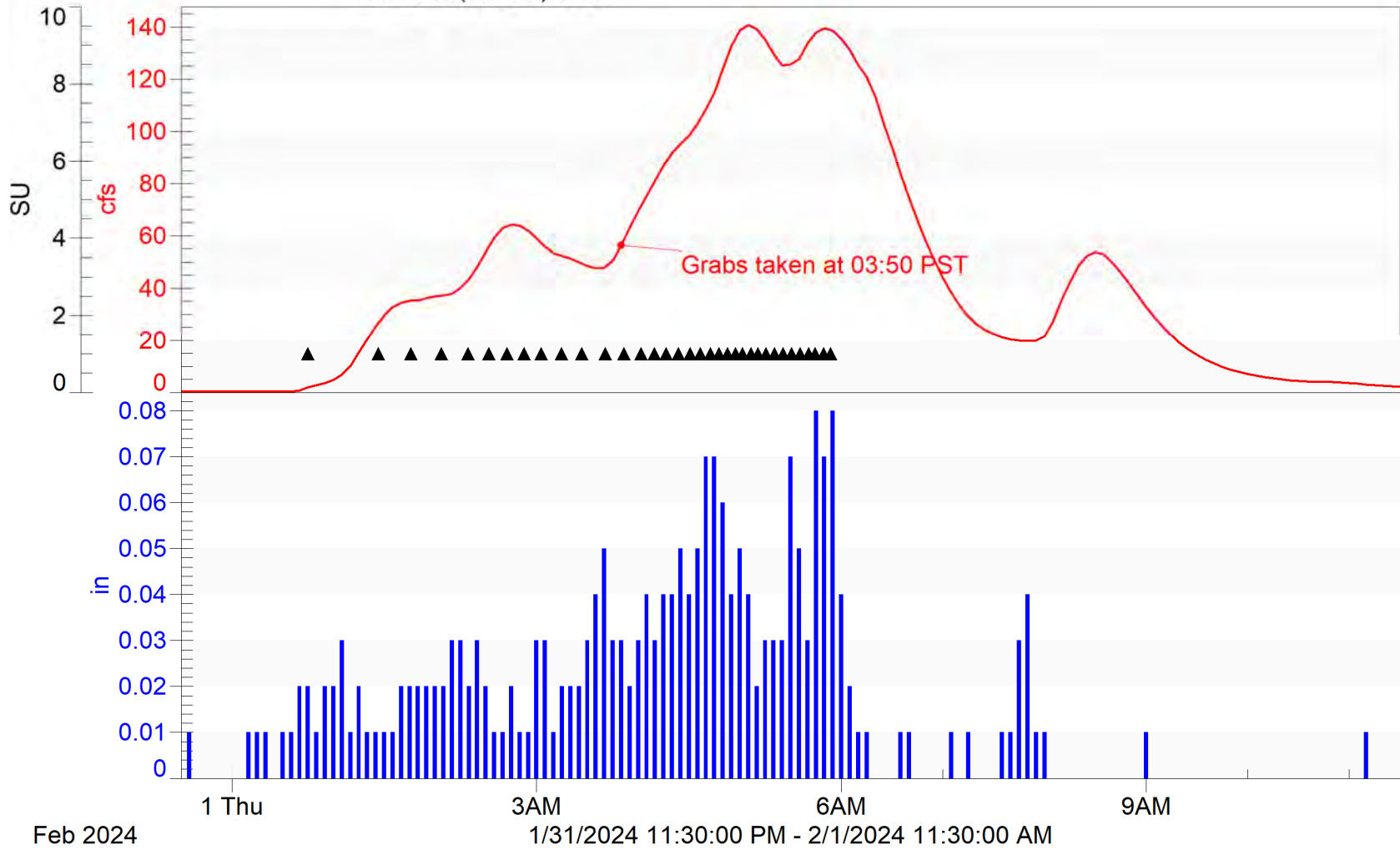
Oxnard-1

2023/24 NPDES Event #4 (Wet)

4230 Flow Rate (1982064.42 cf):0.27

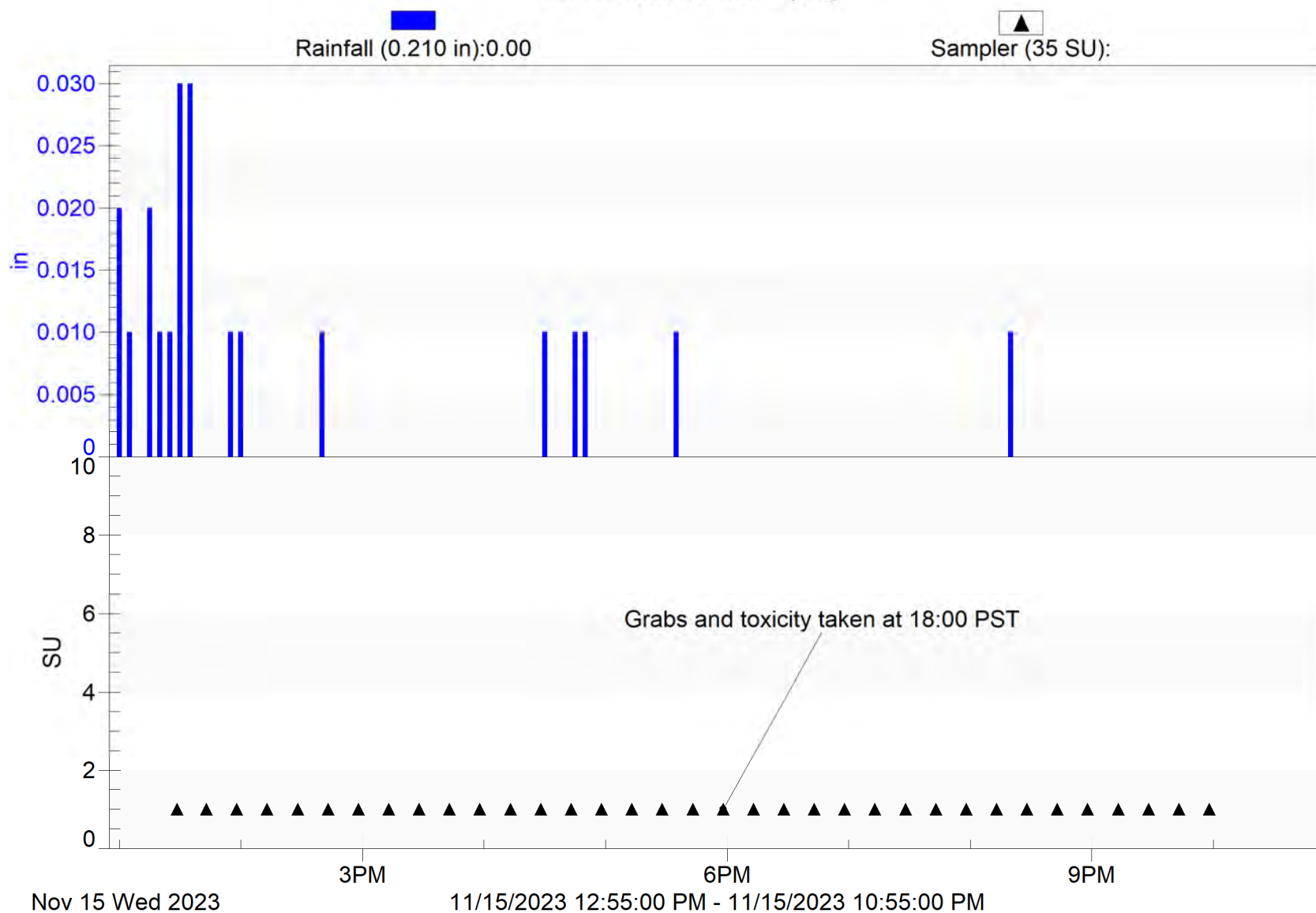
Rainfall (2.28 in):0.00

Sampler (35 SU):



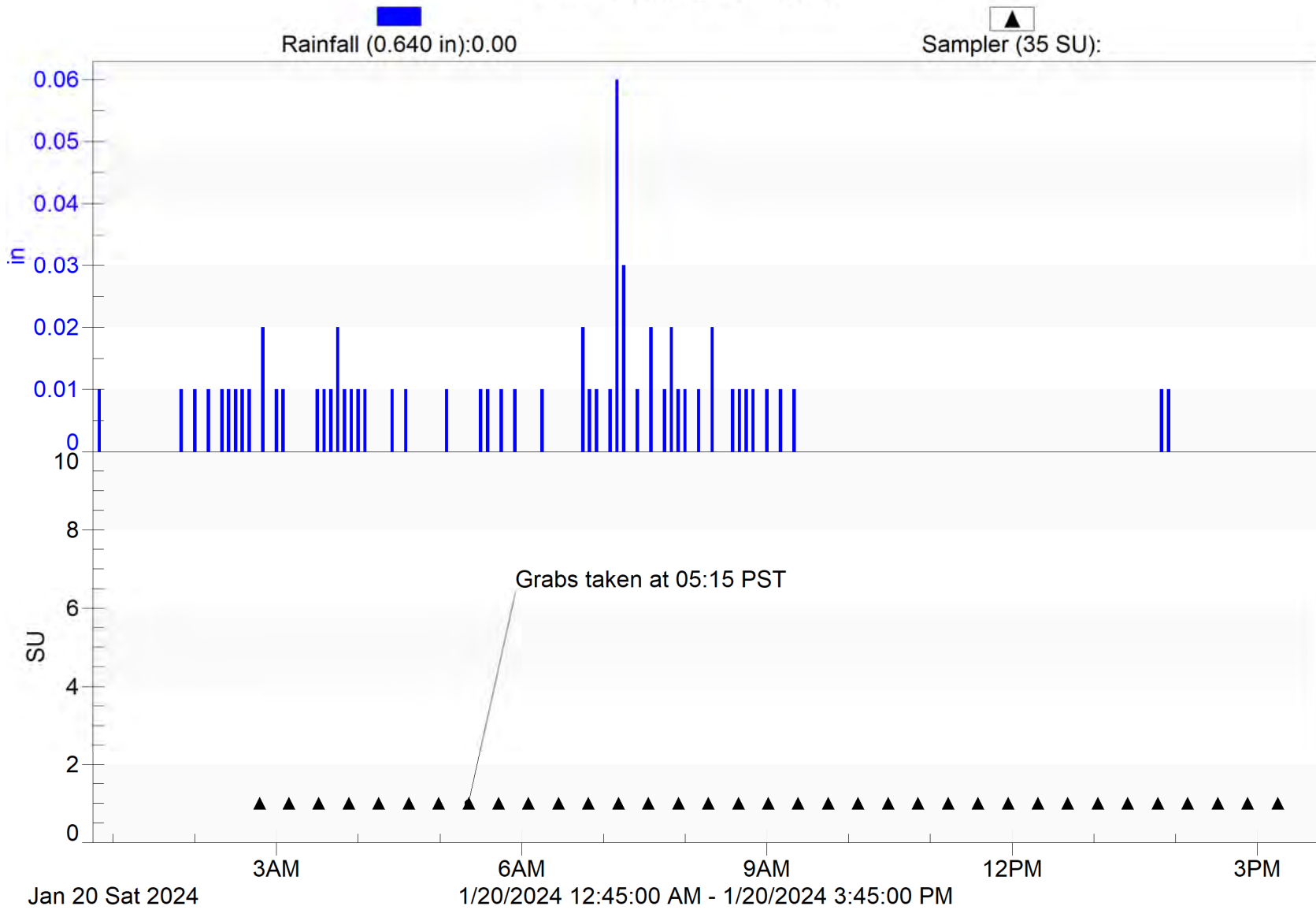
Port Hueneme-1

2023/24 NPDES Event #1 (Wet)



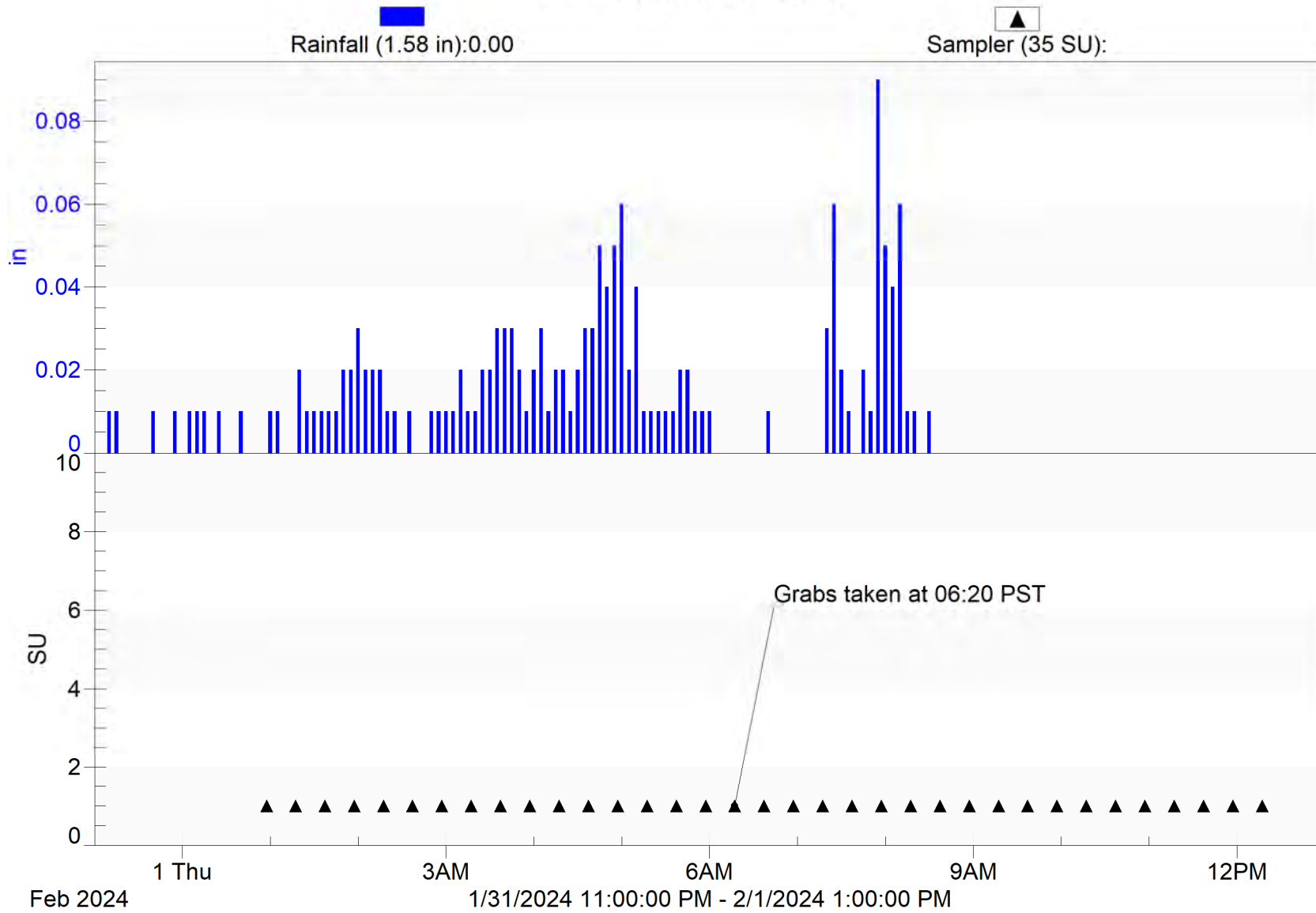
Port Hueneme-1

2023/24 NPDES Event #3 (Wet)



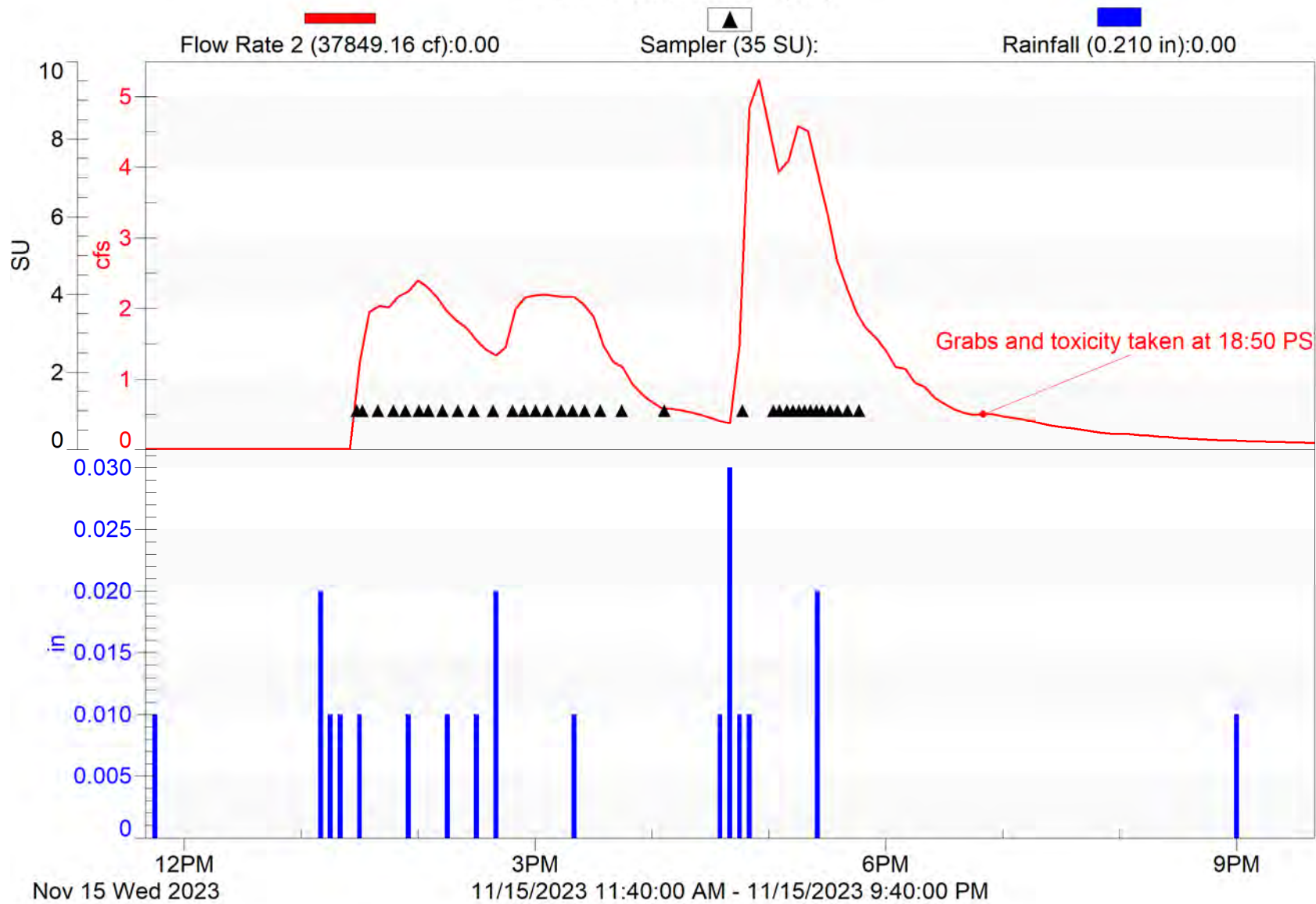
Port Hueneme-1

2023/24 NPDES Event #4 (Wet)



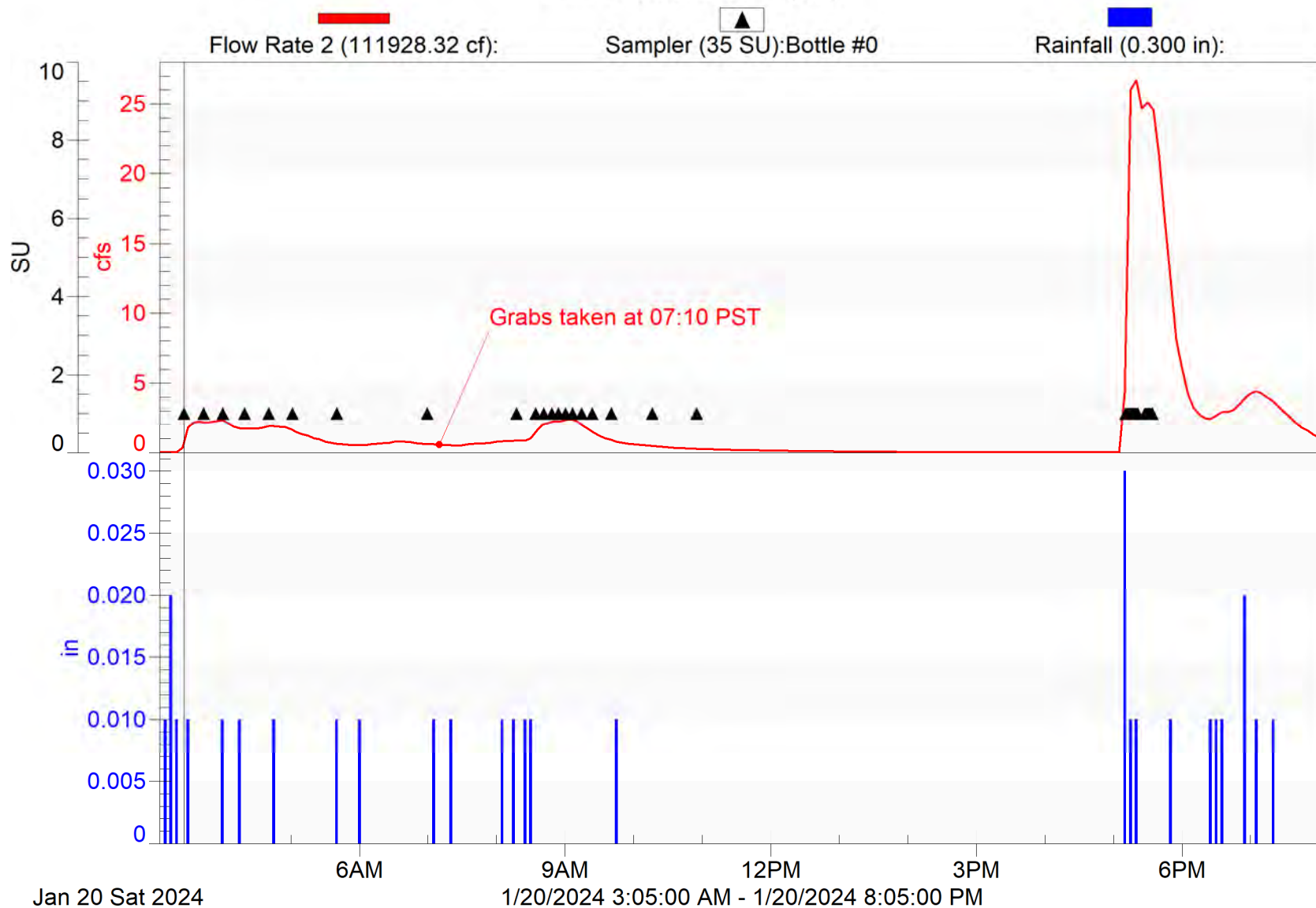
Santa Paula-1

2023/24 NPDES Event #1 (Wet)



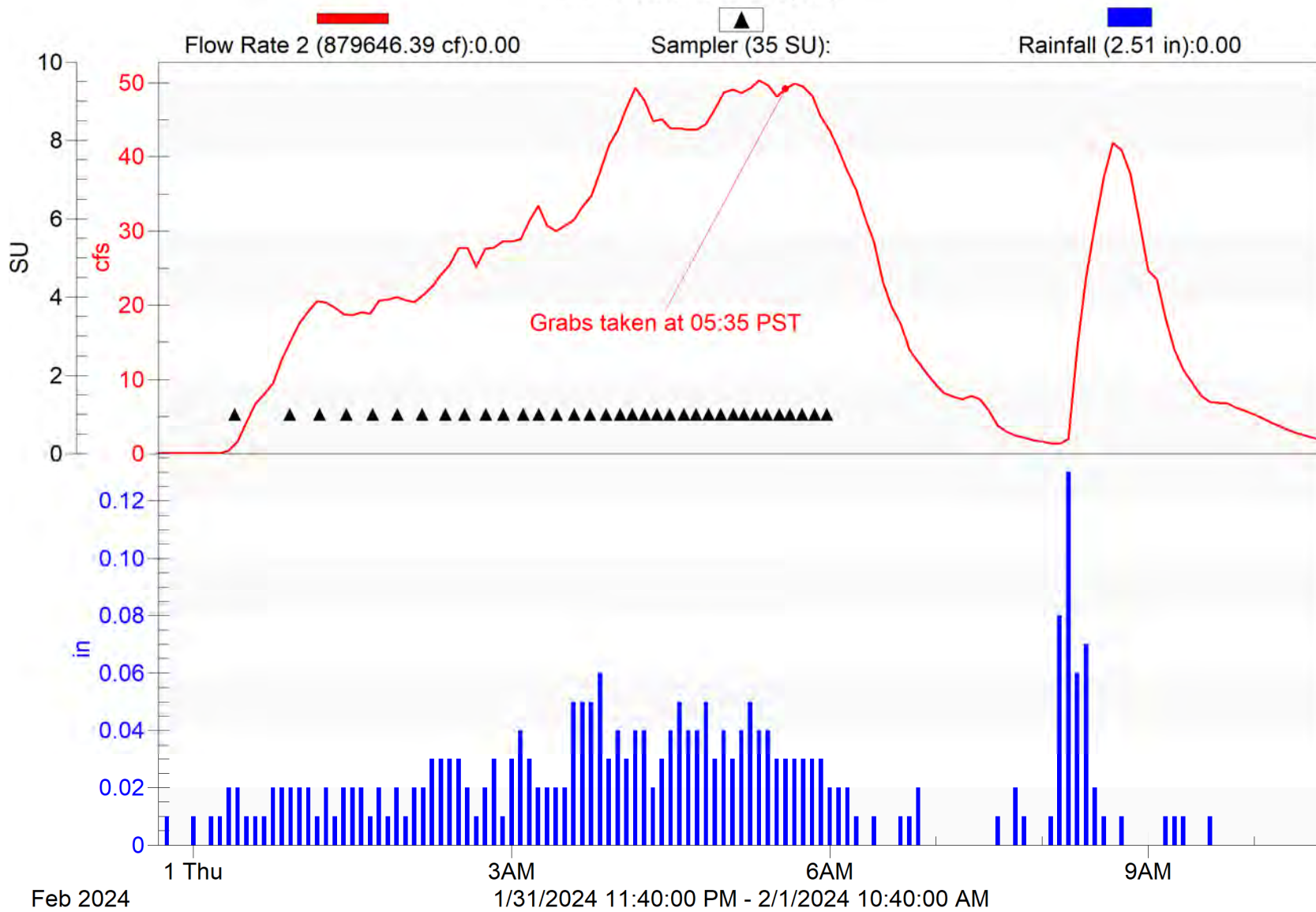
Santa Paula-1

2023/24 NPDES Event #3 (Wet)



Santa Paula-1

2023/24 NPDES Event #4 (Wet)



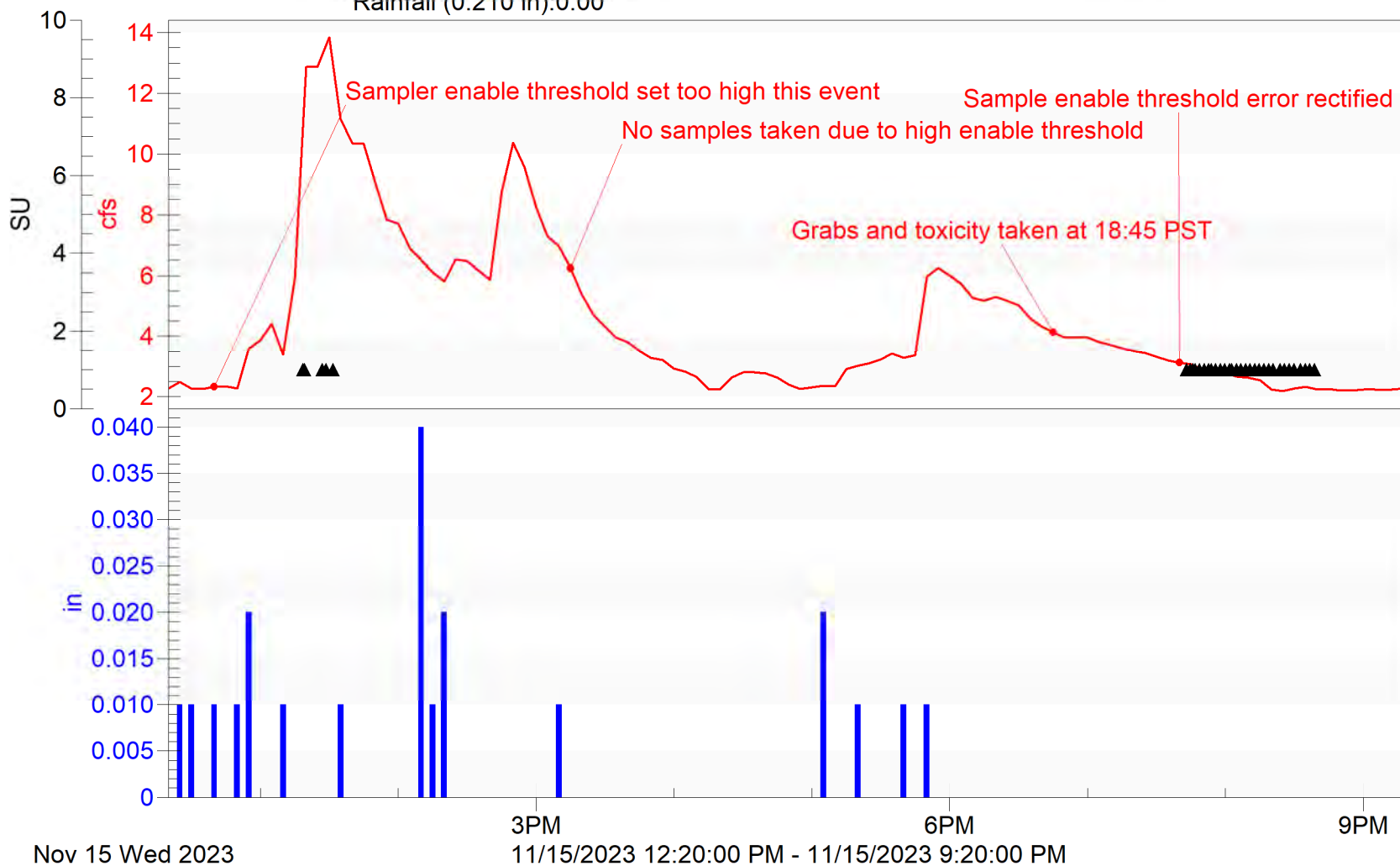
Simi Valley-1

2023/24 NPDES Event #1 (Wet)

4230 Flow Rate (144781.61 cf):2.26

Sampler (35 SU):

Rainfall (0.210 in):0.00

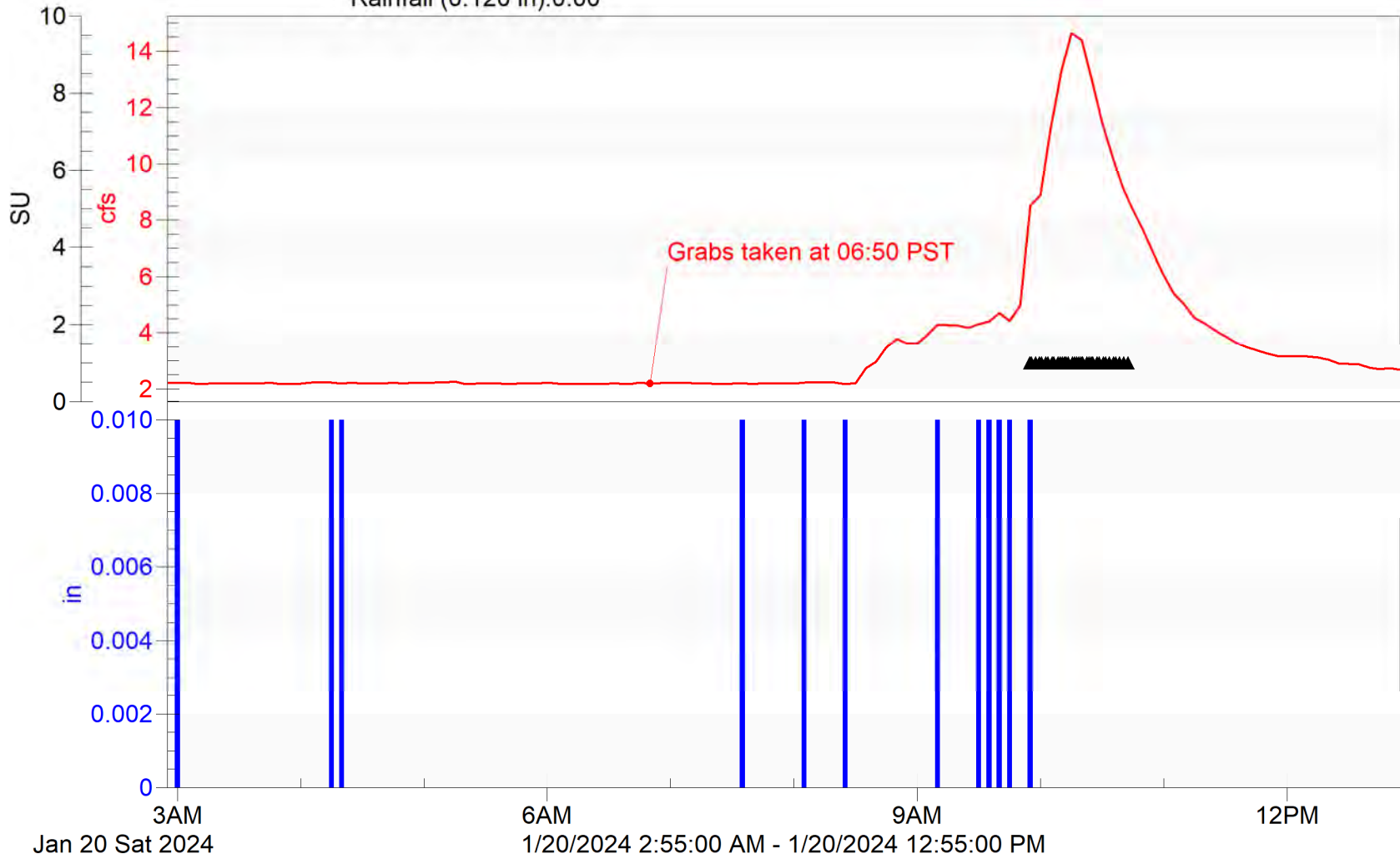


Simi Valley-1

2023/24 NPDES Event #3 (Wet)

█
 4230 Flow Rate (130234.27 cf):2.20
█
 Rainfall (0.120 in):0.00

▲
 Sampler (35 SU):



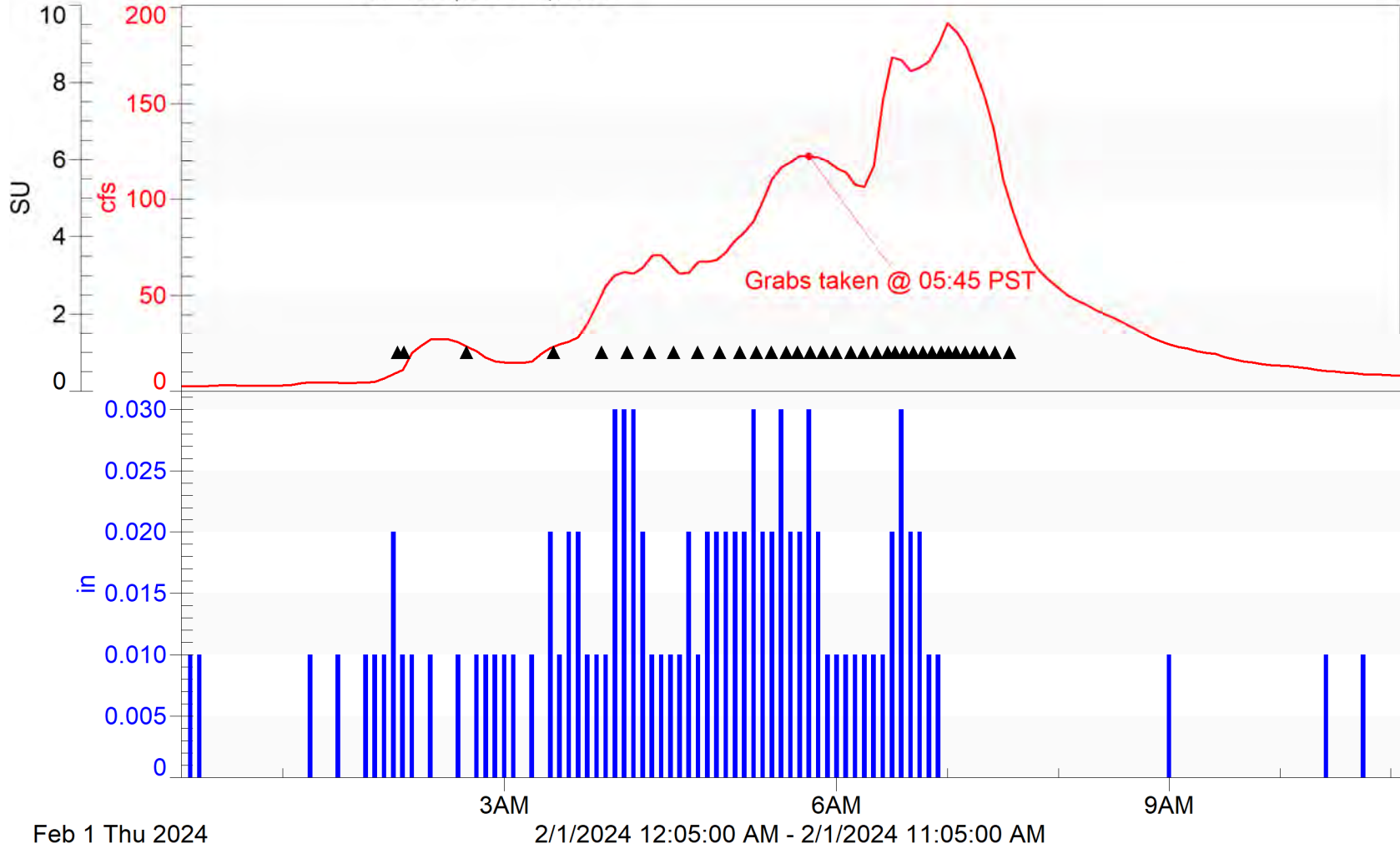
Simi Valley-1

2023/24 NPDES Event #4 (Wet)

4230 Flow Rate (2024924.99 cf):2.25

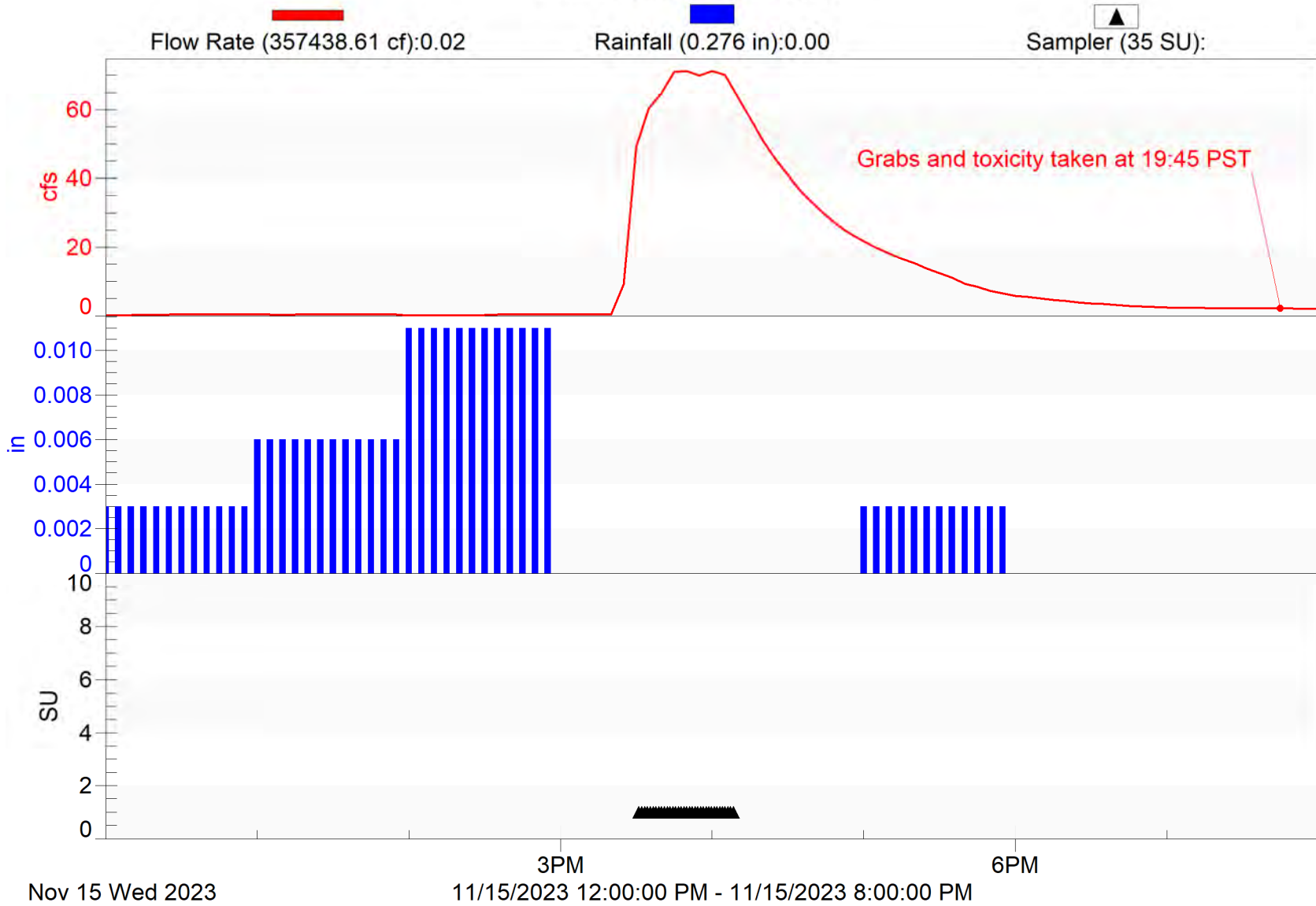
Sampler (35 SU):

Rainfall (0.970 in):0.00



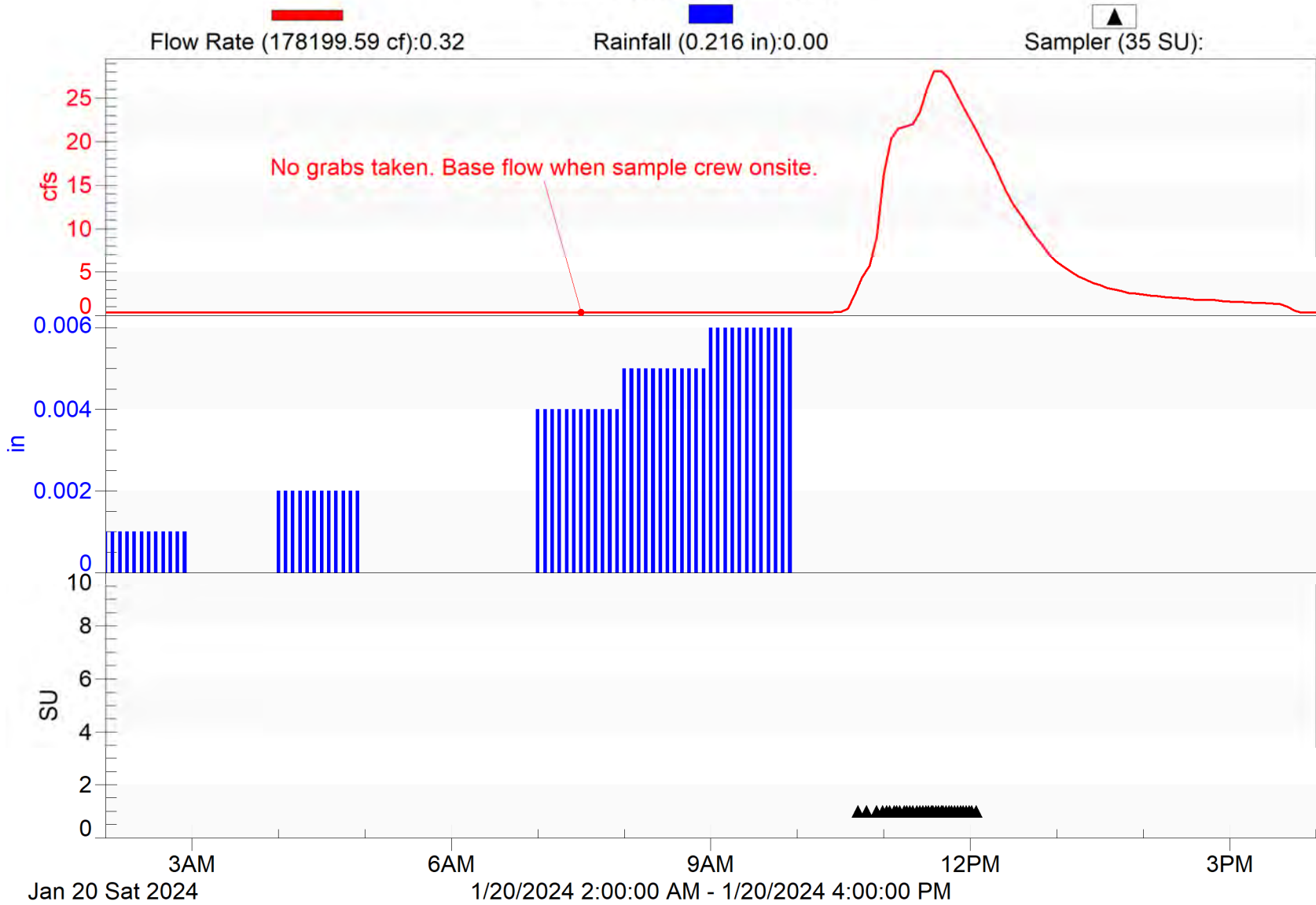
Thousand Oaks-1

2023/24 NPDES Event #1 (Wet)



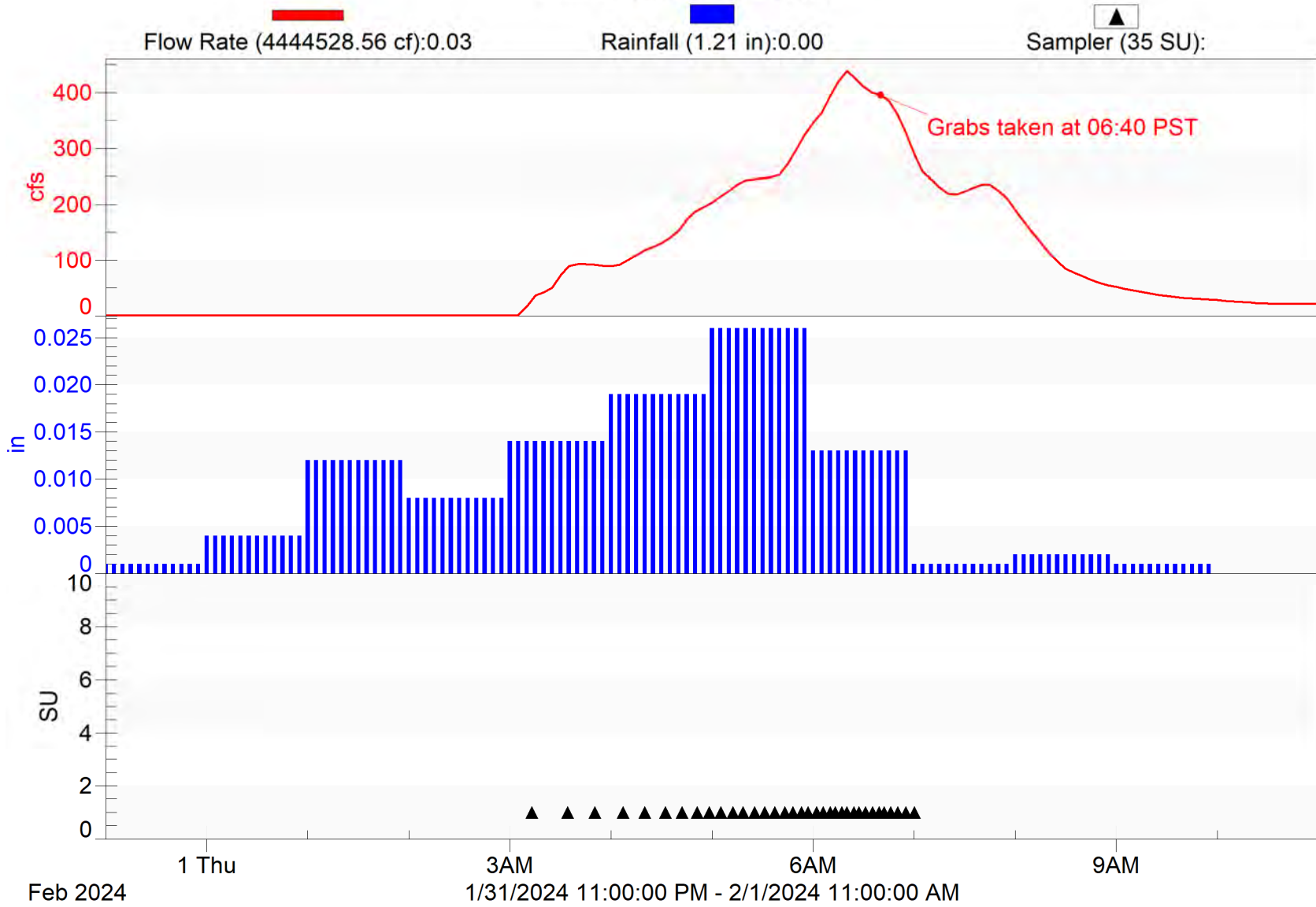
Thousand Oaks-1

2023/24 NPDES Event #3 (Wet)



Thousand Oaks-1

2023/24 NPDES Event #4 (Wet)

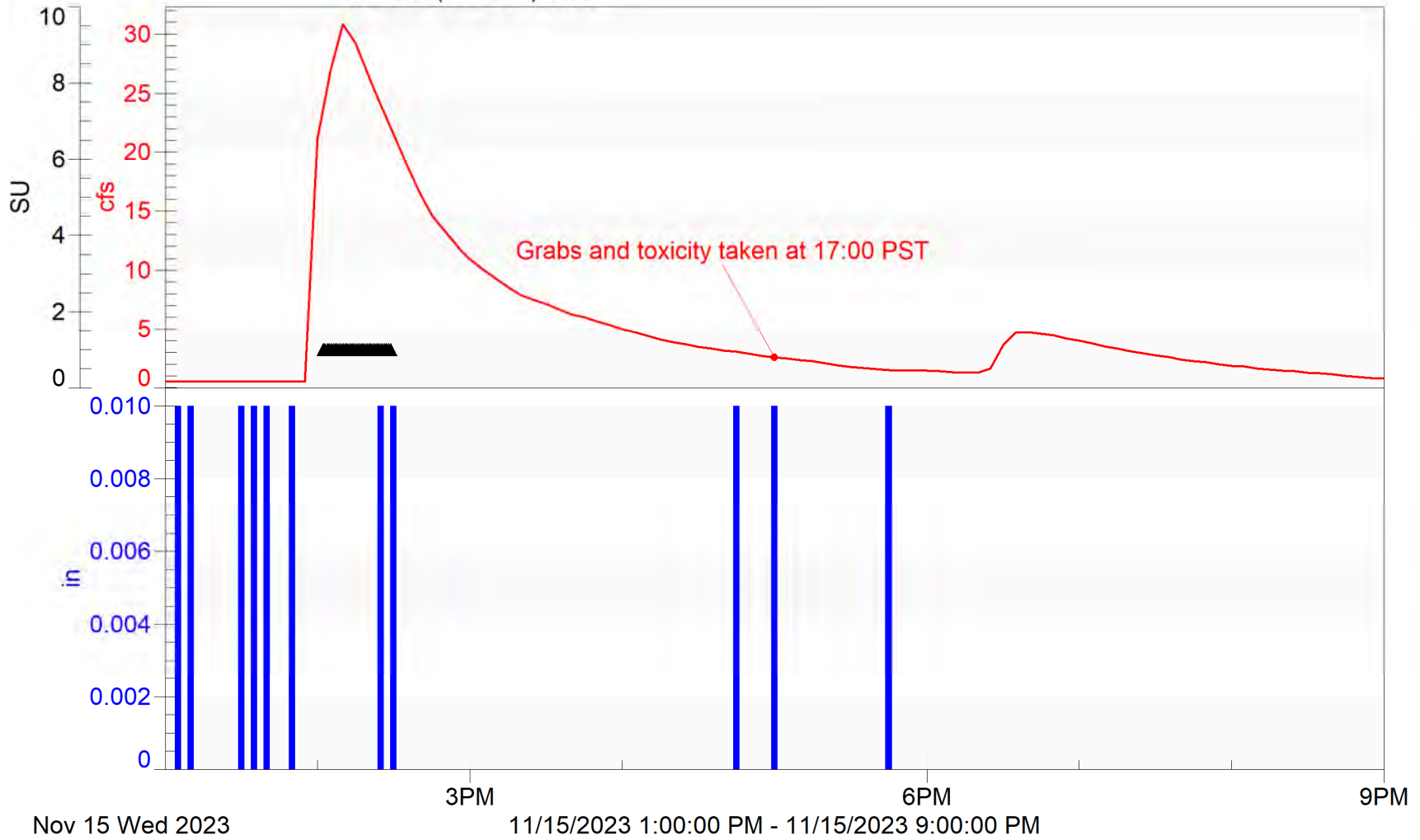


Ventura-1

2023/24 NPDES Event #1 (Wet)

4230 Flow Rate (151938.72 cf):0.52
Rainfall (0.110 in):0.00

Sampler (35 SU):

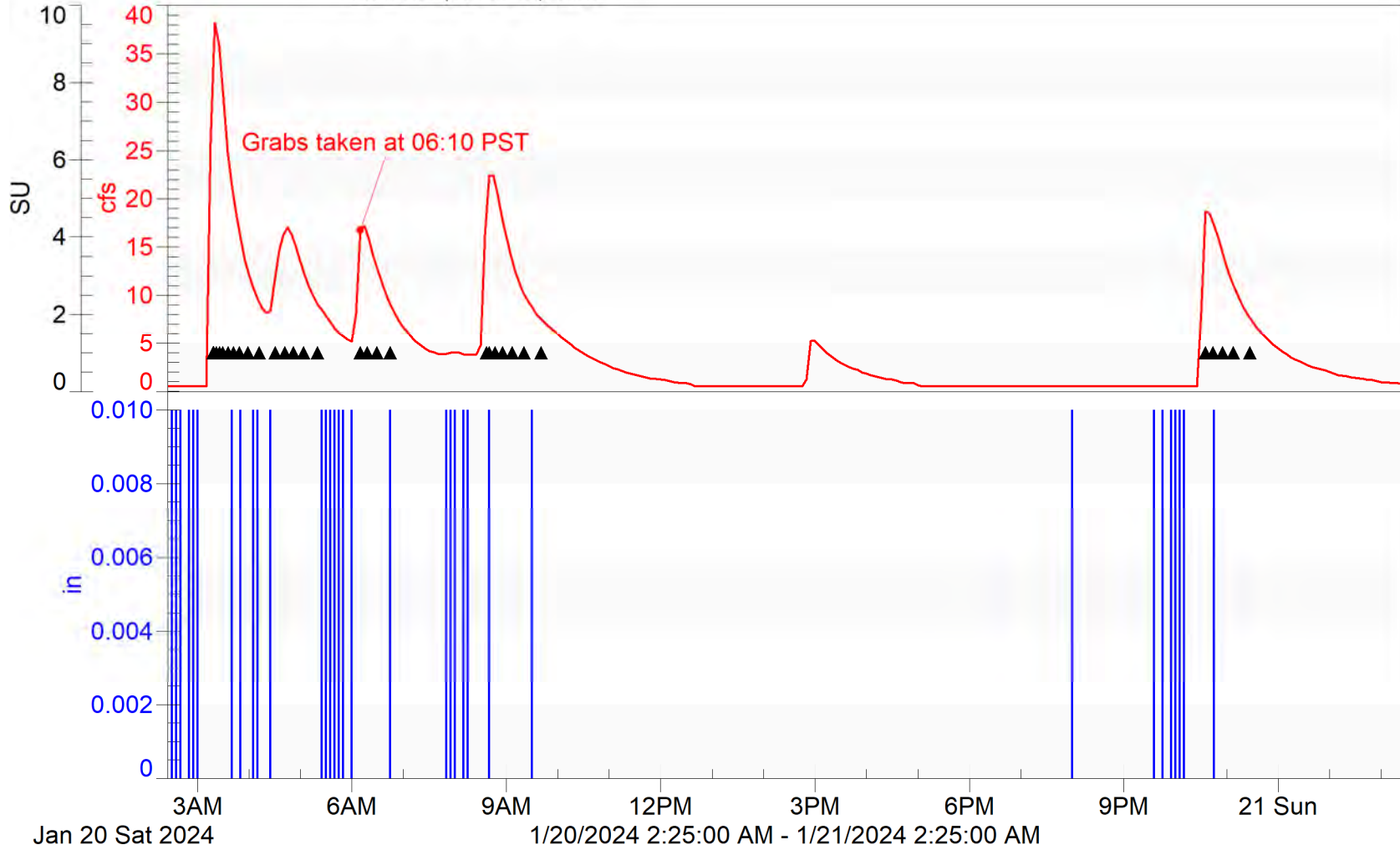


Ventura-1

2023/24 NPDES Event #3 (Wet)

4230 Flow Rate (408137.51 cf):0.52
Rainfall (0.340 in):0.00

Sampler (31 SU):



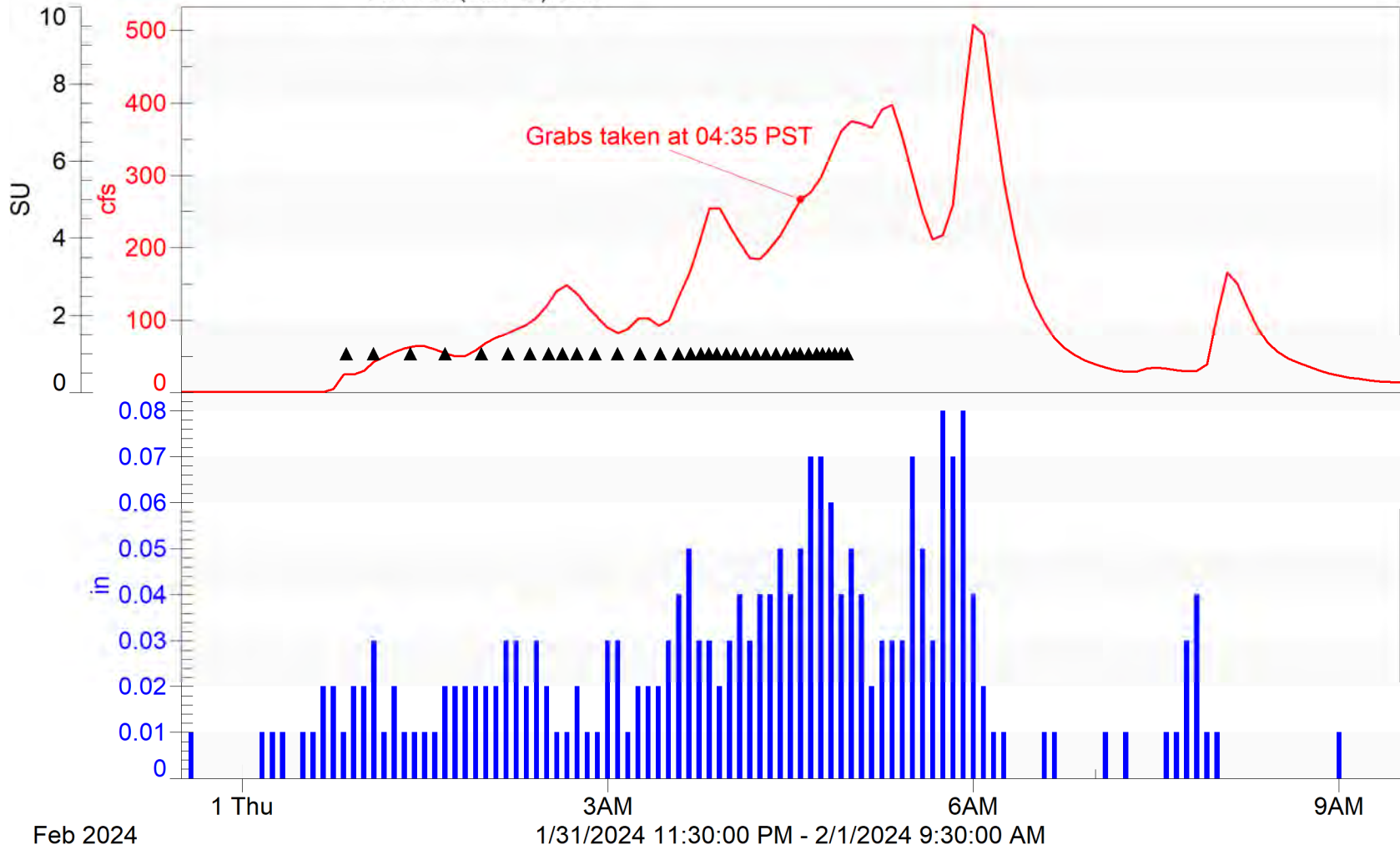
Ventura-1

2023/24 NPDES Event #4 (Wet)

4230 Flow Rate (4342366.60 cf):0.52

Rainfall (2.27 in):0.00

Sampler (35 SU):



Appendix C. NRCS Curve Number Methodology Discussion



Ventura County Watershed Protection District

Planning & Regulatory Hydrology Section

MEMORANDUM

DATE: September 4, 2009 Updated August 12, 2010

TO: Tommy Liddell

VIA: Bruce Rindahl

FROM: Mark Bandurraga

SUBJECT: NPDES Monitoring Site Yield Evaluation

Per your request, we have used the land use and watershed information you provided to prepare a spreadsheet that can be used to estimate the runoff quantities from storm forecasts. The runoff quantity is estimated using the NRCS Curve Number approach that is a common method in hydrology. The results show that the weighed Curve Numbers estimated from the evaluation range from a low of about 74 for the rural Fox Canyon Drain watershed in Ojai to a high of about 91 for the urbanized watershed in the City of Ventura. The methodology and files used to calculate the Curve Numbers are described in this memo for the watersheds shown in Figures 1-4.

In August 2010 you requested results for another 7 monitoring sites across the county. This memo describes the additional work done for that request.

Curve Number Calculation Methodology

Land Use Data

Land Use data used in the study were provided by the Water Quality Section already clipped to the monitoring site boundaries and in a geodatabase. The land use data were extracted from the Assessor's Parcel database which is considered to be current as of the date of extraction (Feb 12, 2009). The various classifications in the file based on the assessor's 4-digit site use codes were sorted and assigned hydrologic land use names associated with the various classifications contained in the Curve Number (CN) Table from the Hydrology Manual (2006) as shown in Table 1. The categories in the land use file corresponded well with the land uses in the VCWPD CN Table with the following exceptions:

1. Vacant undifferentiated land was assumed be open brush in fair condition in rural areas and open space with 50% grass cover in urban areas.
2. Mixed urban land uses were assumed to correspond to commercial properties with 50% effective impervious.
3. Fire stations, public buildings, and schools were assigned to the low industrial use category with an effective impervious value of 36% due to the potential for large landscaped areas.

Table 1 Land Uses In NPDES Database (Assessor's Land Uses)

KVM_CAT1	SHORT_	Name
Agriculture	Abandoned Orchards and Vineyards	Orchard
Agriculture	Horse Ranches	open
Agriculture	Nurseries	Orchard
Agriculture	Orchards and Vineyards	Orchard
Agriculture	Vacant With Limited Improvements	open
Com_Indus. Mix	Mixed Commercial and Industrial	Comm
Commer.	Commercial Recreation	Comm
Commer.	Commercial Storage	Comm
Commer.	Low- to Medium-Rise Major Office Use	comm
Commer.	Modern Strip Development	comm
Commer.	Retail Centers (Non-Strip with Contiguous Interconnected Off-Street Parking)	comm
Extraction	WHOLESALE AND WAREHOUSING	indhigh
Facility	Fire Stations**	indlow
Facility	Government Offices	indlow
Facility	Major Medical Health Care Facilities	comm
Facility	Other Public Facilities	indlow
Facility	Other Special Use Facilities	indlow
Facility	Police and Sheriff Stations**	indlow
Facility	Religious Facilities	indlow
Facility	Special Care Facilities	indlow
Industrial_1	Open Storage	indlow
Industrial_1	Packing Houses and Grain Elevators	indlow
Industrial_3	Manufacturing, Assembly, and Industrial Services	indhigh
No Info Given		open
Recreation	Other Open Space and Recreation	open
Res.1	Low Density Single Family Residential	reslow
Res.1	Trailer Parks and Mobile Home Courts, High Density	reshigh
Res.2	Low-Rise Apartments, Condominiums, and Townhouses	reshigh
Res.2	Rural Residential Low Density	resrural
Res.3	High Density Single Family Residential	reshigh
Res.4	Duplexes, Triplexes, and 2- or 3-Unit Condominiums and Townhouses	reshigh
Res.4	Medium-Rise Apartments and Condominiums	reshigh
Res.4	Mixed Urban	comm
Schools	Elementary Schools**	indlow
Schools	Junior High Schools**	indlow
Schools	Senior High Schools**	indlow
Transportation	Freeways and Major Roads	paved
Transportation	Mixed Transportation	paved
Transportation	Truck Terminals	paved
Under Constructi	Under Construction	indlow
Utilities	Electrical Power Facilities	indlow
Vacant Undiffere	Vacant Undifferentiated (rural)	brushfair
Vacant Undiffere	Vacant Undifferentiated (city)	open

Soils Information

The soils information was obtained from the District soils shapefile that groups the soil info into categories 1 through 7 corresponding to the NRCS soil categories D through A, respectively. The soils info was clipped to the watershed boundaries using the watershed shapefile. The areas

obtained from the soils files were checked against the total watershed areas to make sure they were identical.

Combined Soils and Land Use Information and Weighted Curve Numbers

The soils and land use shapefiles were then unioned in GIS to obtain the combinations of soil type and land uses in the watersheds. The resulting table was imported into excel and sorted to group the various land uses. The land uses were then assigned a name associated with the data in the District CN Table. Based on the name and soil number, excel functions “match” and “offset” were used to obtain a CN from the CN Table. The weighted soil number and Curve Number for each watershed were calculated using the areas, soil numbers, and CN’s. The weighted soil types were checked against the data in the original watershed soil files and were found to be the same. The weighted Curve Numbers were linked to a summary worksheet to be used to calculate the yields by the Water Quality Section. This procedure was also applied to the 7 additional watersheds added to the study in August 2010. The results are shown in Table 2.

Table 2: Storm Yield Results- Weighted Average Curve Numbers

Watershed Name	Size ac	Composite CN	Rain (in)	Initial Abs S (no units)	Rain cutoff (in)	Yield (in)	% Yield
Camarillo	2,779	85.12	5.00	1.75	0.35	3.38	68%
Happy Valley	1,026	77.29	5.00	2.94	0.59	2.65	53%
Fox	749	74.19	5.00	3.48	0.70	2.38	48%
Ventura	707	90.93	5.00	1.00	0.20	3.97	79%
Fillmore	762	74.77	5.00	3.37	0.67	2.43	49%
Port Hueneme	589	85.60	5.00	1.68	0.34	3.43	69%
Moorpark	1,816	63.34	5.00	5.79	1.16	1.53	31%
Oxnard	1,374	84.07	5.00	1.89	0.38	3.28	66%
Simi Valley	3,321	71.04	5.00	4.08	0.82	2.12	42%
Santa Paula	64	80.07	5.00	2.49	0.50	2.90	58%
Thousand Oaks	5,179	81.54	5.00	2.26	0.45	3.04	61%

Between the first request and present, the Hydrology Section has updated their Curve Number tables to make them more consistent with reported infiltration rates in the Hydrology Manual. The resultant CNs were used in the study to see the effect on the yields as shown in Table 3.

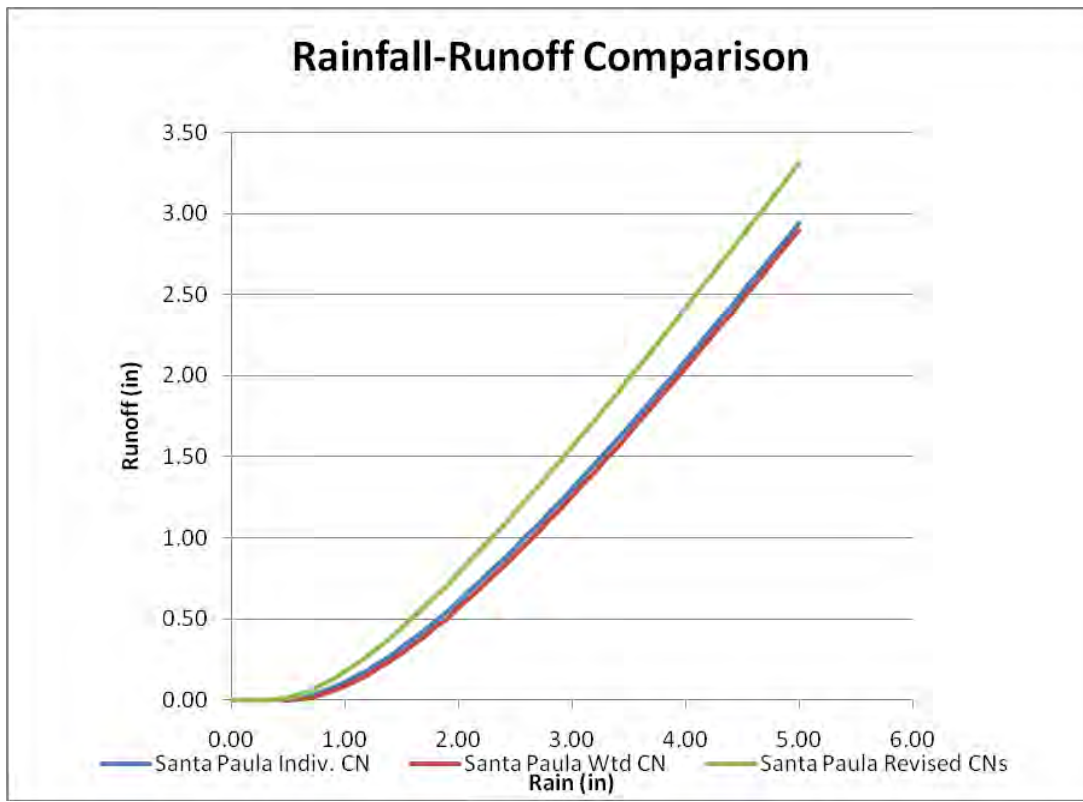
Table 3: Storm Yield Results- Weighted Average Curve Numbers with Updated CNs

Watershed Name	Size ac	Composite CN	Rain (in)	Initial Abs S (no units)	Rain Cutoff (in)	Yield (in)	% Yield
Camarillo	2,779	84.72	5.00	1.80	0.36	3.34	67%
Happy Valley	1,026	77.22	5.00	2.95	0.59	2.64	53%
Fox	749	73.48	5.00	3.61	0.72	2.32	46%
Ventura	707	91.24	5.00	0.96	0.19	4.01	80%
Fillmore	762	74.39	5.00	3.44	0.69	2.40	48%
Port Hueneme	589	86.14	5.00	1.61	0.32	3.48	70%
Moorpark	1,816	64.63	5.00	5.47	1.09	1.63	33%
Oxnard	1,374	84.01	5.00	1.90	0.38	3.27	65%
Simi Valley	3,321	71.11	5.00	4.06	0.81	2.13	43%
Santa Paula	64	84.22	5.00	1.87	0.37	3.29	66%
Thousand Oaks	5,179	81.27	5.00	2.30	0.46	3.01	60%

The results showed that the revised CNs provided yields that were 1 or 2% higher than the 2006 CN set except for the Santa Paula watershed. This watershed was soil type 6, which had CNs that were more affected by the updates than most of the CNs for the other soils.

While working on the 2nd request, it was realized that the Hydrology Section could provide more precise estimates of flow at lower rainfall levels by analyzing each soil/land use combination individually and summing the results rather than using a weighted average CN in the runoff equation. So the individual CN results were calculated and summed for both the 7 sites in this update and the previous 4 sites. The resultant spreadsheets provide tables of runoff vs rainfall data. Figure 1 shows a comparison of the rainfall and runoff from a highly developed watershed Camarillo using the weighted average CN, individual CNs, and revised individual CNs.

Figure 1



Conclusions and Limitations

The provided weighted CNs can be used to estimate runoff from low to moderately saturated watersheds. It has been our experience that it is necessary to use Antecedent Moisture Condition III CNs for highly saturated watersheds which only occurs after many days of heavy rainfall such as January 10, 2005. The provided CNs probably will overpredict the runoff coming from the first storms of the season due to the very dry antecedent moisture conditions present then. If necessary further work can be done to provide CNs representing AMC I conditions. Also, the CNs assigned to the various land uses can be calibrated after enough storms have occurred to evaluate the predictive accuracy of the current yield equations provided to the NPDES group. It should also be possible to provide forecasts of runoff from the HSPF forecast model of the Ventura River watershed that more accurately reflect saturated/unsaturated conditions.

List of Files in Work Directory K:\PR\hydrology\Watersheds\NPDES\Monitoring_Sites

Filename	Description
GIS	Contains GIS files used in evaluation
GIS2010	Contains 2010 GIS files used in updated evaluation
ClippedLandUse.mdb	Geodatabase with land uses clipped to watershed boundaries provided by WQ section
*_SelectedWatershed.shp	shapefiles showing boundaries of monitoring watersheds
*soils.shp	soils shapefiles clipped to watershed boundaries
*soilsunion.shp	Union of soils and land use data shapefile for watersheds
Allsoil.shp	VCWPD soils shapefile showing numbers for hydrology calcs
NPDES_MonitoringSitesR unoff9-09.xls	9-09 CN data
NPDES_MonitoringSitesR unoff8-10.xls	8-10 updated analysis for 11 sites total
NPDES_MonitoringSitesR unoff8-10RevCNs.xls	8-10 analysis using revised CNs
MonitoringSites9-09.mxd	ArcMap project file for analysis

Ventura Watershed

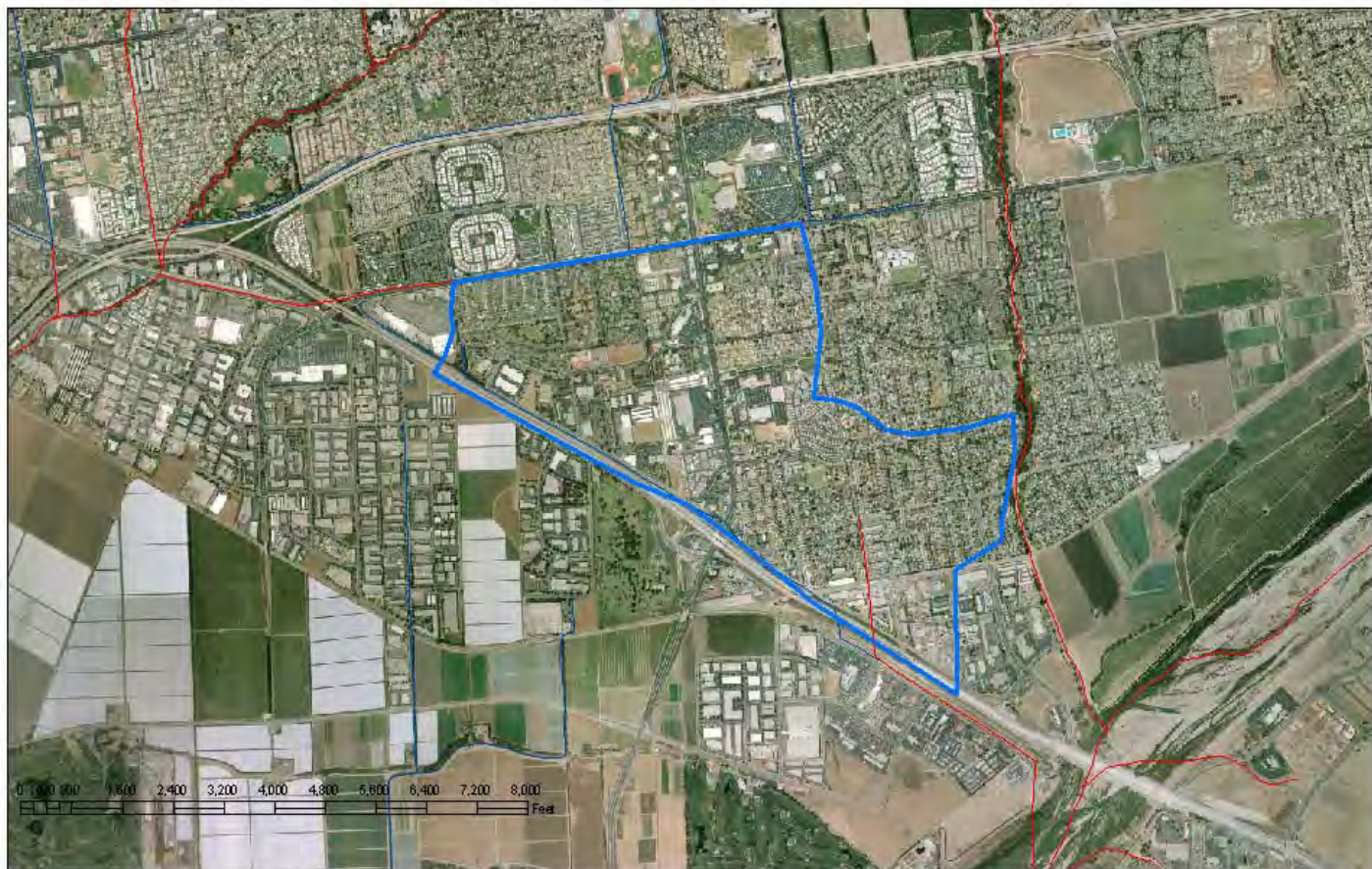


Figure 2

Meiners Oaks Happy Valley Watershed



Figure 3

Ojai Fox Watershed

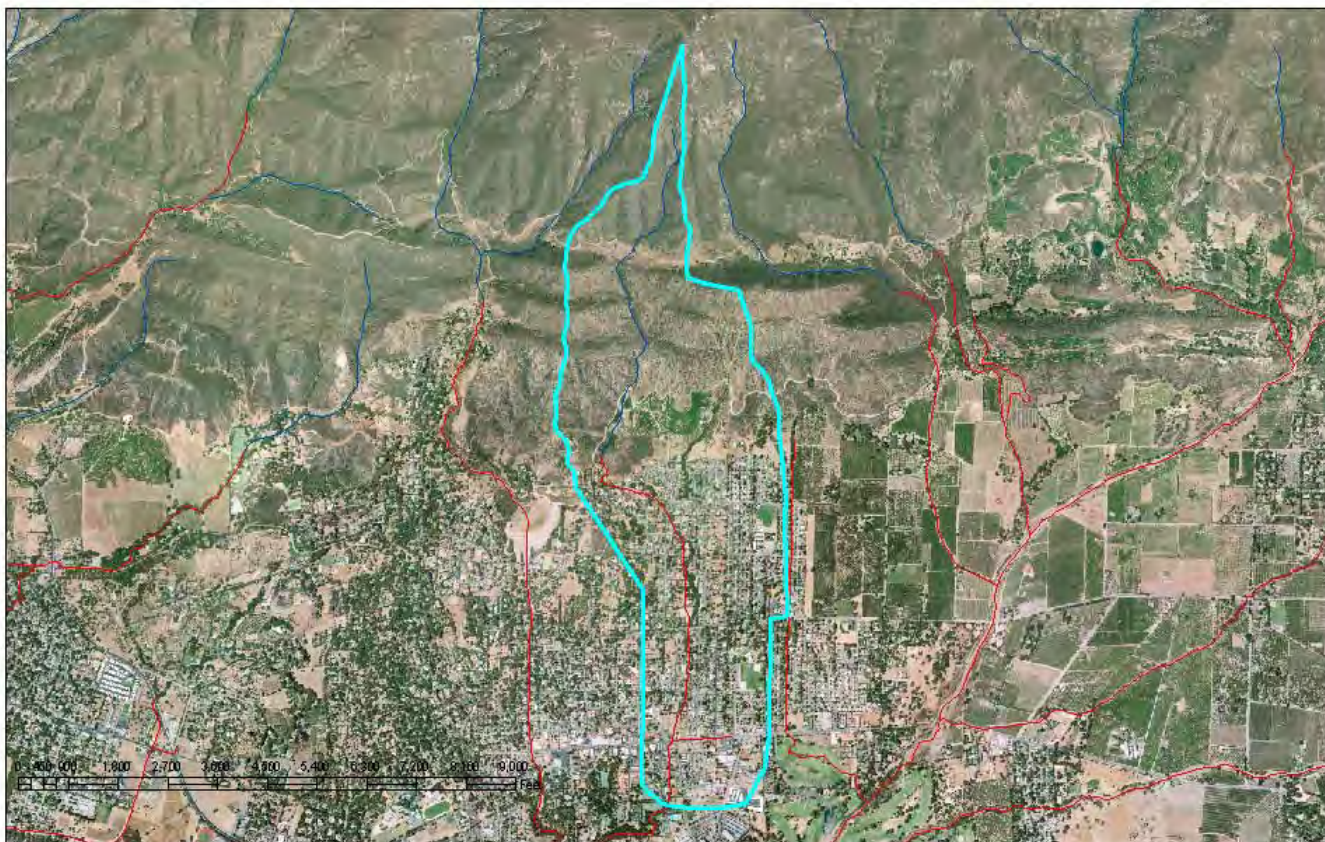


Figure 4

Camarillo Hills Drain Watershed

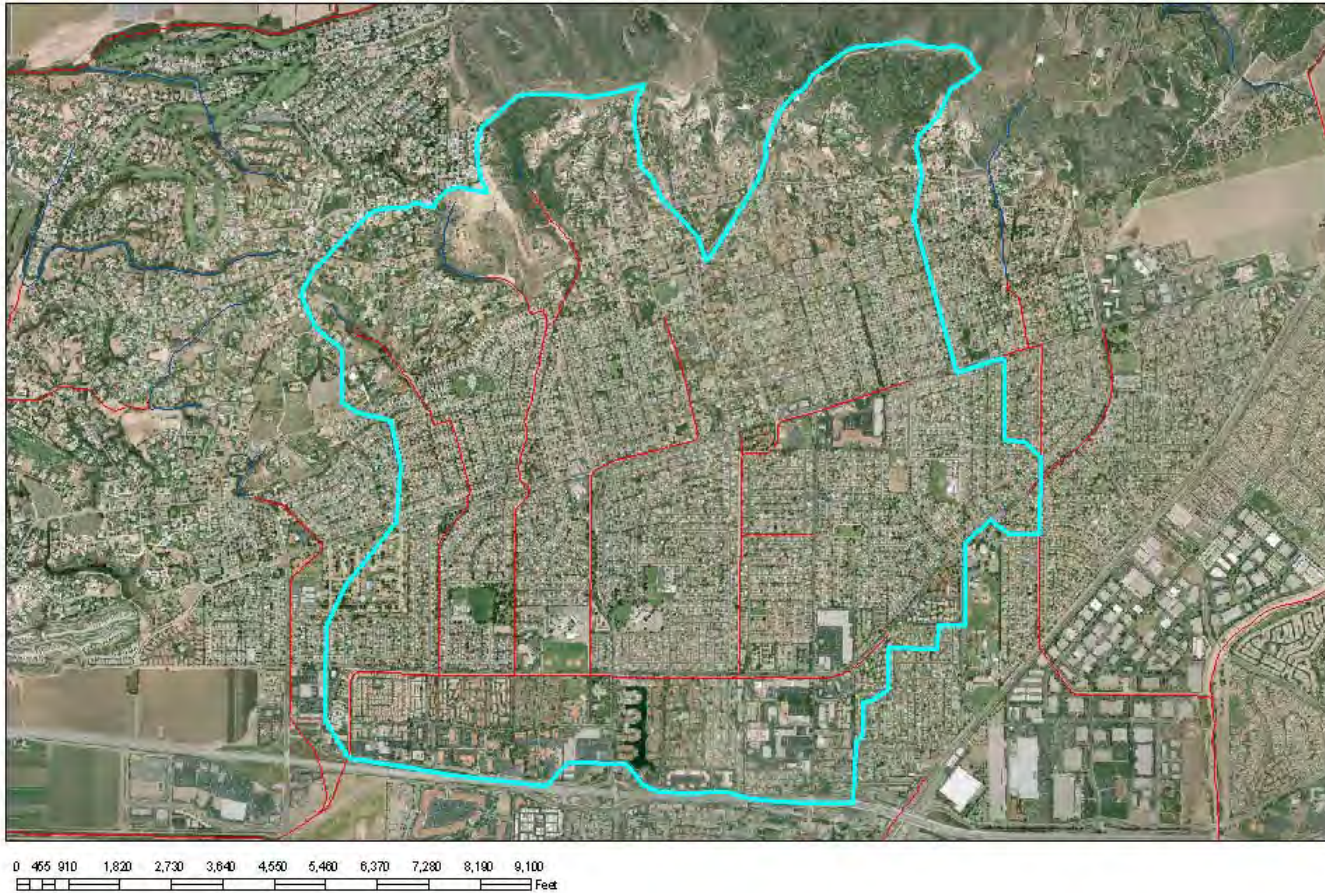


Figure 5

Simi Valley Watershed

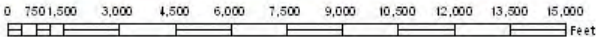
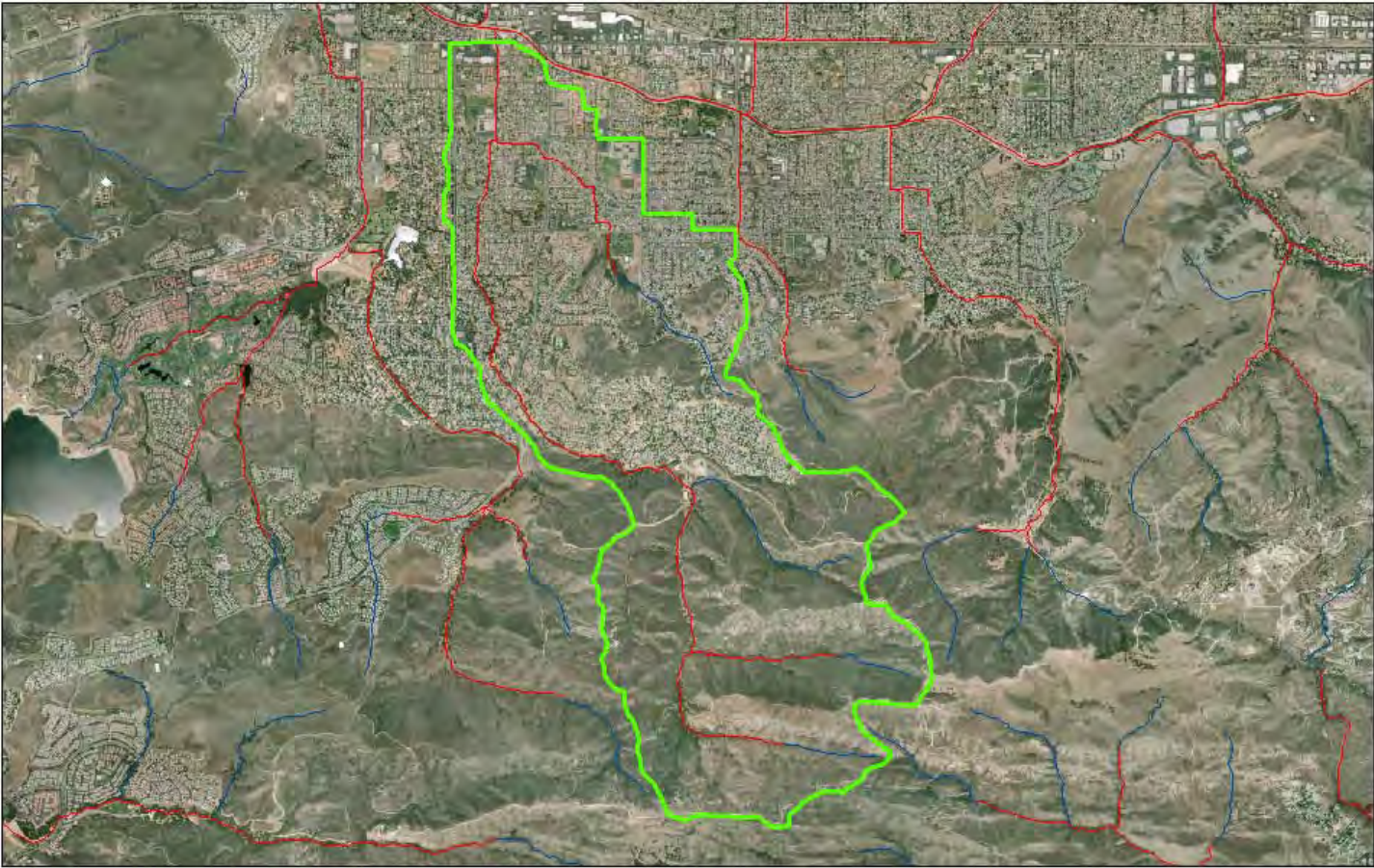


Figure 6

Oxnard Watershed



Figure 7

Moorpark Watershed

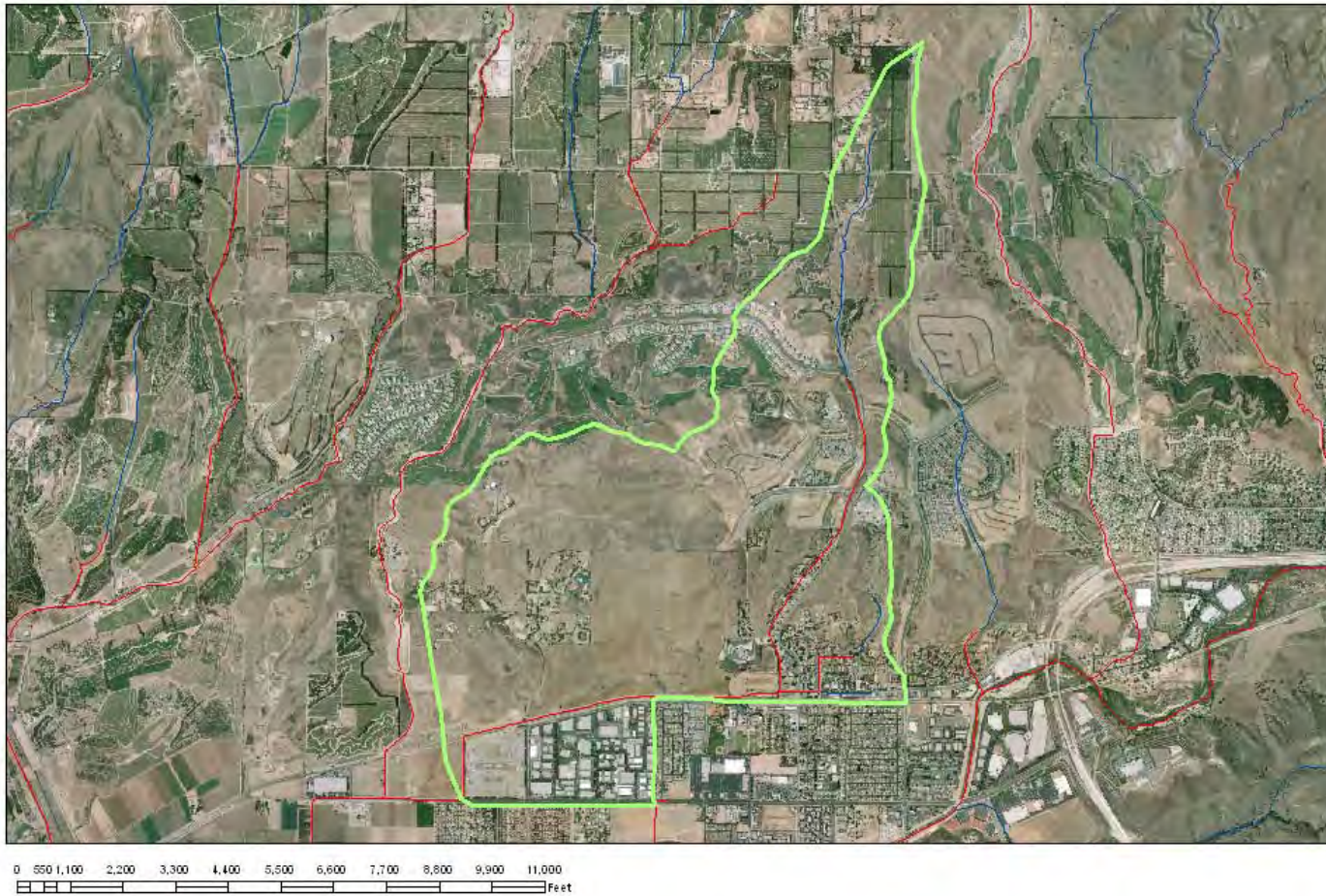


Figure 8

Port Hueneme Watershed



Figure 9

Fillmore Watershed



Figure 10

Thousand Oaks Watershed



Figure 11

Santa Paula Watershed



Figure 12

Appendix D. Event Summaries

Site	Event	Visit	Staff	Date	Arrival Time	PST/PDT	Flowmeter		Outside Staff (ft)	Fridge T °C	Flush (L)	Pump Count	Program/6712 Display	Comp bottle status/ Estimated Vol (L)	Comp Duration (nearest half hrs)	Comp Time	Grab Time	Toxicity Time	Notes
							Level (feet)	Flowmeter Flow (cfs)											
ME-CC	1	1	LL,SP	11/14/2023	1210	PST	1.142	NA	1.13	Turned on	4L Distilled	7,762	Unable to connect to 2105. Time: 15 min/500mlx35 start at 1500	Installed labelled bottle, lid off.					Tried troubleshooting onsite with laptop but unable to get laptop to communicate/directconnect so programmed time-paced
ME-CC	1	2	DL,DW	11/16/2023	0816	PST	1.346	NA		4	2L Distilled	355,233	Program done	17.5L	0845	0825	0850		At 0839 4230 1.339' and OSS 1.32'. Turned off 6712 and fridge and propped open.
ME-SCR	1	1	SC,EM	11/14/2023	1402	PST	1	NA	NA	2	4L Distilled	100,760	Time: 15 min/500mlx35, program disabled	Installed labelled bottle, lid off.					Calibrated pump. Turned off 6712. Raised swing arm (not noted in book but can see it raised in onsite camera).
ME-SCR	1	3	SC,CB	11/16/2023	0820	PST	7.652	NA	NA	0	2L Distilled	405,091	Program done	20L	0830	0840	0840		
ME-VR2	1	1	SBC,EM	11/14/2023	1130	PST	4.626	NA	NA	turned warmer	4L Distilled	426,823	Flow: 1 pulse/500mlx35, program disabled	Installed labelled bottle, lid off.					4230 Desiccant blue. Checked intake secured in stream
ME-VR2	1	2	SC	11/17/2023	1100	PST	4.638	NA	NA	0			Program disabled						
ME-VR2	1	3	LL	11/18/2023	1225	PST	4.635	NA	NA		2L Distilled	436,746	Not recorded	Re-capped					No samples taken. No response to rainfall at site
MO-CAM	1	1	LL,SP	11/14/2023	1345	PST				Turned on	4L Distilled	9,802	Flow: 1 pulse/500mlx35, program disabled	Installed labelled bottle, lid off.					
MO-CAM	1	2	EM,SM	11/15/2023	1530	PST	0.038	11	0	3			Program done	17L		1530	1530		Desiccant pink Field duplicates @ 1530 PST. Turned off 6712 and fridge and propped open.
MO-CAM	1	3	LL,SM	11/16/2023	0947	PST	0.033	10	0-0.25	3	2L Distilled	99,198	Program done	17.5L	0948				
MO-FIL	1	1	SM,ZB	11/14/2023	1017	PST	1.744	NA		Turned on	4L Distilled	5,625	Time: 15 min/500mlx35, program disabled	Installed labelled bottle, lid off.					Desiccant purple. Checked intake linebubbling - not clogged
MO-FIL	1	2	SC,RC,CB	11/15/2023	1950	PST	2.174	NA		0			Sample 27	14L		2000	2000		
MO-FIL	1	3	SC,CB	11/16/2023	1020	PST	1.813	NA		2	2L Distilled	169,759	Program done	18L	1025				Turned off 6712 and fridge.
MO-HUE	1	1	SC,EM	11/14/2023	1248	PST	NA	NA		turned warmer	4L Distilled	13,883	Time: 15 min/500mlx35, program disabled	Installed labelled bottle, lid off.					
MO-HUE	1	2	LL,SP	11/15/2023	1754	PST	NA	NA	4.25	4			Sample 19 in 3:00	10L		1800	1800		
MO-HUE	1	3	DL,DW	11/16/2023	0929	PST	NA	NA		2	2L Distilled	168,006	Program done	19L	0935				
MO-MEI	1	1	SBC,EM	11/14/2023	1035	PST	0.078	1	0	Turned on	4L Distilled	15,062	Flow: 1 pulse/500mlx35, program disabled	Installed labelled bottle, lid off.					Program was enabling immediately. Tightened loose cable from 6712 to 2105 fixed issue.
MO-MEI	1	2	LL,SP	11/15/2023	1657	PST		1		2			Program disabled	0L					No flow for sample collection
MO-MEI	1	3	SC	11/17/2023	1030	PST	0.077	1	NR	Turned on		15,062	Program disabled	0L					Second storm wave attempt
MO-MEI	1	4	LL	11/18/2023	1155	PST	0.079	1	NR	Turned off		15,062	Stopped program	0L Recapped bottle					
MO-MPK	1	1	LL,SP	11/14/2023	0933	PST	0.075	0.2		Turned on	4L Distilled	769,242	Flow: 1 pulse/500mlx35, program disabled	Installed labelled bottle, lid off.					Desiccant pink/purple. Site was serviced for WY 23/24 on 8/28/23 but no record of pump tubing replacement or pump count reset.
MO-MPK	1	2	EM,SM	11/15/2023	1705	PST	0.084	0.3	0	1			Program done	17L		1725	1725		Field blanks at 1735 PST Turned off 6712 and fridge and propped open.
MO-MPK	1	3	LL,SM	11/16/2023	0750	PST	NR	NR	0-0.25	0	2L Distilled	910,048	Program done	19L	0753				
MO-OJA	1	1	SC,EM	11/14/2023	1000	PST	0.1	5	NR	4	4L Distilled	23,000	Flow: 1 pulse/500mlx35, program disabled	Installed labelled bottle, lid off.					Desiccant pink
MO-OJA	1	2	LL,SP	11/15/2023	1539	PST		5	0-0.25*	2			Program disabled	0L		1600	1600		*Error by team?
MO-OJA	1	3	SC	11/17/2023	1015	PST	0.098	5	NR	NR		23,000	Program disabled	NR					
MO-OJA	1	4	LL	11/18/2023	1130	PST	0.1	5	NR	NR		23,000	Program disabled. Stopped program	0L Recapped bottle					Turned off 6712
MO-OXN	1	1	SM,ZB	11/14/2023	1117	PST	0.111			Turned on	4L Distilled	23,487	Flow: 1 pulse/500mlx35, program disabled	Installed labelled bottle, lid off.					Desiccant purple

MO-OXN	1	2	SC,RC,CB	11/15/2023	1540	PST	0.399	4.2	0.4	4	2L Distilled	95,740	Program done	16L	1615	1555	1555	Turned off 6712 and fridge and propped open.
MO-SIM	1	1	LL,SP	11/14/2023	1030	PST	NR	2	~0.25	Turned on	4L Distilled	16,489	Flow: 1 pulse/500mx35, program disabled	Installed labelled bottle, lid off.				Desiccant purple
MO-SIM	1	2	EM,SM	11/15/2023	1823	PST	0.212	5	0	2			Program disabled	1L		1845	1845	Turned off 6712 and fridge and propped open. Priority list needed for lab for limited volume (enable height set too high for this storm)
MO-SIM	1	3	LL,SM	11/16/2023	0825	PST	0.15	2	NR	2	2L Distilled	99,405	Program done	3.5L	0828			
MO-SPA	1	1	SM,ZB	11/14/2023	0936	PST	NA	NA	No flow	Turned on	4L Distilled	7,263	Flow: 1 pulse/500mx35, program disabled	Installed labelled bottle, lid off.				Turned off 6712 and fridge and propped open.
MO-SPA	1	2	SC,RC,CB	11/15/2023	1830	PST	NA	NA	Flowing	0	2L Distilled	658,950	Program done	17L	1855	1850	1850	
MO-THO	1	1	LL,SP	11/14/2023	1114	PST		0	<3'to~2'	0	4L Distilled	771,282	Flow: 1 pulse/500mx35, program disabled	Installed labelled bottle, lid off.				Site was serviced for WY 23/24 on 8/28/23 but no record of pump tubing replacement or pump count reset.
MO-THO	1	2	EM,SM	11/15/2023	1935	PST	2.207	2	~2	4			Program done	16L		1945	1945	
MO-THO	1	3	LL,SM	11/16/2023	0902	PST	2.024	0	~2	3	2L Distilled	934,800	Program done	17.75L	0905			Turned 6712 off
MO-VEN	1	1	SM,ZB	11/14/2023	1151	PST	0.043			Turned on	4L Distilled	6,316	Flow: 1 pulse/500mx35, program disabled	Installed labelled bottle, lid off.				Desiccant purple-pink
MO-VEN	1	2	SC,RC,CB	11/15/2023	1645	PST	0.121	3	0.2	3	2L Distilled	102,701	Program done	18.5L	1645	1700	1700	Turned off fridge and propped open

Event Notes:

NR: Not recorded

All times are recorded here in PST

Forecast Rain: 0.2-0.5"

Actual Rainfall: 0.1-0.4"

Storm Control: David Laak

Sample Tracking:

Bacteria samples to William Schwartz at VCHCA:

11/15/2023 @ 19:11 PST (OJA/HUE) by Landon Lujar

11/15/2023 @ 20:40 PST (CAM/SIM/MPK/THO/MB-1(MPK)/MD-1(CAM)) by Emily McCord

11/15/2023 @ 21:10 PST (OXN/VEN/SPA/FIL) by Sawyer Carman

11/16/2023 @ 11:12 PST (SCR) by Sawyer Carman

11/16/2023 @ 11:32 PST (CC) by David Laak

Toxicity samples to Aquatic Bioassay and Consulting Laboratories, Inc.:

11/15/2023 @ 19:35 PST (OJA/HUE) by Landon Lujar

11/15/2023 @ 21:00 PST (CAM/SIM/MPK/THO) by Emily McCord

11/15/2023 @ 21:40 PST (OXN/VEN/SPA/FIL) by Sawyer Carman

11/16/2023 @ 11:32 PST (SCR) by Sawyer Carman

11/16/2023 @ 08:50 PST (CC) by David Laak

Chemistry samples to PHYSIS Environmental Laboratories, Inc.

11/16/2023 @ 12:45 PST (All sampled grabs and composites) to Brendan Haskins by William B. Carej

Meters:

OJA/HUE (LL,SP): Not recorded

CAM/SIM/MPK/THO (EM,SM): Beckman 255 # 2151, YSI ProSense 13b101923

OXN/VEN/SPA/FIL (SC,RC,CB): Beckman 255 # 2554, YSI 22H10433C

SCR (SC,CB): Hanna TA06040171, YSI 23K102951

CC (DL,DW): Not recorded

Site	Event	Visit	Staff	Date	Arrival Time	PST/PDT	Flowmeter	Flowmeter Flow (cfs)	Outside Staff (ft)	Fridge T °C	Flush (L)	Pump Count	Program/6712 Display	Comp bottle	Comp	Grab Time	Toxicity	Notes
							Level (feet)							status/ Estimated Vol (L)	Duration (nearest half hrs)			
ME-VR2	2	1	MD	12/17/2023	1251	PST	4.638	NA	NA	-2 Turned up	4L Distilled	436,746	Flow: 1 pulse/500mlx35, program disabled	Installed labelled bottle, lid off.				
ME-VR2	2	2	SM,NY	12/19/2023	1623	PST	4.706	NA	NA	1			Flow: 1 pulse/500mlx35, program disabled Replace pump tubing. Errors have occurred. Sample 23 after 1 pulses	Empty/Dry	NA	1640	1640	
ME-VR2	2	3	DL,KH	12/19/2023	1715	PST	NR	NA	NA	NR		NR		Empty/Dry	NA			Troubleshooting for comp issue. Unable to determine cause or resolve in time for sample collection this event. Replaced pump tubing. Turned off 6712
MO-MEI	2	1	MD	12/17/2023	1203	PST	0.077	1		Turned on	4L Distilled	4,723	Flow: 1 pulse/500mlx35, program disabled	Installed labelled bottle, lid off.				
MO-MEI	2	2	SM,NY	12/19/2023	1342	PST	0.128	3	0	4			Program done. Reprogrammed for 15 samples.	9.5L		1356	1356	
MO-MEI	2	3	DL	12/20/2023	0801	PST	0.078	1	0.01	2	2L Distilled	126,619	Program done	19.5L	0805			Flow at edge of channel. Turned off 6712 and fridge and propped open
MO-OJA	2	1	MD	12/17/2023	1115	PST	0.1	5	NR	2	4L Distilled	23,000	Flow: 1 pulse/500mlx35, program disabled	Installed labelled bottle, lid off.				
MO-OJA	2	2	SM,NY	12/19/2023	1502	PST	0.1	5	0	2.5	2L Distilled	105,836	Program done	13L	1522	1502	NA	First flush grabs and toxicity were taken during Event 1 for MO-OJA

Event Notes:

NR: Not recorded

All times are recorded here in PST

Forecast Rain: 0.2-0.4". Multi-day storm with uncertainties in timing so difficult to specify which 24-hour forecast to use

Actual Rainfall: ~0.5

Storm Control: Dave Laak (pre-storm)/Kelly Hahs(storm)

Sample Tracking:

Bacteria samples to William Schwartz at VCHCA:

12/19/2023 @ 18:00 PST (VR2/MEI/OJA) by Nicole Yamagiwa

Toxicity samples to Victor Marquez at Aquatic Bioassay and Consulting Laboratories, Inc.

12/19/2023 @ 17:30 PST (VR2/MEI/OJA) by Nicole Yamagiwa

Chemistry samples to PHYSIS Environmental Laboratories:

12/20/2023 @ 08:57 PST (All sampled grabs and composites) to Andrew Leon by Kelly Hahs

Site	Event	Visit	Staff	Date	Arrival Time	PST/PDT	Flowmeter		Outside Staff (ft)	Fridge T °C	Flush (L)	Pump Count	Program/6712 Display	Comp bottle status/ Estimated Vol (L)	Comp Duration			Toxicity	Notes
							Level (feet)	Flow (cfs)							(nearest half hrs)	Comp Time	Grab Time		
ME-CC	3	1	EM	1/19/2024	1030	PST	1.186	NA	1.18	Turned on	4L Distilled	364,607	Flow: 1 pulse/500mlx35, program started. Stopped program	Installed labelled bottle, lid off.				4230 desiccant pink. Cleaned bubbler orifice. Sampler enabled immediately. Reconnected 6712 to 4230 and reprogrammed sampler.	
ME-CC	3	2	KH	1/20/2024	1233	PST	NR	NA	NR	NR			Flow: 1 pulse/500mlx35, program disabled					Duplicate sample taken. Labeled at 0945. Updated on COC by KH to 0940	
ME-CC	3	3	LL,SP	1/20/2024	0930	PST	1.259	NA	1.24	0			Program disabled	0L		0940		Turned fridge off and propped open.	
ME-CC	3	4	DL	1/21/2024	0841	PST	1.587	NA	NR	4	2L Distilled	683,342	Sample 33 after 1 pulse. Stopped program.	17L		0849		Turned 6712 off.	
ME-SCR	3	1	LL	1/19/2024	1407	PST	7.615	NA	NA	1	4L Distilled	409,867	Time: 22 min/500mlx35, program disabled	Installed labelled bottle, lid off.				Cleaned rain gauge	
ME-SCR	3	2	LL,SP	1/20/2024	0816	PST	7.729	NA	NA	2			Sample 4 in 00:15	4.5L		0830		Field blank samples also collected	
ME-SCR	3	3	DW,KH	1/21/2024	0636	PST	7.625	NA	NA	2	2L attempted	716,524	Program done	Full		0644		Raised swing arm to railing. The line could not be flushed. Likely due to a clog or a split in the tubing. (Troubleshooting at 07:45 determined a clog). Additional maintenance will be necessary. Turned 6712 off.	
ME-VR2	3	1	LL	1/19/2024	1122	PST	4.678	NA		2	4L Distilled	959,997	Flow: 1 pulse/500mlx35, program disabled	Installed labelled bottle, lid off.				Pump count reset to zero, but tubing has ~500,000 counts on it from previous troubleshooting efforts. Not tubing in house for replacement. Checked intake-Water ~2' below bank	
ME-VR2	3	2	LL,SP	1/20/2024	0657	PST	4.707	NA		0			Program disabled	Empty		0720		Turned 6712 off.	
ME-VR2	3	3	DL	1/21/2024	0806	PST	4.832	NA		3	2L Distilled	311,260	Program done	18.5		0810		Turned 6712 off.	
MO-CAM	3	1	EM	1/19/2024	0913	PST	NR	10	0	Turned on	4L Distilled	106,552	Flow: 1 pulse/500mlx35, program disabled	Installed labelled bottle, lid off.				4230 desiccant pink. Cleaned bubbler orifice.	
MO-CAM	3	2	SB,NY	1/20/2024	0445	PST	0.037	11	0	3			Program disabled	2.5		0500		Turned fridge off and propped open.	
MO-CAM	3	3	SB,LL	1/21/2024	0825	PST	0.035	10	0	4	2L Distilled	207,404	Program done	20L		0830		Turned 6712 off.	
MO-FIL	3	1	CB	1/19/2024	1136	PST	1.94	NA		Turned on	4L Distilled	174,333	Time: 22 min/500mlx35, program disabled	Installed labelled bottle, lid off.				4230 desiccant purple. Cleared intake.	
MO-FIL	3	2	EM,MD,CB	1/20/2024	0741	PST	2.269	NA		4			Sample 4 in 08:20	2L		0755		Turned fridge off and propped open.	
MO-FIL	3	3	EM,CB	1/21/2024	0818	PST	2.077	NA		2	2L Distilled	327,785	Program done	18.5L. Some ice in bottle		0820		Turned 6712 off.	
MO-HUE	3	1	LL	1/19/2024	1256	PST	NA	NA		2	4L Distilled	172,580	Time: 22 min/500mlx35, program disabled	Installed labelled bottle, lid off.					
MO-HUE	3	2	DL,DW	1/20/2024	0503	PST	NA	NA		4			Sample 8 in 00:16	4L		0515			
MO-HUE	3	3	DW	1/21/2024	0749	PST	NA	NA		4	2L Distilled	327,104	Program done	18L		0800		Turned 6712 off.	
MO-MEI	3	1	LL	1/19/2024	1033	PST	0.078	1		Turned on	4L Distilled	131,108	Flow: 1 pulse/500mlx35, program disabled	Installed labelled bottle, lid off.				Desiccant blue	
MO-MEI	3	2	DL,DW	1/20/2024	0743	PST	0.079	1	0	4			Program disabled	Empty		0750		Turned fridge off and propped open.	
MO-MEI	3	3	DL	1/21/2024	0725	PST	0.077	1		4	2L Distilled	206,300	Program done	4.5L		0730		Turned 6712 off.	
MO-MPK	3	1	EM	1/19/2024	1327	PST	0.075	0.2	0	Turned on	4L Distilled	920,240	Flow: 1 pulse/500mlx35, program disabled	Installed labelled bottle, lid off.				4230 desiccant pink. Cleaned bubbler orifice.	
MO-MPK	3	2	SB,NY	1/20/2024	0550	PST	0.071	0.1	0	Turned on.			Program disabled	Empty		0600			
MO-MPK	3	3	SB,LL	1/21/2024	0630	PST	0.072	0.1	<0.1	1	2L Distilled	995,280	Program disabled	10L		0640			
MO-OJA	3	1	LL	1/19/2024	0940	PST	0.1	5	<0.2	4	4L Distilled	109,863	Flow: 1 pulse/500mlx35, program disabled	Installed labelled bottle, lid off.				Desiccant mostly blue. Cleaned bubbler orifice. Checked battery connections were firm.	
MO-OJA	3	2	DL,DW	1/20/2024	0627	PST	0.101	5	0	2			Program disabled	Empty		0640			

MO-OJA	3	3	DL	1/21/2024	0650	PST	0.12	7	0 (flow in center of channel)	2	2L Distilled	183,759	Program done	12.5L	0655	Turned off 6712.
MO-OXN	3	1	KH,CB	1/19/2024	0907	PST	0.112	0.3	Dry	Turned on	4L Distilled	100,556	Flow: 1 pulse/500mlx35, program disabled	Installed labelled bottle, lid off.		4230 desiccant pink. Changed desiccant. Cleaned bubbler orifice. 2105 desiccant purple. Storm control unable to call OXN for programming and Flowlink has intermittent data gaps for OXN since 1/16, so disconnected 6712 from 4230 to run time-paced
MO-OXN	3	2	DL,KH	1/19/2024	1900	PST	NR	NR	Dry	NR			Changed to time-paced, 15-min samples, start at 02:00 1/20/24	Empty		WBC was able to program OXN and intermittently feeding data, so reconnected 6712 to 4230 and programmed for flow-paced
MO-OXN	3	3	EM,MD,CB	1/20/2024	0450	PST		8.6	0.5	4			Changed to flow-paced, 27 samples	3.5L	0510	[Storm control determined only 17 samples had been programmed, not 27]. Turned fridge off and propped open. Turned 6712 off.
MO-OXN	3	4	EM,CB	1/21/2024	0630	PST	0.111	0.3	0	-2	2L Distilled	183,233	Program done	16.5L. Had ice inside	0635	
MO-SIM	3	1	EM	1/19/2024	1245	PST	0.149	2	0	Turned on 13.	4L Distilled	109,223	Flow: 1 pulse/500mlx35, program disabled	Installed labelled bottle, lid off.		4230 desiccant pink. Cleaned bubbler orifice
MO-SIM	3	2	SB,NY	1/20/2024	0642	PST	0.152	2	0	Turned switch on			Program disabled	Empty	0650	Turned fridge off and propped open.
MO-SIM	3	3	SB,LL	1/21/2024	0705	PST	0.152	2	NR	1	2L Distilled	182,031	Program done	17L	0710	Turned 6712 off.
MO-SPA	3	1	KH,CB	1/19/2024	1053	PST	NA	NA	Dry	Turned on	4L Distilled	663,561	Flow: 1 pulse/500mlx35, program disabled	Installed labelled bottle, lid off.		Cleared intake (small, clear plastic bag had been inserted over it by someone unaffiliated with our Program.)
MO-SPA	3	2	EM,MD,CB	1/20/2024	0658	PST	NA	NA	Flowing Slightly	4			Sample 8 after 1 pulse Program done. Errors have occurred.	3.5L	0710	Turned fridge off and propped open.
MO-SPA	3	3	EM,CB	1/21/2024	0749	PST	NA	NA	flowing	2	2L Distilled	821,576		17L	0750	Turned 6712 off.
MO-THO	3	1	EM	1/19/2024	1130	PST	1.998	0	2	2	4L Distilled	445,223	Flow: 1 pulse/500mlx35, program disabled	Installed labelled bottle, lid off.		4230 desiccant purple
MO-THO	3	2	SB,NY	1/20/2024	0730	PST	2.009	0	2	4			Program disabled	Empty		Too little rainfall for qualifying event or runoff. (Note that rain fell later and did enable this site much later than the others.
MO-THO	3	3	SB,LL	1/21/2024	0750	PST	2.084	1	~2	2	2L Distilled	1,106,351	Program done	18L	0755	HWM slightly above 2'. Turned 6712 off
MO-VEN	3	1	KH,CB	1/19/2024	0947	PST	0.043	1	<OSS	Turned on	4L Distilled	107,427	Flow: 1 pulse/500mlx35, program disabled	Installed labelled bottle, lid off.		4230 desiccant pink. Changed desiccant. Cleaned bubbler orifice. 2105 desiccant purple. Some corrosion on negative terminal of one battery, but connections tight.
MO-VEN	3	2	EM,MD,CB	1/20/2024	0556	PST	0.177	5	<0.1 cfs	4			Program disabled	6L	0610	
MO-VEN	3	3	EM,CB	1/21/2024	0658	PST	0.041	1	0	-2	2L Distilled	190,580	Program disabled	16.5L. Had ice inside	0700	Turned fridge off and propped open. Turned 6712 off.

Event Notes:

NR: Not recorded
 All times are recorded here in PST
 Forecast Rain: 0.5-1" NWS and Fox
 Actual Rainfall: 0.25-0.75"
 Storm Control: Kelly Hahs

Meters:

HUE/MEI/OJA (DL,DW): YSI ProSolo 23K102951, Hanna pH TA06040171
 OXN/VEN/SPA/FIL (EM,MD,CB): YSI Pro2030 22H104330, Beckman 255 pH #2151
 CAM/SIM/MPK/(no THO runoff) (SB,NY): YSI Pro2030 13b101923, Hanna pH TA0550002?
 CC(+dup)/SCR(+FB)/VR2 (LL,SP): Beckman 255 # 2554, YSI ProSolo 23K102951

Sample Tracking:

Bacteria samples to William Schwartz at VCHCA:
 1/20/2024 @ 09:00 PST (HUE/MEI/OJA) by David Laak
 1/20/2024 @ 09:00 PST (OXN/VEN/SPA/FIL) by Marissa De Hoyos
 1/20/2024 @ 09:00 PST (CAM/MPK/SIM/(no THO runoff) by Nicole Yamagiwa
 1/20/2024 @ 10:30 PST (CC(+dup)/SCR(+FB)/VR2) by Shelby Palasik

Chemistry samples to PHYSIS Environmental Laboratories, Inc.
 1/21/2024 @ 12:22 PST (All sampled grabs and composites) to Jerry Mendoza (PHYSIS) by Kelly Hah:

Site	Event	Visit	Staff	Date	Arrival Time	PST/PDT	Flowmeter		Outside Staff (ft)	Fridge T °C	Flush (L)	Pump Count	Program/6712 Display	Comp bottle status/ Estimated Vol (L)	Comp Duration (nearest half hrs)	Comp Time	Grab Time	Toxicity Time	Notes
							Level (feet)	Flow (cfs)											
ME-CC	4	1	EM	1/31/2024	0855	PST	1.209	NA	1.2	Turned on	4L Distilled	696,054	Flow: 1 pulse/500mlx35, program disabled	Installed labelled bottle, lid off.				Desiccant pink	
ME-CC	4	2	SB,BC	2/1/2024	1140	PST	3.801	NA		5			Sample 20 after 1 pulse	9L		1155			
ME-CC	4	3	MD,CB	2/2/2024	0719	PST	1.732	NA		4	2L Distilled	1,043,376	Program done. Warning replace tubing.	18L		0722			
ME-SCR	4	1	SP,CB	1/31/2024	0845	PST	8.62	NA	NA	4	4L Distilled	95,776	Time: 20 min/500mlx35, program disabled	Installed labelled bottle, lid off.				Lowered swing arm and attached 2x4 block to bolt at top of swing arm to keep intake off channel bottom and out of sediment	
ME-SCR	4	2	SB,BC	2/1/2024	0855	PST	7.755	NA	NA	4			Sample 25 in 00:09	13.5L		0915			
ME-SCR	4	3	SB,BC	2/1/2024	1530	PST	7.67	NA	NA	2	2L Distilled	318,326	Program done	19.5L		1535		Raised swing arm. Outside light off.	
ME-VR2	4	1	SC,MD	1/31/2024	0800	PST	4.709	NA	1	3	4L Distilled	345,054	Flow: 1 pulse/500mlx35, program disabled	Installed labelled bottle, lid off.				Pump tube changed. Pump counts not reset. Checked intake and calibration.	
ME-VR2	4	2	SB,BC	2/1/2024	1005	PST	7.62	NA	4	2	2L Distilled	656,357	Program done	18.25L		1050	1025		
MO-CAM	4	1	EM	1/31/2024	0820	PST	0.034	10	0	Turned on	4L Distilled	216,694	Flow: 1 pulse/500mlx35, program disabled	Installed labelled bottle, lid off.				Desiccant pink	
MO-CAM	4	2	EM,SP	2/1/2024	0337	PST	0.524	88	0.5	2			Sample 7 after 1 pulse	2.5L		0345			
MO-CAM	4	3	EM,LS	2/1/2024	1330	PST	0.033	10	0	4	2L Distilled	303,921	Program done	17.5L		1335		Turned off fridge and 6712. Propped fridge open	
MO-FIL	4	1	SP,CB	1/31/2024	1122	PST	1.96	NA		Turned on	4L Distilled	332,334	Time: 20 min/500mlx35, program disabled	Installed labelled bottle, lid off.				Cleared intake. Desiccant purple.	
MO-FIL	4	2	MTD,CB,MD	2/1/2024	0615	PST	4.707	NA		2			Sample 16 1 pulse*	6.5L		0620		*Time paced. Not recorded correctly.	
MO-FIL	4	3	SB,BC	2/1/2024	1435	PST	2.345	NA		0	2L Distilled	483,650	Program done	17.5L		1440		Turned off fridge and 6712. Propped fridge open	
MO-HUE	4	1	MD	1/31/2024	1237	PST	NA	NA		3	4L Distilled	334,257	Time: 20 min/500mlx35, program disabled	Installed labelled bottle, lid off.					
MO-HUE	4	2	DL,DW	2/1/2024	0609	PST	NA	NA		3			Sample 17 in 00:07	9L		0620			
MO-HUE	4	3	MD,CB	2/1/2024	1437	PST	NA	NA		2	2L Distilled	488,900	Program done	18.5L		1440		Turned off 6712	
MO-MEI	4	1	SC,MD	1/31/2024	0957	PST	0.077	1		Turned on	4L Distilled	212,326	Flow: 1 pulse/500mlx35, program disabled	Installed labelled bottle, lid off.				Desiccant pink to blue. Pushed intake down ~1cm to be flush with bottom of channel	
MO-MEI	4	2	DL,DW	2/1/2024	0451	PST	0.677	70	~0.9	2			Sample 21 after 1 pulse	13.5L		0505			
MO-MEI	4	3	DL,DW	2/1/2024	1430	PST	0.123	3		3	2L Distilled	295,234	Program done	Overflowed. 0.5" water in bottom of fridge		1435		Pulled plug from fridge to drain. Turned off fridge and 6712. Propped fridge open	
MO-MPK	4	1	EM	1/31/2024	1125	PST	0.078	0.2	0	Turned on	4L Distilled	1,004,353	Flow: 1 pulse/500mlx35, program disabled. Replace pump tubing*	Installed labelled bottle, lid off.				*Pump counts were not reset when tubing replaced in August 2023. Tubing ok. Desiccant pink	
MO-MPK	4	2	EM,SP	2/1/2024	0444	PST	0.326	8.2	NR	0			Sample 5 after 1 pulse. Replace pump tubing*	2.5L		0500			
MO-MPK	4	3	EM,LS	2/1/2024	1420	PST	0.101	0.6	0	-1	2L Distilled	1,130,333	Program disabled. Replace pump tubing*	17L		1425		Turned off fridge and 6712. Propped fridge open	
MO-OJA	4	1	MD	1/31/2024	1116	PST	0.101	5	0.1	2	4L Distilled	189,318	Flow: 1 pulse/500mlx35, program disabled	Installed labelled bottle, lid off.				Desiccant pink to blue.	
MO-OJA	4	2	DL,DW	2/1/2024	0402	PST	0.555	55	~0.6	4			Sample 19 after 1 pulse	7.5L		0410			
MO-OJA	4	3	DL,DW	2/1/2024	1406	PST	0.113	6	~0.01	3	2L Distilled	263,757	Program done	13L		1410		Turned off 6712	
MO-OXN	4	1	SP,CB	1/31/2024	0945	PST	0.113	0.3		Turned on	4L Distilled	187,115	Flow: 1 pulse/500mlx35, program disabled	Installed labelled bottle, lid off.				Tube in fridge needs replaced - dirty. Desiccant blue.	
MO-OXN	4	2	MTD,CB,MD	2/1/2024	0340	PST	1.504	47.9	1.6	5 (turned colder)			Sample 12 after 1 pulse	5.5L		0350			
MO-OXN	4	3	MD,CB	2/1/2024	1327	PST	0.169	0.7	0.2	0	2L Distilled	259,205	Program done	16L		1335		Turned off fridge and 6712. Propped fridge open	

Site	Event	Visit	Staff	Date	Arrival Time	PST/PDT	Flowmeter	Flowmeter Flow (cfs)	Outside Staff (ft)	Fridge T °C	Flush (L)	Pump Count	Program/6712 Display	Comp bottle	Comp	Grab Time	Toxicity	Notes
							Level (feet)							status/ Estimated Vol (L)	Duration (nearest half hrs)			
ME-VR2	5	1	KH	3/29/2024	1327	PST	5.057	NA	~5'	-6 Turned warmer	4L Distilled	NA (not reset) ~345,000	Flow: 1 pulse/500mlx35, program disabled	Installed labelled bottle, lid off.				OSS visual estimate
ME-VR2	5	2	KH	3/30/2024	0550	PST	7.361	NA	~7'	-4 Turned warmer			Sample 22 after 1 pulse. Warning replace pump tubing	~10L				OSS visual estimate. Trip to confirm automated sampler functioning. *Meters Only. OSS visual estimate. Cleaned rain gauge because not recording rainfall-clogged with a lot of water sitting in the cone.
ME-VR2	5	3	KH,DW	3/30/2024	0755	PST	6.817	NA	~7'	-4 Turned warmer	2L Distilled		Program done. Warning replace pump tubing	~20L	0858	0810*		

Event Notes:

NR: Not recorded

All times are recorded here in PST

Forecast Rain: 1.50-3.00 inches for coast and valleys and up to 5.00 inches along the south facing mountains for the weekend totals, with a strong band Friday night into Saturday (event timing)

Actual Rainfall: 1.41"

Storm Control: Kelly Hahs

Sample Tracking:

Bacteria samples NA

Chemistry samples to PHYSIS Environmental Laboratories, Inc.

3/30/2024 @ PST (All sampled grabs and composites) to Jerry by Kelly Hahs

Meters:

VR2 (KH,DW): Hanna TA06040171, YSI 23K102952

Site	Event	Visit	Staff	Date	Arrival Time	PST/PDT	Flowmeter		Outside Staff (ft)	Fridge T °C	Flush (L)	Pump Count	Program/6712 Display	Comp bottle status/ Estimated Vol (L)	Comp Duration			Toxicity	Notes
							Level (feet)	Flow (cfs)							(nearest half hrs)	Comp Time	Grab Time		
ME-CC	6	1	KH,SB	5/13/2024	1057	PDT	1.226	NA	1.2	Turned on	4L Distilled	5,636	Time: 41 min/500mlx35. Run program. Sample 2 in 00:37	Installed labelled bottle, lid off.				Sample 1 volume good	
ME-CC	6	2	KH,SB	5/14/2024	1100	PDT	1.221	NA	1.205	4	2L Distilled	354,966	Program done	17L		1103	1105	Turned off 6712 and fridge and propped fridge open.	
ME-SCR	6	1	KH,SB	5/15/2024	0930	PDT	8.833	NA	NA	2	4L Distilled	327,562	Time: 41 min/500mlx35. Run program. Sample 2 in 00:38	Installed labelled bottle, lid off.				Lowered intake swing arm and secured above sediment level. Adjusted line length to calibrate to 500 ml. Sample 1 volume good.	
ME-SCR	6	2	KH,SB	5/16/2024	0930	PDT	8.83	NA	NA	2	2L Distilled	564,104	Program done	19L		0935	0940	Raised swing arm and secured to railing. Changed desiccant 2105. Turned 6712 off.	
ME-VR2	6	1	KH,EM	5/20/2024	0940	PDT	5.362	NA		-8 Turned warmer	4L Distilled	0	Time: 39 min/500mlx35. Run program. Sample 2 in 00:36	Installed labelled bottle, lid off.				Changed pump tubing and set counts to zero. Checked grab sample volume --> 550ml. Checked and cleaned algae from bubbler and intake. 4230 sedicant purple. Set all sites this sample date to 39 min pacing for earlier collection bc no parking zone at MO-MEI starts 7 am 5/21 for transformer/electrical work.	
ME-VR2	6	2	KH,MDJ	5/21/2024	0907	PDT	5.362	NA		-5	2L Distilled	298,541	Program done	20L		0910	0920	Turned off 6712. Heavy equipment /diesel fumes at station from OVSD work on basins opposite house.	
MO-CAM	6	1	KH,SB	5/13/2024	1035	PDT	0.038	11	Well below toe. Est. <0.01cfs	Turned on	4L Distilled	310,469	Time: 41 min/500mlx35. Run program. Sample 2 in 00:40	Installed labelled bottle, lid off.				Installed silicone dam and calibration line. Desiccant half pink/half purple. Sample 1 volume good.	
MO-CAM	6	2	KH,SB	5/14/2024	1140	PDT	0.034		<0.01 cfs	4	2L Distilled	398,513	Program done	18L		1140	1150	Removed dam from channel and reconnected main intake. Turned off 6712 and fridge and propped fridge open.	
MO-FIL	6	1	KH,SB	5/15/2024	0800	PDT	2.193	NA	NA	Turned on	4L Distilled	489,266	Time: 41 min/500mlx35. Run program. Sample 2 in 00:39	Installed labelled bottle, lid off.				Scraped (cleared) channel bottom around intake. Desiccant blue.	
MO-FIL	6	2	KH,SB	5/16/2024	0810	PDT	2.223	NA	NA	-2	2L Distilled	641,738	Program done	18L		0810	0820	Trip blanks included. Turned off 6712 and fridge and propped fridge open.	
MO-HUE	6	1	KH,EM	5/20/2024	1108	PDT	NA	NA		4	4L Distilled	495,817	Time: 39 min/500mlx35. Run program. Sample 1 vol looked high. Calibrated. Reprogram 34 samples with 36 min delay to start. Start at 10:57 MO-20-MAY, 10:22 MO 20-MAY.	Installed labelled bottle, lid off.				Sample 1 volume appeared high. Calibration volume was 500ml. Volume in carboy appeared higher because fridge floor slanted. Installed silicone dam and calibration line. Sample 1 volume good. Set all sites this sample date to 39 min pacing for earlier collection bc no parking zone at MO-MEI starts 7 am 5/21 for transformer/electrical work.	
MO-HUE	6	2	KH,MDJ	5/21/2024	1008	PDT	NA	NA		4	2L Distilled	658,940	Program done	18.5L		1010	1015	Turned 6712 off	
MO-MEI	6	1	KH,EM	5/20/2024	0810	PDT	0.077	1	<0.1 cfs	Turned on	4L Distilled	300,597	Time: 39 min/500mlx35. Run program. Sample 2 in 00:37	Installed labelled bottle, lid off.				Installed silicone dam and calibration line. Sample 1 volume good. Set all sites this watershed to 39 min pacing for earlier collection bc no parking zone and site starts 7 am 5/21 for transformer/electrical work	
MO-MEI	6	2	KH	5/21/2024	0645	PDT	0.078	1	<0.1 cfs	0	2L Distilled	377,705	Program done	Slightly overfilled		0720	0650	Removed dam from channel and reconnected main intake. Turned off 6712 and fridge and propped fridge open.	

MO-MPK	6	1	KH,SB	5/13/2024	0810	PDT	0.072	0.2	Channel dry	Turned on	4L Distilled	366,960	Time: 20 min/500mlx35. Delay start. Start at 19:00 MO 13-MAY 07:23, MO-13-MAY	Installed labelled bottle, lid off.	Delayed start for evening irrigation because channel completely dry. Cleared sand across channel, installed silicon dam and calibration line	
MO-MPK	6	2	KH,SB	5/14/2024	0820	PDT	0.071	0.1	Channel dry	Turned off	2L Distilled		Program done. Errors have occurred.	Empty	Dry Dry	Removed dam from channel and reconnected main intake. Turned off 6712 and fridge and propped fridge open. Removed comp and grab bottles.
MO-OJA	6	1	KH,EM	5/20/2024	0854	PDT	0.098	5	<toe. ~1cfs	4	4L Distilled	270,101	Time: 39 min/500mlx35. Run program. Sample 2 in 00:36	Installed labelled bottle, lid off.	Set all sites this watershed to 39 min pacing for earlier collection bc MO-MEI no parking zone at site starts 7 am 5/21 for transformer/electrical work. Installed silicone dam and calibration line. 4230 desiccant orange. Sample 1 volume good.	
MO-OJA	6	2	KH,MDJ	5/21/2024	0753	PDT	0.1	5	<toe	2	2L Distilled	346,788	Program done. Added one grab sample	13.5L	0820 0800	Dam not across channel, flow likely picked up during deployment. Reset dam across channel to collect samples. Removed dam from channel and reconnected main intake. Turned 6712 off.
MO-OXN	6	1	KH,SB	5/15/2024	1020	PDT	0.11	0.2	Channel dry	NA	NA	NA	6712 - screen display showing line of gray boxes. Unplugged power to 6712 for 30sec, reconnected and no change.	NA	4230 flashing "Power failed check source" in between level displays. Changed 4230 and 6712 desiccant. Did not set up site for sampling due to dry conditions and malfunctioning equipment. Factory reset unsuccessful (unplug, wait 30 sec, plug back in while pushing red + enter keys). Removed 6712 pump head for service. Turned 4230 off and on to clear error message	
MO-OXN	6	2	KH,SB	5/15/2024	1200	PDT	NR	NR	Channel dry	NA	NA	NA	NA	NA	NA	
MO-OXN	6	3	KH,SB	5/16/2024	1022	PDT	NR	NR	Channel dry	NA	NA	NA	NA	NA	Dry Dry	Took photos of dry channel
MO-SIM	6	1	KH,SB	5/13/2024	0858	PDT	0.25	8	0.2	Turned on	4L Distilled	268,367	Time: 21 min/500mlx35. Run program. Sample 2 in 00:19	Installed labelled bottle, lid off.	Installed calibration line and weighted mid stream with sand bag. Sample 1 volume good.	
MO-SIM	6	2	KH,SB	5/13/2024	1019	PDT							Sample 5 in 00:18. Changed to 41 min/x35. Took one sample. Reprogrammed 32 samples delay start 40 minutes. Start at 09:54 MO 13-MAY, 09:15 MO 13-MAY	~2L. Swirled, then dumped ~half bottle		
MO-SIM	6	3	KH,SB	5/14/2024	0855	PDT	0.245	7	0.22	1	2L Distilled	347,403	Program done	17.5L	0927 0900	Removed sand bag from channel and reconnected main intake. Turned off 6712 and fridge and propped fridge open.
MO-SPA	6	1	KH,SB	5/15/2024	0840	PDT	NA	NA	Channel dry	Turned on	4L Distilled	988,191	Time: 2 min/500mlx35, to enableat 0.12'. Program disabled.	Installed labelled bottle, lid off.	Tubing was disconnected between fridge and pump. Reconnected. Installed silicone dam in pipe. Fresh human waste on trail to site. Old human waste inside pipe. Removed dam from channel. Turned off 6712 and fridge and propped fridge open. Removed comp and grab bottles.	
MO-SPA	6	2	KH,SB	5/16/2024	0900	PDT	NA	NA	Channel dry	NR	2L Distilled	988,191	Program disabled. Stopped program	Empty	NA NA	
MO-THO	6	1	KH,SB	5/13/2024	0940	PDT	2.107	1	NR	2	4L Distilled	506,324	Time: 41 min/500mlx35. Run program. Sample 2 in 00:39	Installed labelled bottle, lid off.	Sample 1 volume good	
MO-THO	6	2	KH,SB	5/14/2024	1005	PDT	2.086	1	NR	4	2L Distilled	673,834	Program done	18L	1022 1015	Turned off 6712
MO-VEN	6	1	KH,SB	5/15/2024	1100	PDT	0.094	2	0.05	Turned on	4L Distilled	297,335	Time: 41 min/500mlx35. Run program. Sample 2 in 00:39	Installed labelled bottle, lid off.	Installed silicone dam and calibration line. Sample 1 volume good.	

MO-VEN 6 2 KH,SB 5/16/2024 1040 PDT 0.094 2 0.05 3 2L Distilled 391,788 Program done 18L 1040 1045

Removed dam from channel and reconnected main intake. Vandals had slashed the silicone tube in multiple locations but does not appear to have affected sample collection. Turned off 6712 and fridge and propped fridge open.

Event Notes:

NR: Not recorded
All times are recorded here in PDT
Dry event

Sample Tracking:

Bacteria samples to William Schwartz at VCHCA:
5/14/2024 @ 12:42 PDT (CC/CAM/SIM/THO) by Kelly Hahs
5/16/2024 @ 11:35 PDT (SCR/VEN/FIL) by Kelly Hahs
5/21/2024 @ 11:18 PDT (VR2/OJA/MEI/HUE) by Kelly Hahs

Chemistry samples to PHYSIS Environmental Laboratories, Inc.
5/14/2024 @ 15:00 PDT (CC/CAM/SIM/THO) to Adam Idell by Kelly Hahs
5/16/2024 @ 14:08 PDT (SCR/VEN/FIL) to Adam Idell by Kelly Hahs
5/21/2024 @ 13:10 PDT (VR2/OJA/MEI/HUE) to Adam Idell by Kelly Hahs

Meters:

All sites: Hanna TA06040171, YSI 23K102952