



Napa River and Sonoma Creek Vineyard General Permit

Monitoring



Napa RCD Coordinating 2 Studies

- **Do the Napa River and Sonoma Creek Streambeds Have Good Conditions for Fish Spawning?**
- **How Effective are BMPs for Treating Erosion of Unpaved Road on Hillslope Vineyard Properties?**

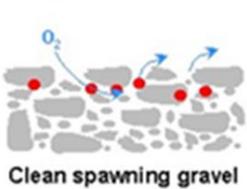
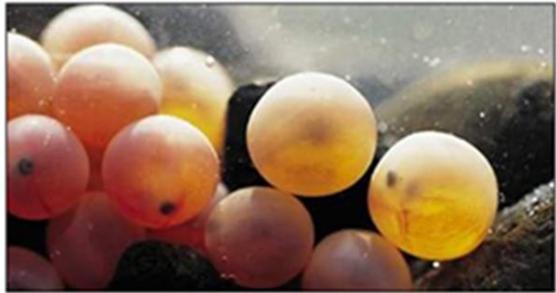
Partners



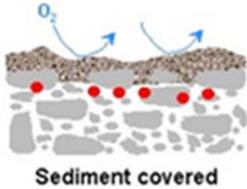


Do the Napa River and Sonoma Creek Streambeds Have Good Conditions for Fish Spawning?

Sediment Impairs Reproduction



Clean spawning gravel



Sediment covered spawning gravel

● Salmon egg





1.
Bulk sediment sampling
of spawning gravels is
tested technique for
monitoring spawning
conditions in streams

Bulk Sediment Sampling

- Identify spawning sites, perform channel slope survey, collect gravel samples:

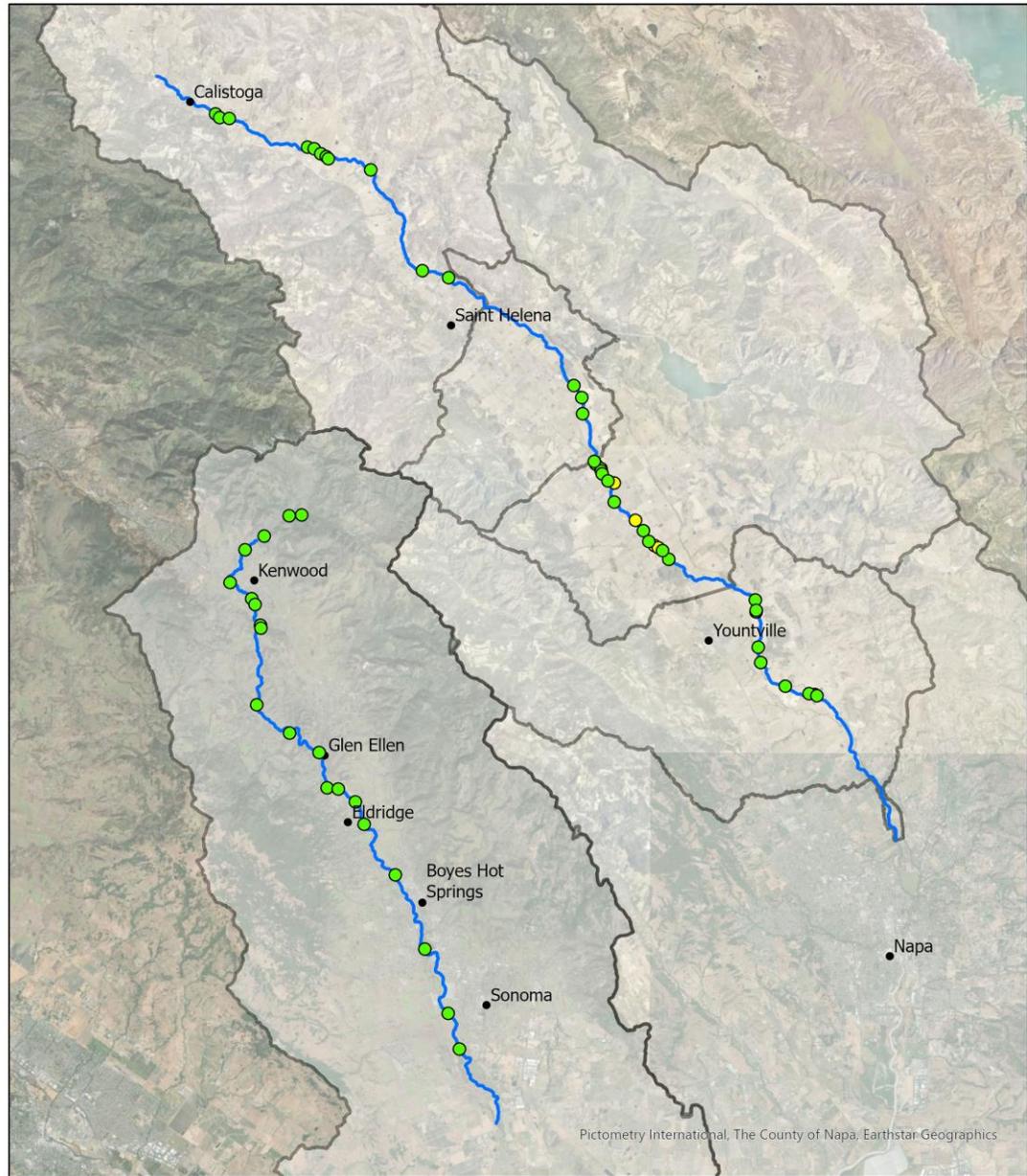
32 Napa River sites

20 Sonoma Creek sites

Completed with landowner permission

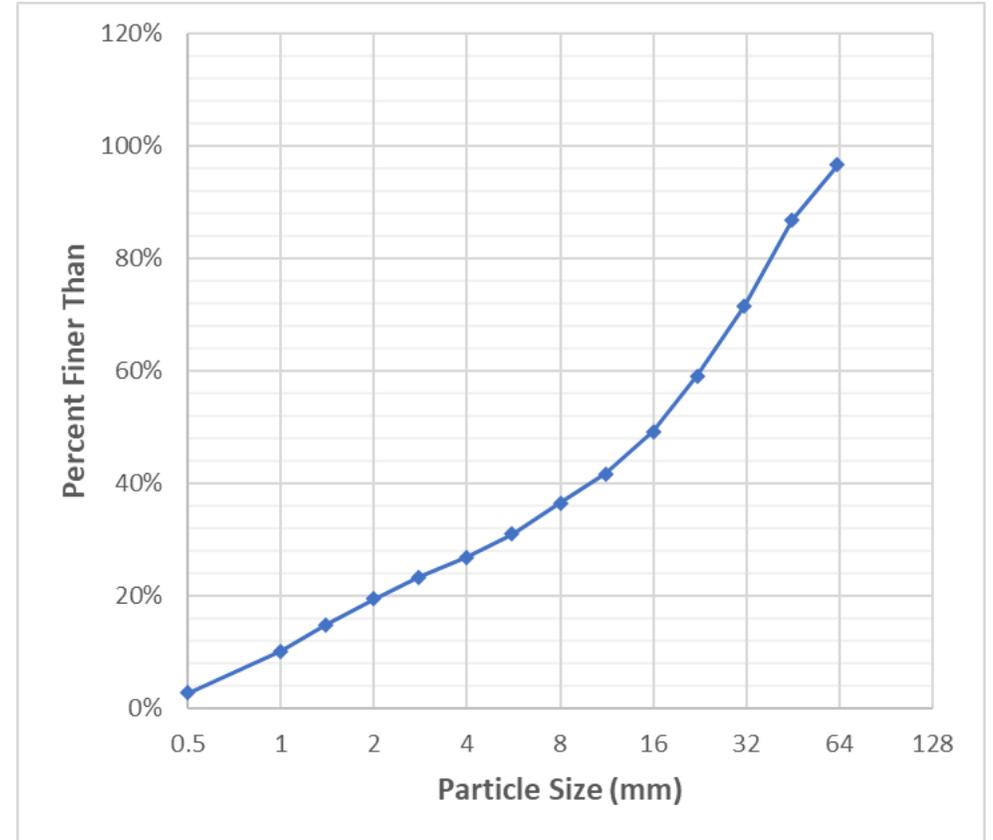
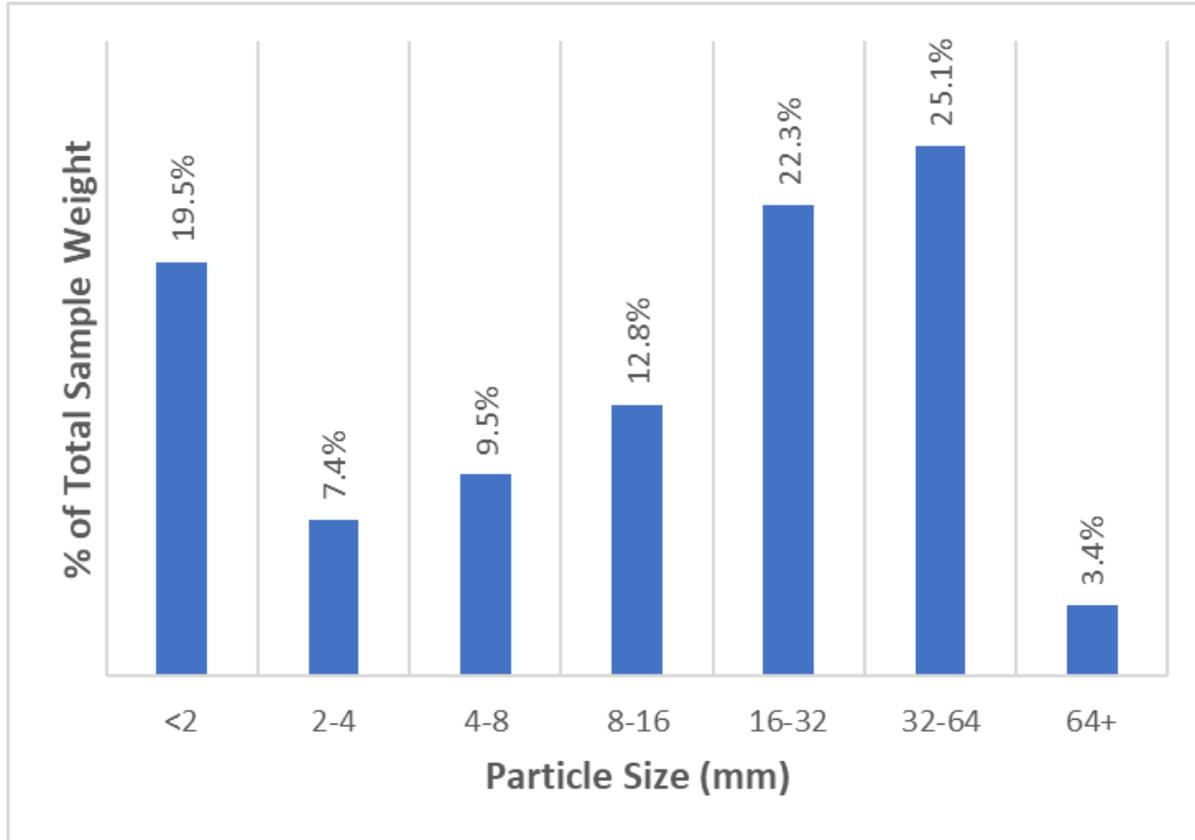
- Streambed sediments excavated to depth of ~20 cm.
- Sieved in the field into 8 size classes (64, 45, 32, 22, 16, 11, 8, and <8 mm)
- Each size class weighed
- Subsample of <8mm class collected and sent to lab for further analysis (5.6, 4, 2.8, 2, 1.4, 1, and <1 mm)



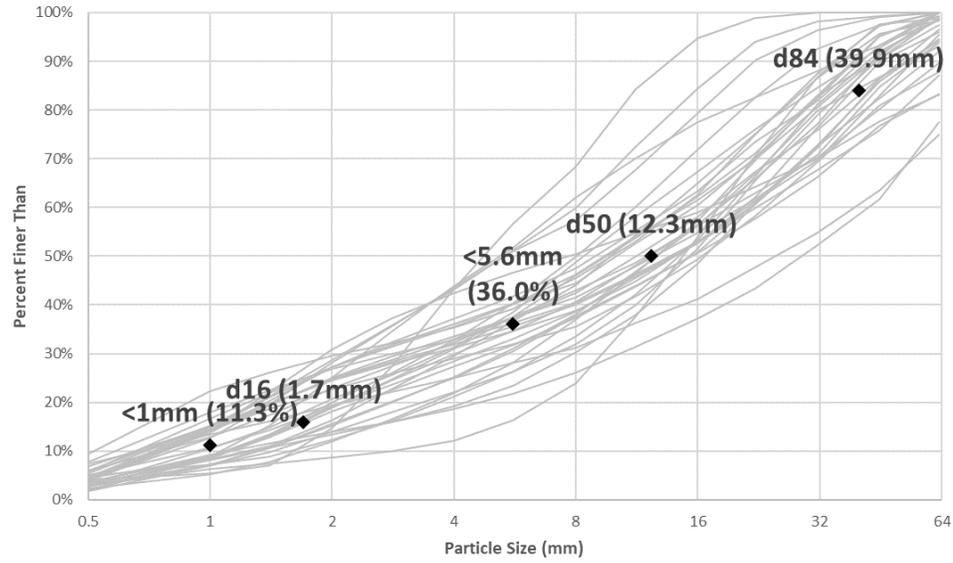


- Sampled Site Year 1
 - Sampled Site Year 2
 - Sonoma Creek Mainstem
 - Napa River Mainstem
- 0 10 Miles

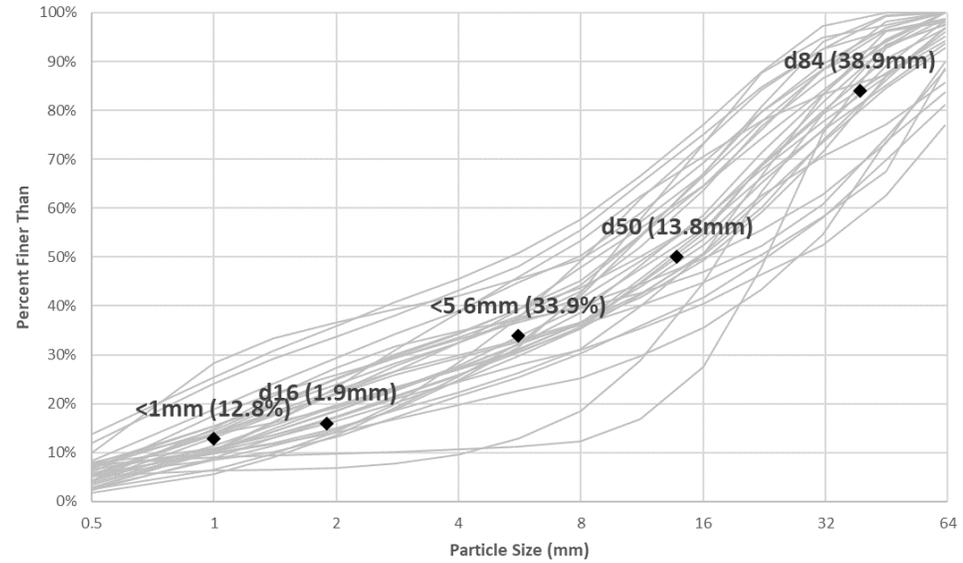
Napa River Site 137150 2023 Sample



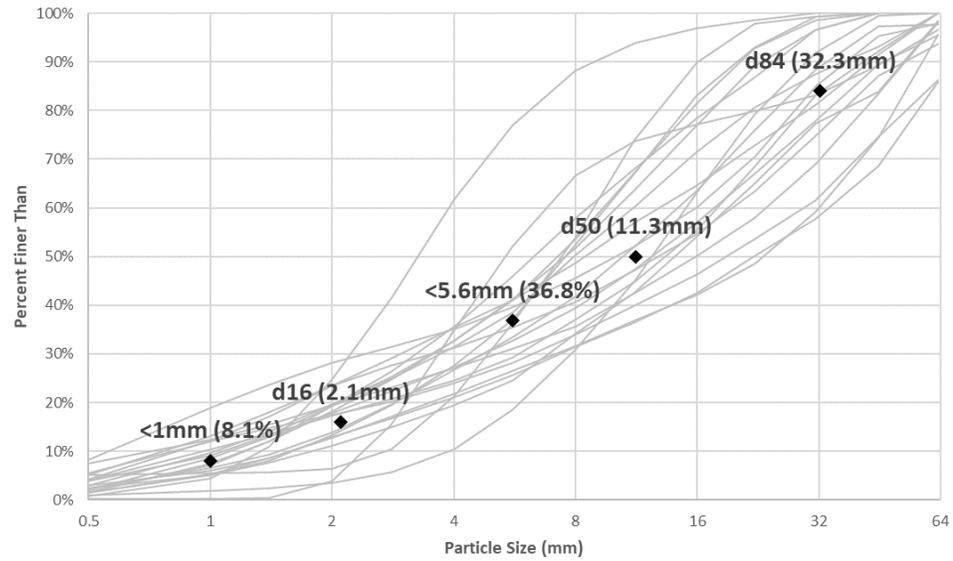
Napa River 2022



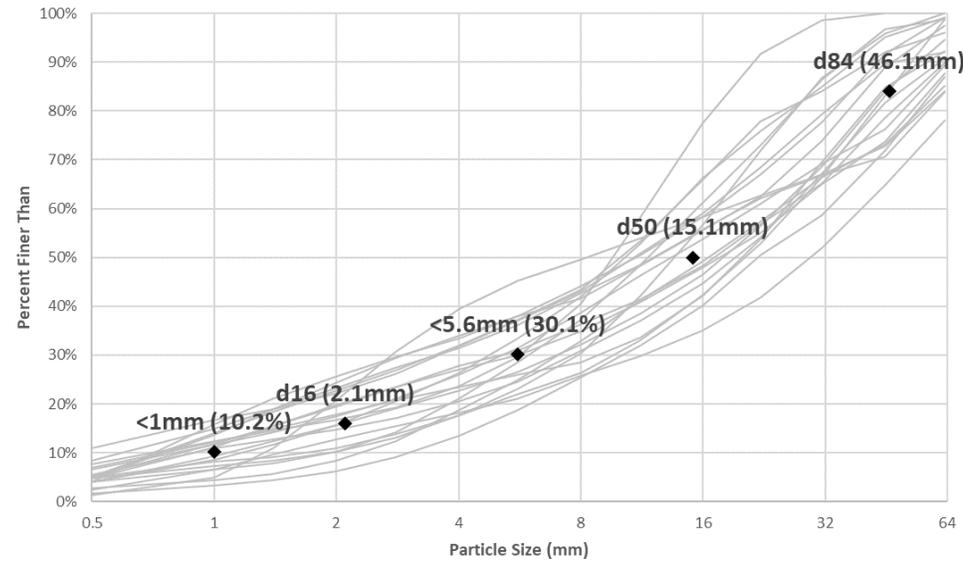
Napa River 2023



Sonoma Creek 2022



Sonoma Creek 2023



Spawning Gravel Quality Standards

Salmonid Life Stage	Need	Sediment Attribute	Standard
Adults	Movement and excavation of gravel	Median particle diameter (d_{50})	<40 mm
Eggs	Intra-gravel flow for incubation	Percentage of particles finer than 1 mm	<14%
Fry	Emergence from gravel	Percentage of particles finer than 5.6 mm	<30%

- Developed from peer-reviewed laboratory and field studies

Bulk Sediment Sampling Results

Stream	Reach	Year	Reach Average		
			d ₅₀	Percent Finer Than	
				1mm	5.6mm
Napa River	Calistoga to Sulphur Cr	2022	13.6	13.5%	34.6%
		2023	16.2	11.4%	32.1%
	Sulphur Cr to Bale Slough	2022	8.9	10.6%	38.5%
		2023	11.6	15.5%	37.5%
	Bale Slough to Conn Cr	2022	9.5	8.8%	39.2%
		2023	10.0	10.2%	32.3%
	Conn Cr to Tidal Boundary	2022	14.0	10.7%	33.0%
		2023	11.9	13.6%	33.7%
	Full Mainstem	2022	12.4	10.6%	36.4%
		2023	12.8	10.8%	32.8%
Sonoma Cr	Full Mainstem	2022	10.2	7.4%	35.9%
		2023	13.5	11.0%	29.9%

Conclusions

- Spawning gravels are not overly coarse and are suitable for successful excavation by spawning salmonids.
- Fine sediment (<1 mm) content is within desired conditions. Spawning gravels appear to be suitable for successful incubation of salmonid eggs.
- Material in the coarse sand and fine gravel range (<5.6mm) exceeds desired conditions in the Napa River and in one of two years of sampling in Sonoma Creek, and has the potential to decrease survival and emergence rates of salmonid fry.



2.
How effective are Best Management Practices for treating erosion of unpaved roads on hillslope vineyard properties?

BMPs to reduce hydrologic connection between roads and streams



Rolling dips



Water bars

BMPs to reduce potential for culvert plugging and diversion



Critical dip

Single post trash rack

Region 2 - Vineyard WDR BMP Effectiveness Monitoring Program

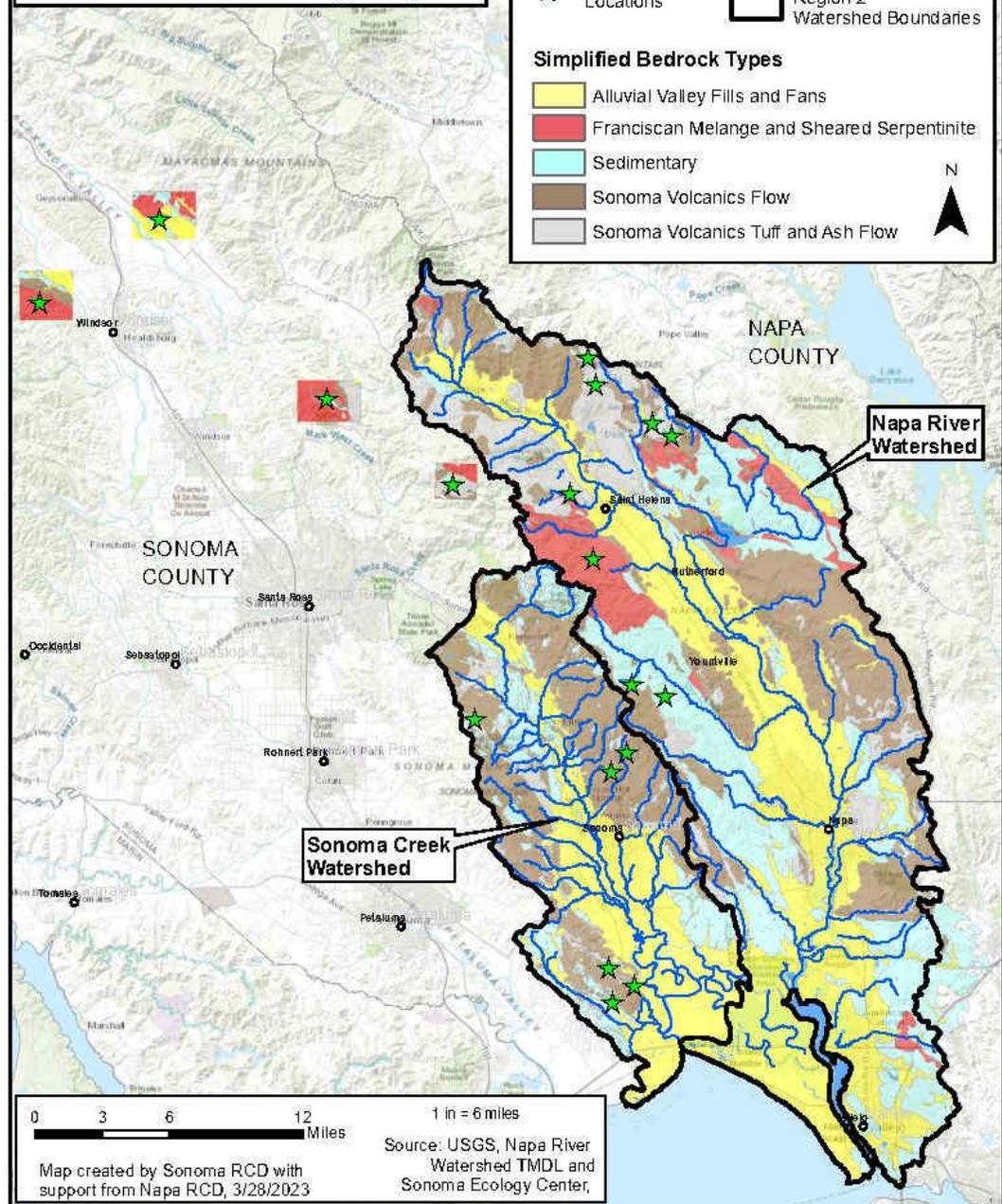
Features

- ★ BMP Monitoring Locations
- Main Streams
- ▭ Region 2 Watershed Boundaries

Simplified Bedrock Types

- Alluvial Valley Fills and Fans
- Franciscan Melange and Sheared Serpentinite
- Sedimentary
- Sonoma Volcanics Flow
- Sonoma Volcanics Tuff and Ash Flow

N



0 3 6 12 Miles
1 in = 6 miles

Map created by Sonoma RCD with support from Napa RCD, 3/28/2023

Source: USGS, Napa River Watershed TMDL and Sonoma Ecology Center,

Effectiveness of Best Management Practices

	Reduce Plug Potential	Reduce Diversion Potential	Reduce Hydrologic Connectivity	
Performance	Trash rack	Critical dip	Rolling dip	Waterbar
Number of BMPs Performing Effectively	28	38	209	191
Number of BMPs Not Effective	1	0	8	15
Number of BMPs Monitored	29	38	217	206
Percent of BMPs Performing Effectively	97%	100%	96%	93%

Questions?

Frances Knapczyk

Program Director

Frances@NapaRCD.org

Paul Blank

Environmental Scientist

Paul@NapaRCD.org

Bill Birmingham

Program Manager

Bill@NapaRCD.org

