

State Water Resources Control Board  
Order 12/10/2021

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Term 2 - Fisheries Monitoring Tasks



**Sonoma  
Water**

**August 1, 2022**

**Prepared by**

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## Introduction

On November 17, 2021, the Sonoma County Water Agency (Sonoma Water) filed a Temporary Urgency Change Petition (TUCP) with the State Water Resources Control Board (SWRCB) to temporarily reduce minimum instream flows in the upper Russian River to address low storage in Lake Mendocino. The TUCP requested an implementation of an alternative hydrologic index based on Lake Mendocino storage (SWRCB 2021). The SWRCB issued an Order (Order) approving the Sonoma Water's TUCP on December 10, 2021 (SWRCB 2021). The SWRCB's Order included fisheries monitoring and reporting tasks which are summarized in term 2 of the Order and presented in the methods section of this report.

## Methods

In the sections that follow, we outline the monitoring methods intended under Term 2 (Fisheries Monitoring) of the Order.

### Habitat measurements

#### Lower Russian River

##### *Transects*

Sonoma Water visited critical riffles to assess adult salmonid passage opportunities in the lower Russian River biweekly starting when flow dropped below 125 cfs at the USGS Hacienda gage (station number 1146700). Sites were based on consultation with NMFS. Sites included Brown's Riffle near the confluence of the Russian River and Austin Creek, Monte Rio, Vacation Beach, the Russian River near the confluence with Hulbert Creek, and Steelhead Beach. At each site riffle length, width, and depth was measured, and sites were documented with photographs. Sonoma Water was also tasked with conducting visual surveys of likely holding pools located near riffle sites to document whether adult salmonids were congregating in pools.

### Spawning surveys

#### Dry Creek

If flow at the USGS Hopland gage (station number 11462500) falls below 100 cfs, Sonoma Water was to conduct biweekly walking surveys of riffles in Dry Creek between Warm Springs Dam and Lambert bridge. A count of salmonid redds, live adult salmonids, and adult salmonid carcasses were to be documented.

#### Alexander Valley and Upper Russian River

If flow at the USGS Hopland gage (station number 11462500) falls below 100 cfs, Sonoma Water was to monitor the number of adult salmonids in representative reaches in Alexander Valley and the Upper Russian River via walk in spawner surveys. Proposed reaches included the confluence of the east and west fork of the Russian River, Leaping lady rock, Commisky Station Road, downstream of Crocker Road, downstream of Washington School Road, and Alexander Valley. A count of salmonid redds, live adult salmonids, and adult salmonid carcasses were to be documented. Sonoma Water was also tasked with photo documentation and written descriptions of prevailing conditions as they relate to tributary access by adult salmonids for survey reaches that contained major tributaries. Proposed tributaries included the west fork of the Russian River, Pieta Creek, Cummiskey Creek, and Big Sulphur Creek.

## Results:

### Habitat measurements

#### Lower Russian River

Riffle Crest transects and longitudinal profiles were taken at Vacation Beach and Steelhead Beach, on March 13, 2022 and in the Russian River near the confluence with Hulbert Creek on March 14, 2022 (Figure 1). Flow was 109 cfs and 103 cfs on March 13, and March 14, 2022, respectively, at the USGS Hacienda stream gage (gage number 11467000). Figure 1 through Figure 8 show transect and longitudinal depths for each site on these dates. Brown's riffle near the confluence with Austin Creek and Monte Rio were not surveyed because these sites were inundated due to the increase in stage in the estuary from a river mouth closure. Additional lower river surveys were canceled due to high flow following a rain event in mid-April that increased flow to over 1,000 cfs (Figure 8). No adult salmonids were observed holding in pools located adjacent to riffle sites.

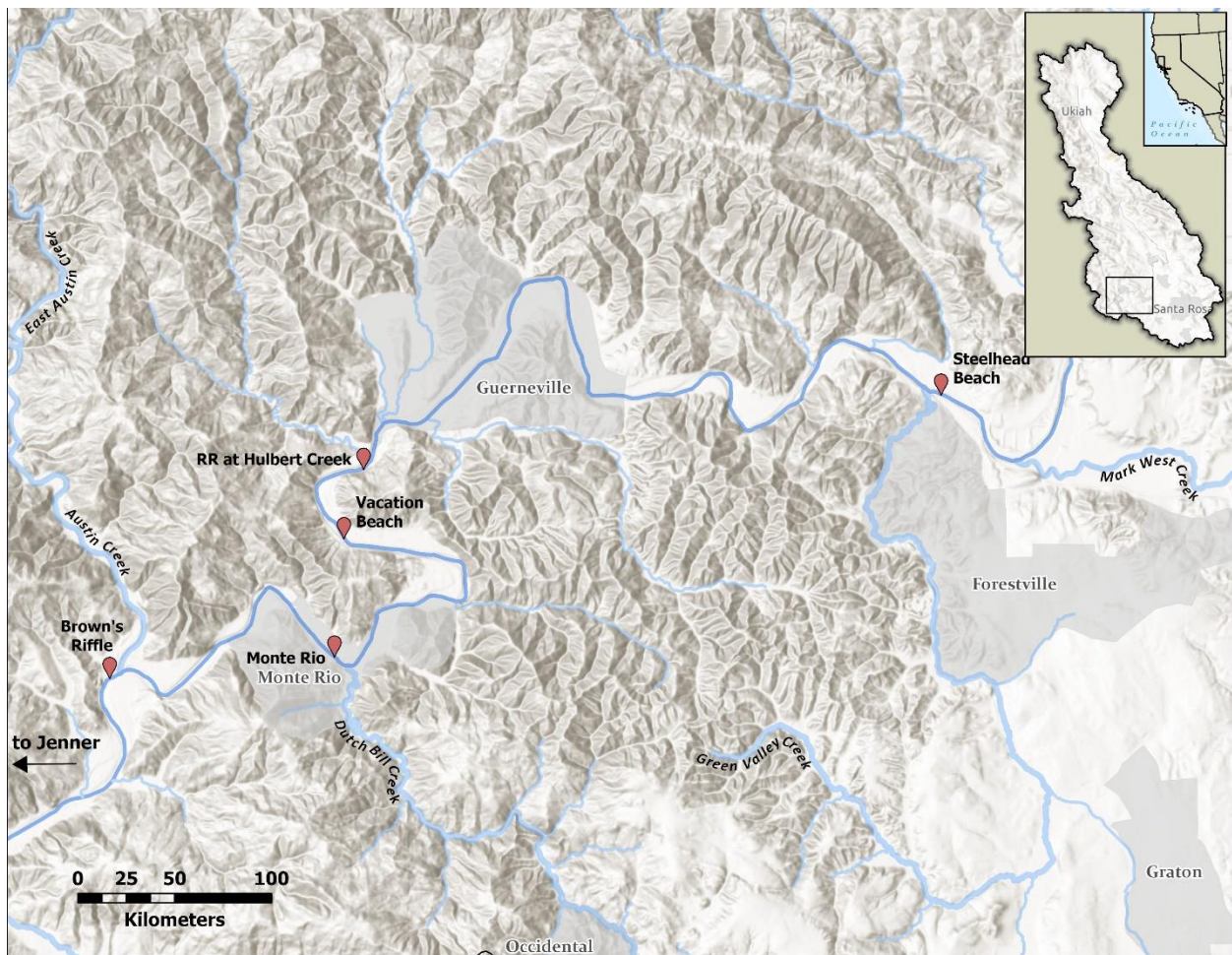


Figure 1. The sample sites at Brown's riffle, Monte Rio, Vacation Beach, Russian River near the confluence with Hulbert Creek, and Steelhead Beach.

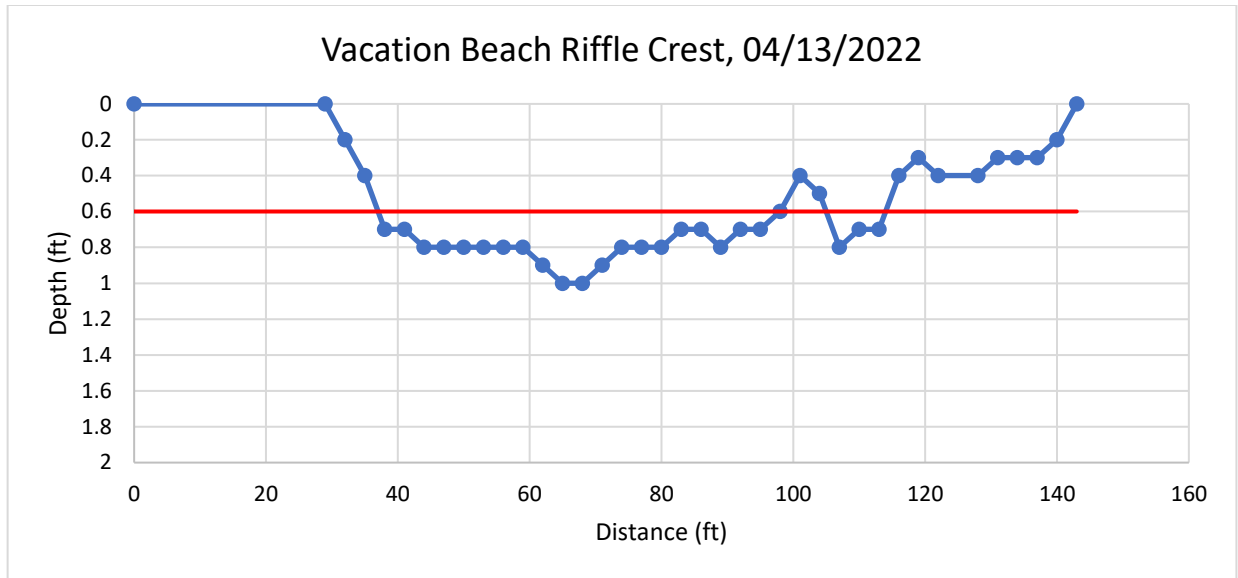


Figure 2. Riffle crest transect depths at Vacation Beach on April 13, 2022. Flow at the USGS Hacienda stream gage (gage number 11467000) was 109 cfs. The red line indicates the suggested passage depth from the literature.

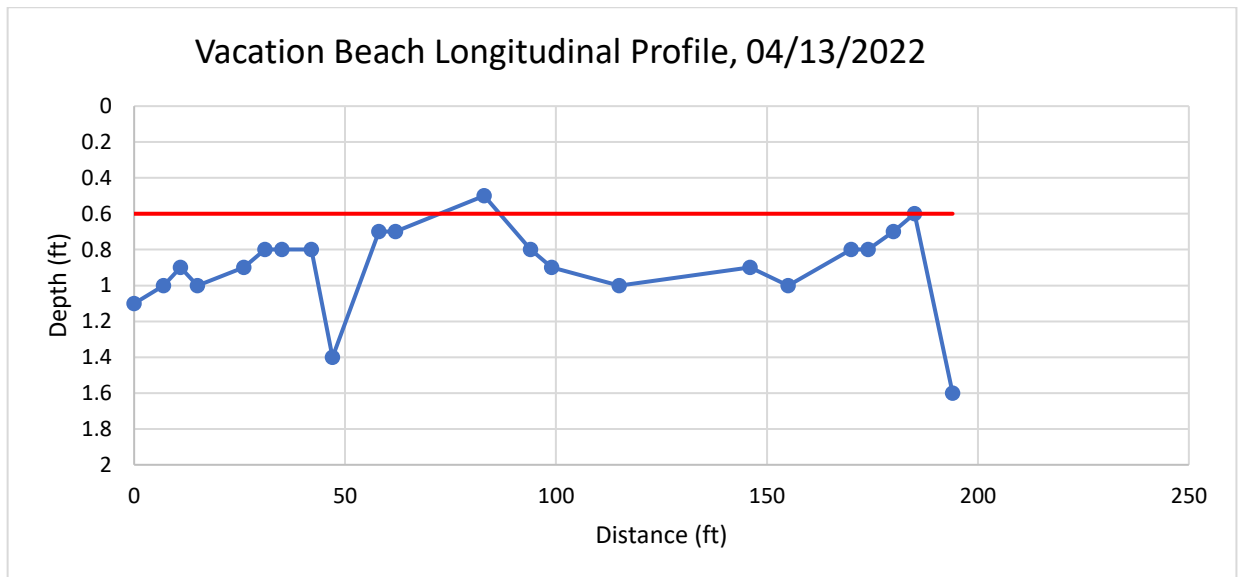


Figure 3. Longitudinal profile depths at Vacation Beach on April 13, 2022. Flow at the USGS Hacienda stream gage (gage number 11467000) was 109 cfs. The red line indicates the suggested passage depth from the literature.

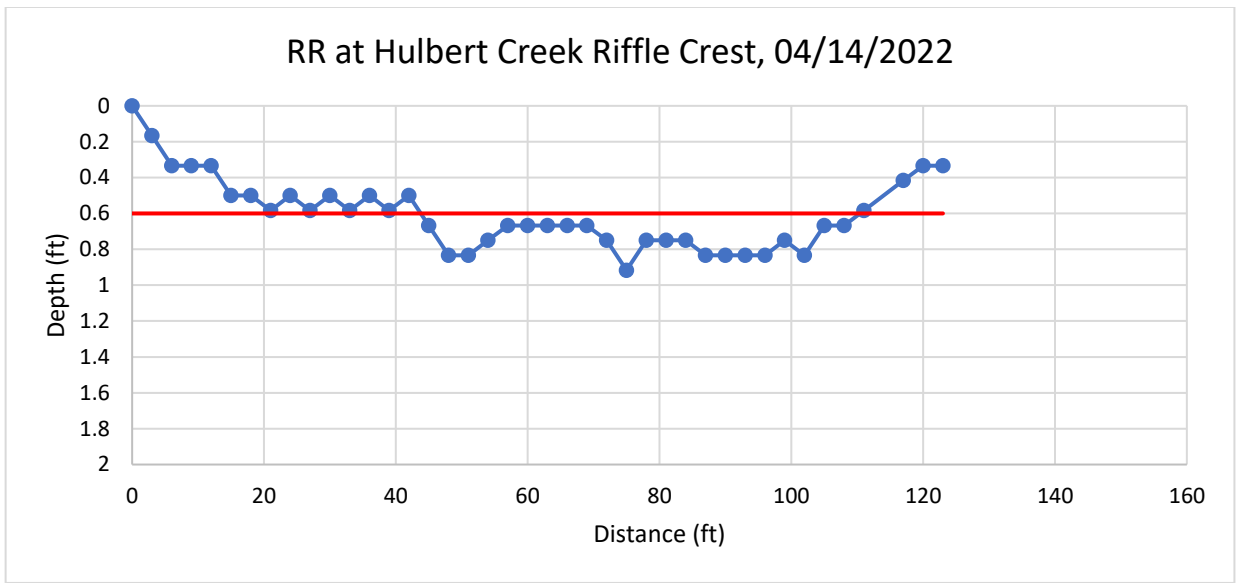


Figure 4. Riffle crest transect depths near the confluence with Hulbert Creek on April 14, 2022. Flow at the USGS Hacienda stream gage (gage number 11467000) was 113 cfs. The red line indicates the suggested passage depth from the literature.

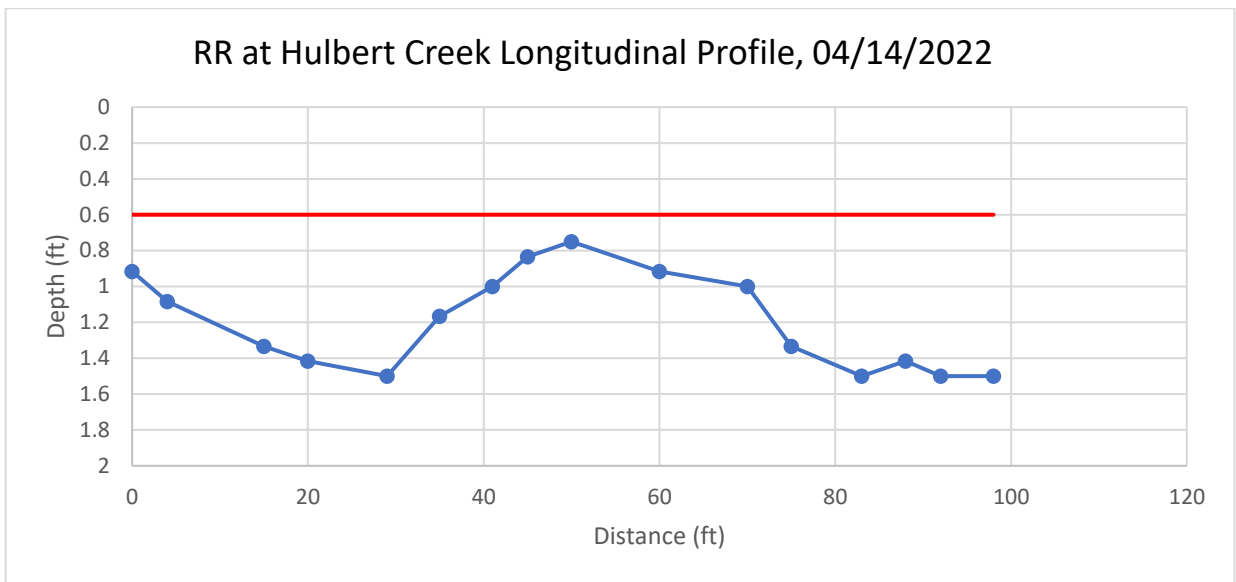


Figure 5. Longitudinal profile depths near the confluence with Hulbert Creek on April 14, 2022. Flow at the USGS Hacienda stream gage (gage number 11467000) was 113 cfs. The red line indicates the suggested passage depth from the literature.

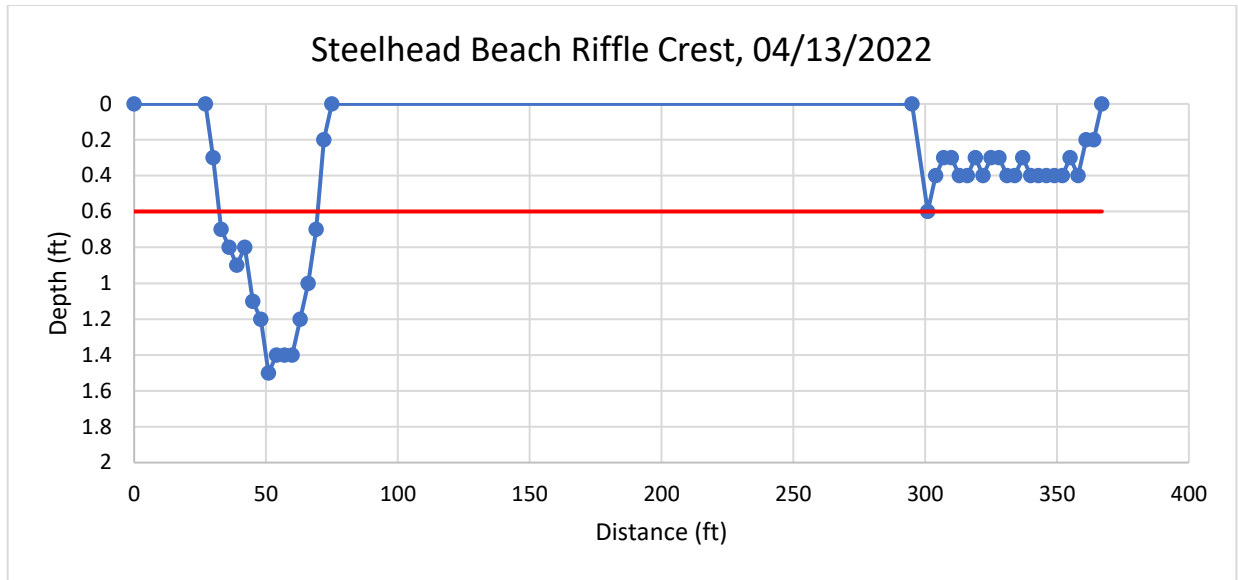


Figure 6. Riffle crest transect depths at Steelhead beach on April 13, 2022. Flow at the USGS Hacienda stream gage (gage number 11467000) was 109 cfs. The red line indicates the suggested passage depth from the literature.

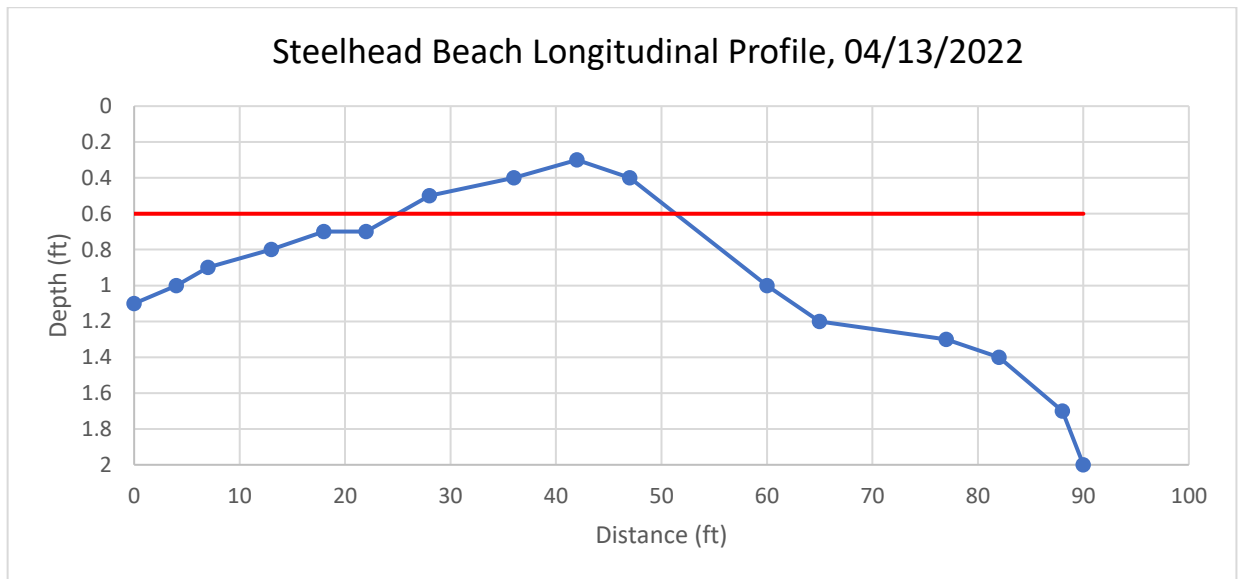


Figure 7. Longitudinal profile depths at Steelhead Beach on April 13, 2022. Flow at the USGS Hacienda stream gage (gage number 11467000) was 109 cfs. The red line indicates the suggested passage depth from the literature.

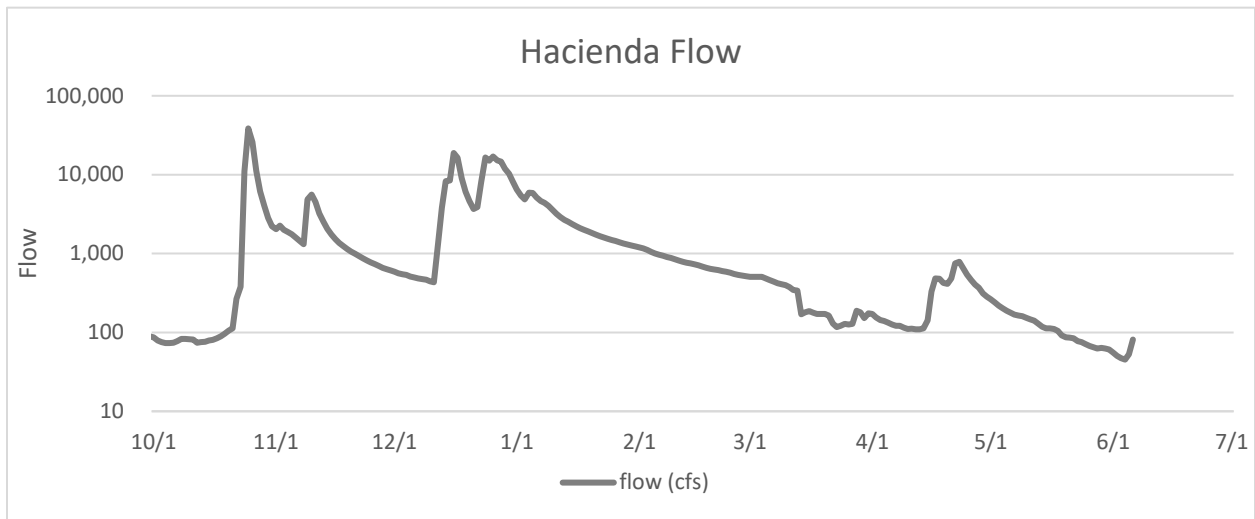


Figure 8. Flow in the Russian River at the USGS Hacienda stream gage (USGS gage number 11467000).

## Spawning surveys

### Dry Creek, Alexander Valley, and Upper Russian River

Spawner surveys were not conducted in Dry Creek due to poor visibility. Alexander Valley and the upper Russian River were surveyed on March 3, March 15, March 29, and on April 12, 2022. Sites sampled include the Russian River at Alexander Valley Road, at Crocker Road, at Washington School Road, at Commisky Station Road, downstream of Leaping lady rock, and at the confluence of the east and west fork (Figure 9). On days surveys were conducted flow ranged from 29 to 144 cfs depending on location and date (Table 1). In total 38 adult salmonids and 81 redds were observed (Figure 10).

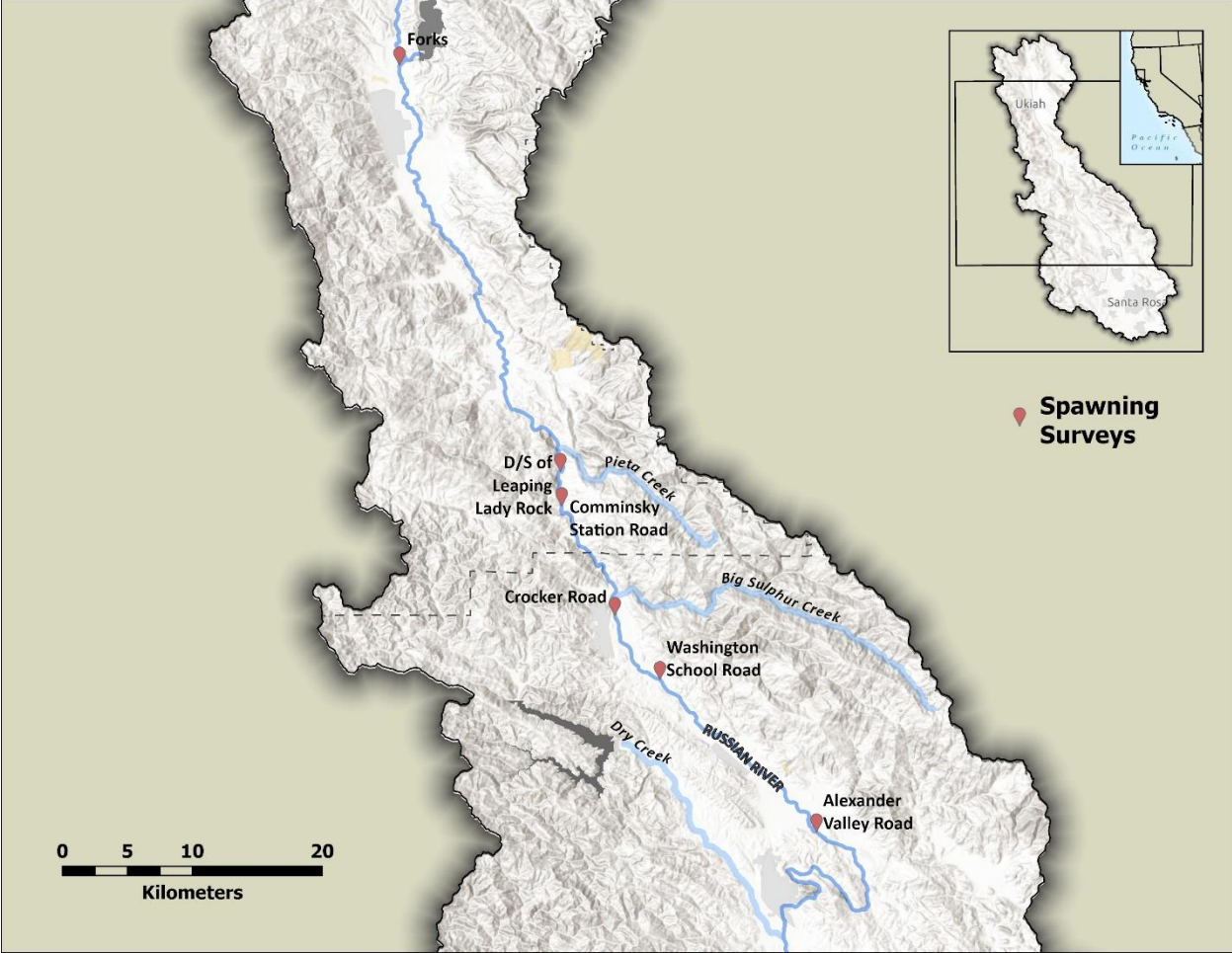


Figure 9. Spawner surveys were conducted in the mainstem Russian River at Alexander Valley Road, at Crocker Road, at Washington School Road, at Commisky Station Road, downstream of Leaping lady rock, and at the confluence of the east and west fork.



Table 1. The date of the Alexander Valley and upper Russian River salmon spawning surveys, USGS gage station number, and corresponding flow in cubic feet per second (cfs) on the survey date. Flow at the Forks is a combination of the flow in the west fork of the Russian River (USGS gage number 11461000) and the release from Lake Mendocino into the east fork of the Russian River.

Date	Station No.	Stream gage	Fow (cfs)
3/3/2022	11461000	Forks	46.6
	11462500	Hopland	72.7
	11463000	Cloverdale	108
	11463682	Jimtown	144
3/15/2022	11461000	Forks	45.7
	11462500	Hopland	44.8
	11463000	Cloverdale	60.4
	11463682	Jimtown	95.6
3/29/2022	11461000	Forks	45.45
	11462500	Hopland	49.1
	11463000	Cloverdale	64.6
	11463682	Jimtown	94.5
4/12/2022	11461000	Forks	47.2
	11462500	Hopland	26.9
	11463000	Cloverdale	39.9
	11463682	Jimtown	65.2

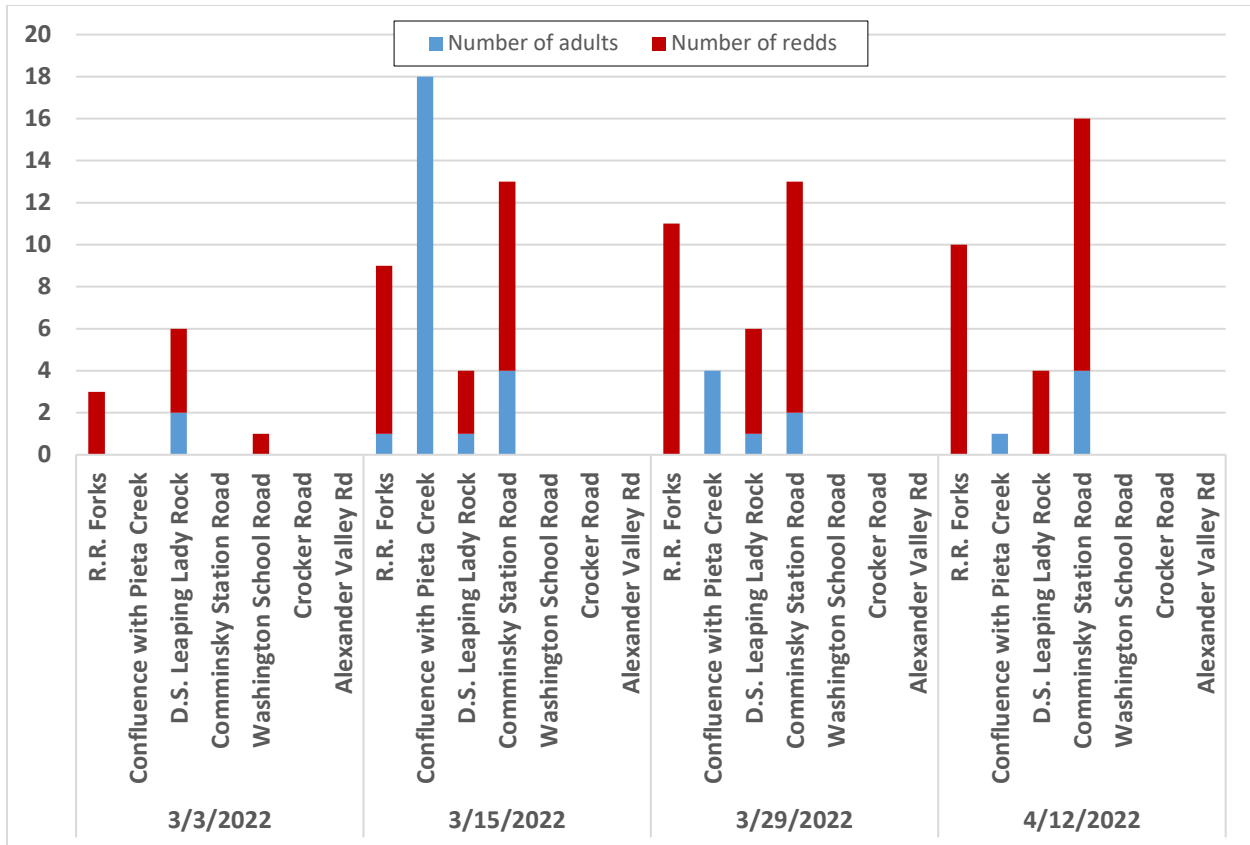


Figure 10. The number of adult salmonids and redds observed in Alexander Valley and the upper Russian River during spawner surveys in the spring of 2022.

Photographs were taken of tributary mouths for salmonid spawning survey reaches that contained major tributaries. These photographs were collected to document the prevailing conditions as they relate to tributary access by adult salmonids. Photographs were taken at the confluence of the east and west fork of the Russian River, and at Pieta, Cummiskey, and Big Sulphur Creeks (Figure 11 through Figure 21). The west fork appeared to be accessible by adult salmonids, at least at the mouth. Surveys were not conducted on the west fork upstream of the confluence with the Russian River. It appeared that adult salmonids would have difficulty accessing at Pieta, and Big Sulphur Creeks under the observed flows in the respective tributaries. Pieta Creek was disconnected from the mainstem Russian River and was not accessible to adult salmonids during the period of time that these surveys occurred.



Figure 11. A photo of the confluence of the east and west forks of the Russian River taken on March 15, 2022, when flow in the west fork was 15.7 cfs. The west fork is on the left side of the photograph.



Figure 12. A photo of the confluence of the east and west forks of the Russian River taken on March 29, 2022, when flow in the west fork was 16.8 cfs. The west fork is on the left side of the photograph.



Figure 13. A photo of the confluence of the east and west forks of the Russian River taken on April 12, 2022, when flow in the west fork was 11.7 cfs. The west fork is on the left side of the photograph.



Figure 14. A photo of the confluence Pieta Creek and the Russian River taken on March 15, 2022.



Figure 15. A photo of the confluence Pieta Creek and the Russian River taken on March 29, 2022.



Figure 16. A photo of the confluence Pieta Creek and the Russian River taken on April 12, 2022.





Figure 17. A photo of Cummiskey Creek taken near the mouth of Cummiskey Creek on March 15, 2022. As can be seen on the right side of the photo, Cummiskey Creek was disconnected from the Russian River.



Figure 18. A photo of Cummiskey Creek taken near the mouth of Cummiskey Creek on April 12, 2022. Note that Cummiskey Creek was disconnected from the Russian River.



Figure 19. A photo of Big Sulphur Creek taken near the mouth of Big Sulphur Creek on March 15, 2022 when flow in Big Sulphur Creek was 21.4 cfs.



Figure 20. A photo of Big Sulphur Creek taken near the mouth of Big Sulphur Creek on March 29, 2022 when flow in Big Sulphur Creek was 28.4 cfs.



Figure 21. A photo of Big Sulphur Creek taken near the mouth of Big Sulphur Creek on April 12, 2022, when flow in Big Sulphur Creek was 13.0 cfs.

### Summary

In the lower Russian River, riffle depths for upstream migration were suitable at the locations sampled. On the days surveys were conducted flow at the USGS Hacienda stream gage (USGS gage number 11467000) was approximately 110 cfs. The riffles surveyed had maximum depths that were equal to or greater than 0.6 ft under these flow conditions. The literature suggests a depth of 0.6 ft is suitable for steelhead passage (Thompson 1972). Riffles downstream of Vacation Beach became inundated and deepened due to lagoon formation following a river mouth closure. Without the river mouth being closed it is likely that the riffles downstream of Vacation Beach would have been shallower than they were on the day they were visited. Additional lower river surveys were canceled following a rain event in mid-April that increased river flow to over 1,000 cfs.

High turbidity and poor visibility precluded us from conducting salmon spawner surveys in Dry Creek. Spawner surveys were successfully implemented in the upper Russian River and in the Alexander Valley reach. Redds and adult salmonids were observed during these surveys indicating that adult salmonids were able to access upper mainstem spawning habitat and successfully spawn. The adult salmonids that could be identified to species were steelhead and it is likely that the adult salmonids that could not be identified to species were also steelhead based on the time of year (i.e., spring) that these fish were

observed. The tributaries in the salmon spawning survey reaches include the west fork of the Russian River, Pieta creek, Cummiskey Creek, and Big Sulphur Creek. The west fork of the Russian River was accessible to adult salmonids at least at the mouth where it was visited. However, the other creeks surveyed are perched on top of large alluvial deposits. This places the mouth of the creek several feet in elevation above the Russian River’s water surface (see photos of Pieta Creek, Figure 14-16). Access to these streams is more dependent on tributary flow to create adequate stream depth within the tributary than it is on flow in the mainstem Russian River. Based on the USGS rating curve taken at the Cloverdale gage Russian River flow would need to increase by over 900 cfs to raise the stage from 2 feet to 5 feet, which would be approximate stage increase necessary to bring the Russian River’s water surface to the height of the perched tributaries such as Pieta Creek (Figure 22).

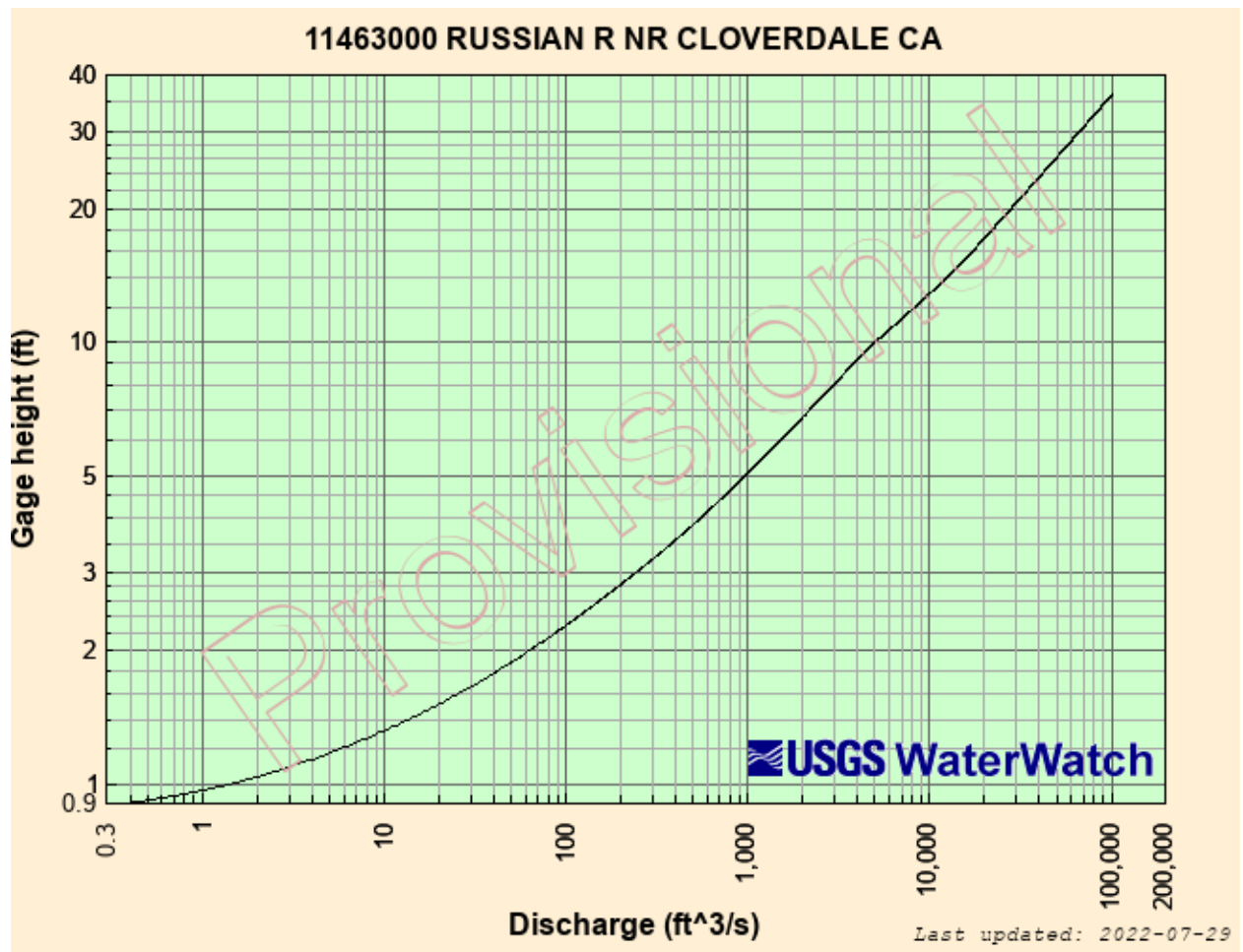


Figure 22. Provisional data from the USGS Cloverdale stream gage (stream gage number 11463000) accessed on July 29, 2022 showing the relationship of gage height to stream flow at the Cloverdale gage site.

## References

- State Water Resources Control Board. 2021. Order WR 2021-0056-EXEC in the matter of permits 12947A, 12949, 12950, and 16596 (applications 12919A, 15736, 15737, 19351) Sonoma County Water Agency order approving temporary urgency change. Sacramento California.
- Sonoma County Water Agency. 2016. Fish Habitat Flows and Water Rights Project Draft Environmental Impact Report. July 2016
- Sonoma County Water Agency 2022. Russian River Water Quality Summary for the 2021 Temporary Urgency Change. March 2022.
- Thompson, K. 1972. Determining stream flows for fish life. Pages 31-50 in Proceedings, instream flow requirements workshop. Pacific Northwest River Basins Commission, Vancouver, Washington. Water quality report
- U.S. Geological Survey, 2022, USGS Current Conditions for California available on the World Wide Web (USGS Water Data for the Nation), accessed July 29, 2022, at URL <https://waterdata.usgs.gov/ca/nwis/uv?>

Appendix. Photographs of habitat conditions in the Russian River.  
Lower Russian River Cross-Section Photo Documentation



Figure A 1. Brown's riffle located near the confluence with Austin Creek on April 13, 2022, showing inundation from the ponding effect when the mouth of the Russian River closed. Flow at the USGS Hacienda stream gage (gage number 11467000) was 113 cfs.





Figure A 2. Looking upstream from the Vacation Beach temporary crossing on April 13, 2022.



Figure A 3. Looking across the Vacation Beach dam sill on April 13, 2022.



Figure A 4. A photo of the riffle crest transect taken at Vacation Beach on April 13, 2022.



Figure A 5. A photo of the longitudinal profile taken at Vacation Beach on April 13, 2022.



Figure A 6. A photo of the Monte Rio riffle showing inundation from the ponding effect when the mouth of the Russian River closed. The photo was taken on April 14, 2022.



Figure A 7. A photo of the riffle crest transect taken on the Russian River near the confluence with Hulbert Creek on April 14, 2022.



Figure A 8. A photo of the longitudinal profile taken the Russian River near the confluence with Hulbert Creek on April 14, 2022.