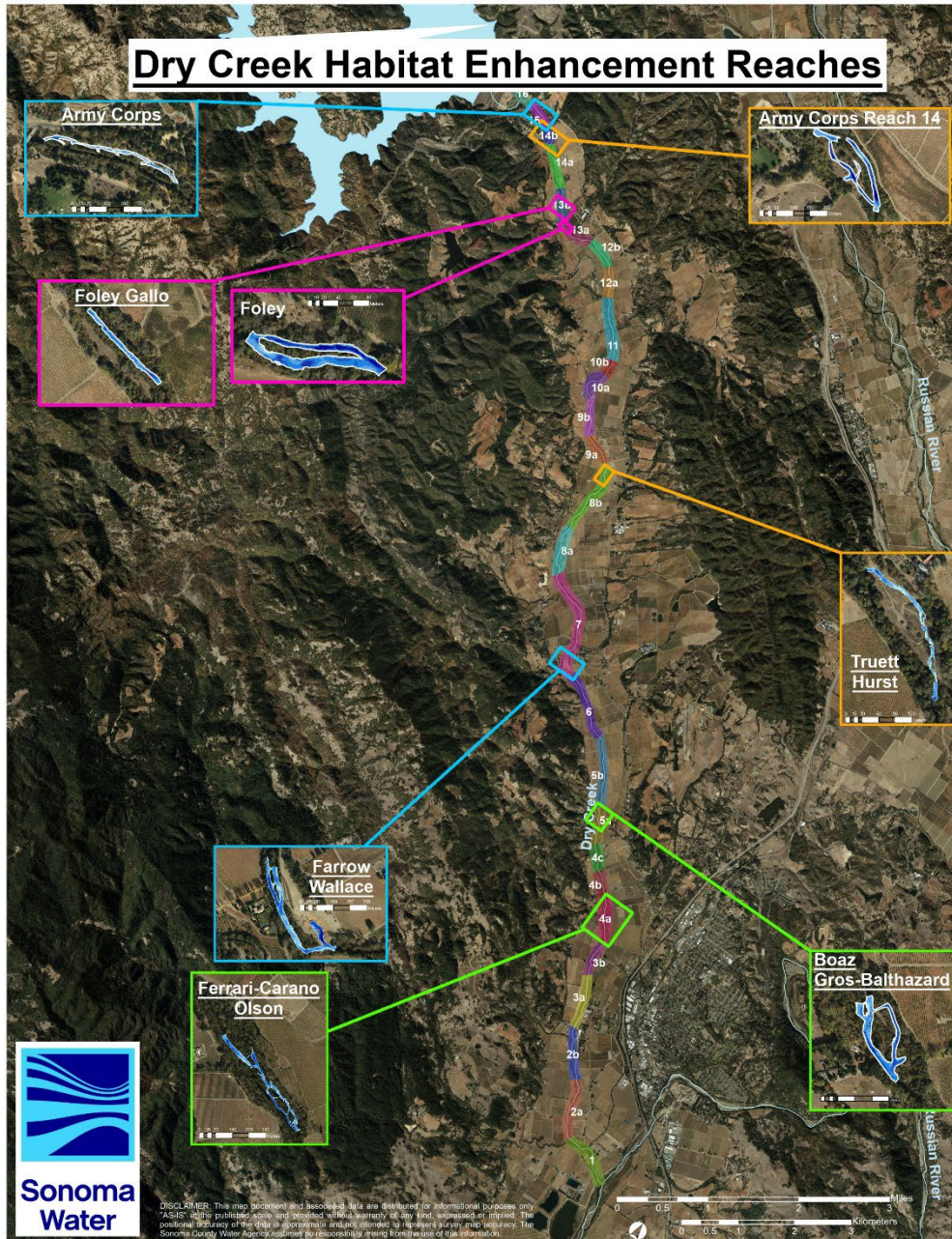


# APPENDIX 5.2: Dry Creek Habitat Enhancement Project

## Effectiveness Monitoring Data

Collected 2022



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**Pre-Enhancement, 2022**

**Foley Gallo, June 2022**

## Depth and Velocity

**Table 1. Areas and percentages of wetted area, optimal depth and velocity, and optimal hydraulic habitat within the Foley Gallo enhancement reach, June 2022.**

<b>Foley Gallo Pre-enhancement, June 2022</b>	<b>Wetted area (ft<sup>2</sup>)</b>	<b>0.5 – 2.0 ft (ft<sup>2</sup>)</b>	<b>2.0 – 4.0 ft (ft<sup>2</sup>)</b>	<b>Total (ft<sup>2</sup>)</b>	<b>&lt; 0.5 ft/s (ft<sup>2</sup>)</b>	<b>0.5 – 2.0 ft, &lt; 0.5 ft/s (ft<sup>2</sup>)</b>	<b>2.0 – 4.0 ft, &lt; 0.5 ft/s (ft<sup>2</sup>)</b>	<b>Total (ft<sup>2</sup>)</b>
Main channel area	23,388	11,311	9,224	20,535	7,660	3,775	1,571	5,346
<b>Total area</b>	<b>23,388</b>	<b>11,311</b>	<b>9,224</b>	<b>20,535</b>	<b>7,660</b>	<b>3,775</b>	<b>1,571</b>	<b>5,346</b>
Main channel % of wetted area	100%	48%	39%	88%	33%	16%	7%	23%
<b>Total % of wetted area</b>	<b>100%</b>	<b>48%</b>	<b>39%</b>	<b>88%</b>	<b>33%</b>	<b>16%</b>	<b>7%</b>	<b>23%</b>

# Foley, Gallo Enhancement Reach



Figure 1. Measured water depth within the Foley Gallo enhancement reach, June 2022.

## Foley, Gallo Enhancement Reach



Figure 2. Optimal water depth for fry (0.5-2.0 ft) and parr (2.0-4.0 ft) within the Foley Gallo enhancement reach, June 2022.

# Foley, Gallo Enhancement Reach

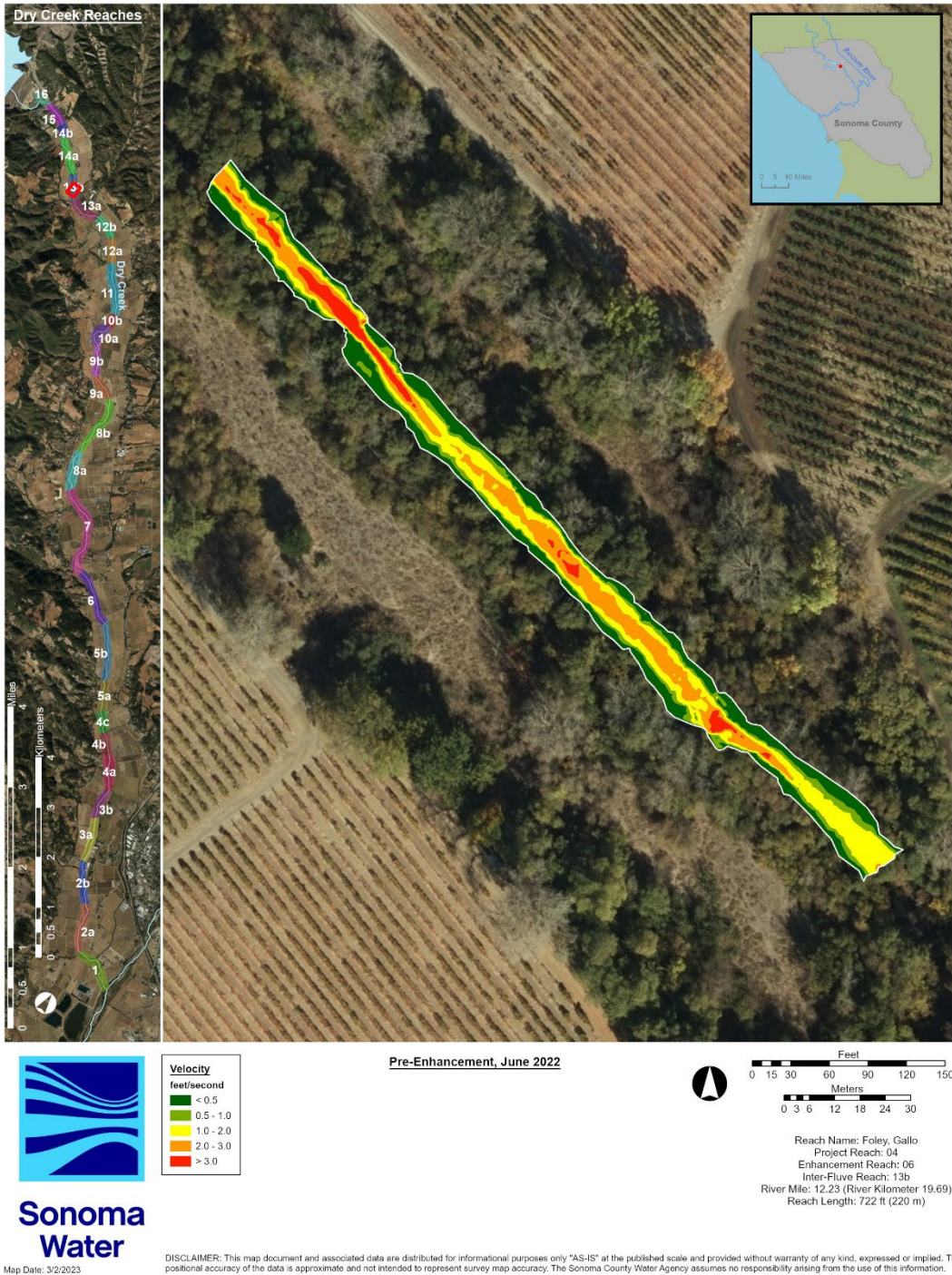


Figure 3. Measured water velocity within the Foley Gallo enhancement reach, June 2022.

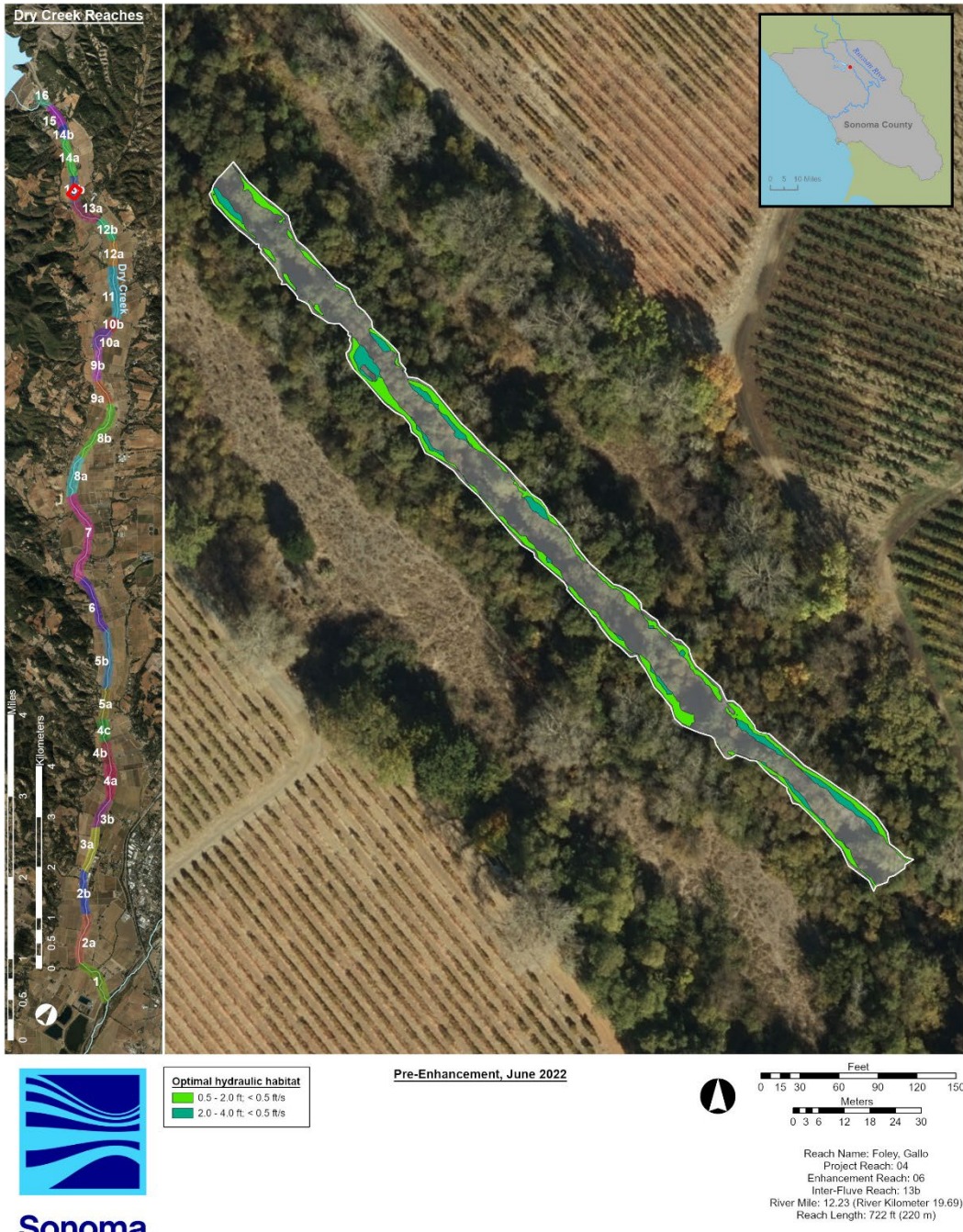


# Foley, Gallo Enhancement Reach



Figure 4. Optimal water velocity for fry and parr (< 0.5 ft/s) within the Foley Gallo enhancement reach, June 2022.

# Foley, Gallo Enhancement Reach



**Sonoma Water**

Map Date: 3/2/2023

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**Figure 5. Optimal hydraulic habitat for fry (<0.5 ft/s, 0.5-2.0 ft) and parr (<0.5 ft/s, 2.0-4.0 ft) within the Foley Gallo enhancement reach, June 2022.**

## Habitat Types and Shelter Values

**Table 2. Habitat, types, shelter value, percent cover, and shelter score for habitat units within the Foley Gallo enhancement reach, June 2022.**

Habitat Unit #	Habitat Type	Shelter Value	Percent Cover	Shelter Score
HU01	Pool	3	35	105
HU02	Riffle	3	50	150
HU03	Flatwater	3	35	105
HU04	Pool	3	35	105
HU05	Riffle	2	20	40
HU06	Flatwater	2	15	30
<b>Pool: riffle</b>	<b>2: 2 (1.00)</b>			<b>Avg = 89</b>

# Foley, Gallo Enhancement Reach

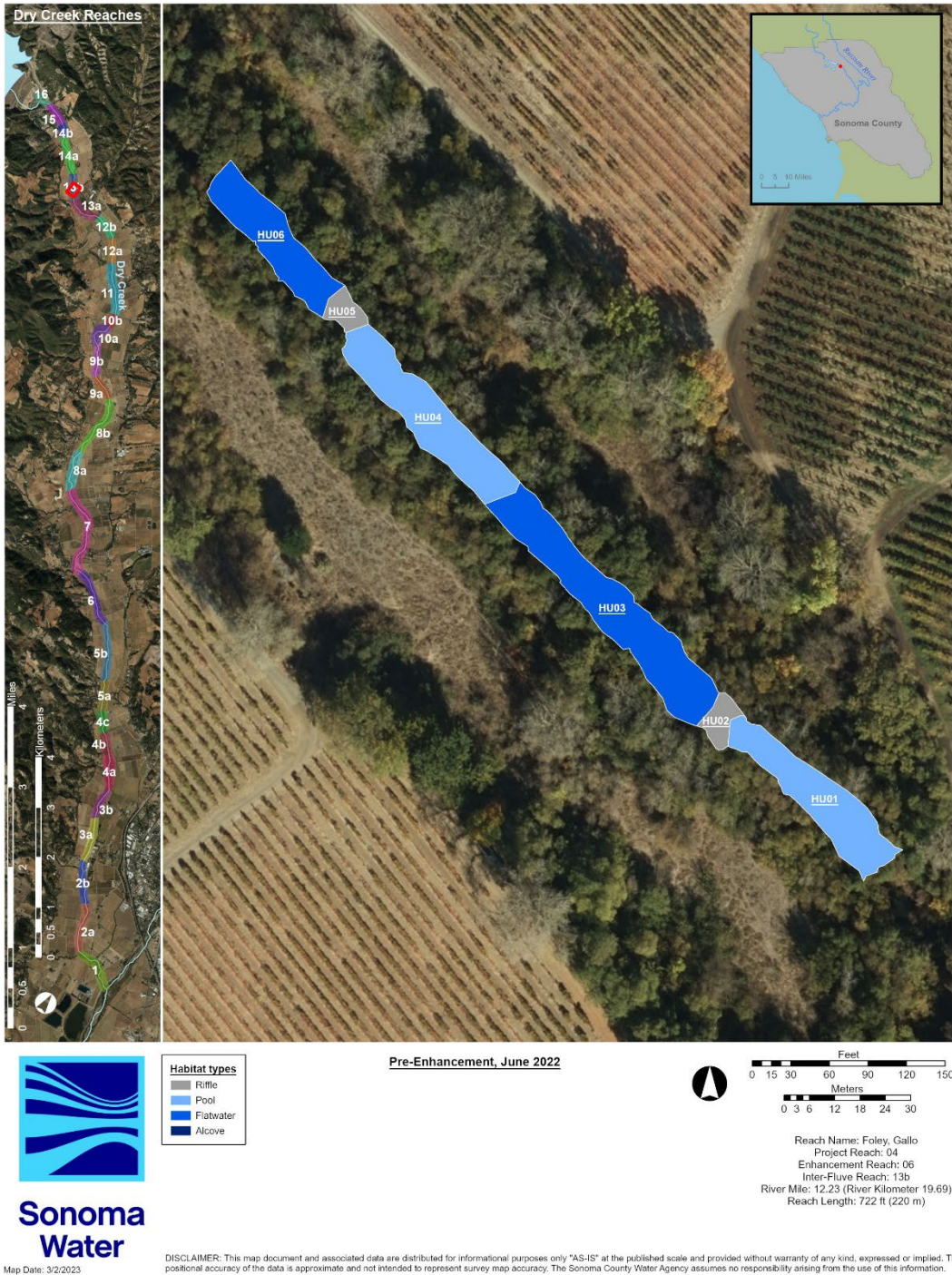


Figure 6. Habitat unit number and type within the Foley Gallo enhancement reach, June 2022.

# Foley, Gallo Enhancement Reach

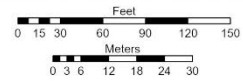


**Sonoma  
Water**

Map Date: 3/2/2023

Shelter score (shelter value * percent cover)	
0 - 20	Red
21 - 40	Orange
41 - 60	Yellow
61 - 79	Light Green
80 - 120	Medium Green
121 - 240	Dark Green
241 - 300	Very Dark Green

Pre-Enhancement, June 2022



Reach Name: Foley, Gallo  
Project Reach: 04  
Enhancement Reach: 06  
Inter-Fluve Reach: 13b  
River Mile: 12.23 (River Kilometer 19.69)  
Reach Length: 722 ft (220 m)

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Figure 7. Habitat unit shelter scores within the Foley Gallo enhancement reach, June 2022.

## Habitat Unit, Site, and Reach Ratings

**Table 3. Post-enhancement habitat unit ratings for the Foley Gallo enhancement reach June 2022.**

Project Reach		4	4	4	4	4	4
Enhancement Reach		6	6	6	6	6	6
Colloquial Name		FG	FG	FG	FG	FG	FG
mmddyy		62122	62122	62122	62122	62122	62122
Survey Type		PRE	PRE	PRE	PRE	PRE	PRE
HABITAT UNIT NUMBER		HU01	HU02	HU03	HU04	HU05	HU06
Habitat Type		Pool	Riffle	Flatwater	Pool	Riffle	Flatwater
PROJECT SITE NUMBER		1	1	1	1	1	1
Project Site Type		MainChan	MainChan	MainChan	MainChan	MainChan	MainChan
11e	% Area of <b>habitat unit</b> within 0.5 -2.0 ft depth	28%	86%	63%	29%	84%	58%
11f	% Area of <b>habitat unit</b> within 2.0 -4.0 ft depth	54%	7%	28%	62%	0%	27%
14.	Instream shelter value in the <b>habitat unit</b> : 0, 1, 2, 3	3	3	3	3	2	2
15.	Percent of <b>habitat unit</b> covered by shelter: %	35	50	35	35	20	15
17b	a. Calculate the shelter rating for the <b>habitat unit</b> : 0-300	105	150	105	105	40	30
28.	Percent of <b>habitat unit</b> within targeted velocity (see above): (%)	35%	31%	29%	39%	11%	31%
36e	% <b>habitat unit</b> area where < 0.5 f/s: 0.5 to 2 ft and shelter criteria overlap	15%	20%	17%	19%	2%	13%
36f	% <b>habitat unit</b> area where < 0.5 f/s: 2 to 4 ft and shelter criteria overlap	11%	4%	3%	11%	0%	4%
HABITAT UNIT NUMBER		HU01	HU02	HU03	HU04	HU05	HU06
11e	% area of <b>hab unit</b> within 0.5 -2.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	2	4	4	2	4	4
11f	% area of <b>hab unit</b> within 2.0 -4.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	4	0	2	4	0	2
14.	Instream shelter value in the <b>habitat unit</b> : 0, 1, 2, 3 (3 = 5 pts; 2 = 4 pts, 1 = 3 pts, 0 = 0 pts)	5	5	5	5	4	4
15.	% <b>hab unit</b> covered by shelter (≥80 = 5pts; ≥60 = 4 pts; ≥40 = 3 pts; ≥20 = 2 pts; ≥10 = 1 pt; <10 = 0 pt)	2	3	2	2	2	1
17b	a. Calculate the shelter rating for the <b>habitat unit</b> : 0-300	4	5	4	4	1	0
28.	% area of <b>hab unit</b> within targeted velocity (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	3	3	2	3	1	3
36e	% area <b>hab unit</b> with < 0.5 f/s: 0.5 to 2 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	1	2	1	1	0	1
36f	% area <b>hab unit</b> with < 0.5 f/s: 2 to 4 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	1	0	0	1	0	0
HABITAT UNIT NUMBER		HU01	HU02	HU03	HU04	HU05	HU06
HABITAT UNIT RATING	Habitat unit quantitative rating (out of 35)	22	22	20	22	12	15
	Habitat unit qualitative rating: Excellent (≥28), Good (≥21), Fair(≥14), Poor (≥7), Fail (<7)	Good	Good	Fair	Good	Poor	Fair

# Foley, Gallo Enhancement Reach

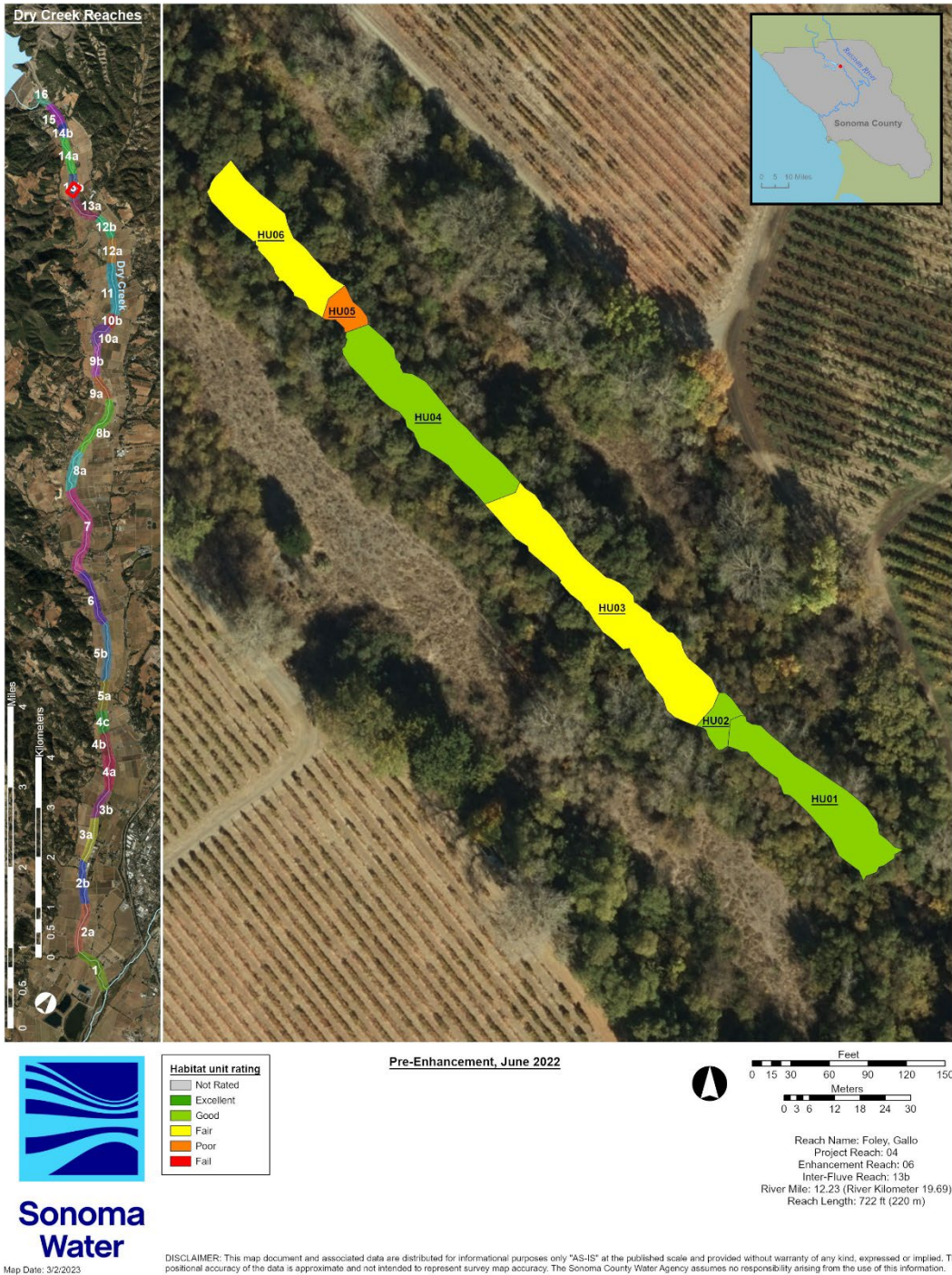


Figure 8. Habitat unit ratings for the Foley Gallo enhancement reach, June 2022.



Table 4. Post-enhancement average feature, average habitat unit, site, and reach ratings for the Foley Gallo enhancement reach, June 2022.

	Project Reach	4
	Enhancement Reach	6
	<b>ENHANCEMENT REACH NAME</b>	<b>FG</b>
	mmddy	62122
	Survey Type	PRE
	<b>PROJECT SITE NUMBER</b>	<b>1</b>
	Project Site Type	MainChan
	<b>PROJECT SITE NUMBER</b>	<b>1</b>
<b>SITE AVERAGE FEATURE RATING</b>	Site average feature quantitative rating (out of 15; bold indicates excluded from site rating)	0
	Site average feature qualitative rating Excellent (>=12), Good (>=9), Fair(>=6), Poor (>=3), Fail (<3), Not rated (not used to rate site)	Not rated
	<b>PROJECT SITE NUMBER</b>	<b>1</b>
<b>SITE AVERAGE HABITAT UNIT RATING</b>	Site average habitat unit quantitative rating (out of 35; bold indicates excluded from site rating)	19
	Site average qualitative rating Excellent (>=28), Good (>=21), Fair(>=14), Poor (>=7), Fail (<7), Not rated (not used to rate site)	Fair
	<b>PROJECT SITE NUMBER</b>	<b>1</b>
<b>SITE RATING</b>	Site quantitative rating (sum of site average feature and habitat unit ratings) (out of 35; bold indicates rating excludes feature or habitat unit rating and scoring out of 15 or 35)	<b>19</b>
	Site qualitative rating: Excellent (>=28), Good (>=21), Fair(>=14), Poor (>=7), Fail (<7)	Fair
	<b>ENHANCEMENT REACH NAME</b>	<b>FG</b>
<b>ENHANCEMENT REACH RATING</b>	Enhancement reach quantitative rating (average of site ratings) (out of 35)	19
	Enhancement reach qualitative rating: Excellent (>=28), Good (>=21), Fair(>=14), Poor (>=7), Fail (<7)	Fair

# Foley, Gallo Enhancement Reach

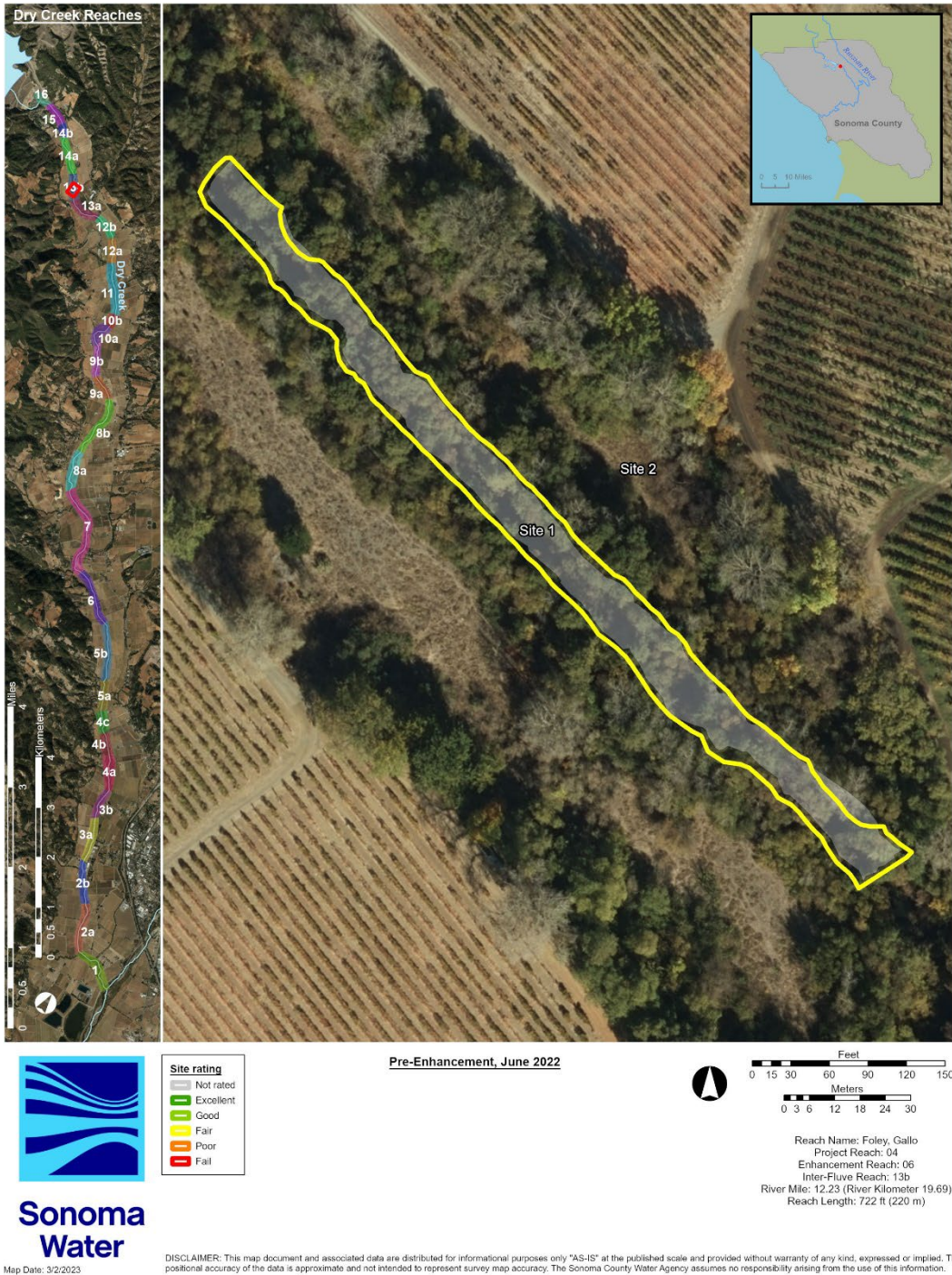
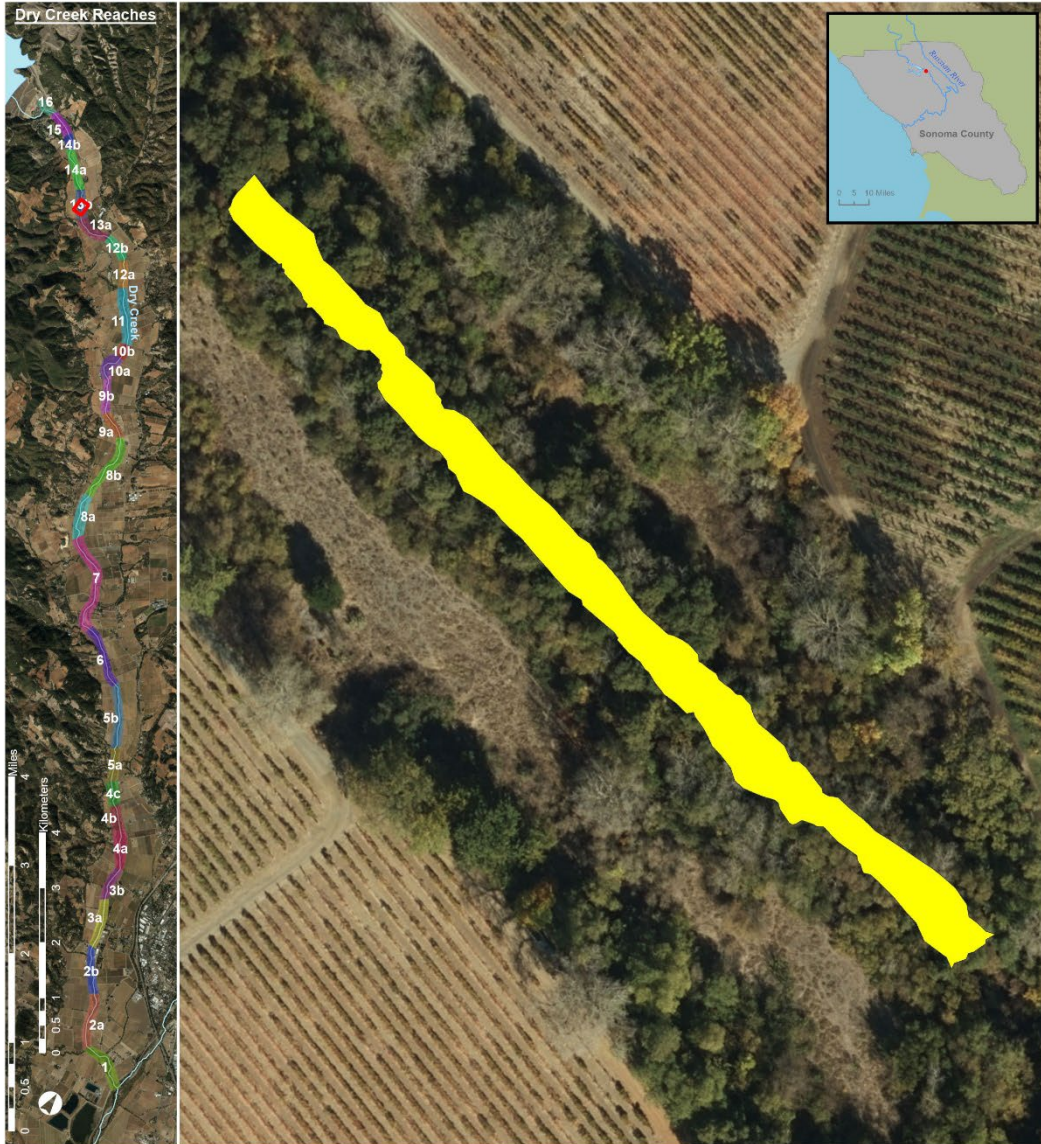


Figure 9. Post enhancement site ratings for the Foley Gallo enhancement reach, June 2022.

# Foley, Gallo Enhancement Reach



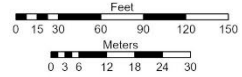
Pre-Enhancement, June 2022



**Sonoma  
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Map Date: 8/8/2023

Reach rating	
Grey square	Not Rated
Green square	Excellent
Light Green square	Good
Yellow square	Fair
Orange square	Poor
Red square	Fail



Reach Name: Foley, Gallo  
Project Reach: 04  
Enhancement Reach: 06  
Inter-Fluve Reach: 13b  
River Mile: 12.23 (River Kilometer 19.69)  
Reach Length: 722 ft (220 m)

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Figure 10. Post-enhancement reach rating for the Foley Gallo enhancement reach, June 2022.

## Feature and Habitat Unit Checklists

Table 5. Adaptive Management Plan targeted checklist for the Foley Gallo enhancement reach, June 2022.

	4	4	4	4	4	4
Project Reach	4	4	4	4	4	4
Enhancement Reach	6	6	6	6	6	6
Colloquial Name	FG	FG	FG	FG	FG	FG
mmddy	62122	62122	62122	62122	62122	62122
Survey Type	PRE	PRE	PRE	PRE	PRE	PRE
Project Site Number	1	1	1	1	1	1
Project Site Type	MainChan	MainChan	MainChan	MainChan	MainChan	MainChan
Project Feature Number	NA	NA	NA	NA	NA	NA
Feature Type Code	NA	NA	NA	NA	NA	NA
Habitat Unit	HU01	HU02	HU03	HU04	HU05	HU06
Habitat Type	Pool	Riffle	Flatwater	Pool	Riffle	Flatwater
4. Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	NA	NA	NA	NA	NA	NA
5a. Are problems with the feature visible?	NA	NA	NA	NA	NA	NA
6a. Is the feature still in its original location?	NA	NA	NA	NA	NA	NA
6b. Is the feature still in its original position?	NA	NA	NA	NA	NA	NA
6d. Is the feature still in its original orientaton?	NA	NA	NA	NA	NA	NA
8. If an objective, did the feature create the targeted instream habitat type?	NA	NA	NA	NA	NA	NA
9. Were there any unintended effects by the feature on the habitat type? If Y, comment.	NA	NA	NA	NA	NA	NA
11e. % Area of habitat unit within 0.5 -2.0 ft depth	28%	86%	63%	29%	84%	58%
11f. % Area of habitat unit within 2.0 -4.0 ft depth	54%	7%	28%	62%	0%	27%
14. Instream shelter value in the habitat unit: 0, 1, 2, 3	3	3	3	3	2	2
15. Percent of habitat unit covered by shelter: %	35	50	35	35	20	15
17a. If an objective, did the feature increase instream shelter rating?	NA	NA	NA	NA	NA	NA
17b. a. Calculate the shelter rating for the habitat unit: 0-300	105	150	105	105	40	30
19a. If an objective, did the feature increase LWD count in the habitat unit?	NA	NA	NA	NA	NA	NA
21a. If an objective, did the feature lead to the targeted channel conditions?	NA	NA	NA	NA	NA	NA
25. Did the feature achieve the targeted velocity?	NA	NA	NA	NA	NA	NA
28. Percent of habitat unit within targeted velocity (see above): (%)	35%	31%	29%	39%	11%	31%
36e. % habitat unit area where < 0.5 f/s; 0.5 to 2 ft and shelter criteria overlap	15%	20%	17%	19%	2%	13%
36f. % habitat unit area where < 0.5 f/s; 2 to 4 ft and shelter criteria overlap	11%	4%	3%	11%	0%	4%
FEATURE NUMBER	NA	NA	NA	NA	NA	NA
HABITAT UNIT NUMBER	HU01	HU02	HU03	HU04	HU05	HU06
SITE NUMBER	1	1	1	1	1	1
ENHANCEMENT REACH NAME	FG	FG	FG	FG	FG	FG
4. Structural condition of feature: EXCL (5 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)	0	0	0	0	0	0
5a. Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)	0	0	0	0	0	0
6a. Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0
6b. Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0
6d. Is the feature still in its original orientaton? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0
8. If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0
9. Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)	0	0	0	0	0	0
11e. % area of hab unit within 0.5 -2.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	2	4	4	2	4	4
11f. % area of hab unit within 2.0 -4.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	4	0	2	4	0	2
14. Instream shelter value in the habitat unit: 0, 1, 2, 3 (3 = 5 pts; 2 = 4 pts, 1 = 3 pts, 0 = 0 pts)	5	5	5	5	4	4
15. % hab unit covered by shelter (≥80 = 5pts; ≥60 = 4 pts; ≥40 = 3 pts; ≥20 = 2 pts; ≥10 = 1 pt; <10 = 0 pt)	2	3	2	2	2	1
17a. If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0
17b. a. Calculate the shelter rating for the habitat unit: 0-300	4	5	4	4	1	0
19a. If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0
21a. If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0
25. Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0
28. % area of hab unit within targeted velocity (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	3	3	2	3	1	3
36e. % area hab unit with < 0.5 f/s; 0.5 to 2 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	1	2	1	1	0	1
36f. % area hab unit with < 0.5 f/s; 2 to 4 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	1	0	0	1	0	0

Table 6. Adaptive Management Plan full checklist for the Foley Gallo enhancement reach, June 2022.

	4	4	4	4	4	4
Project Reach	4	4	4	4	4	4
Enhancement Reach	6	6	6	6	6	6
Colloquial Name	FG	FG	FG	FG	FG	FG
mmdyy	62122	62122	62122	62122	62122	62122
Survey Type	PRE	PRE	PRE	PRE	PRE	PRE
Project Site Number	1	1	1	1	1	1
Project Site Type	MainChan	MainChan	MainChan	MainChan	MainChan	MainChan
Project Feature Number	NA	NA	NA	NA	NA	NA
Feature Type Code	NA	NA	NA	NA	NA	NA
Habitat Unit	HU01	HU02	HU03	HU04	HU05	HU06
Habitat Type	Pool	Riffle	Flatwater	Pool	Riffle	Flatwater
1. Length of targeted treatment (ft)	NA	NA	NA	NA	NA	NA
2. Width of targeted treatment (ft)	NA	NA	NA	NA	NA	NA
3. Estimate area of the targeted feature: (ft <sup>2</sup> )	0	1	2	3	4	5
4. Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	NA	NA	NA	NA	NA	NA
5a. Are problems with the feature visible?	NA	NA	NA	NA	NA	NA
5b. Types: ANC, BBB, CRF, MAT, SHF, STR, SWA, UND, UNS, WSH, OTH, NON	NA	NA	NA	NA	NA	NA
6a. Is the feature still in its original location?	NA	NA	NA	NA	NA	NA
6b. Is the feature still in its original position?	NA	NA	NA	NA	NA	NA
6c. If yes: LBK, MDC, RBK, SPN, OTH	NA	NA	NA	NA	NA	NA
6d. Is the feature still in its original orientation?	NA	NA	NA	NA	NA	NA
6e. If yes: DNS, MUL, PRL, PRP, UPS, OTH	NA	NA	NA	NA	NA	NA
7. Current level II habitat type: FLT, POO, RIF, DRY, ALC, OTH	POO	RIF	FLT	POO	RIF	FLT
8. If an objective, did the feature create the targeted instream habitat type?	NA	NA	NA	NA	NA	NA
9. Were there any unintended effects by the feature on the habitat type? If Y, comment.	NA	NA	NA	NA	NA	NA
10. Mean water depth in habitat unit: ft	2.4	1.4	1.6	2.0	1.2	1.5
11a. Maximum water depth in habitat unit: ft	4.6	2.2	3.1	4.0	2.0	3.4
11b. Area of habitat unit within 0.5 -2.0 ft depth: (ft <sup>2</sup> )	1343.4	662.0	4790.1	1582.6	583.6	2349.7
11c. Area of habitat unit within 2.0 -4.0 ft depth: (ft <sup>2</sup> )	2605.8	50.6	2096.2	3385.8	1.4	1084.1
11d. Area of habitat unit within 0.5-4.0 ft depth: (ft <sup>2</sup> )	3949.2	712.6	6886.3	4968.3	584.9	3433.8
11e. % Area of habitat unit within 0.5 -2.0 ft depth	28%	86%	63%	29%	84%	58%
11f. % Area of habitat unit within 2.0 -4.0 ft depth	54%	7%	28%	62%	0%	27%
11g. 6	82%	92%	91%	90%	85%	85%
11h. If an objective, did the feature increase/decrease water depth in the treatment area?	NA	NA	NA	NA	NA	NA
12a. Targeted depth or range (ft) in habitat unit	0.5-4.0	0.5-4.0	0.5-4.0	0.5-4.0	0.5-4.0	0.5-4.0
12b. Estimate area of feature within targeted depth or range ft <sup>2</sup> :	0	1	2	3	4	5
13. Were there any unintended effects of the feature on the water depth? If Y, comment.	NA	NA	NA	NA	NA	NA
14. Instream shelter value in the habitat unit: 0, 1, 2, 3	3	3	3	3	2	2
15. Percent of habitat unit covered by shelter: %	35	50	35	35	20	15
16a. 1st dominant cover in habitat unit: BED, BOL, BUB, LWD, RTW, SWD, UCB, VEG, OTH	AVG	SWD	AVG	AVG	SWD	LWD
16b. 2nd dominant in habitat unit: BED, BOL, BUB, LWD, RTW, SWD, UCB, VEG, OTH	SWD	AVG	SWD	SWD	AVG	TVG
17a. If an objective, did the feature increase instream shelter rating?	NA	NA	NA	NA	NA	NA
17b. a. Calculate the shelter rating for the habitat unit: 0-300	105	150	105	105	40	30
18a. Large woody debris count in habitat unit: D >1', L 6-20'	2	0	1	1	0	0
18b. Large woody debris count in habitat unit: D >1', L >20'	0	0	0	0	0	0
19a. If an objective, did the feature increase LWD count in the habitat unit?	NA	NA	NA	NA	NA	NA
19b. LWD recruitment mechanisms in habitat unit: ANC, EXC, EXH, INT, RPR, UNA, OTH	NR	NON	NR	NR	NON	NON
20. Current stream channel problems in the habitat unit: AGG, BRD, FLO, GRC, HDC, INC, NAR, SCU, STT, WID, NON, OTH	NON	NON	NON	NON	NON	NON
21a. If an objective, did the feature lead to the targeted channel conditions?	NA	NA	NA	NA	NA	NA
21b. Overall Offchannel Condition (site): AGG, FPD, GRC, INC, NAR, SIN, STB, TOG, WID, OTH	NA	NA	NA	NA	NA	NA
21c. Outlet Conditions (site): AGG, FPD, GRC, INC, NAR, SIN, STB, TOG, WID, OTH	NA	NA	NA	NA	NA	NA
21d. Inlet Conditions (site): AGG, FPD, GRC, INC, NAR, SIN, STB, TOG, WID, OTH	NA	NA	NA	NA	NA	NA
22. Were there any unintended effects on the stream channel at the feature? If Y, comment.	NA	NA	NA	NA	NA	NA
23. If an objective, did the feature decrease/increase velocity in the treatment area?	NA	NA	NA	NA	NA	NA
24. Targeted velocity/range in the habitat unit: (ft/sec)	0.5	0.5	0.5	0.5	0.5	0.5
25. Did the feature achieve the targeted velocity?	NA	NA	NA	NA	NA	NA
26a. Measured minimum velocity (ft/sec) in habitat unit	0	0	0	0	0	0
26b. Measured max velocity (ft/sec) in habitat unit	4.1	4.9	3.2	5.4	5.6	4.4
26c. Measured mean velocity (ft/sec) in habitat unit	1.0	1.7	1.4	1.1	2.7	1.5
27. Area of habitat unit within targeted velocity: (ft <sup>2</sup> )	1689.5	237.1	2234.9	2169.5	75.0	1254.0
28. Percent of habitat unit within targeted velocity (see above): (%)	35%	31%	29%	39%	11%	31%
29. Were there any unintended effects of feature on velocity? If Y, comment.	NA	NA	NA	NA	NA	NA
30a. 1st/2nd dominant substrate in habitat unit: BED, BOL, COB, GRV, SND, SLC, OTH	GRV	GRV	COB	GRV	COB	COB
30b. 2nd dominant substrate in habitat unit: BED, BOL, COB, GRV, SND, SLC, OTH	SND	COB	GRV	SND	GRV	GRV
31. If an objective, did the feature achieve the targeted substrate composition?	NA	NA	NA	NA	NA	NA
32. % Canopy Measurement:	NR	NR	NR	NR	NR	NR
33. Photopoint data collected: YES /NO	NR	NR	NR	NR	NR	NR
34. Temperature Profile: YES /NO	NR	NR	NR	NR	NR	NR
35. Dissolved Oxygen Profile: YES/NO	NR	NR	NR	NR	NR	NR
36a. Total habitat unit area where targeted depth, velocity and shelter criteria overlap	1281.4	182.8	1528.4	1645.5	13.1	695.1
36b. Total habitat unit area where < 0.5 ft/s; 0.5 to 2 ft and shelter criteria overlap	735.2	152.6	1303.6	1028.3	13.1	542.3
36c. Total habitat unit area where < 0.5 ft/s; 2 to 4 ft and shelter criteria overlap	546.3	30.2	224.8	617.2	0.0	152.8
36d. % habitat unit area where targeted depth, velocity and shelter criteria overlap	27%	24%	20%	30%	2%	17%
36e. % habitat unit area where < 0.5 ft/s; 0.5 to 2 ft and shelter criteria overlap	15%	20%	17%	19%	2%	13%
36f. % habitat unit area where < 0.5 ft/s; 2 to 4 ft and shelter criteria overlap	11%	4%	3%	11%	0%	4%
37. Does this feature need: DEC, ENH, MNT, REP, NON, OTH	NA	NA	NA	NA	NA	NA
38. Are additional restoration treatments recommended at this site?	NA	NA	NA	NA	NA	NA

**Foley, July 2022**

## Depth and Velocity

**Table 7. Areas and percentages of wetted area, optimal depth and velocity, and optimal hydraulic habitat within the Foley enhancement reach, July 2022.**

Foley Pre-enhancement, July 2022	Wetted area (ft <sup>2</sup> )	0.5 – 2.0 ft (ft <sup>2</sup> )	2.0 – 4.0 ft (ft <sup>2</sup> )	Total (ft <sup>2</sup> )	< 0.5 ft/s (ft <sup>2</sup> )	0.5 – 2.0 ft, < 0.5 ft/s (ft <sup>2</sup> )	2.0 – 4.0 ft, < 0.5 ft/s (ft <sup>2</sup> )	Total (ft <sup>2</sup> )
Main channel area	25,184	11,572	10,924	22,496	8,335	3,543	2,682	6,224
<b>Total area</b>	<b>25,184</b>	<b>11,572</b>	<b>10,924</b>	<b>22,496</b>	<b>8,335</b>	<b>3,543</b>	<b>2,682</b>	<b>6,224</b>
Main channel % of wetted area	100%	46%	43%	89%	33%	14%	11%	25%
<b>Total % of wetted area</b>	<b>100%</b>	<b>46%</b>	<b>43%</b>	<b>89%</b>	<b>33%</b>	<b>14%</b>	<b>11%</b>	<b>25%</b>



# Foley Enhancement Reach



Figure 11. Measured water depth within the Foley enhancement reach, July 2022.

# Foley Enhancement Reach



Figure 12. Optimal water depth for fry (0.5-2.0 ft) and parr (2.0-4.0 ft) within the Foley enhancement reach, July 2022.

# Foley Enhancement Reach



Figure 13. Measured water velocity within the Foley enhancement reach, July 2022.

# Foley Enhancement Reach



Figure 14. Optimal water velocity for fry and parr (< 0.5 ft/s) within the Foley enhancement reach, July 2022.

# Foley Enhancement Reach

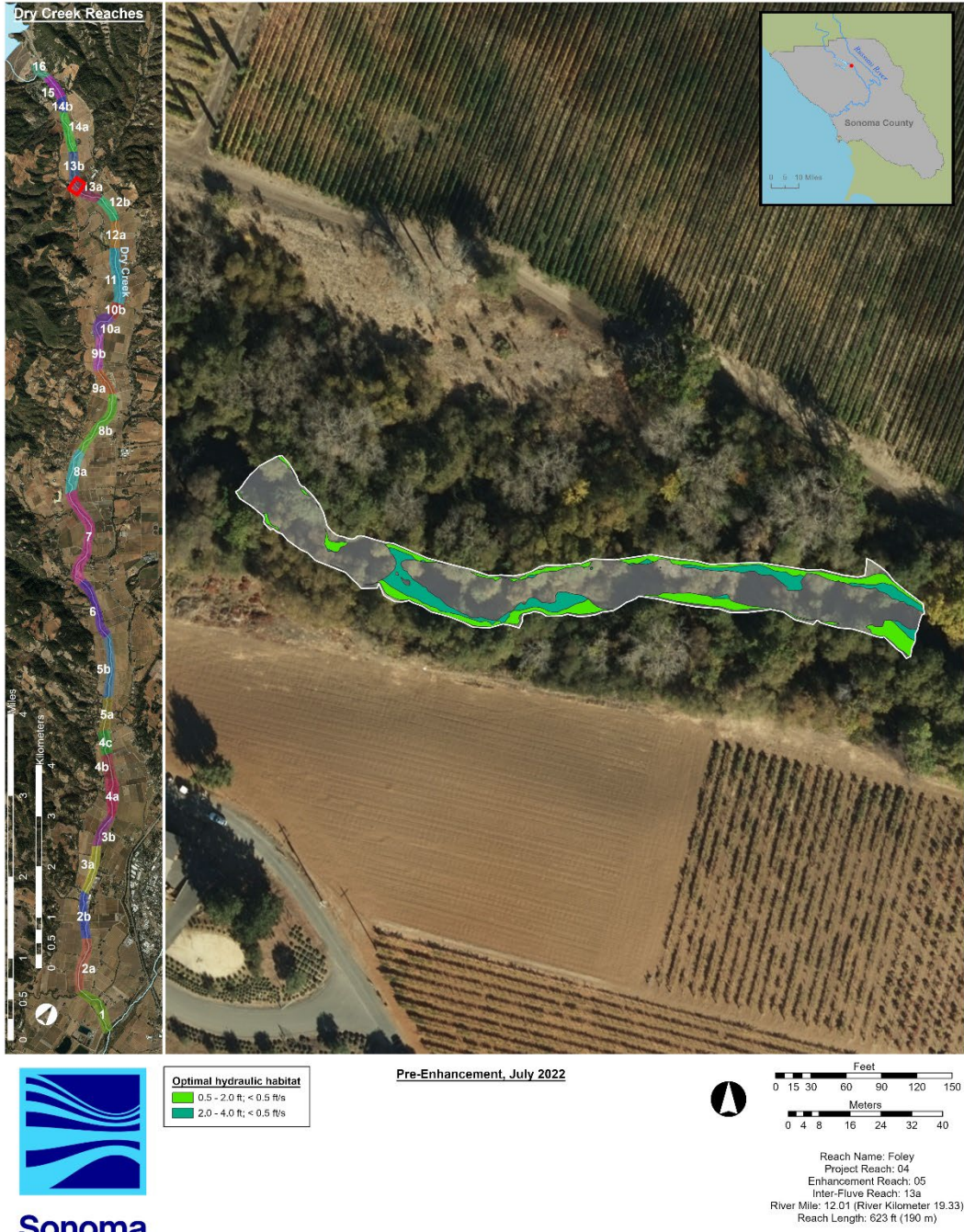


Figure 15. Optimal hydraulic habitat for fry (<0.5 ft/s, 0.5-2.0 ft) and parr (<0.5 ft/s, 2.0-4.0 ft) within the Foley enhancement reach, July 2022.

## Habitat Types and Shelter Values

**Table 8. Habitat, types, shelter value, percent cover, and shelter score for habitat units within the Foley enhancement reach, July 2022.**

<b>Habitat Unit #</b>	<b>Habitat Type</b>	<b>Shelter Value</b>	<b>Percent Cover</b>	<b>Shelter Score</b>
HU01	Pool	3	35	105
HU02	Pool	3	45	135
HU03	Pool	3	40	120
HU04	Pool	3	15	45
HU05	Riffle	3	25	75
HU06	Pool	1	5	5
HU07	Riffle	3	30	90
HU08	Pool	3	40	120
<b>Pool: riffle</b>	<b>6: 2 (3.00)</b>			<b>Avg = 73</b>

# Foley Enhancement Reach



Figure 16. Habitat unit number and type within the Foley enhancement reach, July 2022.

# Foley Enhancement Reach



Figure 17. Habitat unit shelter scores within the Foley enhancement reach, July 2022.



## Habitat Unit, Site, and Reach Ratings

**Table 9. Post-enhancement habitat unit ratings for the Foley enhancement reach July 2022.**

Project Reach	4	4	4	4	4	4	4	4	
Enhancement Reach	5	5	5	5	5	5	5	5	
Colloquial Name	FL	FL	FL	FL	FL	FL	FL	FL	
mmddyy	70722	70722	70722	70722	70722	70722	70722	70722	
Survey Type	PRE	PRE	PRE	PRE	PRE	PRE	PRE	PRE	
	<b>HABITAT UNIT NUMBER</b>								
	<b>HU01</b>	<b>HU02</b>	<b>HU03</b>	<b>HU04</b>	<b>HU05</b>	<b>HU06</b>	<b>HU07</b>	<b>HU08</b>	
Habitat Type	Pool	Pool	Pool	Pool	Riffle	Pool	Riffle	Pool	
	<b>PROJECT SITE NUMBER</b>								
	1	1	1	1	1	1	1	1	
Project Site Type	MainChan	MainChan	MainChan	MainChan	MainChan	MainChan	MainChan	MainChan	
11e	% Area of <b>habitat unit</b> within 0.5 -2.0 ft depth	40%	40%	43%	40%	75%	65%	82%	54%
11f	% Area of <b>habitat unit</b> within 2.0 -4.0 ft depth	46%	53%	42%	52%	0%	20%	7%	42%
14.	Instream shelter value in the <b>habitat unit</b> : 0, 1, 2, 3	3	3	3	3	2	2	2	3
15.	Percent of <b>habitat unit</b> covered by shelter: %	35	25	40	40	5	10	5	40
17b	a. Calculate the shelter rating for the <b>habitat unit</b> : 0-300	105	75	120	120	10	20	10	120
28.	Percent of <b>habitat unit</b> within targeted velocity (see above): (%)	54%	31%	37%	39%	21%	25%	12%	7%
36e	% <b>habitat unit</b> area where < 0.5 f/s; 0.5 to 2 ft and shelter criteria overlap	27%	16%	15%	12%	5%	12%	3%	3%
36f	% <b>habitat unit</b> area where < 0.5 f/s; 2 to 4 ft and shelter criteria overlap	16%	8%	12%	20%	0%	1%	0%	0%
	<b>HABITAT UNIT NUMBER</b>								
	<b>HU01</b>	<b>HU02</b>	<b>HU03</b>	<b>HU04</b>	<b>HU05</b>	<b>HU06</b>	<b>HU07</b>	<b>HU08</b>	
11e	% area of <b>hab unit</b> within 0.5 -2.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	4	4	4	4	4	4	4	4
11f	% area of <b>hab unit</b> within 2.0 -4.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	4	4	4	4	0	2	0	4
14.	Instream shelter value in the <b>habitat unit</b> : 0, 1, 2, 3 (3 = 5 pts, 2 = 4 pts, 1 = 3 pts, 0 = 0 pts)	5	5	5	5	4	4	4	5
15.	% <b>hab unit</b> covered by shelter (≥80 = 5pts; ≥60 = 4 pts; ≥40 = 3 pts; ≥20 = 2 pts; ≥10 = 1 pt; <10 = 0 pt)	2	2	3	3	0	1	0	3
17b	a. Calculate the shelter rating for the <b>habitat unit</b> : 0-300	4	2	4	4	0	0	0	4
28.	% area of <b>hab unit</b> within targeted velocity (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	4	3	3	3	2	2	1	0
36e	% area <b>hab unit</b> with < 0.5 f/s; 0.5 to 2 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	2	1	1	1	0	1	0	0
36f	% area <b>hab unit</b> with < 0.5 f/s; 2 to 4 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	1	0	1	2	0	0	0	0
	<b>HABITAT UNIT NUMBER</b>								
	<b>HU01</b>	<b>HU02</b>	<b>HU03</b>	<b>HU04</b>	<b>HU05</b>	<b>HU06</b>	<b>HU07</b>	<b>HU08</b>	
<b>HABITAT UNIT RATING</b>	Habitat unit quantitative rating (out of 35)	26	21	25	26	10	14	9	20
	Habitat unit qualitative rating: Excellent (>=28), Good (>=21), Fair(>=14), Poor (>=7), Fail (<7)	Good	Good	Good	Good	Poor	Fair	Poor	Fair

# Foley Enhancement Reach



Figure 18. Habitat unit ratings for the Foley enhancement reach, July 2022.

Table 10. Post-enhancement average feature, average habitat unit, site, and reach ratings for the Foley enhancement reach, July 2022.

	Project Reach	4
	Enhancement Reach	5
	<b>ENHANCEMENT REACH NAME</b>	<b>FL</b>
	mmddy	70722
	Survey Type	PRE
	<b>PROJECT SITE NUMBER</b>	<b>1</b>
	Project Site Type	MainChan
	<b>PROJECT SITE NUMBER</b>	<b>1</b>
<b>SITE AVERAGE FEATURE RATING</b>	Site average feature quantitative rating (out of 15; bold indicates excluded from site rating)	0
	Site average feature qualitative rating Excellent (>=12), Good (>=9), Fair(>=6), Poor (>=3), Fail (<3), Not rated (not used to rate site)	Not rated
	<b>PROJECT SITE NUMBER</b>	<b>1</b>
<b>SITE AVERAGE HABITAT UNIT RATING</b>	Site average habitat unit quantitative rating (out of 35; bold indicates excluded from site rating)	19
	Site average qualitative rating Excellent (>=28), Good (>=21), Fair(>=14), Poor (>=7), Fail (<7), Not rated (not used to rate site)	Fair
	<b>PROJECT SITE NUMBER</b>	<b>1</b>
<b>SITE RATING</b>	Site quantitative rating (sum of site average feature and habitat unit ratings) (out of 50; bold indicates rating excludes feature or habitat unit rating and scoring out of 15 or 35)	19
	Site qualitative rating: Excellent (>=40), Good (>=30), Fair(>=20), Poor (>=10), Fail (<10)	Fair
	<b>ENHANCEMENT REACH NAME</b>	<b>FL</b>
<b>ENHANCEMENT REACH RATING</b>	Enhancement reach quantitative rating (average of site ratings) (out of 35)	19
	Enhancement reach qualitative rating: Excellent (>=28), Good (>=21), Fair(>=14), Poor (>=7), Fail (<7)	Fair

# Foley Enhancement Reach

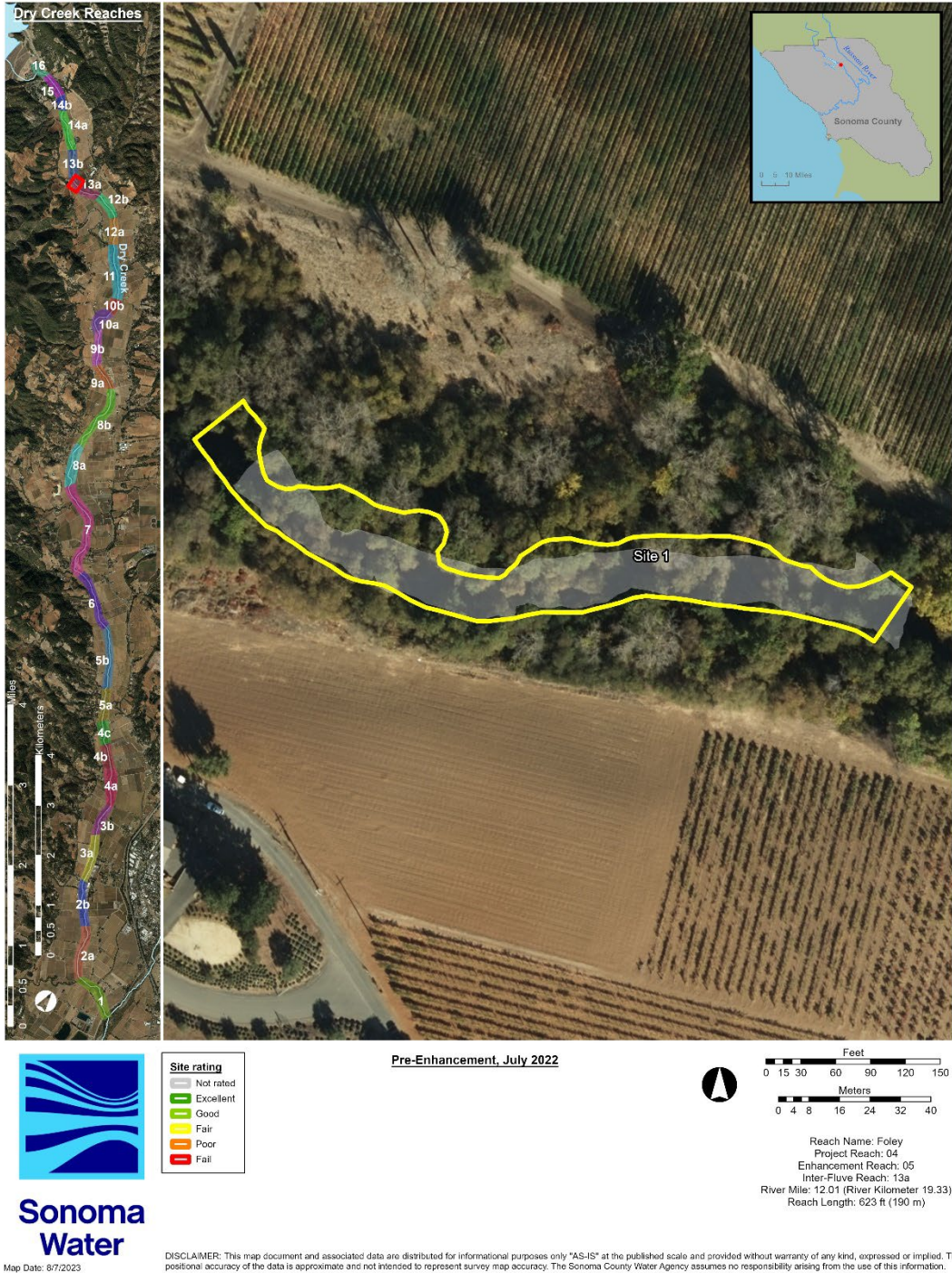


Figure 19. Post enhancement site ratings for the Foley enhancement reach, July 2022.

# Foley Enhancement Reach



Figure 20. Post-enhancement reach rating for the Foley enhancement reach, July 2022.

## Feature and Habitat Unit Checklists

Table 11. Adaptive Management Plan targeted checklist for the Foley enhancement reach, July 2022.

		4	4	4	4	4	4	4	4
Project Reach		4	4	4	4	4	4	4	4
Enhancement Reach		5	5	5	5	5	5	5	5
Colloquial Name	FL	FL	FL	FL	FL	FL	FL	FL	FL
nmddy	70722	70722	70722	70722	70722	70722	70722	70722	70722
Survey Type	PRE	PRE	PRE	PRE	PRE	PRE	PRE	PRE	PRE
Project Site Number	1	1	1	1	1	1	1	1	1
Project Site Type	MainChan	MainChan	MainChan	MainChan	MainChan	MainChan	MainChan	MainChan	MainChan
Project Feature Number	NA	NA	NA	NA	NA	NA	NA	NA	NA
Feature Type Code	NA	NA	NA	NA	NA	NA	NA	NA	NA
Habitat Unit	HU01	HU02	HU03	HU04	HU05	HU06	HU07	HU08	
Habitat Type	Pool	Pool	Pool	Pool	Riffle	Pool	Riffle	Pool	
4.	Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	NA	NA	NA	NA	NA	NA	NA	NA
5a	Are problems with the feature visible?	NA	NA	NA	NA	NA	NA	NA	NA
6a	Is the feature still in its original location?	NA	NA	NA	NA	NA	NA	NA	NA
6b	Is the feature still in its original position?	NA	NA	NA	NA	NA	NA	NA	NA
6d	Is the feature still in its original orientaton?	NA	NA	NA	NA	NA	NA	NA	NA
8.	If an objective, did the feature create the targeted instream habitat type?	NA	NA	NA	NA	NA	NA	NA	NA
9.	Were there any unintended effects by the feature on the habitat type? If Y, comment.	NA	NA	NA	NA	NA	NA	NA	NA
11e	% Area of habitat unit within 0.5 -2.0 ft depth	40%	40%	43%	40%	75%	65%	82%	54%
11f	% Area of habitat unit within 2.0 -4.0 ft depth	46%	53%	42%	52%	0%	20%	7%	42%
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3	3	3	3	3	2	2	2	3
15.	Percent of habitat unit covered by shelter: %	35	25	40	40	5	10	5	40
17a	If an objective, did the feature increase instream shelter rating?	NA	NA	NA	NA	NA	NA	NA	NA
17b	a. Calculate the shelter rating for the habitat unit: 0-300	105	75	120	120	10	20	10	120
19a	If an objective, did the feature increase LWD count in the habitat unit?	NA	NA	NA	NA	NA	NA	NA	NA
21a	If an objective, did the feature lead to the targeted channel conditions?	NA	NA	NA	NA	NA	NA	NA	NA
25.	Did the feature achieve the targeted velocity?	NA	NA	NA	NA	NA	NA	NA	NA
28.	Percent of habitat unit within targeted velocity (see above): (%)	54%	31%	37%	39%	21%	25%	12%	7%
36e	% habitat unit area where < 0.5 f/s; 0.5 to 2 ft and shelter criteria overlap	27%	16%	15%	12%	5%	12%	3%	3%
36f	% habitat unit area where < 0.5 f/s; 2 to 4 ft and shelter criteria overlap	16%	8%	12%	20%	0%	1%	0%	0%
	<b>FEATURE NUMBER</b>	NA	NA	NA	NA	NA	NA	NA	NA
	<b>HABITAT UNIT NUMBER</b>	HU01	HU02	HU03	HU04	HU05	HU06	HU07	HU08
	<b>SITE NUMBER</b>	1	1	1	1	1	1	1	1
	<b>ENHANCEMENT REACH NAME</b>	FL	FL	FL	FL	FL	FL	FL	FL
4.	Structural condition of feature: EXCL (5 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)	0	0	0	0	0	0	0	0
5a	Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)	0	0	0	0	0	0	0	0
6a	Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0	0	0
6b	Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0	0	0
6d	Is the feature still in its original orientaton? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0	0	0
8.	If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0	0	0
9.	Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)	0	0	0	0	0	0	0	0
11e	% area of hab unit within 0.5 -2.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	4	4	4	4	4	4	4	4
11f	% area of hab unit within 2.0 -4.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	4	4	4	4	0	2	0	4
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3 (3 = 5 pts, 2 = 4 pts, 1 = 3 pts, 0 = 0 pts)	5	5	5	5	4	4	4	5
15.	% hab unit covered by shelter (≥80 = 5pts; ≥60 = 4 pts; ≥40 = 3 pts; ≥20 = 2 pts; ≥10 = 1 pt; <10 = 0 pt)	2	2	3	3	0	1	0	3
17a	If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0	0	0
17b	a. Calculate the shelter rating for the habitat unit: 0-300	4	2	4	4	0	0	0	4
19a	If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0	0	0
21a	If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0	0	0
25.	Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0	0	0
28.	% area of hab unit within targeted velocity (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	4	3	3	3	2	2	1	0
36e	% area hab unit with < 0.5 f/s; 0.5 to 2 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	2	1	1	1	0	1	0	0
36f	% area hab unit with < 0.5 f/s; 2 to 4 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	1	0	1	2	0	0	0	0



Table 12. Adaptive Management Plan full checklist for the Foley enhancement reach, July 2022.

	4	4	4	4	4	4	4	4	4
Project Reach	4	4	4	4	4	4	4	4	4
Enhancement Reach	5	5	5	5	5	5	5	5	5
Colloquial Name	FL	FL	FL	FL	FL	FL	FL	FL	FL
mmddy	70722	70722	70722	70722	70722	70722	70722	70722	70722
Survey Type	PRE	PRE	PRE	PRE	PRE	PRE	PRE	PRE	PRE
Project Site Number	1	1	1	1	1	1	1	1	1
Project Site Type	MainChan	MainChan	MainChan	MainChan	MainChan	MainChan	MainChan	MainChan	MainChan
Project Feature Number	NA	NA	NA	NA	NA	NA	NA	NA	NA
Feature Type Code	NA	NA	NA	NA	NA	NA	NA	NA	NA
Habitat Unit	HU01	HU02	HU03	HU04	HU05	HU06	HU07	HU08	
Habitat Type	Pool	Pool	Pool	Pool	Rifle	Pool	Rifle	Pool	
4.	Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	NA	NA	NA	NA	NA	NA	NA	NA
5a	Are problems with the feature visible?	NA	NA	NA	NA	NA	NA	NA	NA
6a	Is the feature still in its original location?	NA	NA	NA	NA	NA	NA	NA	NA
6b	Is the feature still in its original position?	NA	NA	NA	NA	NA	NA	NA	NA
6d	Is the feature still in its original orientaton?	NA	NA	NA	NA	NA	NA	NA	NA
8.	If an objective, did the feature create the targeted instream habitat type?	NA	NA	NA	NA	NA	NA	NA	NA
9.	Were there any unintended effects by the feature on the habitat type? If Y, comment.	NA	NA	NA	NA	NA	NA	NA	NA
11e	% Area of habitat unit within 0.5 -2.0 ft depth	40%	40%	43%	40%	75%	65%	82%	54%
11f	% Area of habitat unit within 2.0 -4.0 ft depth	48%	53%	42%	52%	0%	20%	7%	42%
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3	3	3	3	3	2	2	2	3
15.	Percent of habitat unit covered by shelter: %	35	25	40	40	5	10	5	40
17a	If an objective, did the feature increase instream shelter rating?	NA	NA	NA	NA	NA	NA	NA	NA
17b	a. Calculate the shelter rating for the habitat unit: 0-300	105	75	120	120	10	20	10	120
19a	If an objective, did the feature increase LWD count in the habitat unit?	NA	NA	NA	NA	NA	NA	NA	NA
21a	If an objective, did the feature lead to the targeted channel conditions?	NA	NA	NA	NA	NA	NA	NA	NA
25.	Did the feature achieve the targeted velocity?	NA	NA	NA	NA	NA	NA	NA	NA
28.	Percent of habitat unit within targeted velocity (see above): (%)	54%	31%	37%	39%	21%	25%	12%	7%
36e	% habitat unit area where < 0.5 f/s; 0.5 to 2 ft and shelter criteria overlap	27%	16%	15%	12%	5%	12%	3%	3%
36f	% habitat unit area where < 0.5 f/s; 2 to 4 ft and shelter criteria overlap	16%	8%	12%	20%	0%	1%	0%	0%
	<b>FEATURE NUMBER</b>	NA	NA	NA	NA	NA	NA	NA	NA
	<b>HABITAT UNIT NUMBER</b>	HU01	HU02	HU03	HU04	HU05	HU06	HU07	HU08
	<b>SITE NUMBER</b>	1	1	1	1	1	1	1	1
	<b>ENHANCEMENT REACH NAME</b>	FL	FL	FL	FL	FL	FL	FL	FL
4.	Structural condition of feature: EXCL (5 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)	0	0	0	0	0	0	0	0
5a	Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)	0	0	0	0	0	0	0	0
6a	Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0	0	0
6b	Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0	0	0
6d	Is the feature still in its original orientaton? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0	0	0
8.	If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0	0	0
9.	Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)	0	0	0	0	0	0	0	0
11e	% area of hab unit within 0.5 -2.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	4	4	4	4	4	4	4	4
11f	% area of hab unit within 2.0 -4.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	4	4	4	4	0	2	0	4
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3 (3 = 5 pts; 2 = 4 pts, 1 = 3 pts, 0 = 0 pts)	5	5	5	5	4	4	4	5
15.	% hab unit covered by shelter (≥80 = 5pts; ≥60 = 4 pts; ≥40 = 3 pts; ≥20 = 2 pts; ≥10 = 1 pt; <10 = 0 pt)	2	2	3	3	0	1	0	3
17a	If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0	0	0
17b	a. Calculate the shelter rating for the habitat unit: 0-300	4	2	4	4	0	0	0	4
19a	If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0	0	0
21a	If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0	0	0
25.	Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0	0	0
28.	% area of hab unit within targeted velocity (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	4	3	3	3	2	2	1	0
36e	% area hab unit with < 0.5 f/s; 0.5 to 2 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	2	1	1	1	0	1	0	0
36f	% area hab unit with < 0.5 f/s; 2 to 4 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	1	0	1	2	0	0	0	0



# Post-Enhancement, 2022

**Foley, November 2022**

## Depth and Velocity

**Table 13. Areas and percentages of wetted area, optimal depth and velocity, and optimal hydraulic habitat within the Foley enhancement reach, November 2022.**

<b>Foley Post-enhancement, November 2022</b>	<b>Wetted area (ft<sup>2</sup>)</b>	<b>0.5 – 2.0 ft (ft<sup>2</sup>)</b>	<b>2.0 – 4.0 ft (ft<sup>2</sup>)</b>	<b>Total (ft<sup>2</sup>)</b>	<b>&lt; 0.5 ft/s (ft<sup>2</sup>)</b>	<b>0.5 – 2.0 ft, &lt; 0.5 ft/s (ft<sup>2</sup>)</b>	<b>2.0 – 4.0 ft, &lt; 0.5 ft/s (ft<sup>2</sup>)</b>	<b>Total (ft<sup>2</sup>)</b>
Main channel area	27,121	9,944	12,903	22,846	10,884	4,040	3,760	7,800
Side channel area	12,725	2,810	4,025	6,835	8,672	2,380	2,840	5,220
<b>Total area</b>	<b>39,845</b>	<b>12,754</b>	<b>16,928</b>	<b>29,681</b>	<b>19,557</b>	<b>6,420</b>	<b>6,600</b>	<b>13,020</b>
Main channel % of wetted area	68%	37%	48%	84%	40%	15%	14%	29%
Side channel % of wetted area	32%	22%	32%	54%	68%	19%	22%	41%
<b>Total % of wetted area</b>	<b>100%</b>	<b>32%</b>	<b>42%</b>	<b>74%</b>	<b>49%</b>	<b>16%</b>	<b>17%</b>	<b>33%</b>

# Foley Enhancement Reach

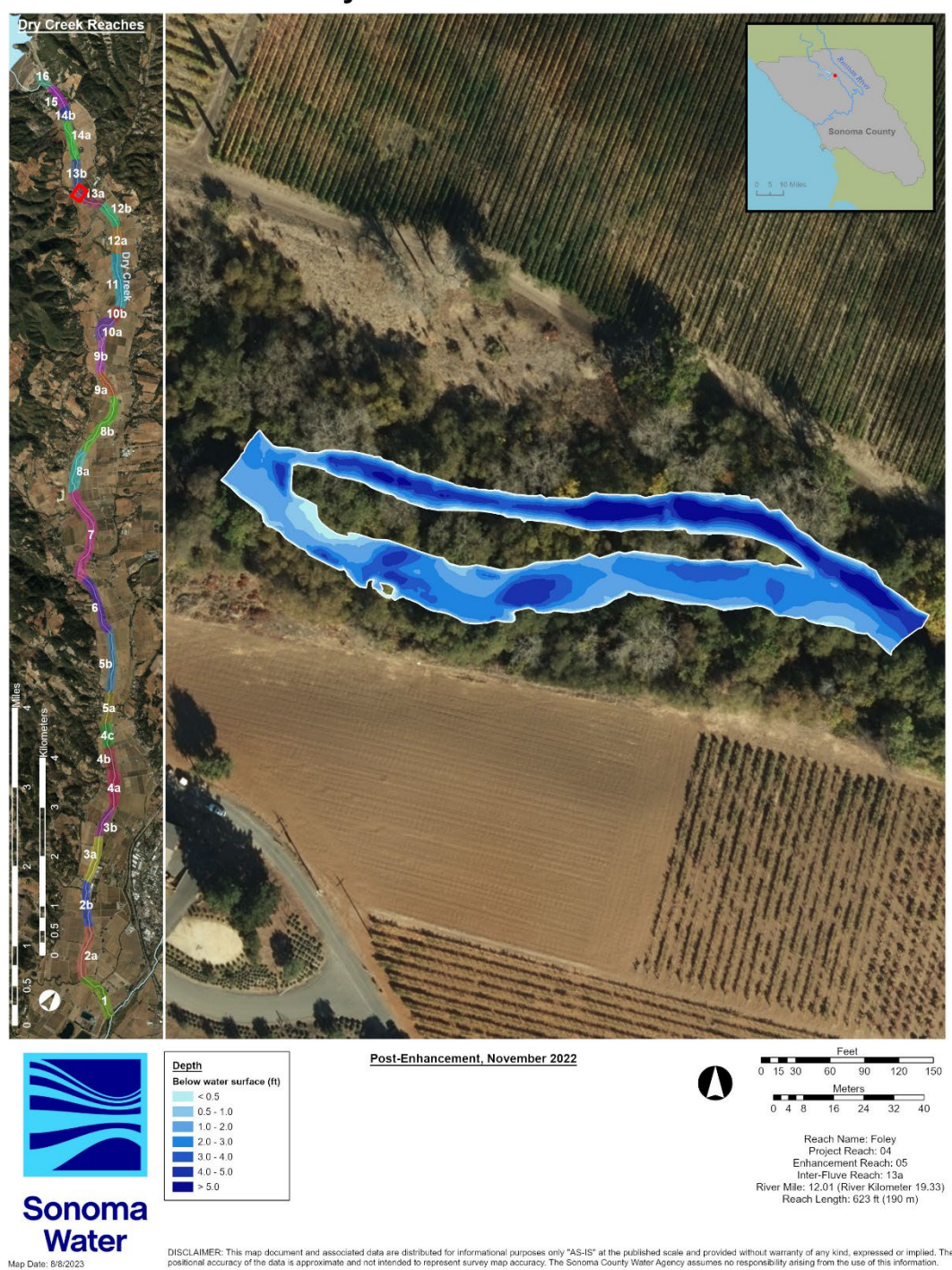


Figure 21. Measured water depth within the Foley enhancement reach, November 2022.

# Foley Enhancement Reach

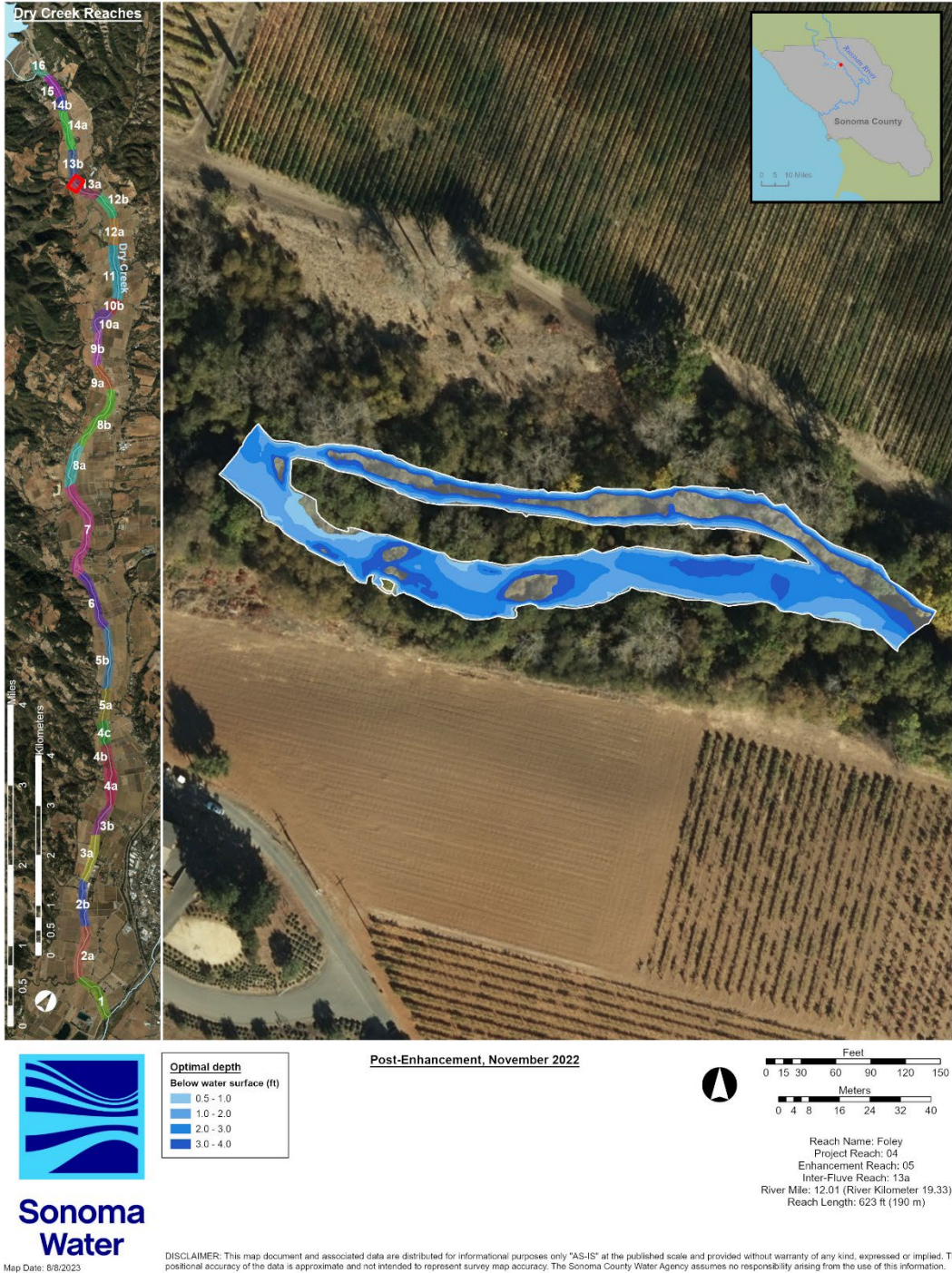


Figure 22. Optimal water depth for fry (0.5-2.0 ft) and parr (2.0-4.0 ft) within the Foley enhancement reach, November 2022.

# Foley Enhancement Reach



Figure 23. Measured water velocity within the Foley enhancement reach, November 2022.



# Foley Enhancement Reach



**Figure 24. Optimal water velocity for fry and parr (< 0.5 ft/s) within the Foley enhancement reach, November 2022.**

# Foley Enhancement Reach

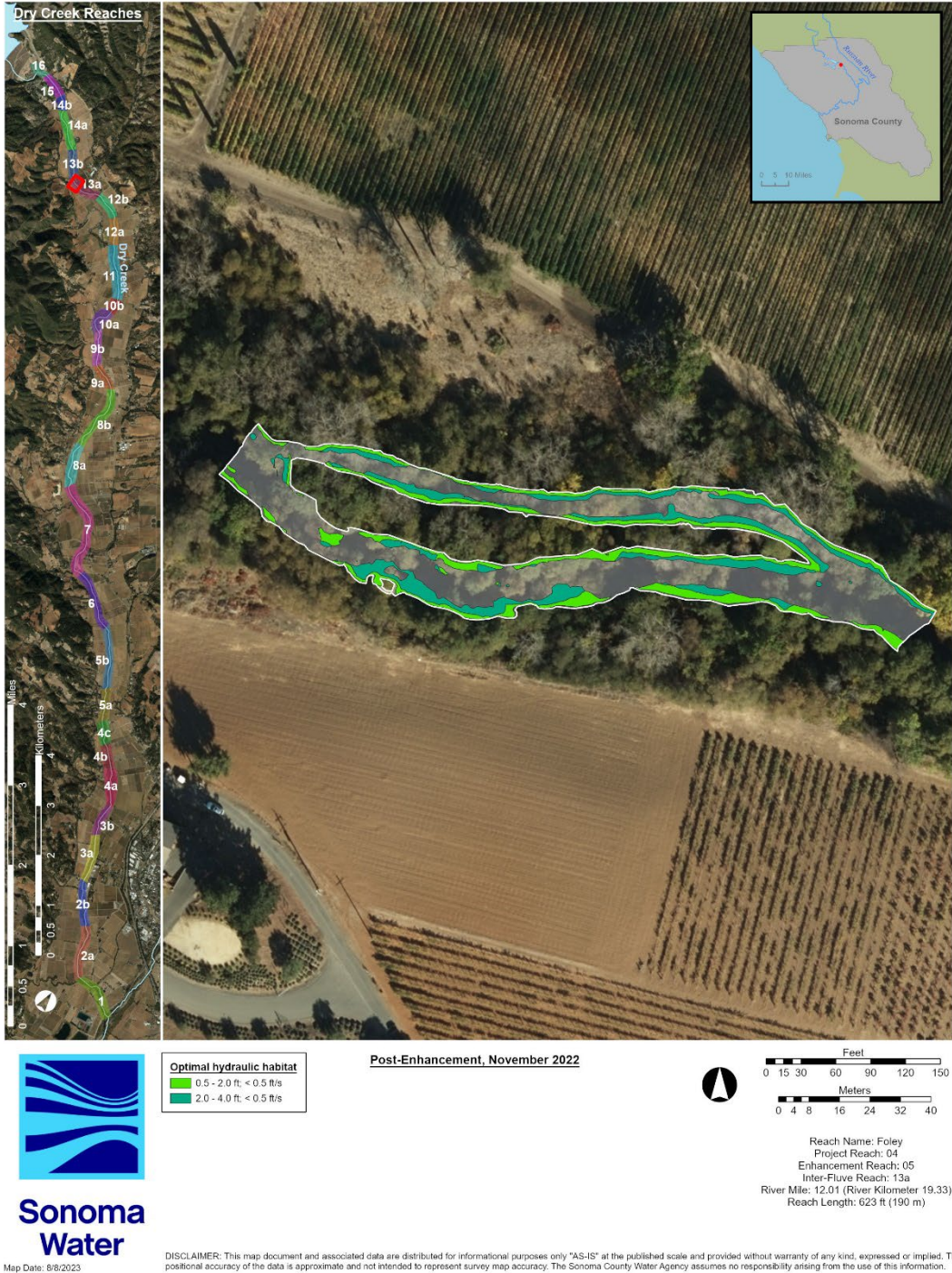


Figure 25. Optimal hydraulic habitat for fry (<0.5 ft/s, 0.5-2.0 ft) and parr (<0.5 ft/s, 2.0-4.0 ft) within the Foley enhancement reach, November 2022.

## Habitat Types and Shelter Values

**Table 14. Habitat, types, shelter value, percent cover, and shelter score for habitat units within the Foley enhancement reach, November 2022.**

Habitat Unit #	Habitat Type	Shelter Value	Percent Cover	Shelter Score
HU01	Pool	3	15	45
HU02	Flatwater	2	15	30
HU03	Pool	2	20	40
HU04	Flatwater	3	45	135
HU05	Riffle	2	5	10
HU06	Pool	3	35	105
HU07	Pool	3	50	150
HU08	Flatwater	3	45	135
HU09	Riffle	3	30	90
<b>Pool: riffle</b>	<b>4: 2 (2.00)</b>			<b>Avg = 82</b>

# Foley Enhancement Reach

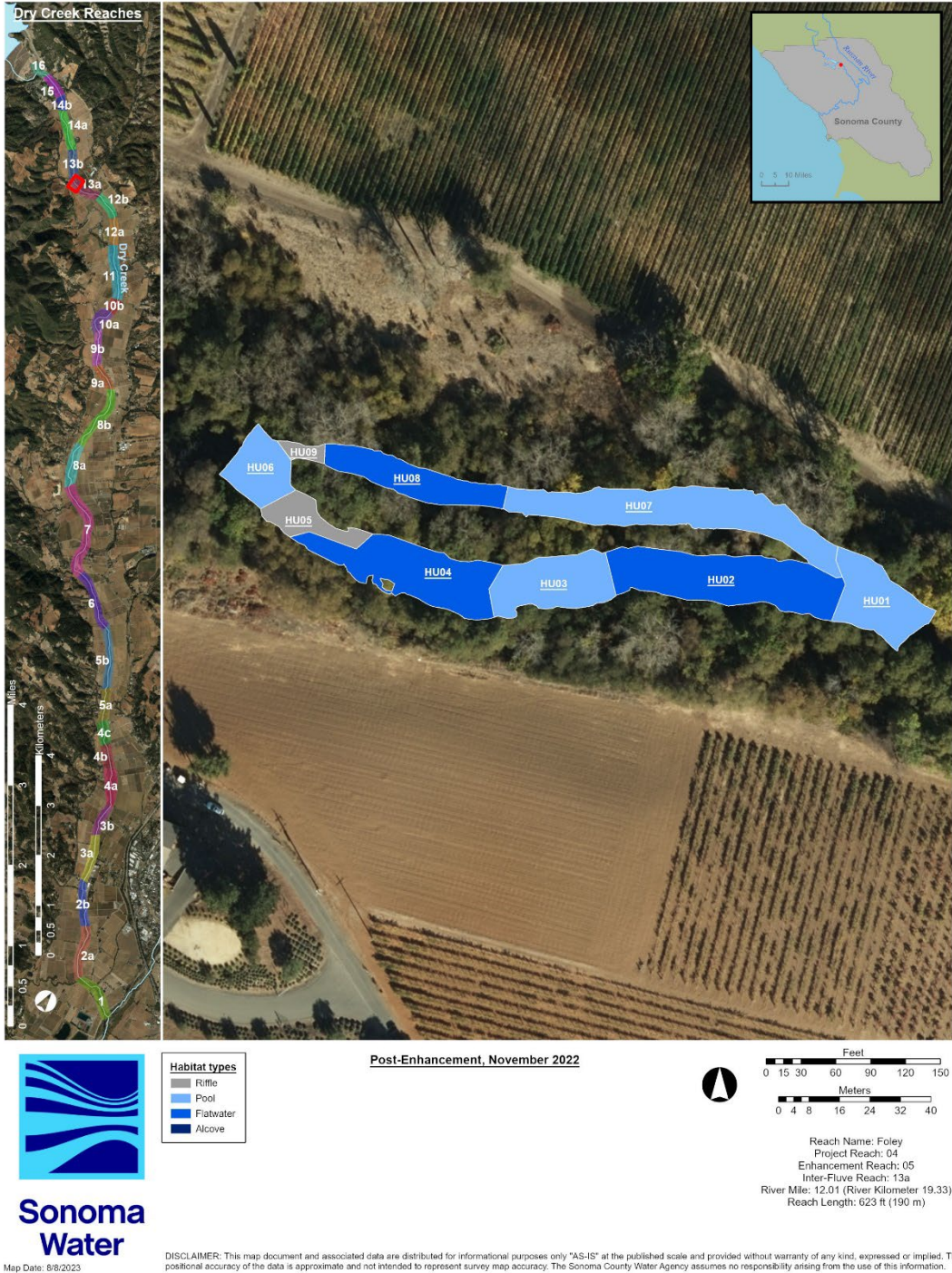


Figure 26. Habitat unit number and type within the Foley enhancement reach, November 2022.

# Foley Enhancement Reach



Figure 27. Habitat unit shelter scores within the Foley enhancement reach, November 2022.

## Feature, Habitat Unit, Site, and Reach Ratings

Table 15. Post-enhancement feature ratings for the Foley enhancement reach November 2022.

Project Reach	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Enhancement Reach	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Colloquial Name	FL	FL	FL	FL	FL	FL	FL	FL	FL	FL	FL	FL	FL	FL	FL	FL	FL	FL	FL
mmddy	110922	110922	110922	110922	110922	110922	110922	110922	110922	110922	110922	110922	110922	110922	110922	110922	110922	110922	110922
Survey Type	POS	POS	POS	POS	POS	POS	POS	POS	POS	POS	POS	POS	POS	POS	POS	POS	POS	POS	POS
PROJECT SITE NUMBER	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2
PROJECT FEATURE NUMBER	S1-01	S1-02	S1-03	S1-04	S1-05	S1-06	S2-01	S2-02	S2-03	S2-04	S2-05	S2-06	S2-07	S2-08	S2-09	S2-10	S2-11	S2-12	
Feature Type Code	S1-01	S1-02	S1-03	S1-04	S1-05	S1-06	S2-01	S2-02	S2-03	S2-04	S2-05	S2-06	S2-07	S2-08	S2-09	S2-10	S2-11	S2-12	
Habitat Unit	HU02	HU02	HU02	HU03	HU04	HU05	HU01 2	HU07	HU07	HU07	HU07	HU07	HU07	HU07	HU07	HU07	HU07	HU07	HU07
Habitat Type	Flatwater	Flatwater	Flatwater	Pool	Flatwater	Riffle	Pool	Pool	Pool	Pool	Pool	Pool	Pool	Pool	Pool	Pool	Pool	Pool	Pool
4. Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL
5a. Are problems with the feature visible?	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
6a. Is the feature still in its original location?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
6b. Is the feature still in its original position?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
6d. Is the feature still in its original orientaton?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
8. If an objective, did the feature create the targeted instream habitat type?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
9. Were there any unintended effects by the feature on the habitat type? If Y, comment.	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
17a. If an objective, did the feature increase instream shelter rating?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
19a. If an objective, did the feature increase LWD count in the habitat unit?	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
21a. If an objective, did the feature lead to the targeted channel conditions?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
25. Did the feature achieve the targeted velocity?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
PROJECT FEATURE NUMBER	S1-01	S1-02	S1-03	S1-04	S1-05	S1-06	S2-01	S2-02	S2-03	S2-04	S2-05	S2-06	S2-07	S2-08	S2-09	S2-10	S2-11	S2-12	
4. Structural condition of feature: EXCL (5 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
5a. Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6a. Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6b. Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6d. Is the feature still in its original orientaton? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8. If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
9. Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
17a. If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
19a. If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21a. If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
25. Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
PROJECT FEATURE NUMBER	S1-01	S1-02	S1-03	S1-04	S1-05	S1-06	S2-01	S2-02	S2-03	S2-04	S2-05	S2-06	S2-07	S2-08	S2-09	S2-10	S2-11	S2-12	
Feature quantitative rating out of 15	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14
Feature qualitative rating Excellent (>=12), Good (>=9), Fair(>=6), Poor (>=3), Fail (<3)	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

Table 15. Post-enhancement feature ratings for the Foley enhancement reach November 2022.

Project Reach	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Enhancement Reach	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Colloquial Name	FL	FL	FL	FL	FL	FL	FL	FL	FL	FL	FL	FL	FL	FL	FL	FL	FL	FL	FL
mmdyy	110922	110922	110922	110922	110922	110922	110922	110922	110922	110922	110922	110922	110922	110922	110922	110922	110922	110922	110922
Survey Type	POS	POS	POS	POS	POS	POS	POS	POS	POS	POS	POS	POS	POS	POS	POS	POS	POS	POS	POS
PROJECT SITE NUMBER	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
PROJECT FEATURE NUMBER	S2-13	S2-14	S2-15	S2-16	S2-17	S2-18	S2-19	S2-20	S2-21	S2-22	S2-23	S2-24	S2-25	S2-26	S2-27	S2-28	S2-29	S2-30	
4. Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL
5a. Are problems with the feature visible?	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
6a. Is the feature still in its original location?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
6b. Is the feature still in its original position?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
6d. Is the feature still in its original orientaton?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
8. If an objective, did the feature create the targeted instream habitat type?	YES	YES	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
9. Were there any unintended effects by the feature on the habitat type? If Y, comment.	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
17a. If an objective, did the feature increase instream shelter rating?	YES	YES	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
19a. If an objective, did the feature increase LWD count in the habitat unit?	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
21a. If an objective, did the feature lead to the targeted channel conditions?	YES	YES	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
25. Did the feature achieve the targeted velocity?	YES	YES	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
PROJECT FEATURE NUMBER	S2-13	S2-14	S2-15	S2-16	S2-17	S2-18	S2-19	S2-20	S2-21	S2-22	S2-23	S2-24	S2-25	S2-26	S2-27	S2-28	S2-29	S2-30	
4. Structural condition of feature: EXCL (5 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
5a. Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6a. Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6b. Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6d. Is the feature still in its original orientaton? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8. If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1
9. Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1
17a. If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1
19a. If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21a. If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1
25. Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1
PROJECT FEATURE NUMBER	S2-13	S2-14	S2-15	S2-16	S2-17	S2-18	S2-19	S2-20	S2-21	S2-22	S2-23	S2-24	S2-25	S2-26	S2-27	S2-28	S2-29	S2-30	
FEATURE RATING	14	14	14	14	14	14	9	14	14	14	14	14	14	14	14	14	14	14	14
Feature quantitative rating out of 15																			
Feature qualitative rating Excellent (>=12), Good (>=9), Fair(>=6), Poor (>=3), Fail (<3)	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent



Table 15. Post-enhancement feature ratings for the Foley enhancement reach November 2022.

Project Reach	4	4	4	4	4	
Enhancement Reach	5	5	5	5	5	
Colloquial Name	FL	FL	FL	FL	FL	
nmddy	110922	110922	110922	110922	110922	
Survey Type	POS	POS	POS	POS	POS	
	<b>PROJECT SITE NUMBER</b>					
Project Site Type	2	2	2	2	2	
	<b>PROJECT FEATURE NUMBER</b>					
Feature Type Code	SideChan	SideChan	SideChan	SideChan	SideChan	
Habitat Unit	S2-31	S2-32	S2-33	S2-34	S2-35	
Habitat Type	HW	HW	HW	AW	R	
	HU09	HU09	HU09	HU06 2	HU09	
	Rifle	Rifle	Rifle	Pool	Rifle	
4.	Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	EXCL	EXCL	EXCL	EXCL	EXCL
5a	Are problems with the feature visible?	NO	NO	NO	NO	NO
6a	Is the feature still in its original location?	YES	YES	YES	YES	YES
6b	Is the feature still in its original position?	YES	YES	YES	YES	YES
6d	Is the feature still in its original orientaton?	YES	YES	YES	YES	YES
8.	If an objective, did the feature create the targeted instream habitat type?	YES	YES	YES	YES	YES
9.	Were there any unintended effects by the feature on the habitat type? If Y, comment.	NO	NO	NO	NO	NO
17a	If an objective, did the feature increase instream shelter rating?	YES	YES	YES	YES	YES
19a	If an objective, did the feature increase LWD count in the habitat unit?	NO	NO	NO	NO	NO
21a	If an objective, did the feature lead to the targeted channel conditions?	YES	YES	YES	YES	YES
25.	Did the feature achieve the targeted velocity?	YES	YES	YES	YES	YES
	<b>PROJECT FEATURE NUMBER</b>	<b>S2-31</b>	<b>S2-32</b>	<b>S2-33</b>	<b>S2-34</b>	<b>S2-35</b>
4.	Structural condition of feature: EXCL (5 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)	5	5	5	5	5
5a	Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)	1	1	1	1	1
6a	Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1
6b	Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1
6d	Is the feature still in its original orientaton? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1
8.	If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1
9.	Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)	1	1	1	1	1
17a	If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1
19a	If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0
21a	If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1
25.	Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1
	<b>PROJECT FEATURE NUMBER</b>	<b>S2-31</b>	<b>S2-32</b>	<b>S2-33</b>	<b>S2-34</b>	<b>S2-35</b>
<b>FEATURE RATING</b>	Feature quantitative rating out of 15	14	14	14	14	14
	Feature qualitative rating Excellent (>=12), Good (>=9), Fair(>=6), Poor (>=3), Fail (<3)	Excellent	Excellent	Excellent	Excellent	Excellent

# Foley Enhancement Reach

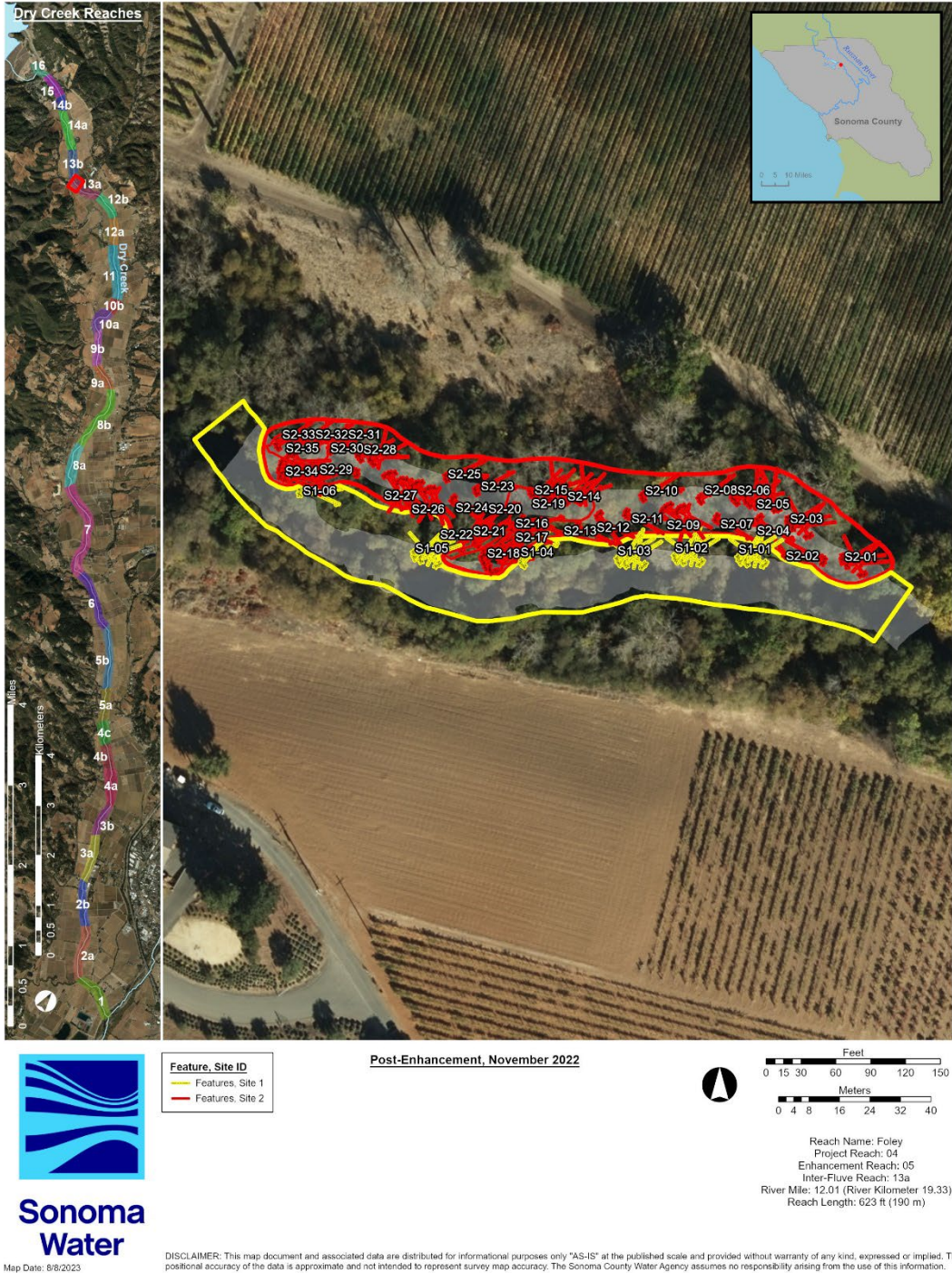


Figure 28. Enhancement sites and features within the Foley enhancement reach, November 2022.

# Foley Enhancement Reach

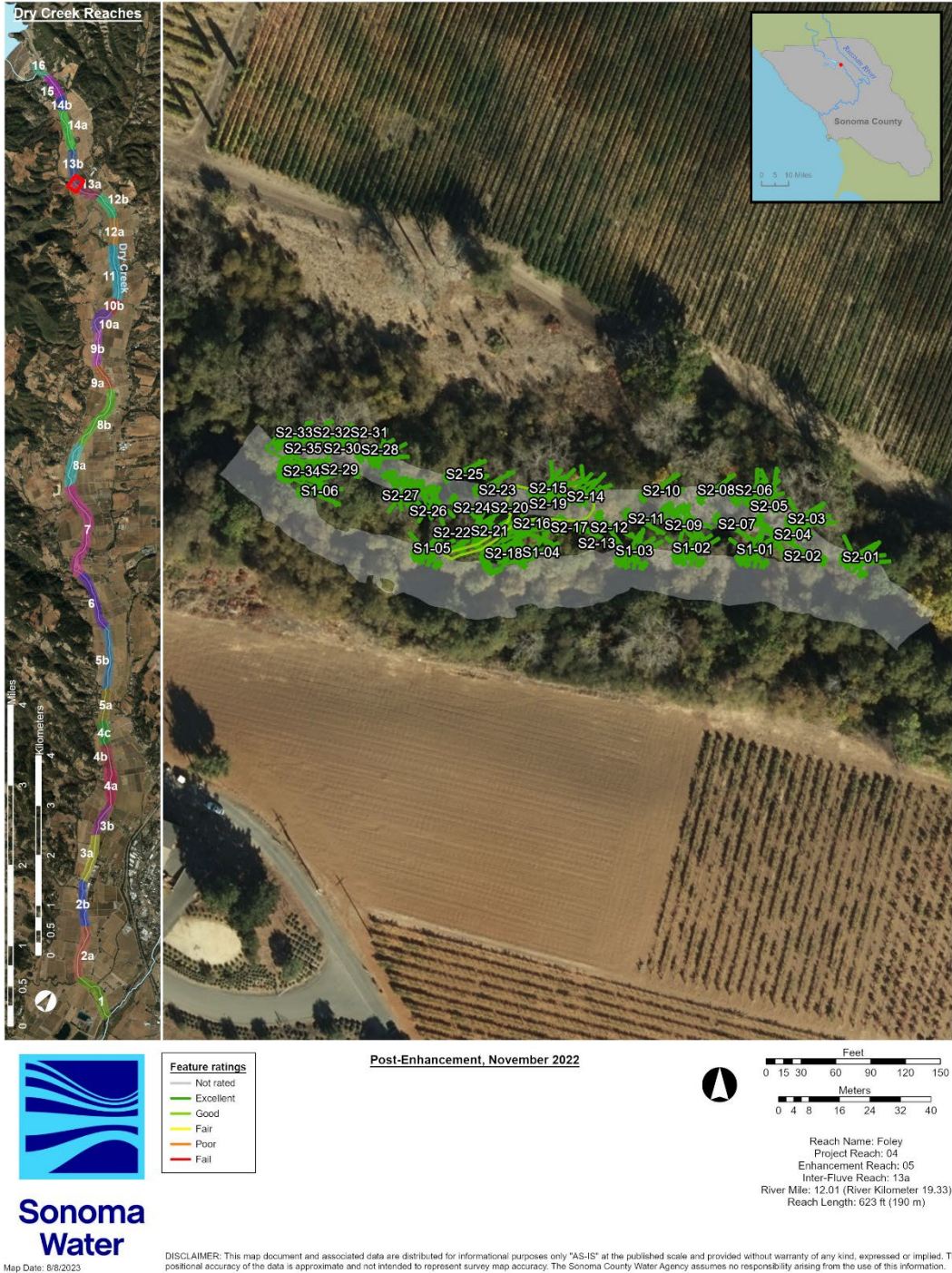


Figure 29. Feature ratings for the Foley enhancement reach, November 2022.

Table 16. Post-enhancement habitat unit ratings for the Foley enhancement reach November 2022.

Project Reach	4	4	4	4	4	4	4	4	4	4	4	4	4
Enhancement Reach	5	5	5	5	5	5	5	5	5	5	5	5	5
Colloquial Name	FL	FL	FL	FL	FL	FL	FL	FL	FL	FL	FL	FL	FL
mmddyy	110922	110922	110922	110922	110922	110922	110922	110922	110922	110922	110922	110922	110922
Survey Type	POS	POS	POS	POS	POS	POS	POS	POS	POS	POS	POS	POS	POS
HABITAT UNIT NUMBER	HU01	HU02	HU03	HU04	HU05	HU06	HU06 2	HU07	HU08	HU09	HU01 2	HU04 2	HU04 2
Habitat Type	Pool	Flatwater	Pool	Flatwater	Riffle	Pool	Pool	Pool	Flatwater	Riffle	Pool	Flatwater	Flatwater
PROJECT SITE NUMBER	1	1	1	1	1	1	2	2	2	2	2	2	2
Project Site Type	MainChan	MainChan	MainChan	MainChan	MainChan	MainChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan
11e	% Area of habitat unit within 0.5 -2.0 ft depth	29%	30%	32%	33%	72%	57%	57%	19%	23%	67%	29%	33%
11f	% Area of habitat unit within 2.0 -4.0 ft depth	33%	65%	46%	56%	0%	33%	33%	29%	38%	17%	33%	56%
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3	3	2	2	3	2	3	3	3	3	3	3	3
15.	Percent of habitat unit covered by shelter: %	15	15	20	45	5	35	35	50	45	30	15	45
17b	a. Calculate the shelter rating for the habitat unit: 0-300	45	30	40	135	10	105	105	150	135	90	45	135
28.	Percent of habitat unit within targeted velocity (see above): (%)	47%	38%	45%	45%	32%	22%	22%	73%	62%	27%	47%	45%
36e	% habitat unit area where < 0.5 f/s; 0.5 to 2 ft and shelter criteria overlap	13%	18%	17%	14%	12%	8%	8%	18%	20%	15%	13%	14%
36f	% habitat unit area where < 0.5 f/s; 2 to 4 ft and shelter criteria overlap	8%	15%	14%	23%	0%	6%	6%	24%	22%	1%	8%	23%
HABITAT UNIT NUMBER	HU01	HU02	HU03	HU04	HU05	HU06	HU06 2	HU07	HU08	HU09	HU01 2	HU04 2	HU04 2
11e	% area of hab unit within 0.5 -2.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	2	3	3	3	4	4	4	1	2	4	2	3
11f	% area of hab unit within 2.0 -4.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	3	4	4	4	0	3	3	2	3	1	3	4
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3 (3 = 5 pts; 2 = 4 pts, 1 = 3 pts, 0 = 0 pts)	5	4	4	5	4	5	5	5	5	5	5	5
15.	% hab unit covered by shelter (≥80 = 5pts; ≥60 = 4 pts; ≥40 = 3 pts; ≥20 = 2 pts; ≥10 = 1 pt; <10 = 0 pt)	1	1	2	3	0	2	2	3	3	2	1	3
17b	a. Calculate the shelter rating for the habitat unit: 0-300	1	0	1	4	0	4	4	5	4	3	1	4
28.	% area of hab unit within targeted velocity (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	4	3	4	4	3	2	2	4	4	2	4	4
36e	% area hab unit with < 0.5 f/s; 0.5 to 2 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	1	1	1	1	1	0	0	1	2	1	1	1
36f	% area hab unit with < 0.5 f/s; 2 to 4 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	1	1	2	0	0	0	2	2	0	0	2
HABITAT UNIT NUMBER	HU01	HU02	HU03	HU04	HU05	HU06	HU06 2	HU07	HU08	HU09	HU01 2	HU04 2	HU04 2
HABITAT UNIT RATING	Habitat unit quantitative rating (out of 35)												
	17	17	20	26	12	20	20	23	25	18	17	26	
	Habitat unit qualitative rating: Excellent (>=28), Good (>=21), Fair(>=14), Poor (>=7), Fail (<7)												
	Fair	Fair	Fair	Good	Poor	Fair	Fair	Good	Good	Fair	Fair	Good	

# Foley Enhancement Reach



Figure 30. Habitat unit ratings for the Foley enhancement reach, November 2022.

Table 17. Post-enhancement average feature, average habitat unit, site, and reach ratings for the Foley enhancement reach, November 2022.

	Project Reach	4	4
	Enhancement Reach	5	5
	<b>ENHANCEMENT REACH NAME</b>	<b>FL</b>	<b>FL</b>
	mmddy	110922	110922
	Survey Type	POS	POS
	<b>PROJECT SITE NUMBER</b>	<b>1</b>	<b>2</b>
	Project Site Type	MainChan	SideChan
	<b>PROJECT SITE NUMBER</b>	<b>1</b>	<b>2</b>
<b>SITE AVERAGE FEATURE RATING</b>	Site average feature quantitative rating (out of 15; bold indicates excluded from site rating)	14	14
	Site average feature qualitative rating Excellent (>=12), Good (>=9), Fair(>=6), Poor (>=3), Fail (<3), Not rated (not used to rate site)	Excellent	Excellent
	<b>PROJECT SITE NUMBER</b>	<b>1</b>	<b>2</b>
<b>SITE AVERAGE HABITAT UNIT RATING</b>	Site average habitat unit quantitative rating (out of 35; bold indicates excluded from site rating)	19	22
	Site average qualitative rating Excellent (>=28), Good (>=21), Fair(>=14), Poor (>=7), Fail (<7), Not rated (not used to rate site)	Fair	Good
	<b>PROJECT SITE NUMBER</b>	<b>1</b>	<b>2</b>
<b>SITE RATING</b>	Site quantitative rating (sum of site average feature and habitat unit ratings) (out of 50; bold indicates rating excludes feature or habitat unit rating and scoring out of 15 or 35)	33	35
	Site qualitative rating: Excellent (>=40), Good (>=30), Fair(>=20), Poor (>=10), Fail (<10)	Good	Good
	<b>ENHANCEMENT REACH NAME</b>	<b>FL</b>	
<b>ENHANCEMENT REACH RATING</b>	Enhancement reach quantitative rating (average of site ratings) (out of 50)	34	
	Enhancement reach qualitative rating: Excellent (>=40), Good (>=30), Fair(>=20), Poor (>=10), Fail (<10)	Good	

# Foley Enhancement Reach



Figure 31. Post enhancement site ratings for the Foley enhancement reach, November 2022.

# Foley Enhancement Reach



Figure 32. Post-enhancement reach rating for the Foley enhancement reach, November 2022.



## Feature and Habitat Unit Checklists





Table 18. Adaptive Management Plan targeted checklist for the Foley enhancement reach, November 2022.

Project Reach	4	4	4	4	4	4	4
Enhancement Reach	5	5	5	5	5	5	5
Colloquial Name	FL	FL	FL	FL	FL	FL	FL
mmdyy	110922	110922	110922	110922	110922	110922	110922
Survey Type	POS	POS	POS	POS	POS	POS	POS
Project Site Number	2	2	2	2	2	2	2
Project Site Type	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan
Project Feature Number	S2-29	S2-30	S2-31	S2-32	S2-33	S2-34	S2-35
Feature Type Code	HW	HW	HW	HW	HW	AW	R
Habitat Unit	HU08	HU08	HU09	HU09	HU09	HU06_2	HU09
Habitat Type	Flatwater	Flatwater	Riffle	Riffle	Riffle	Pool	Riffle
4. Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL
5a. Are problems with the feature visible?	NO	NO	NO	NO	NO	NO	NO
6a. Is the feature still in its original location?	YES	YES	YES	YES	YES	YES	YES
6b. Is the feature still in its original position?	YES	YES	YES	YES	YES	YES	YES
6d. Is the feature still in its original orientation?	YES	YES	YES	YES	YES	YES	YES
8. If an objective, did the feature create the targeted instream habitat type?	YES	YES	YES	YES	YES	YES	YES
9. Were there any unintended effects by the feature on the habitat type? If Y, comment.	NO	NO	NO	NO	NO	NO	NO
11e. % Area of habitat unit within 0.5 -2.0 ft depth	23%	23%	67%	67%	67%	57%	67%
11f. % Area of habitat unit within 2.0 -4.0 ft depth	38%	38%	17%	17%	17%	33%	17%
14. Instream shelter value in the habitat unit: 0, 1, 2, 3	3	3	3	3	3	3	3
15. Percent of habitat unit covered by shelter: %	45	45	30	30	30	35	30
17a. If an objective, did the feature increase instream shelter rating?	YES	YES	YES	YES	YES	YES	YES
17b. a. Calculate the shelter rating for the habitat unit: 0-300	135	135	90	90	90	105	90
19a. If an objective, did the feature increase LWD count in the habitat unit?	NO	NO	NO	NO	NO	NO	NO
21a. If an objective, did the feature lead to the targeted channel conditions?	YES	YES	YES	YES	YES	YES	YES
25. Did the feature achieve the targeted velocity?	YES	YES	YES	YES	YES	YES	YES
28. Percent of habitat unit within targeted velocity (see above): (%)	62%	62%	27%	27%	27%	22%	27%
36e. % habitat unit area where < 0.5 f/s; 0.5 to 2 ft and shelter criteria overlap	20%	20%	15%	15%	15%	8%	15%
36f. % habitat unit area where < 0.5 f/s; 2 to 4 ft and shelter criteria overlap	22%	22%	1%	1%	1%	6%	1%
<b>FEATURE NUMBER</b>	<b>S2-29</b>	<b>S2-30</b>	<b>S2-31</b>	<b>S2-32</b>	<b>S2-33</b>	<b>S2-34</b>	<b>S2-35</b>
<b>HABITAT UNIT NUMBER</b>	<b>HU08</b>	<b>HU08</b>	<b>HU09</b>	<b>HU09</b>	<b>HU09</b>	<b>HU06_2</b>	<b>HU09</b>
<b>SITE NUMBER</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
<b>ENHANCEMENT REACH NAME</b>	<b>FL</b>	<b>FL</b>	<b>FL</b>	<b>FL</b>	<b>FL</b>	<b>FL</b>	<b>FL</b>
4. Structural condition of feature: EXCL (5 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)	5	5	5	5	5	5	5
5a. Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)	1	1	1	1	1	1	1
6a. Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1
6b. Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1
6d. Is the feature still in its original orientation? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1
8. If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1
9. Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)	1	1	1	1	1	1	1
11e. % area of hab unit within 0.5 -2.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	2	2	4	4	4	4	4
11f. % area of hab unit within 2.0 -4.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	3	3	1	1	1	3	1
14. Instream shelter value in the habitat unit: 0, 1, 2, 3 (3 = 5 pts, 2 = 4 pts, 1 = 3 pts, 0 = 0 pts)	5	5	5	5	5	5	5
15. % hab unit covered by shelter (≥80 = 5pts; ≥60 = 4 pts; ≥40 = 3 pts; ≥20 = 2 pts; ≥10 = 1 pt; <10 = 0 pt)	3	3	2	2	2	2	2
17a. If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1
17b. a. Calculate the shelter rating for the habitat unit: 0-300	4	4	3	3	3	4	3
19a. If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0	0
21a. If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1
25. Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1
28. % area of hab unit within targeted velocity (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	4	4	2	2	2	2	2
36e. % area hab unit with < 0.5 f/s; 0.5 to 2 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	2	2	1	1	1	0	1
36f. % area hab unit with < 0.5 f/s; 2 to 4 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	2	2	0	0	0	0	0





Table 19. Adaptive Management Plan full checklist for the Foley enhancement reach, November 2022.

Project Reach	4	4	4	4	4	4	4
Enhancement Reach	5	5	5	5	5	5	5
Colloquial Name	FL	FL	FL	FL	FL	FL	FL
mmddyy	110922	110922	110922	110922	110922	110922	110922
Survey Type	POS	POS	POS	POS	POS	POS	POS
Project Site Number	2	2	2	2	2	2	2
Project Site Type	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan
Project Feature Number	S2-29	S2-30	S2-31	S2-32	S2-33	S2-34	S2-35
Feature Type Code	HV	HV	HV	HV	HV	AW	R
Habitat Unit	HU08	HU08	HU09	HU09	HU09	HU06 2	HU09
Habitat Type	Flatwater	Flatwater	Riffle	Riffle	Riffle	Pool	Riffle
1. Length of targeted treatment (ft)	40	34	36	37	37	40	43
2. Width of targeted treatment (ft)	14	14	15	15	14	29	14
3. Estimate area of the targeted feature: (ft <sup>2</sup> )	70	100	100	100	100	200	320
4. Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL
5a. Are problems with the feature visible?	NO	NO	NO	NO	NO	NO	NO
5b. Types: ANC, BBB, CRF, MAT, SHF, STR, SWA, UND, UNS, WSH, OTH, NON							
6a. Is the feature still in its original location?	YES	YES	YES	YES	YES	YES	YES
6b. Is the feature still in its original position?	YES	YES	YES	YES	YES	YES	YES
6c. If yes: LBK, MDC, RBK, SPN, OTH	RBK	LBK	LBK	LBK	LBK	RBK	SPN
6d. Is the feature still in its original orientation?	YES	YES	YES	YES	YES	YES	YES
6e. If yes: DNS, MUL, PRL, PRP, UPS, OTH	DNS	UPS	UPS	UPS	UPS	UPS	OTH
7. Current level II habitat type: FLT, POO, RIF, DRY, ALC, OTH	FLT	FLT	RIF	RIF	RIF	POO	RIF
8. If an objective, did the feature create the targeted instream habitat type?	YES	YES	YES	YES	YES	YES	YES
9. Were there any unintended effects by the feature on the habitat type? If Y, comment.	NO	NO	NO	NO	NO	NO	NO
10. Mean water depth in habitat unit: ft	2.9	2.9	1.3	1.3	1.3	1.9	1.3
11a. Maximum water depth in habitat unit: ft	5.6	5.6	3.0	3.0	3.0	4.5	3.0
11b. Area of habitat unit within 0.5 -2.0 ft depth: (ft <sup>2</sup> )	868.2	868.2	318.2	318.2	318.2	1525.4	318.2
11c. Area of habitat unit within 2.0 -4.0 ft depth: (ft <sup>2</sup> )	1461.7	1461.7	82.4	82.4	82.4	888.6	82.4
11d. Area of habitat unit within 0.5-4.0 ft depth: (ft <sup>2</sup> )	2329.9	2329.9	400.6	400.6	400.6	2413.9	400.6
11e. % Area of habitat unit within 0.5 -2.0 ft depth	23%	23%	67%	67%	67%	57%	67%
11f. % Area of habitat unit within 2.0 -4.0 ft depth	38%	38%	17%	17%	17%	33%	17%
11g. % Area of habitat unit within 0.5-4.0 ft depth	61%	61%	84%	84%	84%	91%	84%
11h. If an objective, did the feature increase/decrease water depth in the treatment area?	YES	YES	YES	YES	YES	YES	YES
12a. Targeted depth or range (ft) in habitat unit	0.5-4.0	0.5-4.0	0.5-4.0	0.5-4.0	0.5-4.0	0.5-4.0	0.5-4.0
12b. Estimate area of feature within targeted depth or range ft <sup>2</sup> :	70	100	100	100	100	200	320
13. Were there any unintended effects of the feature on the water depth? If Y, comment.	NO	NO	NO	NO	NO	NO	NO
14. Instream shelter value in the habitat unit: 0, 1, 2, 3	3	3	3	3	3	3	3
15. Percent of habitat unit covered by shelter: %	45	45	30	30	30	35	30
16a. 1st dominant cover in habitat unit: BED, BOL, BUB, LWD, RTW, SWD, UCB, VEG, OTH	RTW	RTW	RTW	RTW	RTW	RTW	RTW
16b. 2nd dominant in habitat unit: BED, BOL, BUB, LWD, RTW, SWD, UCB, VEG, OTH	LWD	LWD	SWD	SWD	SWD	AVG	SWD
17a. If an objective, did the feature increase instream shelter rating?	YES	YES	YES	YES	YES	YES	YES
17b. a. Calculate the shelter rating for the habitat unit: 0-300	135	135	90	90	90	105	90
18a. Large woody debris count in habitat unit: D >1', L 6-20'	0	0	0	0	0	1	0
18b. Large woody debris count in habitat unit: D >1', L >20'	0	0	0	0	0	0	0
19a. If an objective, did the feature increase LWD count in the habitat unit?	NO	NO	NO	NO	NO	NO	NO
19b. LWD recruitment mechanisms in habitat unit: ANC, EXC, EXH, INT, RPR, UNA, OTH	NON	NON	NON	NON	NON	NR	NON
20. Current stream channel problems in the habitat unit: AGG, BRD, FLO, GRC, HDC, INC, NAR, SCU, STT, WID, NON, OTH	NON	NON	NON	NON	NON	NON	NON
21a. If an objective, did the feature lead to the targeted channel conditions?	YES	YES	YES	YES	YES	YES	YES
21b. Overall Offchannel Condition (site): AGG, FPD, GRC, INC, NAR, SIN, STB, TOG, WID, OTH	YES	YES	YES	YES	YES	YES	YES
21c. Outlet Conditions (site): AGG, FPD, GRC, INC, NAR, SIN, STB, TOG, WID, OTH							
21d. Inlet Conditions (site): AGG, FPD, GRC, INC, NAR, SIN, STB, TOG, WID, OTH							
22. Were there any unintended effects on the stream channel at the feature? If Y, comment.	NO	NO	NO	NO	NO	NO	NO
23. If an objective, did the feature decrease/increase velocity in the treatment area?	YES	YES	YES	YES	YES	YES	YES
24. Targeted velocity/range in the habitat unit: (ft/sec)	0.5	0.5	0.5	0.5	0.5	0.5	0.5
25. Did the feature achieve the targeted velocity?	YES	YES	YES	YES	YES	YES	YES
26a. Measured minimum velocity (ft/sec) in habitat unit	0	0	0	0	0	0	0
26b. Measured max velocity (ft/sec) in habitat unit	4.0	4.0	5.9	5.9	5.9	3.0	5.9
26c. Measured mean velocity (ft/sec) in habitat unit	0.5	0.5	1.9	1.9	1.9	1.2	1.9
27. Area of habitat unit within targeted velocity: (ft <sup>2</sup> )	2354.5	2354.5	130.2	130.2	130.2	595.4	130.2
28. Percent of habitat unit within targeted velocity (see above): (%)	62%	62%	27%	27%	27%	22%	27%
29. Were there any unintended effects of feature on velocity? If Y, comment.	NO	NO	NO	NO	NO	NO	NO
30a. 1st/2nd dominant substrate in habitat unit: BED, BOL, COB, GRV, SND, SLC, OTH	GRV	GRV	GRV	GRV	GRV	SND	GRV
30b. 2nd dominant substrate in habitat unit: BED, BOL, COB, GRV, SND, SLC, OTH	COB	COB	COB	COB	COB	GRV	COB
31. If an objective, did the feature achieve the targeted substrate composition?	YES	YES	YES	YES	YES	YES	YES
32. % Canopy Measurement:	NR	NR	NR	NR	NR	NR	NR
33. Photopoint data collected: YES /NO	NR	NR	NR	NR	NR	NR	NR
34. Temperature Profile: YES /NO	NR	NR	NR	NR	NR	NR	NR
35. Dissolved Oxygen Profile: YES/NO	NR	NR	NR	NR	NR	NR	NR
36a. Total habitat unit area where targeted depth, velocity and shelter criteria overlap	1609.8	1609.8	77.8	77.8	77.8	365.5	77.8
36b. Total habitat unit area where < 0.5 ft/s; 0.5 to 2 ft and shelter criteria overlap	782.3	782.3	72.1	72.1	72.1	218.3	72.1
36c. Total habitat unit area where < 0.5 ft/s; 2 to 4 ft and shelter criteria overlap	827.5	827.5	5.7	5.7	5.7	147.2	5.7
36d. % habitat unit area where targeted depth, velocity and shelter criteria overlap	42%	42%	16%	16%	16%	14%	16%
36e. % habitat unit area where < 0.5 ft/s; 0.5 to 2 ft and shelter criteria overlap	20%	20%	15%	15%	15%	8%	15%
36f. % habitat unit area where < 0.5 ft/s; 2 to 4 ft and shelter criteria overlap	22%	22%	1%	1%	1%	6%	1%
37. Does this feature need: DEC, ENH, MNT, REP, NON, OTH	NON	NON	NON	NON	NON	NON	NON
38. Are additional restoration treatments recommended at this site?	NO	NO	NO	NO	NO	NO	NO

# Post-effective Flow, 2022



**Army Corps, December 2022**

## Depth and Velocity

**Table 20. Areas and percentages of wetted area, optimal depth and velocity, and optimal hydraulic habitat within the Army Corps enhancement reach, December 2022.**

Army Corps, Post-effective flow, December 2022	Wetted area (ft <sup>2</sup> )	0.5 – 2.0 ft (ft <sup>2</sup> )	2.0 – 4.0 ft (ft <sup>2</sup> )	Total (ft <sup>2</sup> )	< 0.5 ft/s (ft <sup>2</sup> )	0.5 – 2.0 ft, < 0.5 ft/s (ft <sup>2</sup> )	2.0 – 4.0 ft, < 0.5 ft/s (ft <sup>2</sup> )	Total (ft <sup>2</sup> )
Main channel area	0	0	0	0	0	0	0	0
Side channel area	0	0	0	0	0	0	0	0
<b>Total area</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Main channel % of wetted area	0	0	0	0	0	0	0	0
Side channel % of wetted area	0	0	0	0	0	0	0	0
<b>Total % of wetted area</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

# Army Corps, Reach 15 Enhancement Reach



Figure 33. Measured water depth within the Army Corps enhancement reach, December 2022.

# Army Corps, Reach 15 Enhancement Reach



**Figure 34. Optimal water depth for fry (0.5-2.0 ft) and parr (2.0-4.0 ft) within the Army Corps enhancement reach, December 2022.**

# Army Corps, Reach 15 Enhancement Reach



**Figure 35. Measured water velocity within the Army Corps enhancement reach, December 2022.**

# Army Corps, Reach 15 Enhancement Reach



Figure 36. Optimal water velocity for fry and parr (< 0.5 ft/s) within the Army Corps enhancement reach, December 2022.

## Army Corps, Reach 15 Enhancement Reach



**Figure 37. Optimal hydraulic habitat for fry (<0.5 ft/s, 0.5-2.0 ft) and parr (<0.5 ft/s, 2.0-4.0 ft) within the Army Corps enhancement reach, December 2022.**

## Habitat Types and Shelter Values

Table 21. Habitat, types, shelter value, percent cover, and shelter score for habitat units within the Army Corps enhancement reach, December 2022.

Habitat Unit #	Habitat Type	Shelter Value	Percent Cover	Shelter Score
HU01	Flatwater	3	45	135
HU02	Pool	3	85	255
HU03	Alcove	3	80	240
HU04	Flatwater	3	20	60
HU05	Pool	3	60	180
HU06	Flatwater	2	70	140
HU07	Flatwater	3	15	45
HU08	Pool	3	45	135
HU09	Flatwater	3	35	105
HU10	Pool	3	20	60
HU11	Flatwater	2	15	30
HU12	Pool	3	45	135
HU13	Flatwater	2	35	70
HU14	Flatwater	3	15	45
HU15	Riffle	2	15	30
HU16	Pool	3	65	195
HU17	Flatwater	3	70	210
HU18	Flatwater	2	60	120
HU19	Pool	3	40	120
HU20	Flatwater	2	20	40
<b>Pool: riffle</b>	<b>7:1 (7.0)</b>			<b>Avg = 118</b>



# Army Corps, Reach 15 Enhancement Reach



Figure 38. Habitat unit number and type within the Army Corps enhancement reach, December 2022.

# Army Corps, Reach 15 Enhancement Reach



Figure 39. Habitat unit shelter scores within the Army Corps enhancement reach, December 2022.

## Feature, Habitat Unit, Site, and Reach Ratings

Table 22. Post-effective flow feature ratings for the Army Corps enhancement reach, December 2022.

Project Reach	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Enhancement Reach	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Colloquial Name	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC
nmddy	121322	121322	121322	121322	121322	121322	121322	121322	121322	121322	121322	121322	121322	121322	121322	121322
Survey Type	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF
PROJECT SITE NUMBER	1	1	1	1	2	2	3	4	5	5	5	6	6	6	6	6
PROJECT FEATURE NUMBER	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan
Feature Type Code	S1-01	S1-05	S1-06	S1-07	S2-04	S2-05	S3-04	S4-05	S5-05	S5-06	S5-07	S6-06	S6-07	S6-08	S6-09	
Habitat Unit	LWD	LWD	LWD	LWD	LWD	LWD	LWD	LWD	LWD	LWD	LWD	LWD	LWD	LWD	LWD	
Habitat Type	HU01_D	HU19	HU19	HU19	HU16	HU17	HU12	HU10	HU07	HU08	HU07	HU01	HU02	HU05	HU05	
Habitat Type	Dry	Pool	Pool	Pool	Pool	Flatwater	Pool	Pool	Flatwater	Pool	Flatwater	Flatwater	Pool	Pool	Pool	
4. Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	GOOD	GOOD	GOOD	FAIR	EXCL	FAIR	GOOD	FAIR	GOOD	GOOD	GOOD	FAIR	FAIR	GOOD	GOOD	
5a. Are problems with the feature visible?	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
6a. Is the feature still in its original location?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	
6b. Is the feature still in its original position?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	
6d. Is the feature still in its original orientaton?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	
8. If an objective, did the feature create the targeted instream habitat type?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	
9. Were there any unintended effects by the feature on the habitat type? If Y, comment.	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
17a. If an objective, did the feature increase instream shelter rating?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	
19a. If an objective, did the feature increase LWD count in the habitat unit?	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
21a. If an objective, did the feature lead to the targeted channel conditions?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	
25. Did the feature achieve the targeted velocity?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	
PROJECT FEATURE NUMBER	S1-01	S1-05	S1-06	S1-07	S2-04	S2-05	S3-04	S4-05	S5-05	S5-06	S5-07	S6-06	S6-07	S6-08	S6-09	
4. Structural condition of feature: EXCL (5 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)	4	4	4	3	5	3	4	3	4	4	4	3	3	4	4	
5a. Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
6a. Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
6b. Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
6d. Is the feature still in its original orientaton? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
8. If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
9. Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
17a. If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
19a. If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
21a. If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
25. Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
PROJECT FEATURE NUMBER	S1-01	S1-05	S1-06	S1-07	S2-04	S2-05	S3-04	S4-05	S5-05	S5-06	S5-07	S6-06	S6-07	S6-08	S6-09	
FEATURE RATING	Feature quantitative rating out of 15															
	13	13	13	12	14	12	13	12	13	13	13	12	12	13	13	
	Feature qualitative rating Excellent (>=12), Good (>=9), Fair(>=6), Poor (>=3), Fail (<3)															
	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	

# Army Corps Enhancement Reach

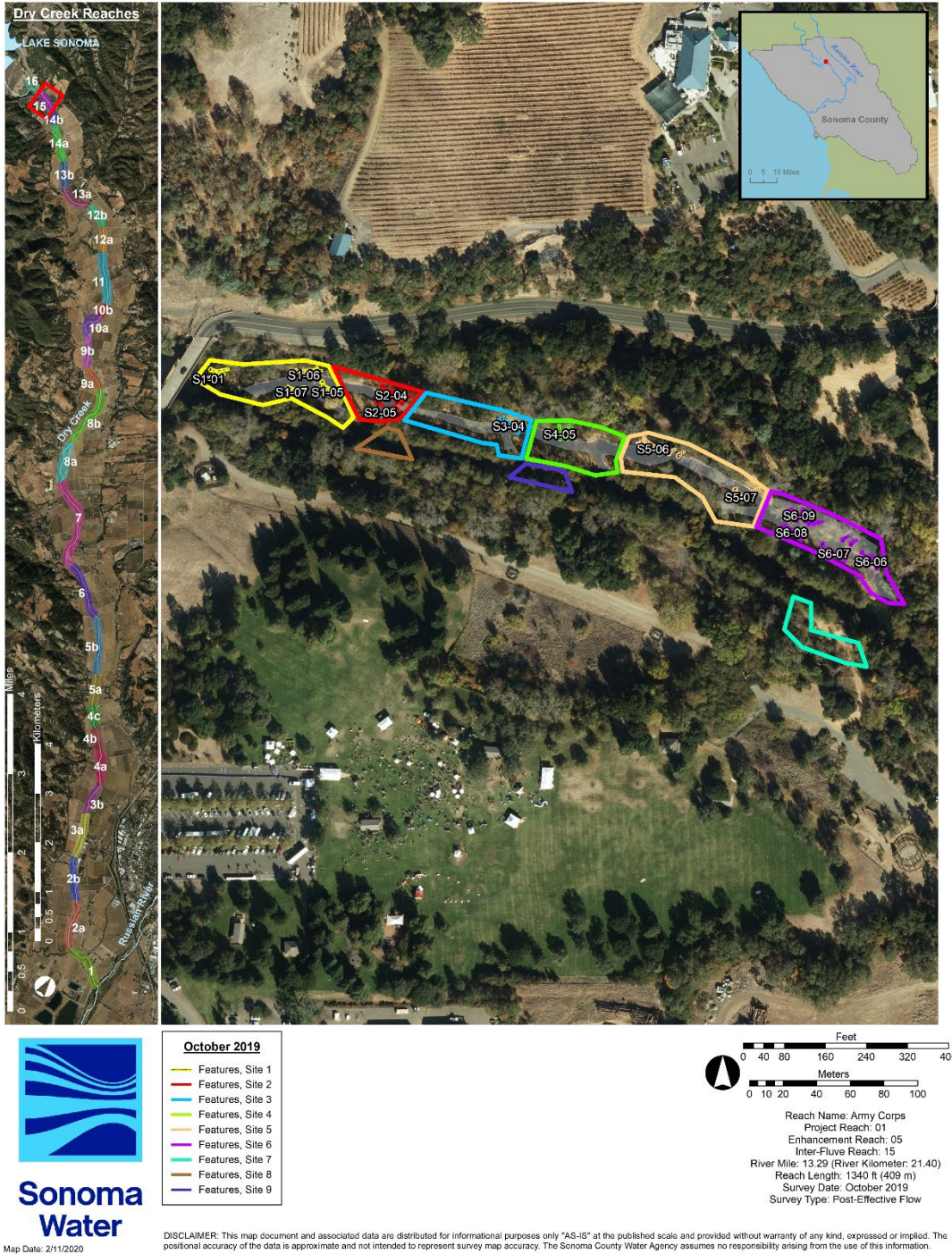


Figure 40. Enhancement sites and features within the Army Corps enhancement reach, December 2022.

# Army Corps, Reach 15 Enhancement Reach



Figure 41. Feature ratings for the Army Corps enhancement reach, December 2022.

Table 23. Post-effective flow habitat unit ratings for the Army Corps enhancement reach, December 2022.

Project Reach		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Enhancement Reach		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Colloquial Name		AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC
mmddyy		121322	121322	121322	121322	121322	121322	121322	121322	121322	121322	121322	121322	121322	121322	121322	121322	121322	121322	121322
Survey Type		PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF
HABITAT UNIT NUMBER		HU01	HU02	HU03	HU04	HU05	HU06	HU07	HU08	HU09	HU10	HU11	HU12	HU13	HU14	HU15	HU16	HU17	HU18	HU19
Habitat Type		Flatwater	Pool	Alcove	Flatwater	Pool	Flatwater	Flatwater	Pool	Flatwater	Pool	Flatwater	Pool	Flatwater	Flatwater	Riffle	Pool	Flatwater	Flatwater	Pool
PROJECT SITE NUMBER		6	6	6	6	6	5	5	4	4	4	3	3	3	3	3	2	2	2	1
Project Site Type		SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan
11e	% Area of habitat unit within 0.5 -2.0 ft depth	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
11f	% Area of habitat unit within 2.0 -4.0 ft depth	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3	3	3	3	3	3	2	3	3	3	2	3	2	3	2	3	3	3	2	3
15.	Percent of habitat unit covered by shelter: %	45	85	80	20	60	70	15	45	35	20	15	45	35	15	15	65	70	60	40
17b	a. Calculate the shelter rating for the habitat unit: 0-300	135	255	240	60	180	140	45	135	105	60	30	135	70	45	30	195	210	120	120
28.	Percent of habitat unit within targeted velocity (see above): (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
36e	% habitat unit area where < 0.5 f/s; 0.5 to 2 ft and shelter criteria overlap	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
36f	% habitat unit area where < 0.5 f/s; 2 to 4 ft and shelter criteria overlap	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
HABITAT UNIT NUMBER		HU01	HU02	HU03	HU04	HU05	HU06	HU07	HU08	HU09	HU10	HU11	HU12	HU13	HU14	HU15	HU16	HU17	HU18	HU19
11e	% area of hab unit within 0.5 -2.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11f	% area of hab unit within 2.0 -4.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3 (3 = 5 pts; 2 = 4 pts, 1 = 3 pts, 0 = 0 pts)	5	5	5	5	5	4	5	5	5	4	5	4	5	4	5	5	5	4	5
15.	% hab unit covered by shelter (≥80 = 5pts; ≥60 = 4 pts; ≥40 = 3 pts; ≥20 = 2 pts; ≥10 = 1 pt; <10 = 0 pt)	3	5	5	2	4	4	1	3	2	2	1	3	2	1	1	4	4	4	3
17b	a. Calculate the shelter rating for the habitat unit: 0-300	4	5	5	2	5	5	1	4	4	2	0	4	2	1	0	5	5	4	4
28.	% area of hab unit within targeted velocity (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36e	% area hab unit with < 0.5 f/s; 0.5 to 2 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36f	% area hab unit with < 0.5 f/s; 2 to 4 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HABITAT UNIT NUMBER		HU01	HU02	HU03	HU04	HU05	HU06	HU07	HU08	HU09	HU10	HU11	HU12	HU13	HU14	HU15	HU16	HU17	HU18	HU19
HABITAT UNIT RATING	Habitat unit quantitative rating (out of 15, No hydraulic data, habitat typing data only)	12	15	15	9	14	13	7	12	11	9	5	12	8	7	5	14	14	12	12
	Habitat unit qualitative rating: Excellent (≥12), Good (≥9), Fair(≥6), Poor (≥3), Fail (<3)	Excellent	Excellent	Excellent	Good	Excellent	Excellent	Fair	Excellent	Good	Good	Poor	Excellent	Fair	Fair	Poor	Excellent	Excellent	Excellent	Excellent

Table 23. Post-effective flow habitat unit ratings for the Army Corps enhancement reach, December 2022.

	Project Reach	1
	Enhancement Reach	5
	Colloquial Name	AC
	mmdyy	121322
	Survey Type	PEF
	<b>HABITAT UNIT NUMBER</b>	<b>HU20</b>
	Habitat Type	Flatwater
	<b>PROJECT SITE NUMBER</b>	<b>1</b>
	Project Site Type	SideChan
11e	% Area of habitat unit within 0.5 -2.0 ft depth	0%
11f	% Area of habitat unit within 2.0 -4.0 ft depth	0%
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3	2
15.	Percent of habitat unit covered by shelter: %	20
17b	a. Calculate the shelter rating for the habitat unit: 0-300	40
28.	Percent of habitat unit within targeted velocity (see above): (%)	0%
36e	% habitat unit area where < 0.5 f/s; 0.5 to 2 ft and shelter criteria overlap	0%
36f	% habitat unit area where < 0.5 f/s; 2 to 4 ft and shelter criteria overlap	0%
	<b>HABITAT UNIT NUMBER</b>	<b>HU20</b>
11e	% area of hab unit within 0.5 -2.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0
11f	% area of hab unit within 2.0 -4.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3 (3 = 5 pts; 2 = 4 pts, 1 = 3 pts, 0 = 0 pts)	4
15.	% hab unit covered by shelter (≥80 = 5pts; ≥60 = 4 pts; ≥40 = 3 pts; ≥20 = 2 pts; ≥10 = 1 pt; <10 = 0 pt)	2
17b	a. Calculate the shelter rating for the habitat unit: 0-300	1
28.	% area of hab unit within targeted velocity (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0
36e	% area hab unit with < 0.5 f/s; 0.5 to 2 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0
36f	% area hab unit with < 0.5 f/s; 2 to 4 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0
	<b>HABITAT UNIT NUMBER</b>	<b>HU20</b>
HABITAT UNIT RATING	Habitat unit quantitative rating (out of 15, No hydraulic data, habitat typing data only)	7
	Habitat unit qualitative rating: Excellent (≥12), Good (≥9), Fair(≥6), Poor (≥3), Fail (<3)	Fair



# Army Corps, Reach 15 Enhancement Reach

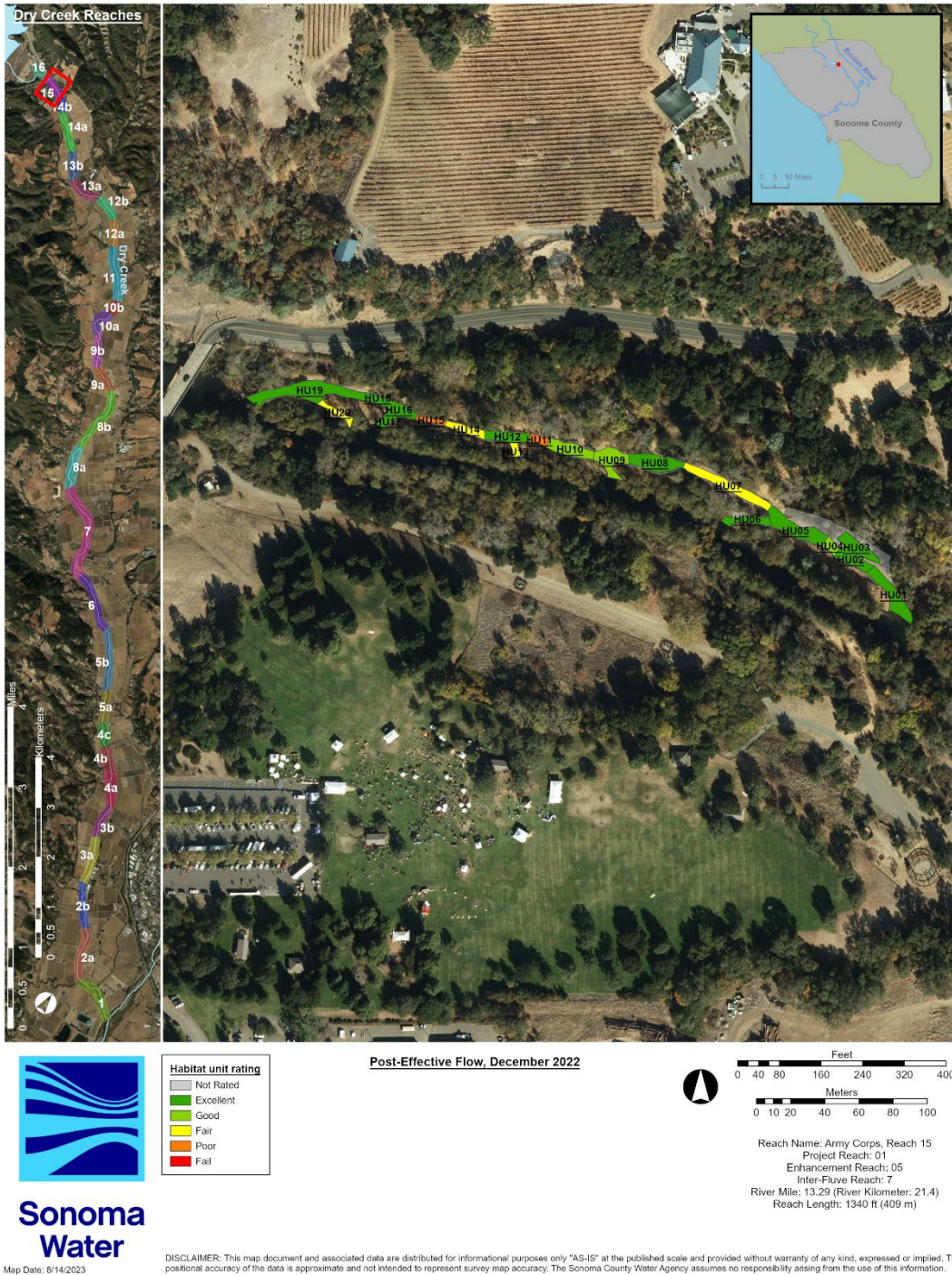


Figure 42. Post-effective flow habitat unit rating for the Army Corps enhancement reach, December 2022.

Table 24. Post-effective flow average feature, habitat unit, site, and reach ratings for the Army Corps enhancement reach, December 2022.

	Project Reach	1	1	1	1	1	1
	Enhancement Reach	5	5	5	5	5	5
	<b>ENHANCEMENT REACH NAME</b>	<b>AC</b>	<b>AC</b>	<b>AC</b>	<b>AC</b>	<b>AC</b>	<b>AC</b>
	mmddy	121322	121322	121322	121322	121322	121322
	Survey Type	PEF	PEF	PEF	PEF	PEF	PEF
	<b>PROJECT SITE NUMBER</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
	Project Site Type	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan
	<b>PROJECT SITE NUMBER</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
<b>SITE AVERAGE FEATURE RATING</b>	Site average feature quantitative rating (out of 15; bold indicates excluded from site rating)	13	13	13	12	13	13
	Site average feature qualitative rating Excellent (>=12), Good (>=9), Fair(>=6), Poor (>=3), Fail (<3), Not rated (not used to rate site)	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
	<b>PROJECT SITE NUMBER</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
<b>SITE AVERAGE HABITAT UNIT RATING</b>	Site average habitat unit quantitative rating (out of 15; No hydraulic data, habitat typing data only)	10	13	8	8	11	13
	Site average qualitative rating Excellent (>=12), Good (>=9), Fair(>=6), Poor (>=3), Fail (<3), Not rated (not used to rate site)	Good	Excellent	Fair	Fair	Good	Excellent
	<b>PROJECT SITE NUMBER</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
<b>SITE RATING</b>	Site quantitative rating (sum of site average feature and habitat unit ratings) (out of 30; Feature and habitat typing only)	22	26	21	20	24	26
	Site qualitative rating: Excellent (>=24), Good (>=18), Fair(>=12), Poor (>=6), Fail (<6)	Good	Excellent	Good	Good	Good	Excellent
	<b>ENHANCEMENT REACH NAME</b>	<b>AC</b>					
<b>ENHANCEMENT REACH RATING</b>	Enhancement reach quantitative rating (average of site ratings) (out of 30)	23					
	Enhancement reach qualitative rating: Excellent (>=24), Good (>=18), Fair(>=12), Poor (>=6), Fail (<6)	Good					

# Army Corps, Reach 15 Enhancement Reach



Figure 43. Post-effective flow site ratings for the Army Corps enhancement reach, December 2022.

# Army Corps, Reach 15 Enhancement Reach



Figure 44. Post-effective flow reach rating for the Army Corps enhancement reach, December 2022.

## Feature and Habitat Unit Checklists



Table 25. Adaptive Management Plan targeted checklist for the Army Corps enhancement reach, December 2022.

Project Reach	1	1	1	1	1	1	1
Enhancement Reach	5	5	5	5	5	5	5
Colloquial Name	AC	AC	AC	AC	AC	AC	AC
mmddyy	121322	121322	121322	121322	121322	121322	121322
Survey Type	PEF	PEF	PEF	PEF	PEF	PEF	PEF
Project Site Number	6	6	6	5	5	5	5
Project Site Type	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan
Project Feature Number	S6-07	S6-08	S6-09	NA	S5-05	S5-06	S5-07
Feature Type Code	LWD	LWD	LWD	NA	LWD	LWD	LWD
Habitat Unit	HU02	HU05	HU05	HU06	HU07	HU08	HU07
Habitat Type	Pool	Pool	Pool	Flatwater	Flatwater	Pool	Flatwater
4. Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	FAIR	GOOD	GOOD	NA	GOOD	GOOD	GOOD
5a. Are problems with the feature visible?	NO	NO	NO	NA	NO	NO	NO
6a. Is the feature still in its original location?	YES	YES	YES	NA	YES	YES	YES
6b. Is the feature still in its original position?	YES	YES	YES	NA	YES	YES	YES
6d. Is the feature still in its original orientaton?	YES	YES	YES	NA	YES	YES	YES
8. If an objective, did the feature create the targeted instream habitat type?	YES	YES	YES	NA	YES	YES	YES
9. Were there any unintended effects by the feature on the habitat type? If Y, comment.	NO	NO	NO	NA	NO	NO	NO
11e. % Area of habitat unit within 0.5 -2.0 ft depth	0%	0%	0%	0%	0%	0%	0%
11f. % Area of habitat unit within 2.0 -4.0 ft depth	0%	0%	0%	0%	0%	0%	0%
14. Instream shelter value in the habitat unit: 0, 1, 2, 3	3	3	3	2	3	3	3
15. Percent of habitat unit covered by shelter: %	85	60	60	70	15	45	15
17a. If an objective, did the feature increase instream shelter rating?	YES	YES	YES	NA	YES	YES	YES
17b. a. Calculate the shelter rating for the habitat unit: 0-300	255	180	180	140	45	135	45
19a. If an objective, did the feature increase LWD count in the habitat unit?	NO	NO	NO	NA	NO	NO	NO
21a. If an objective, did the feature lead to the targeted channel conditions?	YES	YES	YES	NA	YES	YES	YES
25. Did the feature achieve the targeted velocity?	YES	YES	YES	NA	YES	YES	YES
28. Percent of habitat unit within targeted velocity (see above): (%)	0%	0%	0%	0%	0%	0%	0%
36e. % habitat unit area where < 0.5 f/s; 0.5 to 2 ft and shelter criteria overlap	0%	0%	0%	0%	0%	0%	0%
36f. % habitat unit area where < 0.5 f/s; 2 to 4 ft and shelter criteria overlap	0%	0%	0%	0%	0%	0%	0%
<b>FEATURE NUMBER</b>	<b>S6-07</b>	<b>S6-08</b>	<b>S6-09</b>	<b>NA</b>	<b>S5-05</b>	<b>S5-06</b>	<b>S5-07</b>
<b>HABITAT UNIT NUMBER</b>	<b>HU02</b>	<b>HU05</b>	<b>HU05</b>	<b>HU06</b>	<b>HU07</b>	<b>HU08</b>	<b>HU07</b>
<b>SITE NUMBER</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>
<b>ENHANCEMENT REACH NAME</b>	<b>AC</b>	<b>AC</b>	<b>AC</b>	<b>AC</b>	<b>AC</b>	<b>AC</b>	<b>AC</b>
4. Structural condition of feature: EXCL (6 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)	3	4	4	0	4	4	4
5a. Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)	1	1	1	0	1	1	1
6a. Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)	1	1	1	0	1	1	1
6b. Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)	1	1	1	0	1	1	1
6d. Is the feature still in its original orientaton? (YES = 1 pt, NO = 0 pt)	1	1	1	0	1	1	1
8. If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)	1	1	1	0	1	1	1
9. Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)	1	1	1	0	1	1	1
11e. % area of hab unit within 0.5 -2.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	0	0	0	0	0	0
11f. % area of hab unit within 2.0 -4.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	0	0	0	0	0	0
14. Instream shelter value in the habitat unit: 0, 1, 2, 3 (3 = 5 pts; 2 = 4 pts, 1 = 3 pts, 0 = 0 pts)	5	5	5	4	5	5	5
15. % hab unit covered by shelter (≥80 = 5pts; ≥60 = 4 pts; ≥40 = 3 pts; ≥20 = 2 pts; ≥10 = 1 pt; <10 = 0 pt)	5	4	4	4	1	3	1
17a. If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)	1	1	1	0	1	1	1
17b. a. Calculate the shelter rating for the habitat unit: 0-300	5	5	5	5	1	4	1
19a. If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0	0
21a. If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)	1	1	1	0	1	1	1
25. Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)	1	1	1	0	1	1	1
28. % area of hab unit within targeted velocity (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	0	0	0	0	0	0
36e. % area hab unit with < 0.5 f/s; 0.5 to 2 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	0	0	0	0	0	0
36f. % area hab unit with < 0.5 f/s; 2 to 4 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	0	0	0	0	0	0





Table 26. Adaptive Management Plan full checklist for the Army Corps enhancement reach, December 2022.

	1	1	1	1	1	1	1
Project Reach	1	1	1	1	1	1	1
Enhancement Reach	5	5	5	5	5	5	5
Colloquial Name	AC	AC	AC	AC	AC	AC	AC
mmddy	121322	121322	121322	121322	121322	121322	121322
Survey Type	PEF	PEF	PEF	PEF	PEF	PEF	PEF
Project Site Number	6	6	6	5	5	5	5
Project Site Type	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan
Project Feature Number	S6-07	S6-08	S6-09	NA	S5-05	S5-06	S5-07
Feature Type Code	LWD	LWD	LWD	NA	LWD	LWD	LWD
Habitat Unit	HU02	HU05	HU05	HU06	HU07	HU08	HU07
Habitat Type	Pool	Pool	Pool	Flatwater	Flatwater	Pool	Flatwater
1.	Length of targeted treatment (ft)			0			
2.	Width of targeted treatment: (ft)			0			
3.	Estimate area of the targeted feature: (ft <sup>2</sup> )	0	0	0	0	0	0
4.	Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	FAIR	GOOD	GOOD	NA	GOOD	GOOD
5a	Are problems with the feature visible?	NO	NO	NO	NA	NO	NO
5b	Types: ANC, BBB, CRF, MAT, SHF, STR, SWA, UND, UNS, WSH, OTH, NON	NON	NON	NON	NA	NON	NON
6a	Is the feature still in its original location?	YES	YES	YES	NA	YES	YES
6b	Is the feature still in its original position?	YES	YES	YES	NA	YES	YES
6c	If yes: LBK, MDC, RBK, SPN, OTH	RBK	RBK	LBK	NA	LBK	SPN
6d	Is the feature still in its original orientation?	YES	YES	YES	NA	YES	YES
6e	If yes: DNS, MUL, PRL, PRP, UPS, OTH	PRP	PRL	MUL	NA	MUL	PRP
7.	Current level II habitat type: FLT, POO, RIF, DRY, ALC, OTH	POO	POO	POO	FLT	FLT	POO
8.	If an objective, did the feature create the targeted instream habitat type?	YES	YES	YES	NA	YES	YES
9.	Were there any unintended effects by the feature on the habitat type? If Y, comment.	NO	NO	NO	NA	NO	NO
10.	Mean water depth in habitat unit: ft	0.0	0.0	0.0	0.0	0.0	0.0
11a	Maximum water depth in habitat unit: ft	0.0	0.0	0.0	0.0	0.0	0.0
11b	Area of habitat unit within 0.5 -2.0 ft depth: (ft <sup>2</sup> )	0.0	0.0	0.0	0.0	0.0	0.0
11c	Area of habitat unit within 2.0 -4.0 ft depth: (ft <sup>2</sup> )	0.0	0.0	0.0	0.0	0.0	0.0
11d	Area of habitat unit within 0.5-4.0 ft depth: (ft <sup>2</sup> )	0.0	0.0	0.0	0.0	0.0	0.0
11e	% Area of habitat unit within 0.5 -2.0 ft depth	0%	0%	0%	0%	0%	0%
11f	% Area of habitat unit within 2.0 -4.0 ft depth	0%	0%	0%	0%	0%	0%
11g	% Area of habitat unit within 0.5-4.0 ft depth	0%	0%	0%	0%	0%	0%
11h	If an objective, did the feature increase/decrease water depth in the treatment area?	YES	YES	YES	NA	YES	YES
12a	Targeted depth or range (ft) in habitat unit	0.5-4.0	0.5-4.0	0.5-4.0	0.5-4.0	0.5-4.0	0.5-4.0
12b	Estimate area of feature within targeted depth or range ft <sup>2</sup> :						
13.	Were there any unintended effects of the feature on the water depth? If Y, comment.	NO	NO	NO	NA	NO	NO
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3	3	3	3	2	3	3
15.	Percent of habitat unit covered by shelter: %	85	60	60	70	15	45
16a	1st dominant cover in habitat unit: BED, BOL, BUB, LWD, RTW, SWD, UCB, VEG, OTH	AVG	AVG	AVG	AVG	SWD	AVG
16b	2nd dominant in habitat unit: BED, BOL, BUB, LWD, RTW, SWD, UCB, VEG, OTH	SWD	RTW	RTW	TVG	AVG	LWD
17a	If an objective, did the feature increase instream shelter rating?	YES	YES	YES	NA	YES	YES
17b	a. Calculate the shelter rating for the habitat unit: 0-300	255	180	180	140	45	135
18a	Large woody debris count in habitat unit: D >1', L 6-20'	0	0	0	0	0	1
18b	Large woody debris count in habitat unit: D >1', L >20'	1	0	0	0	1	0
19a	If an objective, did the feature increase LWD count in the habitat unit?	NO	NO	NO	NA	NO	NO
19b	LWD recruitment mechanisms in habitat unit: ANC, EXC, EXH, INT, RPR, UNA, OTH	NON	NON	NON	NON	NON	NON
20.	Current stream channel problems in the habitat unit: AGG, BRD, FLO, GRC, HDC, INC, NAR, SCU, STT, WID, NON, OTH	NON	NON	NON	NON	NON	NON
21a	If an objective, did the feature lead to the targeted channel conditions?	YES	YES	YES	NA	YES	YES
21b	Overall Offchannel Condition (site): AGG, FPD, GRC, INC, NAR, SIN, STB, TOG, WID, OTH	STB	STB	STB	NA	STB	STB
21c	Outlet Conditions (site): AGG, FPD, GRC, INC, NAR, SIN, STB, TOG, WID, OTH	STB	STB	STB	NA	STB	STB
21d	Inlet Conditions (site): AGG, FPD, GRC, INC, NAR, SIN, STB, TOG, WID, OTH	STB	STB	STB	NA	STB	STB
22.	Were there any unintended effects on the stream channel at the feature? If Y, comment.	NO	NO	NO	NA	NO	NO
23.	If an objective, did the feature decrease/increase velocity in the treatment area?	YES	YES	YES	NA	YES	YES
24.	Targeted velocity/range in the habitat unit: (ft/sec)	0.5	0.5	0.5	0.5	0.5	0.5
25.	Did the feature achieve the targeted velocity?	YES	YES	YES	NA	YES	YES
26a	Measured minimum velocity (ft/sec) in habitat unit	0	0	0	0	0	0
26b	Measured max velocity (ft/sec) in habitat unit	0.0	0.0	0.0	0.0	0.0	0.0
26c	Measured mean velocity (ft/sec) in habitat unit	0.0	0.0	0.0	0.0	0.0	0.0
27.	Area of habitat unit within targeted velocity: (ft <sup>2</sup> )	0.0	0.0	0.0	0.0	0.0	0.0
28.	Percent of habitat unit within targeted velocity (see above): (%)	0%	0%	0%	0%	0%	0%
29.	Were there any unintended effects of feature on velocity? If Y, comment.	NO	NO	NO	NA	NO	NO
30a	1st/2nd dominant substrate in habitat unit: BED, BOL, COB, GRV, SND, SLC, OTH	GRV	GRV	GRV	GRV	GRV	GRV
30b	2nd dominant substrate in habitat unit: BED, BOL, COB, GRV, SND, SLC, OTH	SLC	SND	SND	SLC	SND	SLC
31.	If an objective, did the feature achieve the targeted substrate composition?	YES	YES	YES	NA	YES	YES
32.	% Canopy Measurement:	NR	NR	NR	NR	NR	NR
33.	Photopoint data collected: YES /NO	NR	NR	NR	NR	NR	NR
34.	Temperature Profile: YES /NO	NR	NR	NR	NR	NR	NR
35.	Dissolved Oxygen Profile: YES/NO	NR	NR	NR	NR	NR	NR
36a	Total habitat unit area where targeted depth, velocity and shelter criteria overlap	0.0	0.0	0.0	0.0	0.0	0.0
36b	Total habitat unit area where < 0.5 ft/s; 0.5 to 2 ft and shelter criteria overlap	0.0	0.0	0.0	0.0	0.0	0.0
36c	Total habitat unit area where < 0.5 ft/s; 2 to 4 ft and shelter criteria overlap	0.0	0.0	0.0	0.0	0.0	0.0
36d	% habitat unit area where targeted depth, velocity and shelter criteria overlap	0%	0%	0%	0%	0%	0%
36e	% habitat unit area where < 0.5 ft/s; 0.5 to 2 ft and shelter criteria overlap	0%	0%	0%	0%	0%	0%
36f	% habitat unit area where < 0.5 ft/s; 2 to 4 ft and shelter criteria overlap	0%	0%	0%	0%	0%	0%
37.	Does this feature need: DEC, ENH, MNT, REP, NON, OTH	NON	NON	NON	NA	NON	NON
38.	Are additional restoration treatments recommended at this site?	NO	NO	NO	NA	NO	NO

**Army Corps Reach 14, April 2022**

## Depth and Velocity

**Table 27. Areas and percentages of wetted area, optimal depth and velocity, and optimal hydraulic habitat within the Army Corps Reach 14 enhancement reach, April 2022.**

Army Corps Reach 14, Post-effective flow, April 2022	Wetted area (ft <sup>2</sup> )	0.5 – 2.0 ft (ft <sup>2</sup> )	2.0 – 4.0 ft (ft <sup>2</sup> )	Total (ft <sup>2</sup> )	< 0.5 ft/s (ft <sup>2</sup> )	0.5 – 2.0 ft, < 0.5 ft/s (ft <sup>2</sup> )	2.0 – 4.0 ft, < 0.5 ft/s (ft <sup>2</sup> )	Total (ft <sup>2</sup> )
Main channel area	39,257	18,101	10,383	28,484	22,166	7,933	6,293	14,226
Side channel area	24,715	8,730	9,858	18,588	16,121	5,020	5,960	10,980
Side channel alcove area	3,059	1,721	757	2,478	3,059	1,721	757	2,478
<b>Total area</b>	<b>67,031</b>	<b>28,552</b>	<b>20,998</b>	<b>49,550</b>	<b>41,346</b>	<b>14,674</b>	<b>13,010</b>	<b>27,684</b>
Main channel % of wetted area	59%	46%	26%	73%	56%	20%	16%	36%
Side channel % of wetted area	37%	35%	40%	75%	65%	20%	24%	44%
Side channel alcove area % of wetted area	4%	56%	25%	81%	100%	56%	25%	81%
<b>Total % of wetted area</b>	<b>100%</b>	<b>43%</b>	<b>31%</b>	<b>74%</b>	<b>62%</b>	<b>22%</b>	<b>19%</b>	<b>41%</b>

# Army Corps, Reach 14 Enhancement Reach

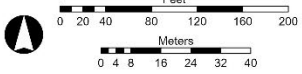


**Sonoma Water**

Map Date: 8/7/2023

Depth	
Below water surface (ft)	
< 0.5	Lightest Blue
0.5 - 1.0	Light Blue
1.0 - 2.0	Medium Light Blue
2.0 - 3.0	Medium Blue
3.0 - 4.0	Dark Blue
4.0 - 5.0	Very Dark Blue
> 5.0	Black

Post-Effective Flow, April 2022



Reach Name: Army Corps, Reach 14  
 Project Reach: 02  
 Enhancement Reach: 03  
 Inter-Fluve Reach: 14a and 14 b  
 River Mile: 12.99 (River Kilometer 20.92)  
 Reach Length: 1216 ft (370 m)

DISCLAIMER: This map document and associated data are distributed for informational purposes only "AS-IS" at the published scale and provided without warranty of any kind, expressed or implied. The positional accuracy of the data is approximate and not intended to represent survey map accuracy. The Sonoma County Water Agency assumes no responsibility arising from the use of this information.

Figure 45. Measured water depth within the Army Corps Reach 14 enhancement reach, April 2022.

# Army Corps, Reach 14 Enhancement Reach



**Figure 46. Optimal water depth for fry (0.5-2.0 ft) and parr (2.0-4.0 ft) within the Army Corps Reach 14 enhancement reach, April 2022.**

## Army Corps, Reach 14 Enhancement Reach

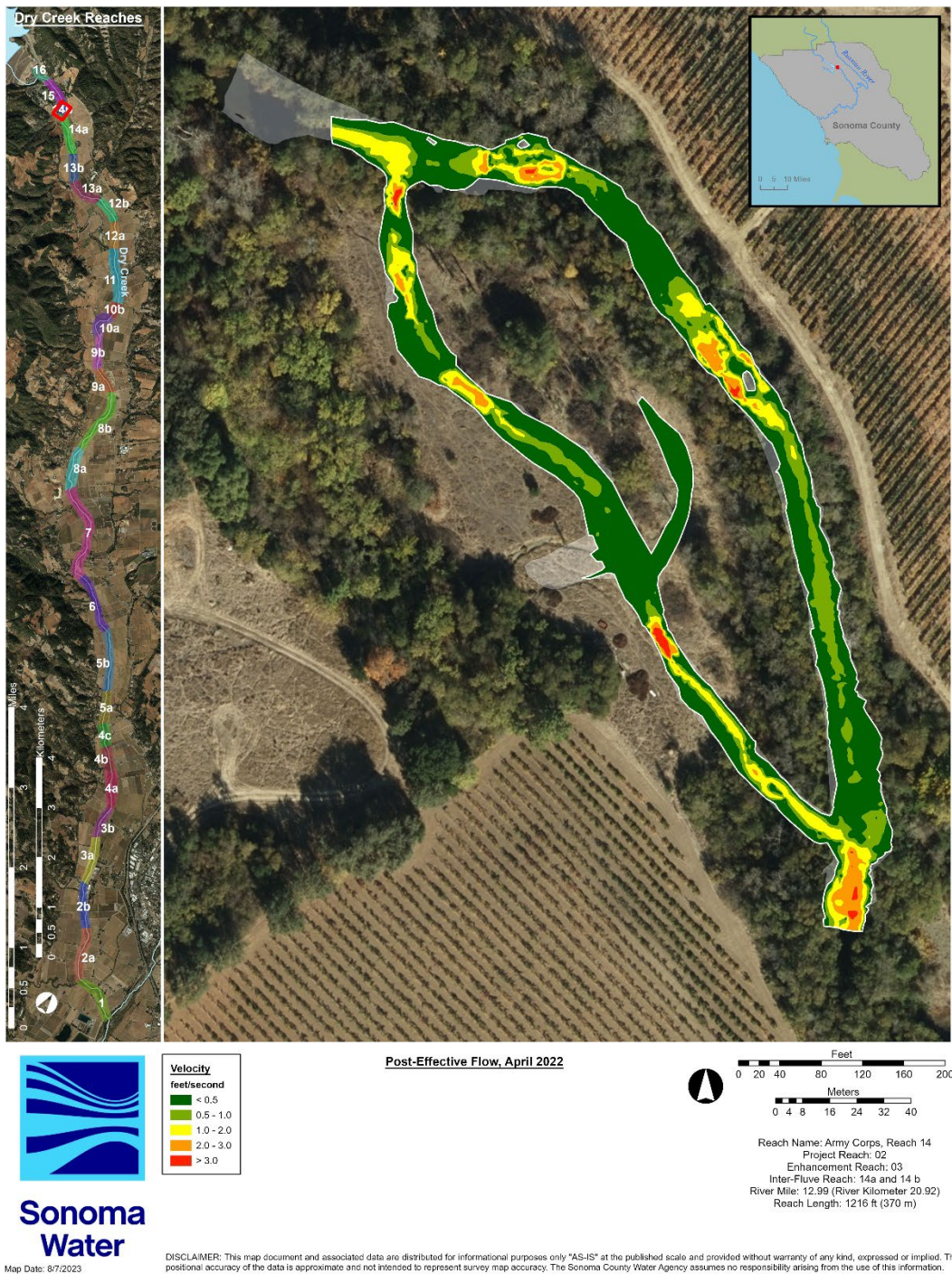


Figure 47. Measured water velocity within the Army Corps Reach 14 enhancement reach, April 2022.

## Army Corps, Reach 14 Enhancement Reach

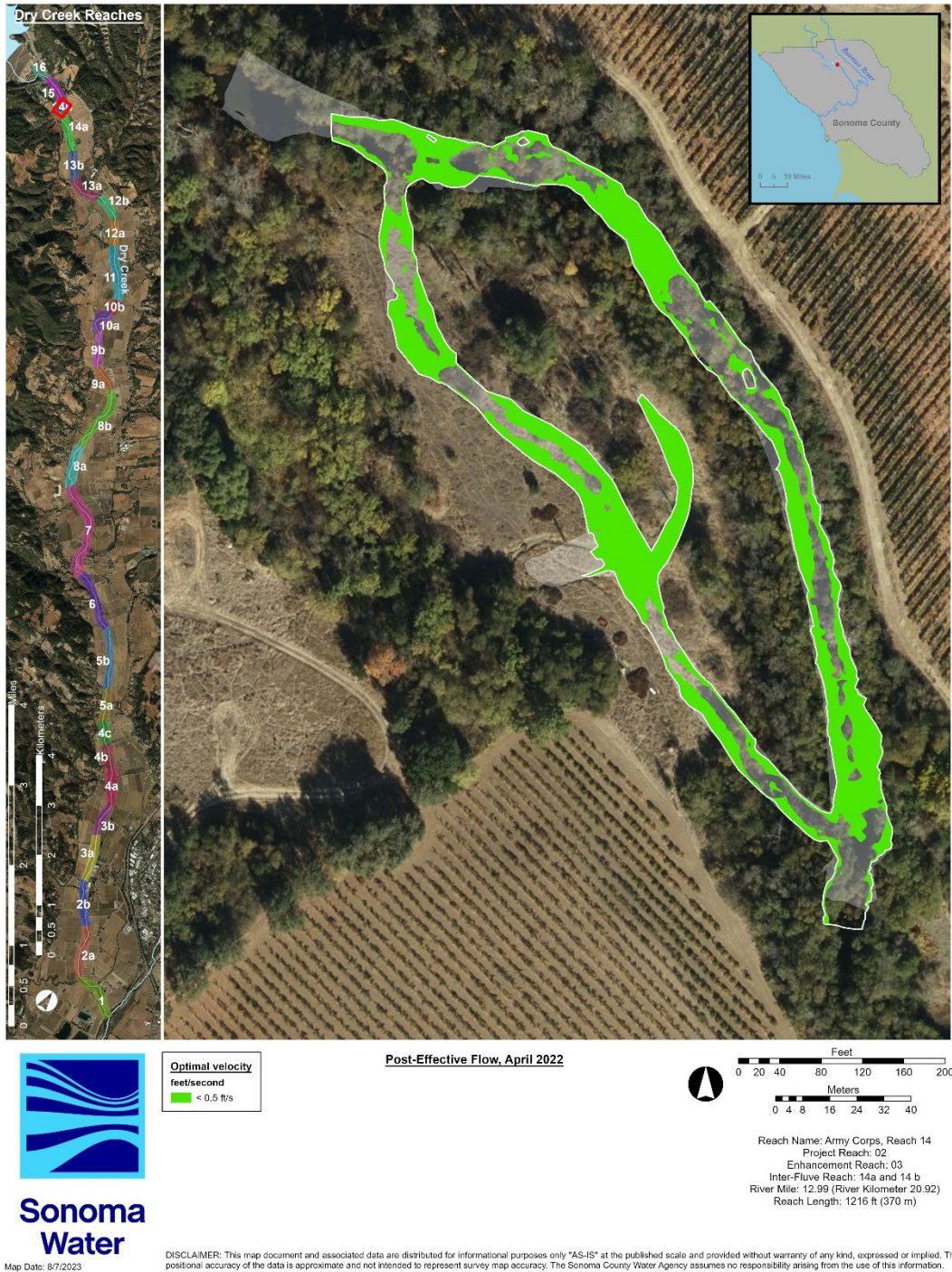
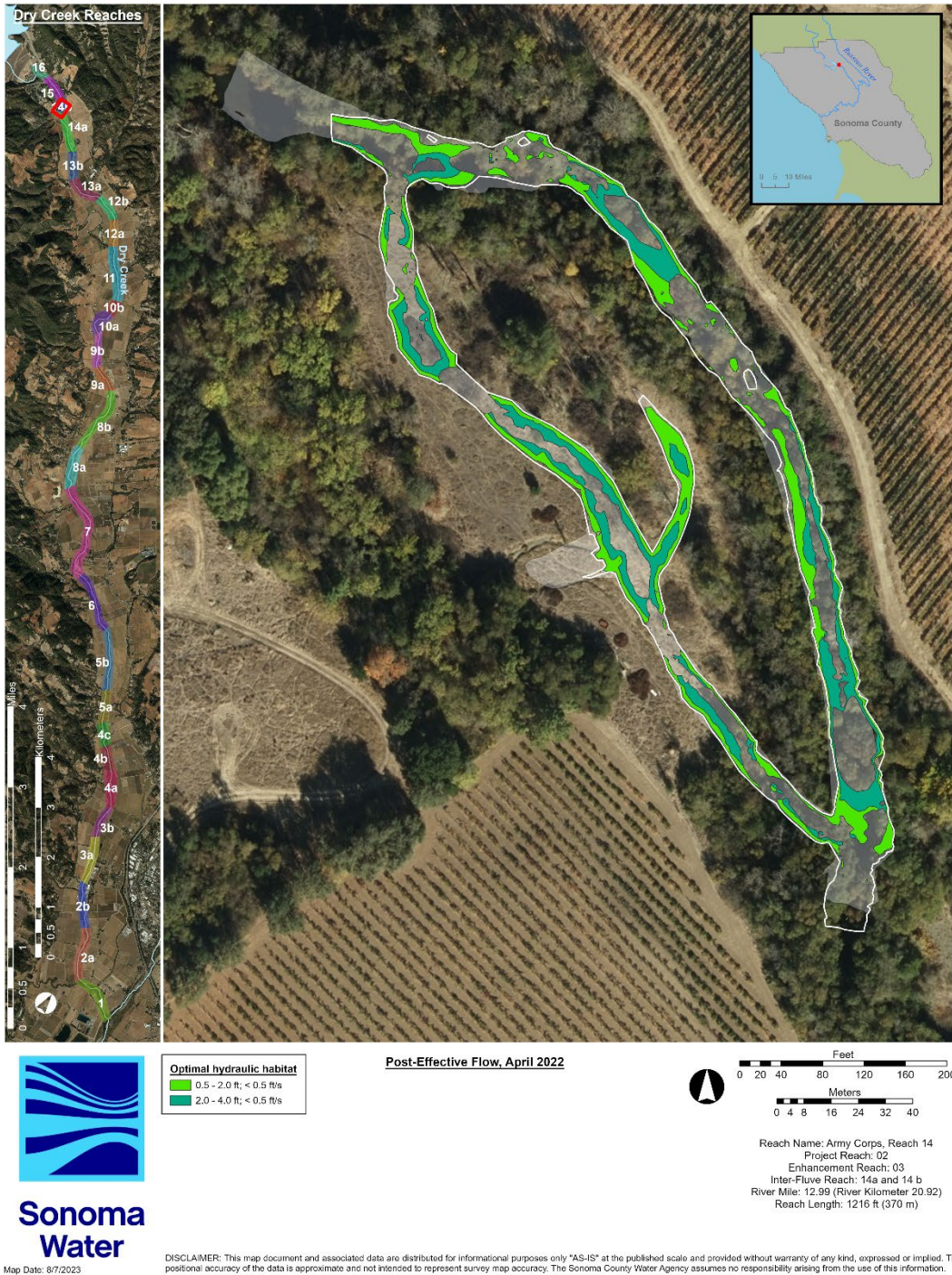


Figure 48. Optimal water velocity for fry and parr (< 0.5 ft/s) within the Army Corps Reach 14 enhancement reach, April 2022.

## Army Corps, Reach 14 Enhancement Reach



**Figure 49. Optimal hydraulic habitat for fry (<0.5 f/s, 0.5-2.0 ft) and parr (<0.5 f/s, 2.0-4.0 ft) within the Army Corps Reach 14 enhancement reach, April 2022.**



## Habitat Types and Shelter Values

Table 28. Habitat, types, shelter value, percent cover, and shelter score for habitat units within the Army Corps Reach 14 enhancement reach, April 2022.

Habitat Unit #	Habitat Type	Shelter Value	Percent Cover	Shelter Score
HU01	Riffle	2	15	30
HU02	Pool	3	40	120
HU03	Flatwater	2	10	20
HU04	Riffle	2	25	50
HU05	Flatwater	2	15	30
HU06	Pool	3	45	135
HU07	Riffle	3	30	90
HU08	Pool	2	25	50
HU09	Pool	3	40	120
HU10	Pool	3	50	150
HU11	Pool	3	50	150
HU12	Riffle	2	35	70
HU13	Pool	3	45	120
HU14	Riffle	1	15	15
HU15	Pool	3	70	210
HU16	Riffle	3	20	60
HU17	Pool	3	30	90
HU18	Riffle	3	40	120
HU19	Alcove	3	45	135
<b>Pool: riffle</b>	<b>9:7 (1.29)</b>			<b>Avg = 93</b>

# Army Corps, Reach 14 Enhancement Reach

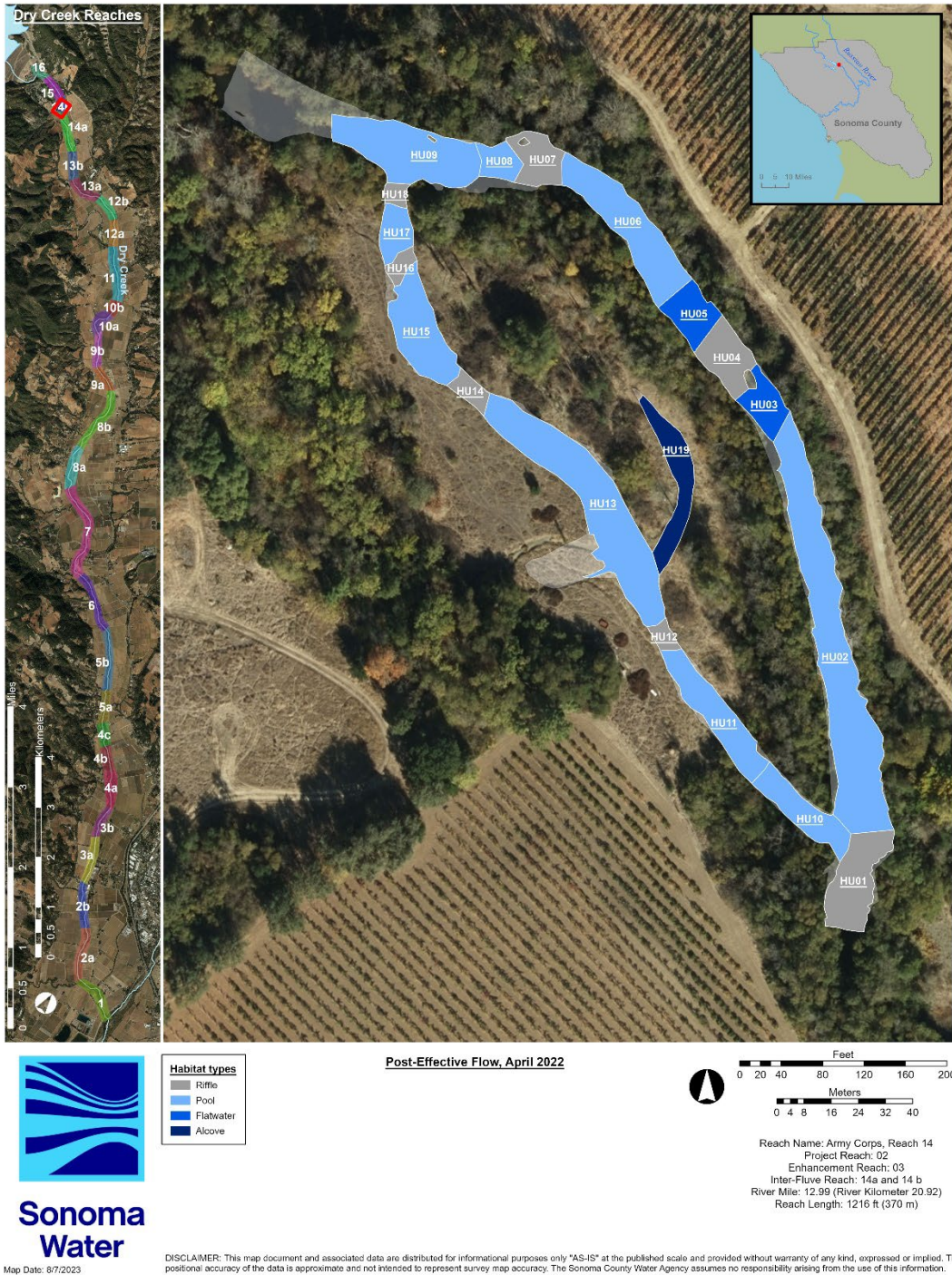


Figure 50. Habitat unit number and type within the Army Corps Reach 14 enhancement reach, April 2022.

# Army Corps, Reach 14 Enhancement Reach

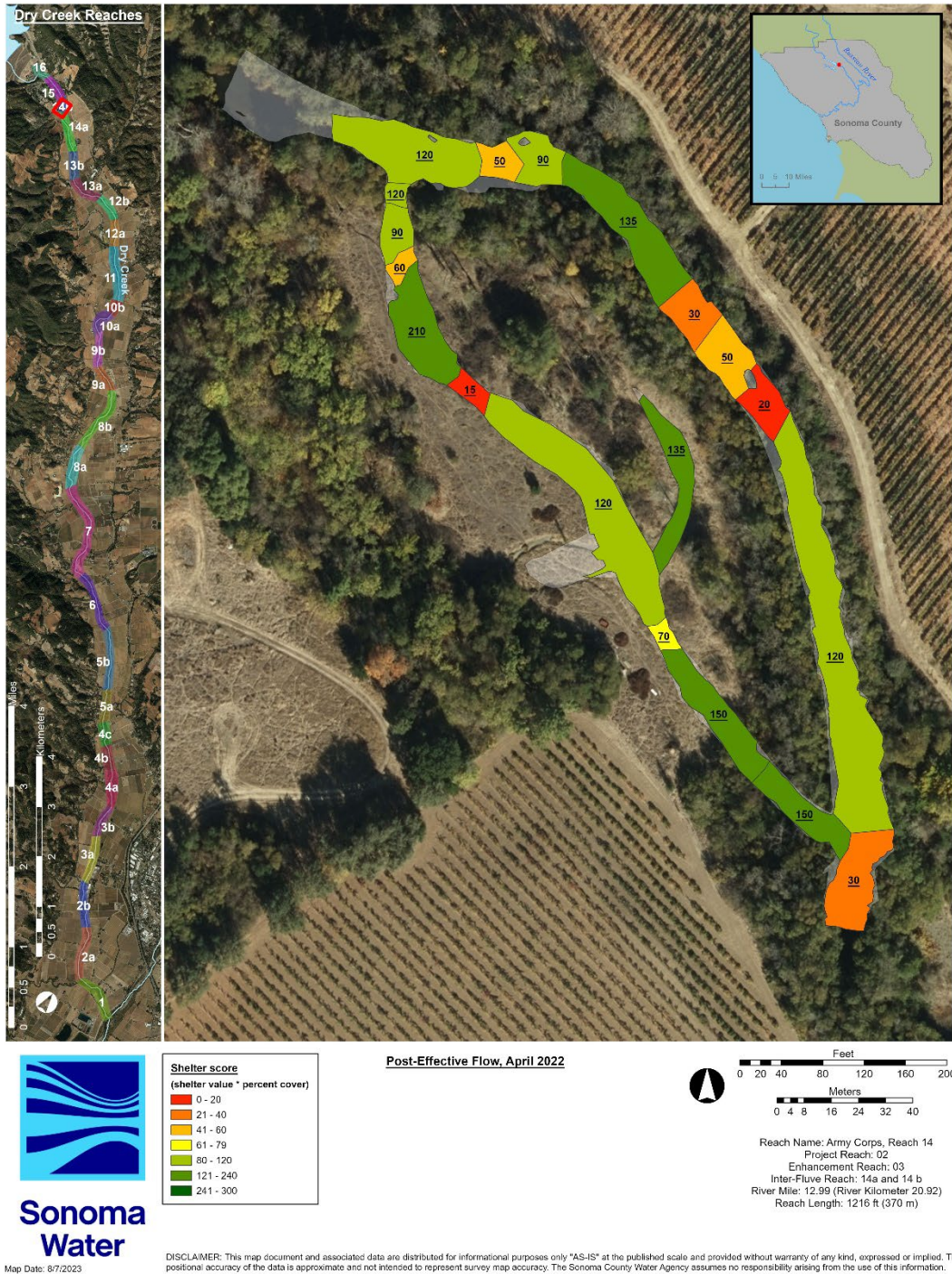


Figure 51. Habitat unit shelter scores within the Army Corps Reach 14 enhancement reach, April 2022.

## Feature, Habitat Unit, Site, and Reach Ratings

Table 29. Post-effective flow feature ratings for the Army Corps Reach 14 enhancement reach April 2022.

Project Reach	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Enhancement Reach	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Colloquial Name	US	US	US	US	US	US	US	US	US	US	US	US	US	US	US	US	US	US	US
nmddy	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322
Survey Type	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF
PROJECT SITE NUMBER	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
PROJECT FEATURE NUMBER	NA	S2-01	S2-02	S2-03	S2-04	S2-05	S2-06	S2-07	S2-08	S2-09	S2-10	S2-11	S2-12	S2-13	S2-14	S2-15	S2-16	S2-17	
Feature Type Code	NA	BKW	HW	HW	HW	SCW	SCW	SCW	SCW	FW	R	HW	HW	HW	HW	HW	SCW	HW	
Habitat Unit	HU01	HU10	HU10	HU10	HU11	HU11	HU11	HU11	HU12	HU01 D	HU12	HU13	HU13	HU13	HU13	HU13	HU13	HU13	
Habitat Type	Rifle	Pool	Pool	Pool	Pool	Pool	Pool	Pool	Rifle	Dry	Rifle	Pool	Pool	Pool	Pool	Pool	Pool	Pool	
4. Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	NA	GOOD	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	
5a. Are problems with the feature visible?	NA	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
6a. Is the feature still in its original location?	NA	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	
6b. Is the feature still in its original position?	NA	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	
6d. Is the feature still in its original orientaton?	NA	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	
8. If an objective, did the feature create the targeted instream habitat type?	NA	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	
9. Were there any unintended effects by the feature on the habitat type? If Y, comment.	NA	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
17a. If an objective, did the feature increase instream shelter rating?	NA	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	
19a. If an objective, did the feature increase LWD count in the habitat unit?	NA	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
21a. If an objective, did the feature lead to the targeted channel conditions?	NA	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	
25. Did the feature achieve the targeted velocity?	NA	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	
PROJECT FEATURE NUMBER	NA	S2-01	S2-02	S2-03	S2-04	S2-05	S2-06	S2-07	S2-08	S2-09	S2-10	S2-11	S2-12	S2-13	S2-14	S2-15	S2-16	S2-17	
4. Structural condition of feature: EXCL (5 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)	0	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
5a. Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
6a. Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
6b. Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
6d. Is the feature still in its original orientaton? (YES = 1 pt, NO = 0 pt)	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
8. If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
9. Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
17a. If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
19a. If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
21a. If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
25. Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
PROJECT FEATURE NUMBER	NA	S2-01	S2-02	S2-03	S2-04	S2-05	S2-06	S2-07	S2-08	S2-09	S2-10	S2-11	S2-12	S2-13	S2-14	S2-15	S2-16	S2-17	
FEATURE RATING	Feature quantitative rating out of 15	0	13	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	
	Feature qualitative rating Excellent (>=12), Good (>=9), Fair(>=6), Poor (>=3), Fail (<3)	Not rated	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	

Table 29. Post-effective flow feature ratings for the Army Corps Reach 14 enhancement reach April 2022.

Project Reach		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Enhancement Reach		7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Colloquial Name		US	US	US	US	US	US	US	US	US	US	US	US	US	US	US	US	US	US	US
nmddy		41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322
Survey Type		PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF
PROJECT SITE NUMBER		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
PROJECT FEATURE NUMBER		SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan
Feature Type Code		S2-18	S2-19	S2-20	S2-21	S2-22	S2-23	S2-24	S2-25	S2-26	S2-27	S2-28	S2-29	S2-30	S2-31	S2-32	S2-33	S2-34	S2-35	
Habitat Unit		SCW	HW	SCW	FW	SCW	R	HW	HW	SCW	SCW	HW	SCW	HW	FW	HW	HW	HW	HW	HW
Habitat Type		HU13	HU01 D	HU13	HU01 D	HU13	HU14	HU15	HU15	HU15	HU15	HU15	HU15	HU16	HU01 D	HU17	HU17	HU18	HU18	HU18
Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL		Pool	Dry	Pool	Dry	Pool	Rifle	Pool	Pool	Pool	Pool	Pool	Pool	Rifle	Dry	Pool	Pool	Rifle	Rifle	Rifle
4.	Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	EXCL	GOOD	EXCL	EXCL	EXCL	GOOD	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL
5a	Are problems with the feature visible?	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
6a	Is the feature still in its original location?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
6b	Is the feature still in its original position?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
6d	Is the feature still in its original orientaton?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
8.	If an objective, did the feature create the targeted instream habitat type?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
9.	Were there any unintended effects by the feature on the habitat type? If Y, comment.	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
17a	If an objective, did the feature increase instream shelter rating?	YES	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
19a	If an objective, did the feature increase LWD count in the habitat unit?	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
21a	If an objective, did the feature lead to the targeted channel conditions?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
25.	Did the feature achieve the targeted velocity?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
PROJECT FEATURE NUMBER		S2-18	S2-19	S2-20	S2-21	S2-22	S2-23	S2-24	S2-25	S2-26	S2-27	S2-28	S2-29	S2-30	S2-31	S2-32	S2-33	S2-34	S2-35	
4.	Structural condition of feature: EXCL (5 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)	5	4	5	5	5	4	5	5	5	5	5	5	5	5	5	5	5	5	5
5a	Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)	1	0	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1
6a	Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6b	Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6d	Is the feature still in its original orientaton? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8.	If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
9.	Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
17a	If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
19a	If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21a	If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
25.	Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
PROJECT FEATURE NUMBER		S2-18	S2-19	S2-20	S2-21	S2-22	S2-23	S2-24	S2-25	S2-26	S2-27	S2-28	S2-29	S2-30	S2-31	S2-32	S2-33	S2-34	S2-35	
FEATURE RATING	Feature quantitative rating out of 15	14	11	14	14	14	13	14	14	14	14	14	13	14	14	14	14	14	14	
	Feature qualitative rating Excellent (>=12), Good (>=9), Fair(>=6), Poor (>=3), Fail (<3)	Excellent	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

Table 29. Post-effective flow feature ratings for the Army Corps Reach 14 enhancement reach April 2022.

Project Reach	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Enhancement Reach	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Colloquial Name	US	US	US	US	US	US	US	US	US	US	US	US	US	US	US	US	US
nmddy	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322
Survey Type	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF
PROJECT SITE NUMBER	2	2	2	2	2	2	2	3	3	3	3	3	4	4	4	4	4
PROJECT FEATURE NUMBER	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SC Alcove	SC Alcove	SC Alcove	SC Alcove	SC Alcove	SC Alcove	SC Alcove	SC Alcove	SC Alcove	SC Alcove
Feature Type Code	S2-36	S2-37	S2-38	S2-39	S2-40	S2-41	S3-01	S3-02	S3-03	S3-04	S3-05	S4-01	S4-02	S4-03	S4-05	S4-06	
Habitat Unit	HW	HW	HW	AW	R	FW	BWW	FW	BWW	HW	FW	BWW	HW	HW	HW	HW	
Habitat Type	HU09 2	HU18	HU18	HU09 2	HU18	HU01 D	HU19	HU02 D	HU19	HU02 D	HU02 D	HU13 2	HU03 D	HU03 D	HU03 D	HU03 D	
Habitat Type	Pool	Riffle	Riffle	Pool	Riffle	Dry	Alcove	Dry	Alcove	Dry	Dry	Pool	Dry	Dry	Dry	Dry	
4. Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	EXCL	EXCL	EXCL	EXCL	GOOD	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	GOOD	GOOD	GOOD	GOOD
5a. Are problems with the feature visible?	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES	YES	YES
6a. Is the feature still in its original location?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
6b. Is the feature still in its original position?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	YES	NO	NO
6d. Is the feature still in its original orientaton?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
8. If an objective, did the feature create the targeted instream habitat type?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	NO	YES	YES
9. Were there any unintended effects by the feature on the habitat type? If Y, comment.	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES	YES	YES
17a. If an objective, did the feature increase instream shelter rating?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	NO	NO	NO
19a. If an objective, did the feature increase LWD count in the habitat unit?	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
21a. If an objective, did the feature lead to the targeted channel conditions?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	NO	NO	NO
25. Did the feature achieve the targeted velocity?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	NO	NO	NO
PROJECT FEATURE NUMBER	S2-36	S2-37	S2-38	S2-39	S2-40	S2-41	S3-01	S3-02	S3-03	S3-04	S3-05	S4-01	S4-02	S4-03	S4-05	S4-06	
4. Structural condition of feature: EXCL (5 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)	5	5	5	5	4	5	5	5	5	5	5	5	4	4	4	4	
5a. Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	1	
6a. Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
6b. Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0	0	
6d. Is the feature still in its original orientaton? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
8. If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	
9. Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	
17a. If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	
19a. If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
21a. If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	
25. Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	
PROJECT FEATURE NUMBER	S2-36	S2-37	S2-38	S2-39	S2-40	S2-41	S3-01	S3-02	S3-03	S3-04	S3-05	S4-01	S4-02	S4-03	S4-05	S4-06	
FEATURE RATING	Feature quantitative rating out of 15																
	14	14	14	14	13	14	14	14	14	14	14	14	13	6	7	7	8
	Feature qualitative rating Excellent (>=12), Good (>=9), Fair(>=6), Poor (>=3), Fail (<3)																
	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Fair	Fair	Fair	Fair

## Army Corps Reach 14 Enhancement Reach

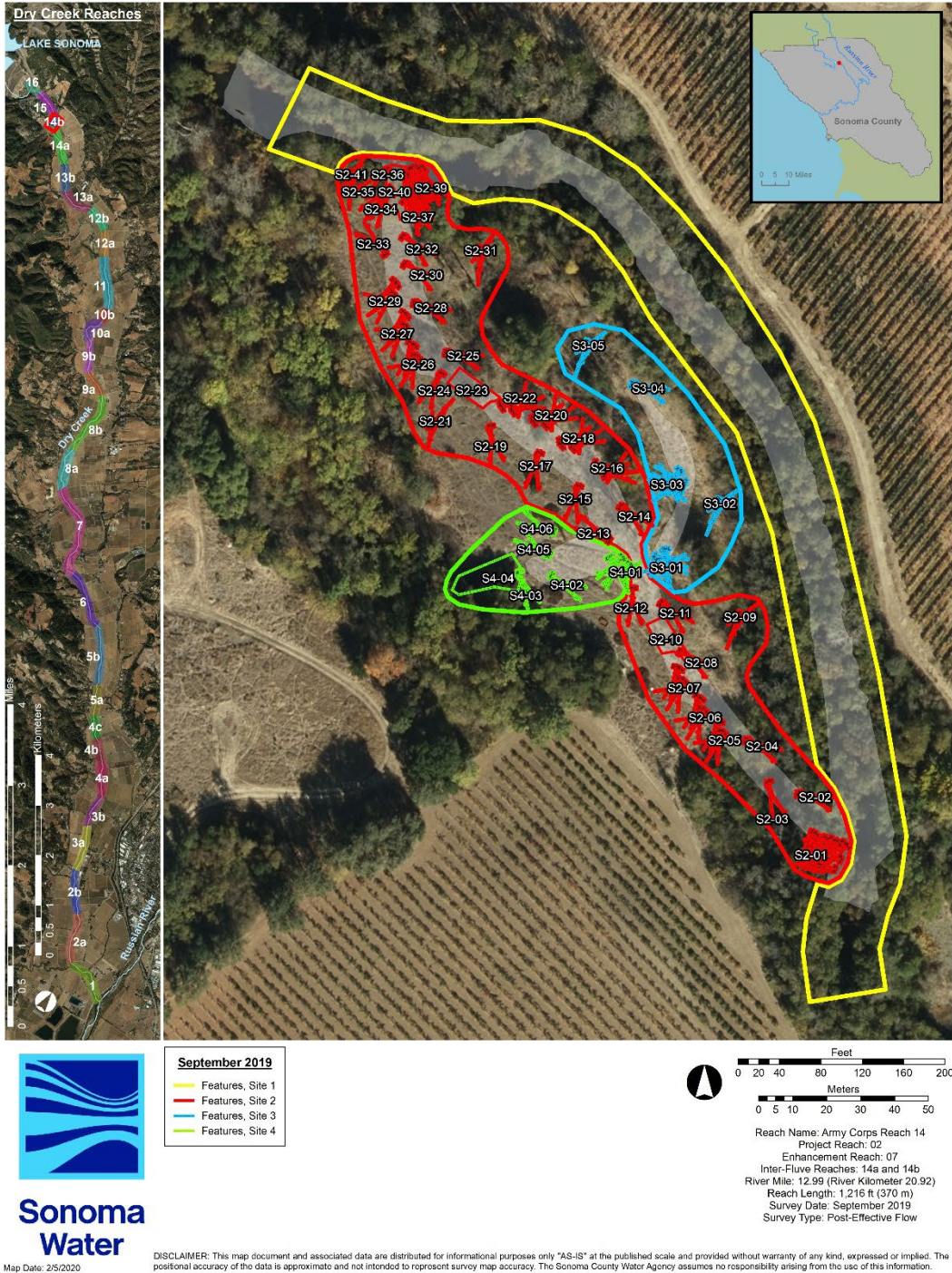


Figure 52. Enhancement sites and features within the Army Corps Reach 14 enhancement reach, April 2022.



# Army Corps, Reach 14 Enhancement Reach

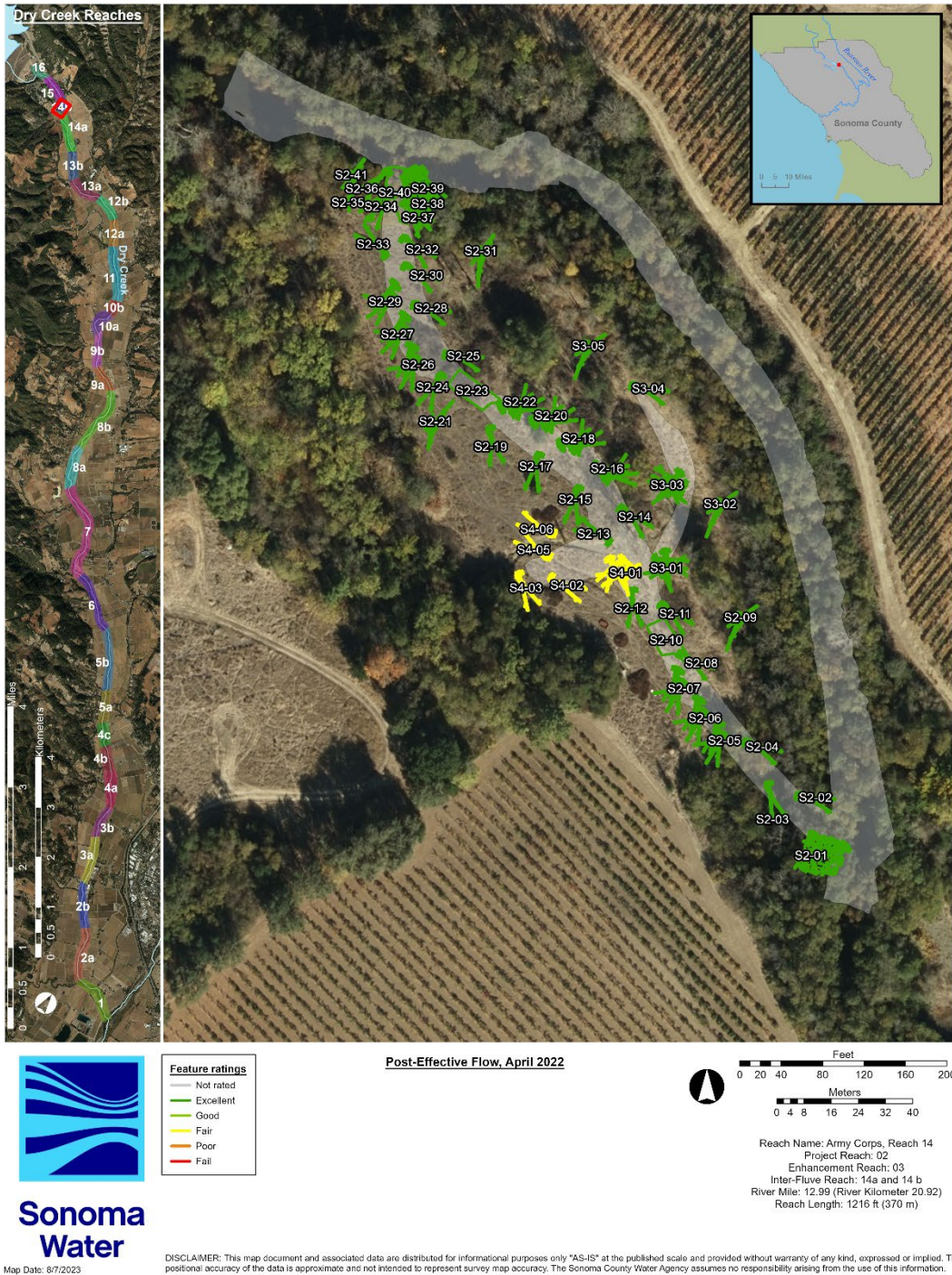


Figure 53. Feature ratings for the Army Corps Reach 14 enhancement reach, April 2022.

Table 30. Post-effective flow habitat unit ratings for the Army Corps Reach 14 enhancement reach April 2022.

Project Reach	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Enhancement Reach	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Colloquial Name	US	US	US	US	US	US	US	US	US	US	US	US	US	US	US	US	US	US	US	US
mmddy	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322
Survey Type	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF
HABITAT UNIT NUMBER	HU01	HU02	HU03	HU04	HU05	HU06	HU07	HU08	HU09	HU10	HU11	HU12	HU13	HU14	HU01 D	HU02 D	HU03 D	HU15	HU16	
Habitat Type	Riffle	Pool	Flatwater	Riffle	Flatwater	Pool	Riffle	Pool	Pool	Pool	Riffle	Pool	Pool	Riffle	Pool	Riffle	Dry	Dry	Dry	Pool
PROJECT SITE NUMBER	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	3	4	2	2
Project Site Type	MainChan	MainChan	MainChan	MainChan	MainChan	MainChan	MainChan	MainChan	MainChan	MainChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SC Alcove	SC Alcove	SideChan	SideChan
11e	% Area of habitat unit within 0.5 -2.0 ft depth	71%	31%	74%	47%	84%	30%	60%	72%	49%	48%	32%	74%	24%	76%	0%	0%	0%	32%	77%
11f	% Area of habitat unit within 2.0 -4.0 ft depth	3%	41%	2%	0%	0%	44%	0%	8%	31%	42%	60%	0%	42%	0%	0%	0%	40%	0%	
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3	2	3	2	2	2	3	3	2	3	3	2	3	1	0	0	0	3	3	
15.	Percent of habitat unit covered by shelter: %	15	40	10	25	15	45	30	25	40	50	50	35	45	15	0	0	70	20	
17b	a. Calculate the shelter rating for the habitat unit: 0-300	30	120	20	50	30	135	90	50	120	150	150	70	120	15	0	0	210	60	
28.	Percent of habitat unit within targeted velocity (see above): (%)	21%	73%	40%	22%	26%	85%	31%	38%	54%	41%	57%	21%	83%	16%	0%	0%	73%	17%	
36e	% habitat unit area where < 0.5 f/s; 0.5 to 2 ft and shelter criteria overlap	9%	23%	23%	6%	12%	25%	13%	20%	25%	22%	23%	4%	22%	0%	0%	0%	20%	7%	
36f	% habitat unit area where < 0.5 f/s; 2 to 4 ft and shelter criteria overlap	0%	26%	0%	0%	0%	34%	0%	2%	11%	9%	26%	0%	31%	0%	0%	0%	30%	0%	
HABITAT UNIT NUMBER	HU01	HU02	HU03	HU04	HU05	HU06	HU07	HU08	HU09	HU10	HU11	HU12	HU13	HU14	HU01 D	HU02 D	HU03 D	HU15	HU16	
11e	% area of hab unit within 0.5 -2.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	4	3	4	4	4	3	4	4	4	3	4	2	4	0	0	0	3	4	
11f	% area of hab unit within 2.0 -4.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	4	0	0	0	4	0	0	3	4	4	0	4	0	0	0	4	0	
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3 (3 = 5 pts; 2 = 4 pts, 1 = 3 pts, 0 = 0 pts)	4	5	4	4	4	5	5	4	5	5	4	5	3	0	0	0	5	5	
15.	% hab unit covered by shelter (≥80 = 5pts; ≥60 = 4 pts; ≥40 = 3 pts; ≥20 = 2 pts; ≥10 = 1 pt; <10 = 0 pt)	1	3	1	2	1	3	2	2	3	3	2	3	1	0	0	0	4	2	
17b	a. Calculate the shelter rating for the habitat unit: 0-300	0	4	0	1	0	4	3	1	4	5	5	2	4	0	0	0	5	2	
28.	% area of hab unit within targeted velocity (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	2	4	4	2	2	4	3	3	4	4	2	4	1	0	0	0	4	1	
36e	% area hab unit with < 0.5 f/s; 0.5 to 2 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	2	2	0	1	2	1	2	2	2	0	2	0	0	0	0	2	0	
36f	% area hab unit with < 0.5 f/s; 2 to 4 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	2	0	0	0	3	0	0	1	0	2	0	3	0	0	0	3	0	
HABITAT UNIT NUMBER	HU01	HU02	HU03	HU04	HU05	HU06	HU07	HU08	HU09	HU10	HU11	HU12	HU13	HU14	HU01 D	HU02 D	HU03 D	HU15	HU16	
HABITAT UNIT RATING	Habitat unit quantitative rating (out of 35)																			
	11	27	15	13	12	28	18	16	26	27	28	14	27	9	0	0	0	30	14	
	Habitat unit qualitative rating: Excellent (>=28), Good (>=21), Fair(>=14), Poor (>=7), Fail (<7)																			
	Poor	Good	Fair	Poor	Poor	Excellent	Fair	Fair	Good	Good	Excellent	Fair	Good	Poor	Not rated	Not rated	Fail	Excellent	Fair	

Table 30. Post-effective flow habitat unit ratings for the Army Corps Reach 14 enhancement reach April 2022.

Project Reach	2	2	2	2	2	
Enhancement Reach	7	7	7	7	7	
Colloquial Name	US	US	US	US	US	
mmddy	41322	41322	41322	41322	41322	
Survey Type	PEF	PEF	PEF	PEF	PEF	
Habitat Type	HABITAT UNIT NUMBER					
	HU17	HU18	HU19	HU13 2	HU09 2	
Project Site Type	PROJECT SITE NUMBER					
	2	2	3	4	2	
	SideChan	SideChan	SC Alcove	SC Alcove	SideChan	
11e	% Area of <b>habitat unit</b> within 0.5 -2.0 ft depth	38%	84%	56%	24%	49%
11f	% Area of <b>habitat unit</b> within 2.0 -4.0 ft depth	33%	0%	25%	42%	31%
14.	Instream shelter value in the <b>habitat unit</b> : 0, 1, 2, 3	3	3	3	3	3
15.	Percent of <b>habitat unit</b> covered by shelter: %	30	40	45	45	40
17b	a. Calculate the shelter rating for the <b>habitat unit</b> : 0-300	90	120	135	120	120
28.	Percent of <b>habitat unit</b> within targeted velocity (see above): (%)	65%	20%	100%	83%	54%
36e	% <b>habitat unit</b> area where < 0.5 f/s; 0.5 to 2 ft and shelter criteria overlap	23%	9%	56%	22%	25%
36f	% <b>habitat unit</b> area where < 0.5 f/s; 2 to 4 ft and shelter criteria overlap	20%	0%	25%	31%	11%
	HABITAT UNIT NUMBER					
	HU17	HU18	HU19	HU13 2	HU09 2	
11e	% area of <b>hab unit</b> within 0.5 -2.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	3	4	4	2	4
11f	% area of <b>hab unit</b> within 2.0 -4.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	3	0	2	4	3
14.	Instream shelter value in the <b>habitat unit</b> : 0, 1, 2, 3 (3 = 5 pts; 2 = 4 pts, 1 = 3 pts, 0 = 0 pts)	5	5	5	5	5
15.	% <b>hab unit</b> covered by shelter (≥90 = 5pts; ≥60 = 4 pts; ≥40 = 3 pts; ≥20 = 2 pts; ≥10 = 1 pt; <10 = 0 pt)	2	3	3	3	3
17b	a. Calculate the shelter rating for the <b>habitat unit</b> : 0-300	3	4	4	4	4
28.	% area of <b>hab unit</b> within targeted velocity (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	4	2	4	4	4
36e	% area <b>hab unit</b> with < 0.5 f/s; 0.5 to 2 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	2	0	4	2	2
36f	% area <b>hab unit</b> with < 0.5 f/s; 2 to 4 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	2	0	2	3	1
	HABITAT UNIT NUMBER					
	HU17	HU18	HU19	HU13 2	HU09 2	
HABITAT UNIT RATING	Habitat unit quantitative rating (out of 35)	24	18	28	27	26
	Habitat unit qualitative rating: Excellent (≥28), Good (≥21), Fair(≥14), Poor (≥7), Fail (<7)	Good	Fair	Excellent	Good	Good

# Army Corps, Reach 14 Enhancement Reach

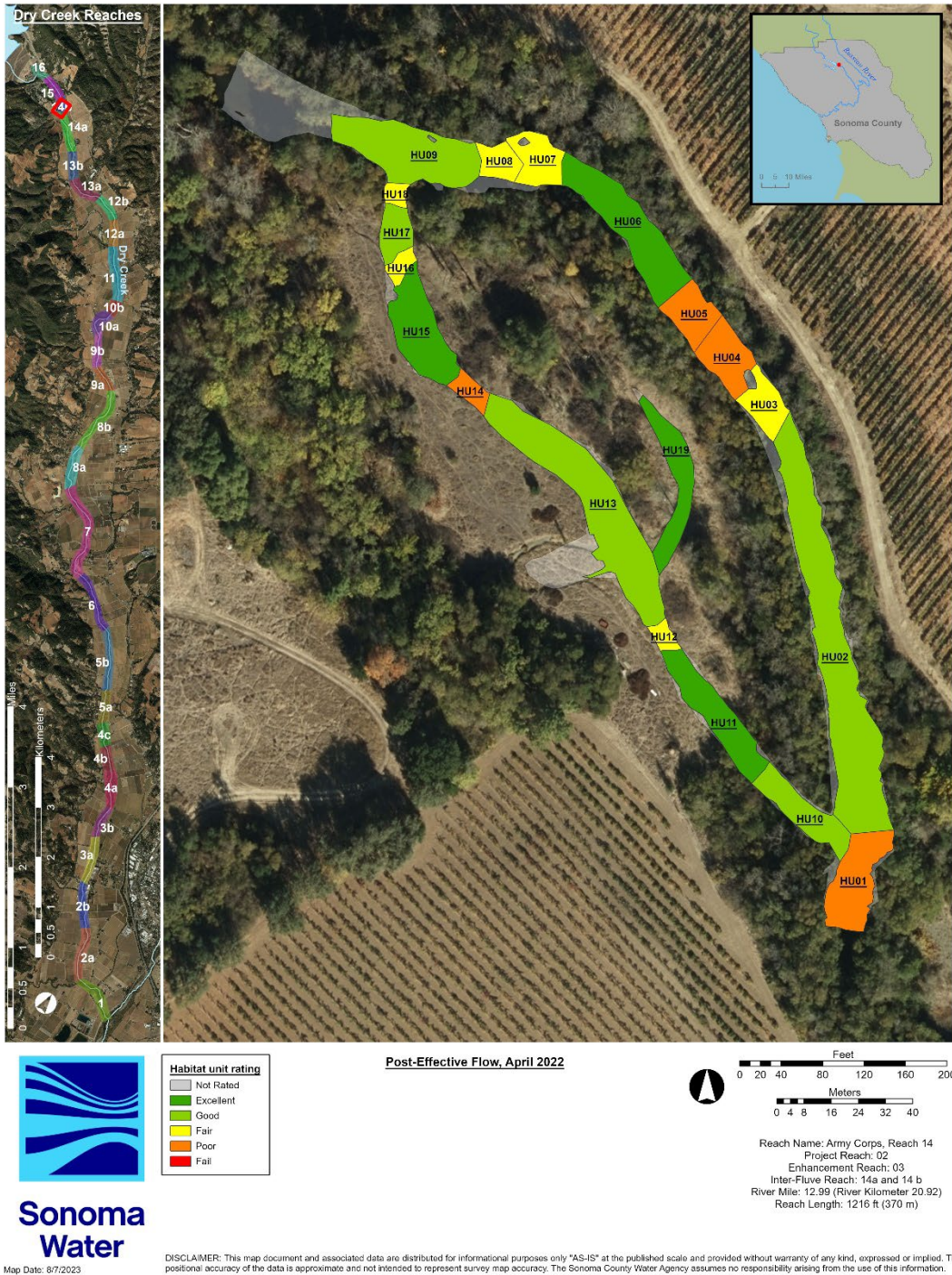


Figure 54. Habitat unit ratings for the Army Corps Reach 14 enhancement reach, April 2022.

Table 31. Post-effective flow average feature, average habitat unit, site, and reach ratings for the Army Corps Reach 14 enhancement reach, April 2022.

	Project Reach	2	2	2	2
	Enhancement Reach	7	7	7	7
	<b>ENHANCEMENT REACH NAME</b>	<b>US</b>	<b>US</b>	<b>US</b>	<b>US</b>
	mmddy	41322	41322	41322	41322
	Survey Type	PEF	PEF	PEF	PEF
	<b>PROJECT SITE NUMBER</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
	Project Site Type	MainChan	SideChan	SC Alcove	SC Alcove
	<b>PROJECT SITE NUMBER</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>SITE AVERAGE FEATURE RATING</b>	Site average feature quantitative rating (out of 15; bold indicates excluded from site rating)	0	14	14	8
	Site average feature qualitative rating Excellent (>=12), Good (>=9), Fair(>=6), Poor (>=3), Fail (<3), Not rated (not used to rate site)	Not rated	Excellent	Excellent	Fair
	<b>PROJECT SITE NUMBER</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>SITE AVERAGE HABITAT UNIT RATING</b>	Site average habitat unit quantitative rating (out of 35; bold indicates excluded from site rating)	18	22	28	14
	Site average qualitative rating Excellent (>=28), Good (>=21), Fair(>=14), Poor (>=7), Fail (<7), Not rated (not used to rate site)	Fair	Good	Excellent	Poor
	<b>PROJECT SITE NUMBER</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>SITE RATING</b>	Site quantitative rating (sum of site average feature and habitat unit ratings) (out of 50; bold indicates rating excludes feature or habitat unit rating and scoring out of 15 or 35)	18	36	42	22
	Site qualitative rating: Excellent (>=40, 28), Good (>=30, 21), Fair(>=20, 14), Poor (>=10, 7), Fail (<10, 7)	Fair	Good	Excellent	Fair
	<b>ENHANCEMENT REACH NAME</b>	<b>US</b>			
<b>ENHANCEMENT REACH RATING</b>	Enhancement reach quantitative rating (average of site ratings) (out of 46)	29			
	Enhancement reach qualitative rating: Excellent (>=37), Good (>=28), Fair(>=19), Poor (>=9), Fail (<9)	Good			

# Army Corps, Reach 14 Enhancement Reach

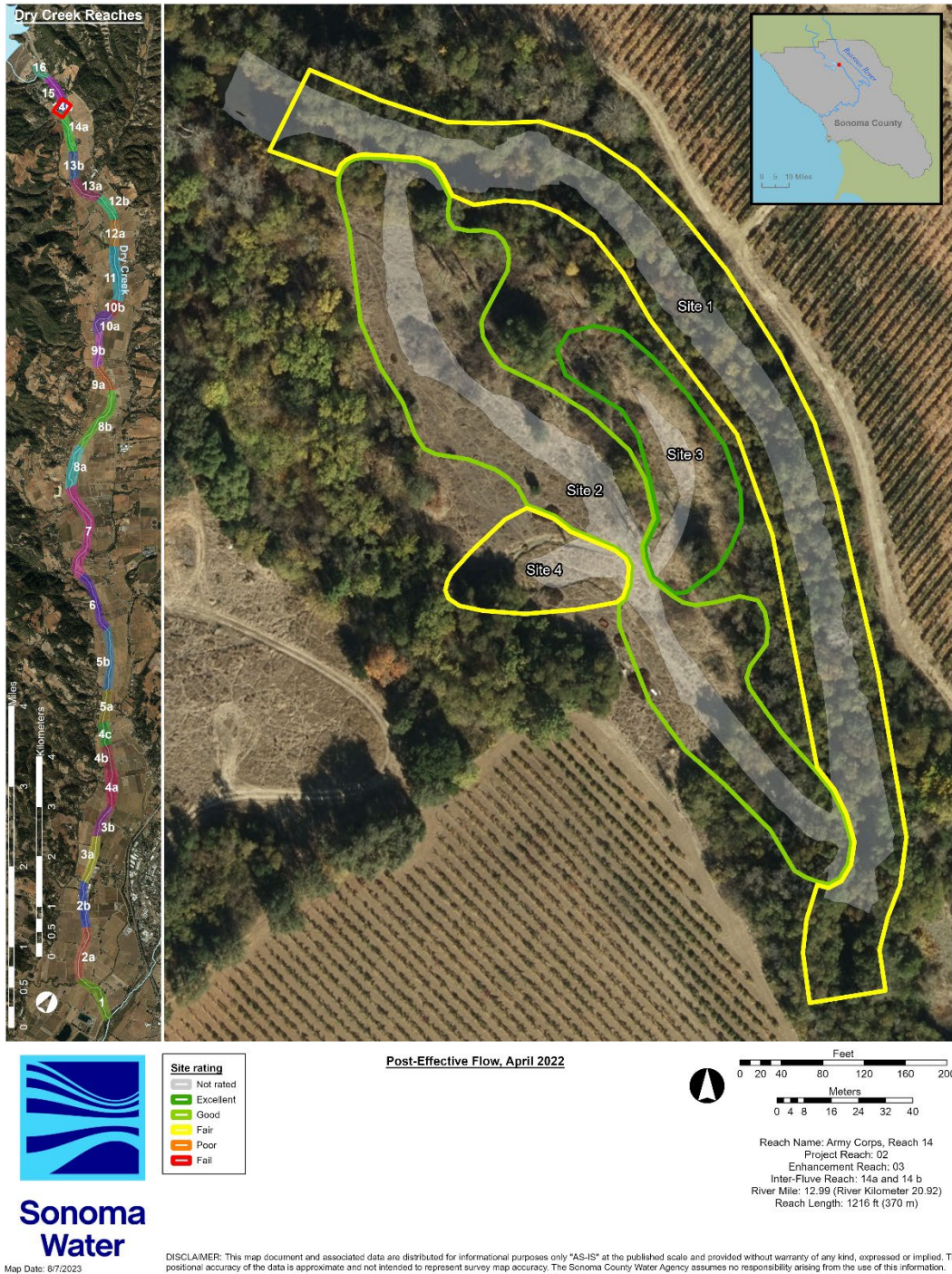


Figure 55. Post-effective flow site ratings for the Army Corps Reach 14 enhancement reach, April 2022.

# Army Corps, Reach 14 Enhancement Reach



Figure 56. Post-effective flow reach rating for the Army Corps Reach 14 enhancement reach, April 2022.

## Feature and Habitat Unit Checklists





Table 32. Adaptive Management Plan targeted checklist for the Army Corps Reach 14 enhancement reach, April 2022.

Project Reach	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Enhancement Reach	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Colloquial Name	US	US	US	US	US	US	US	US	US	US	US	US	US	US	US	US	US	US	US
mmddyy	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322
Survey Type	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF
Project Site Number	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Project Site Type	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan
Project Feature Number	S2-10	S2-11	S2-12	S2-13	S2-14	S2-15	S2-16	S2-17	S2-18	S2-19	S2-20	S2-21	S2-22	S2-23	S2-24	S2-25	S2-26	S2-27	
Feature Type Code	R	HW	HW	HW	HW	HW	SCW	HW	SCW	HW	SCW	FW	SCW	R	HW	HW	SCW	SCW	
Habitat Unit	HU12	HU13	HU13	HU13	HU13	HU13	HU13	HU13	HU13	HU01 D	HU13	HU01 D	HU13	HU14	HU15	HU15	HU15	HU15	
Habitat Type	Rifle	Pool	Pool	Pool	Pool	Pool	Pool	Pool	Pool	Dry	Pool	Dry	Pool	Rifle	Pool	Pool	Pool	Pool	
4.	Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	GOOD	EXCL	EXCL	EXCL	GOOD	EXCL	EXCL	EXCL	EXCL	EXCL
5a	Are problems with the feature visible?	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO
6a	Is the feature still in its original location?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
6b	Is the feature still in its original position?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
6d	Is the feature still in its original orientaton?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
8.	If an objective, did the feature create the targeted instream habitat type?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
9.	Were there any unintended effects by the feature on the habitat type? If Y, comment.	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
11e	% Area of habitat unit within 0.5 -2.0 ft depth	74%	24%	24%	24%	24%	24%	24%	24%	0%	24%	0%	24%	76%	32%	32%	32%	32%	32%
11f	% Area of habitat unit within 2.0 -4.0 ft depth	0%	42%	42%	42%	42%	42%	42%	42%	0%	42%	0%	42%	0%	40%	40%	40%	40%	40%
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3	2	3	3	3	3	3	3	3	0	3	0	3	1	3	3	3	3	3
15.	Percent of habitat unit covered by shelter: %	35	45	45	45	45	45	45	45	0	45	0	45	15	70	70	70	70	70
17a	If an objective, did the feature increase instream shelter rating?	YES	YES	YES	YES	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES
17b	a. Calculate the shelter rating for the habitat unit: 0-300	70	120	120	120	120	120	120	120	0	120	0	120	15	210	210	210	210	210
19a	If an objective, did the feature increase LWD count in the habitat unit?	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
21a	If an objective, did the feature lead to the targeted channel conditions?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
25.	Did the feature achieve the targeted velocity?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
28.	Percent of habitat unit within targeted velocity (see above): (%)	21%	83%	83%	83%	83%	83%	83%	83%	0%	83%	0%	83%	16%	73%	73%	73%	73%	73%
36e	% habitat unit area where < 0.5 f/s; 0.5 to 2 ft and shelter criteria overlap	4%	22%	22%	22%	22%	22%	22%	22%	0%	22%	0%	22%	0%	20%	20%	20%	20%	20%
36f	% habitat unit area where < 0.5 f/s; 2 to 4 ft and shelter criteria overlap	0%	31%	31%	31%	31%	31%	31%	31%	0%	31%	0%	31%	0%	30%	30%	30%	30%	30%
	<b>FEATURE NUMBER</b>	<b>S2-10</b>	<b>S2-11</b>	<b>S2-12</b>	<b>S2-13</b>	<b>S2-14</b>	<b>S2-15</b>	<b>S2-16</b>	<b>S2-17</b>	<b>S2-18</b>	<b>S2-19</b>	<b>S2-20</b>	<b>S2-21</b>	<b>S2-22</b>	<b>S2-23</b>	<b>S2-24</b>	<b>S2-25</b>	<b>S2-26</b>	<b>S2-27</b>
	<b>HABITAT UNIT NUMBER</b>	<b>HU12</b>	<b>HU13</b>	<b>HU13</b>	<b>HU13</b>	<b>HU13</b>	<b>HU13</b>	<b>HU13</b>	<b>HU13</b>	<b>HU01 D</b>	<b>HU13</b>	<b>HU01 D</b>	<b>HU13</b>	<b>HU14</b>	<b>HU15</b>	<b>HU15</b>	<b>HU15</b>	<b>HU15</b>	<b>HU15</b>
	<b>SITE NUMBER</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
	<b>ENHANCEMENT REACH NAME</b>	<b>US</b>	<b>US</b>	<b>US</b>	<b>US</b>	<b>US</b>	<b>US</b>	<b>US</b>	<b>US</b>	<b>US</b>	<b>US</b>	<b>US</b>	<b>US</b>	<b>US</b>	<b>US</b>	<b>US</b>	<b>US</b>	<b>US</b>	<b>US</b>
4.	Structural condition of feature: EXCL (6 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)	5	5	5	5	5	5	5	5	5	4	5	5	4	5	5	5	5	5
5a	Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1
6a	Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6b	Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6d	Is the feature still in its original orientaton? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8.	If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
9.	Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
11e	% area of hab unit within 0.5 -2.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	4	2	2	2	2	2	2	2	0	2	0	2	4	3	3	3	3	3
11f	% area of hab unit within 2.0 -4.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	4	4	4	4	4	4	4	0	4	0	4	0	4	4	4	4	4
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3 (3 = 5 pts; 2 = 4 pts, 1 = 3 pts, 0 = 0 pts)	4	5	5	5	5	5	5	5	0	5	0	5	3	5	5	5	5	5
15.	% hab unit covered by shelter (≥80 = 5pts; ≥60 = 4 pts; ≥40 = 3 pts; ≥20 = 2 pts; ≥10 = 1 pt; <10 = 0 pt)	2	3	3	3	3	3	3	3	0	3	0	3	1	4	4	4	4	4
17a	If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	0	1	0	1	1	1	1	1	1	1
17b	a. Calculate the shelter rating for the habitat unit: 0-300	2	4	4	4	4	4	4	4	0	4	0	4	0	5	5	5	5	5
19a	If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21a	If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
25.	Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
28.	% area of hab unit within targeted velocity (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	2	4	4	4	4	4	4	4	0	4	0	4	1	4	4	4	4	4
36e	% area hab unit with < 0.5 f/s; 0.5 to 2 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	2	2	2	2	2	2	2	0	2	0	2	0	2	2	2	2	2
36f	% area hab unit with < 0.5 f/s; 2 to 4 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	3	3	3	3	3	3	3	0	3	0	3	0	3	3	3	3	3

Table 32. Adaptive Management Plan targeted checklist for the Army Corps Reach 14 enhancement reach, April 2022.

Project Reach	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Enhancement Reach	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Colloquial Name	US	US	US	US	US	US	US	US	US	US	US	US	US	US	US	US	US	US	US
mmddy	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322	41322
Survey Type	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF
Project Site Number	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3
Project Site Type	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SC Alcove	SC Alcove	SC Alcove	SC Alcove
Project Feature Number	S2-28	S2-29	S2-30	S2-31	S2-32	S2-33	S2-34	S2-35	S2-36	S2-37	S2-38	S2-39	S2-40	S2-41	S3-01	S3-02	S3-03	S3-04	
Feature Type Code	HW	SCW	HW	FW	HW	HW	HW	HW	HW	HW	HW	AW	R	FW	BWW	FW	BWW	HW	
Habitat Unit	HU15	HU15	HU16	HU01 D	HU17	HU17	HU18	HU18	HU09 2	HU18	HU18	HU09 2	HU18	HU01 D	HU19	HU02 D	HU19	HU02 D	
Habitat Type	Pool	Pool	Rifle	Dry	Pool	Pool	Rifle	Rifle	Pool	Rifle	Rifle	Pool	Rifle	Dry	Alcove	Dry	Alcove	Dry	
4. Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	GOOD	EXCL	EXCL	EXCL	EXCL	
5a. Are problems with the feature visible?	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
6a. Is the feature still in its original location?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	
6b. Is the feature still in its original position?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	
6d. Is the feature still in its original orientaton?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	
8. If an objective, did the feature create the targeted instream habitat type?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	
9. Were there any unintended effects by the feature on the habitat type? If Y, comment.	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
11e. % Area of habitat unit within 0.5 -2.0 ft depth	32%	32%	77%	0%	38%	39%	84%	84%	49%	84%	84%	49%	84%	0%	56%	0%	56%	0%	
11f. % Area of habitat unit within 2.0 -4.0 ft depth	40%	40%	0%	0%	33%	33%	0%	0%	31%	0%	0%	31%	0%	0%	25%	0%	25%	0%	
14. Instream shelter value in the habitat unit: 0, 1, 2, 3	3	3	3	0	3	3	3	3	3	3	3	3	3	0	3	0	3	0	
15. Percent of habitat unit covered by shelter: %	70	70	20	0	30	30	40	40	40	40	40	40	40	0	45	0	45	0	
17a. If an objective, did the feature increase instream shelter rating?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	
17b. a. Calculate the shelter rating for the habitat unit: 0-300	210	210	60	0	90	90	120	120	120	120	120	120	120	0	135	0	135	0	
19a. If an objective, did the feature increase LWD count in the habitat unit?	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
21a. If an objective, did the feature lead to the targeted channel conditions?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	
25. Did the feature achieve the targeted velocity?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	
28. Percent of habitat unit within targeted velocity (see above): (%)	73%	73%	17%	0%	65%	65%	20%	20%	54%	20%	20%	54%	20%	0%	100%	0%	100%	0%	
36e. % habitat unit area where < 0.5 f/s; 0.5 to 2 ft and shelter criteria overlap	20%	20%	7%	0%	23%	23%	9%	9%	25%	9%	9%	25%	9%	0%	56%	0%	56%	0%	
36f. % habitat unit area where < 0.5 f/s; 2 to 4 ft and shelter criteria overlap	30%	30%	0%	0%	20%	20%	0%	0%	11%	0%	0%	11%	0%	0%	25%	0%	25%	0%	
<b>FEATURE NUMBER</b>	<b>S2-28</b>	<b>S2-29</b>	<b>S2-30</b>	<b>S2-31</b>	<b>S2-32</b>	<b>S2-33</b>	<b>S2-34</b>	<b>S2-35</b>	<b>S2-36</b>	<b>S2-37</b>	<b>S2-38</b>	<b>S2-39</b>	<b>S2-40</b>	<b>S2-41</b>	<b>S3-01</b>	<b>S3-02</b>	<b>S3-03</b>	<b>S3-04</b>	
<b>HABITAT UNIT NUMBER</b>	<b>HU15</b>	<b>HU15</b>	<b>HU16</b>	<b>HU01 D</b>	<b>HU17</b>	<b>HU17</b>	<b>HU18</b>	<b>HU18</b>	<b>HU09 2</b>	<b>HU18</b>	<b>HU18</b>	<b>HU09 2</b>	<b>HU18</b>	<b>HU01 D</b>	<b>HU19</b>	<b>HU02 D</b>	<b>HU19</b>	<b>HU02 D</b>	
<b>SITE NUMBER</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	
<b>ENHANCEMENT REACH NAME</b>	<b>US</b>	<b>US</b>	<b>US</b>	<b>US</b>	<b>US</b>	<b>US</b>	<b>US</b>	<b>US</b>	<b>US</b>	<b>US</b>	<b>US</b>	<b>US</b>	<b>US</b>	<b>US</b>	<b>US</b>	<b>US</b>	<b>US</b>	<b>US</b>	
4. Structural condition of feature: EXCL (5 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)	5	5	5	5	5	5	5	5	5	5	5	5	5	4	5	5	5	5	
5a. Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
6a. Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
6b. Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
6d. Is the feature still in its original orientaton? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
8. If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
9. Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
11e. % area of hab unit within 0.5 -2.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	3	3	4	0	3	3	4	4	4	4	4	4	4	0	4	0	4	0	
11f. % area of hab unit within 2.0 -4.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	4	4	0	0	3	3	0	0	3	0	0	3	0	0	2	0	2	0	
14. Instream shelter value in the habitat unit: 0, 1, 2, 3 (3 = 5 pts; 2 = 4 pts, 1 = 3 pts, 0 = 0 pts)	5	5	5	0	5	5	5	5	5	5	5	5	5	0	5	0	5	0	
15. % hab unit covered by shelter (≥80 = 5pts; ≥60 = 4 pts; ≥40 = 3 pts; ≥20 = 2 pts; ≥10 = 1 pt; <10 = 0 pt)	4	4	2	0	2	2	3	3	3	3	3	3	3	0	3	0	3	0	
17a. If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
17b. a. Calculate the shelter rating for the habitat unit: 0-300	5	5	2	0	3	3	4	4	4	4	4	4	4	0	4	0	4	0	
19a. If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
21a. If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
25. Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
28. % area of hab unit within targeted velocity (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	4	4	1	0	4	4	2	2	4	2	2	4	2	0	4	0	4	0	
36e. % area hab unit with < 0.5 f/s; 0.5 to 2 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	2	2	0	0	2	2	0	0	2	0	0	2	0	0	4	0	4	0	
36f. % area hab unit with < 0.5 f/s; 2 to 4 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	3	3	0	0	2	2	0	0	1	0	0	1	0	0	2	0	2	0	

Table 32. Adaptive Management Plan targeted checklist for the Army Corps Reach 14 enhancement reach, April 2022.

Project Reach	2	2	2	2	2	2
Enhancement Reach	7	7	7	7	7	7
Colloquial Name	US	US	US	US	US	US
mmddy	41322	41322	41322	41322	41322	41322
Survey Type	PEF	PEF	PEF	PEF	PEF	PEF
Project Site Number	3	4	4	4	4	4
Project Site Type	SC Alcove	SC Alcove	SC Alcove	SC Alcove	SC Alcove	SC Alcove
Project Feature Number	S3-05	S4-01	S4-02	S4-03	S4-05	S4-06
Feature Type Code	FW	BWW	HW	HW	HW	HW
Habitat Unit	HU02_D	HU13_2	HU03_D	HU03_D	HU03_D	HU03_D
Habitat Type	Dry	Pool	Dry	Dry	Dry	Dry
4.	Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	EXCL	EXCL	GOOD	GOOD	GOOD
5a	Are problems with the feature visible?	NO	NO	YES	YES	NO
6a	Is the feature still in its original location?	YES	YES	YES	YES	YES
6b	Is the feature still in its original position?	YES	YES	NO	YES	NO
6d	Is the feature still in its original orientaton?	YES	YES	YES	YES	YES
8.	If an objective, did the feature create the targeted instream habitat type?	YES	YES	NO	NO	YES
9.	Were there any unintended effects by the feature on the habitat type? If Y, comment.	NO	NO	YES	YES	YES
11e	% Area of habitat unit within 0.5 -2.0 ft depth	0%	24%	0%	0%	0%
11f	% Area of habitat unit within 2.0 -4.0 ft depth	0%	42%	0%	0%	0%
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3	0	3	0	0	0
15.	Percent of habitat unit covered by shelter: %	0	45	0	0	0
17a	If an objective, did the feature increase instream shelter rating?	YES	YES	NO	NO	NO
17b	a. Calculate the shelter rating for the habitat unit: 0-300	0	120	0	0	0
19a	If an objective, did the feature increase LWD count in the habitat unit?	NO	NO	NO	NO	NO
21a	If an objective, did the feature lead to the targeted channel conditions?	YES	NO	NO	NO	NO
25.	Did the feature achieve the targeted velocity?	YES	YES	NO	NO	NO
28.	Percent of habitat unit within targeted velocity (see above): (%)	0%	83%	0%	0%	0%
36e	% habitat unit area where < 0.5 f/s; 0.5 to 2 ft and shelter criteria overlap	0%	22%	0%	0%	0%
36f	% habitat unit area where < 0.5 f/s; 2 to 4 ft and shelter criteria overlap	0%	31%	0%	0%	0%
	<b>FEATURE NUMBER</b>	<b>S3-05</b>	<b>S4-01</b>	<b>S4-02</b>	<b>S4-03</b>	<b>S4-05</b>
	<b>HABITAT UNIT NUMBER</b>	<b>HU02_D</b>	<b>HU13_2</b>	<b>HU03_D</b>	<b>HU03_D</b>	<b>HU03_D</b>
	<b>SITE NUMBER</b>	<b>3</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>
	<b>ENHANCEMENT REACH NAME</b>	<b>US</b>	<b>US</b>	<b>US</b>	<b>US</b>	<b>US</b>
4.	Structural condition of feature: EXCL (5 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)	5	5	4	4	4
5a	Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)	1	1	0	0	1
6a	Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1
6b	Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)	1	1	0	1	0
6d	Is the feature still in its original orientaton? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1
8.	If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)	1	1	0	0	1
9.	Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)	1	1	0	0	0
11e	% area of hab unit within 0.5 -2.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	2	0	0	0
11f	% area of hab unit within 2.0 -4.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	4	0	0	0
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3 (3 = 5 pts; 2 = 4 pts, 1 = 3 pts, 0 = 0 pts)	0	5	0	0	0
15.	% hab unit covered by shelter (≥80 = 5pts; ≥60 = 4 pts; ≥40 = 3 pts; ≥20 = 2 pts; ≥10 = 1 pt; <10 = 0 pt)	0	3	0	0	0
17a	If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)	1	1	0	0	0
17b	a. Calculate the shelter rating for the habitat unit: 0-300	0	4	0	0	0
19a	If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0
21a	If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)	1	0	0	0	0
25.	Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)	1	1	0	0	0
28.	% area of hab unit within targeted velocity (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	4	0	0	0
36e	% area hab unit with < 0.5 f/s; 0.5 to 2 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	2	0	0	0
36f	% area hab unit with < 0.5 f/s; 2 to 4 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	3	0	0	0







Table 33. Adaptive Management Plan full checklist for the Army Corps Reach 14 enhancement reach, April 2022.

	2	2	2	2	2	2
Project Reach	2	2	2	2	2	2
Enhancement Reach	7	7	7	7	7	7
Colloquial Name	US	US	US	US	US	US
mmddyy	41322	41322	41322	41322	41322	41322
Survey Type	PEF	PEF	PEF	PEF	PEF	PEF
Project Site Number	3	4	4	4	4	4
Project Site Type	SC Alcove	SC Alcove	SC Alcove	SC Alcove	SC Alcove	SC Alcove
Project Feature Number	S3-05	S4-01	S4-02	S4-03	S4-05	S4-06
Feature Type Code	FW	BWW	HW	HW	HW	HW
Habitat Unit	HU02 D	HU13 2	HU03 D	HU03 D	HU03 D	HU03 D
Habitat Type	Dry	Pool	Dry	Dry	Dry	Dry
1. Length of targeted treatment (ft)	14	40	31	18	32	35
2. Width of targeted treatment (ft)	38	33	31	41	34	27
3. Estimate area of the targeted feature: (ft <sup>2</sup> )	532	1320	961	738	1088	945
4. Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	EXCL	EXCL	GOOD	GOOD	GOOD	GOOD
5a. Are problems with the feature visible?	NO	NO	YES	YES	YES	NO
5b. Types: ANC, BBB, CRF, MAT, SHF, STR, SWA, UND, UNS, WSH, OTH, NON	NON	NON	STR	STR	STR	NON
6a. Is the feature still in its original location?	YES	YES	YES	YES	YES	YES
6b. Is the feature still in its original position?	YES	YES	NO	YES	NO	NO
6c. If yes: LBK, MDC, RBK, SPN, OTH	OTH	RBK	OTH	RBK	RBK	RBK
6d. Is the feature still in its original orientation?	YES	YES	YES	YES	YES	YES
6e. If yes: DNS, MUL, PRL, PRP, UPS, OTH	OTH	MUL	UPS	UPS	DNS	DNS
7. Current level II habitat type: FLT, POO, RIF, DRY, ALC, OTH	DRY	POO	DRY	DRY	DRY	DRY
8. If an objective, did the feature create the targeted instream habitat type?	YES	YES	NO	NO	YES	YES
9. Were there any unintended effects by the feature on the habitat type? If Y, comment.	NO	NO	YES	YES	YES	YES
10. Mean water depth in habitat unit: ft	0.0	2.8	0.0	0.0	0.0	0.0
11a. Maximum water depth in habitat unit: ft	0.0	5.6	0.0	0.0	0.0	0.0
11b. Area of habitat unit within 0.5 -2.0 ft depth: (ft <sup>2</sup> )	0.0	2453.9	0.0	0.0	0.0	0.0
11c. Area of habitat unit within 2.0 -4.0 ft depth: (ft <sup>2</sup> )	0.0	4268.3	0.0	0.0	0.0	0.0
11d. Area of habitat unit within 0.5-4.0 ft depth: (ft <sup>2</sup> )	0.0	6722.2	0.0	0.0	0.0	0.0
11e. % Area of habitat unit within 0.5 -2.0 ft depth	0%	24%	0%	0%	0%	0%
11f. % Area of habitat unit within 2.0 -4.0 ft depth	0%	42%	0%	0%	0%	0%
11g. % Area of habitat unit within 0.5-4.0 ft depth	0%	66%	0%	0%	0%	0%
11h. If an objective, did the feature increase/decrease water depth in the treatment area?	YES	YES	NO	NO	NO	NO
12a. Targeted depth or range (ft) in habitat unit	0.5-4.0	0.5-4.0	0.5-4.0	0.5-4.0	0.5-4.0	0.5-4.0
12b. Estimate area of feature within targeted depth or range ft <sup>2</sup> :	0	384	115	0	91	0
13. Were there any unintended effects of the feature on the water depth? If Y, comment.	NO	NO	YES	YES	YES	YES
14. Instream shelter value in the habitat unit: 0, 1, 2, 3	0	3	0	0	0	0
15. Percent of habitat unit covered by shelter: %	0	45	0	0	0	0
16a. 1st dominant cover in habitat unit: BED, BOL, BUB, LWD, RTW, SWD, UCB, VEG, OTH	NA	AVG	NA	NA	NA	NA
16b. 2nd dominant in habitat unit: BED, BOL, BUB, LWD, RTW, SWD, UCB, VEG, OTH	NA	RTW	NA	NA	NA	NA
17a. If an objective, did the feature increase instream shelter rating?	YES	YES	NO	NO	NO	NO
17b. a. Calculate the shelter rating for the habitat unit: 0-300	0	120	0	0	0	0
18a. Large woody debris count in habitat unit: D >1', L 6-20'	0	0	0	0	0	0
18b. Large woody debris count in habitat unit: D >1', L >20'	0	0	0	0	0	0
19a. If an objective, did the feature increase LWD count in the habitat unit?	NO	NO	NO	NO	NO	NO
19b. LWD recruitment mechanisms in habitat unit: ANC, EXC, EXH, INT, RPR, UNA, OTH	NA	NON	NA	NA	NA	NA
20. Current stream channel problems in the habitat unit: AGG, BRD, FLO, GRC, HDC, INC, NAR, SCU, STT, WID, NON, OTH	NA	NON	NA	NA	NA	NA
21a. If an objective, did the feature lead to the targeted channel conditions?	YES	NO	NO	NO	NO	NO
21b. Overall Offchannel Condition (site): AGG, FPD, GRC, INC, NAR, SIN, STB, TOG, WID, OTH	STB	AGG	AGG	AGG	AGG	AGG
21c. Outlet Conditions (site): AGG, FPD, GRC, INC, NAR, SIN, STB, TOG, WID, OTH	STB	AGG	AGG	AGG	AGG	AGG
21d. Inlet Conditions (site): AGG, FPD, GRC, INC, NAR, SIN, STB, TOG, WID, OTH	STB	AGG	AGG	AGG	AGG	AGG
22. Were there any unintended effects on the stream channel at the feature? If Y, comment.	NO	NO	YES	YES	YES	NO
23. If an objective, did the feature decrease/increase velocity in the treatment area?	NA	DEC	NA	NA	NA	NA
24. Targeted velocity/range in the habitat unit: (ft/sec)	0.5	0.5	0.5	0.5	0.5	0.5
25. Did the feature achieve the targeted velocity?	YES	YES	NO	NO	NO	NO
26a. Measured minimum velocity (ft/sec) in habitat unit	0	0	0	0	0	0
26b. Measured max velocity (ft/sec) in habitat unit	0.0	2.8	0.0	0.0	0.0	0.0
26c. Measured mean velocity (ft/sec) in habitat unit	0.0	0.2	0.0	0.0	0.0	0.0
27. Area of habitat unit within targeted velocity: (ft <sup>2</sup> )	0.0	8415.0	0.0	0.0	0.0	0.0
28. Percent of habitat unit within targeted velocity (see above): (%)	0%	83%	0%	0%	0%	0%
29. Were there any unintended effects of feature on velocity? If Y, comment.	NO	NO	YES	YES	YES	NO
30a. 1st/2nd dominant substrate in habitat unit: BED, BOL, COB, GRV, SND, SLC, OTH	GRV	SND	GRV	GRV	GRV	GRV
30b. 2nd dominant substrate in habitat unit: BED, BOL, COB, GRV, SND, SLC, OTH	SND	SLC	SND	SND	SND	SND
31. If an objective, did the feature achieve the targeted substrate composition?	YES	YES	YES	YES	YES	YES
32. % Canopy Measurement:	NR	NR	NR	NR	NR	NR
33. Photopoint data collected: YES /NO	NR	NR	NR	NR	NR	NR
34. Temperature Profile: YES /NO	NR	NR	NR	NR	NR	NR
35. Dissolved Oxygen Profile: YES/NO	NR	NR	NR	NR	NR	NR
36a. Total habitat unit area where targeted depth, velocity and shelter criteria overlap	0.0	5474.7	0.0	0.0	0.0	0.0
36b. Total habitat unit area where < 0.5 ft/s; 0.5 to 2 ft and shelter criteria overlap	0.0	2278.5	0.0	0.0	0.0	0.0
36c. Total habitat unit area where < 0.5 ft/s; 2 to 4 ft and shelter criteria overlap	0.0	3196.1	0.0	0.0	0.0	0.0
36d. % habitat unit area where targeted depth, velocity and shelter criteria overlap	0%	54%	0%	0%	0%	0%
36e. % habitat unit area where < 0.5 ft/s; 0.5 to 2 ft and shelter criteria overlap	0%	22%	0%	0%	0%	0%
36f. % habitat unit area where < 0.5 ft/s; 2 to 4 ft and shelter criteria overlap	0%	31%	0%	0%	0%	0%
37. Does this feature need: DEC, ENH, MNT, REP, NON, OTH	NON	NON	NON	NON	NON	NON
38. Are additional restoration treatments recommended at this site?	NO	NO	NO	NO	NO	NO



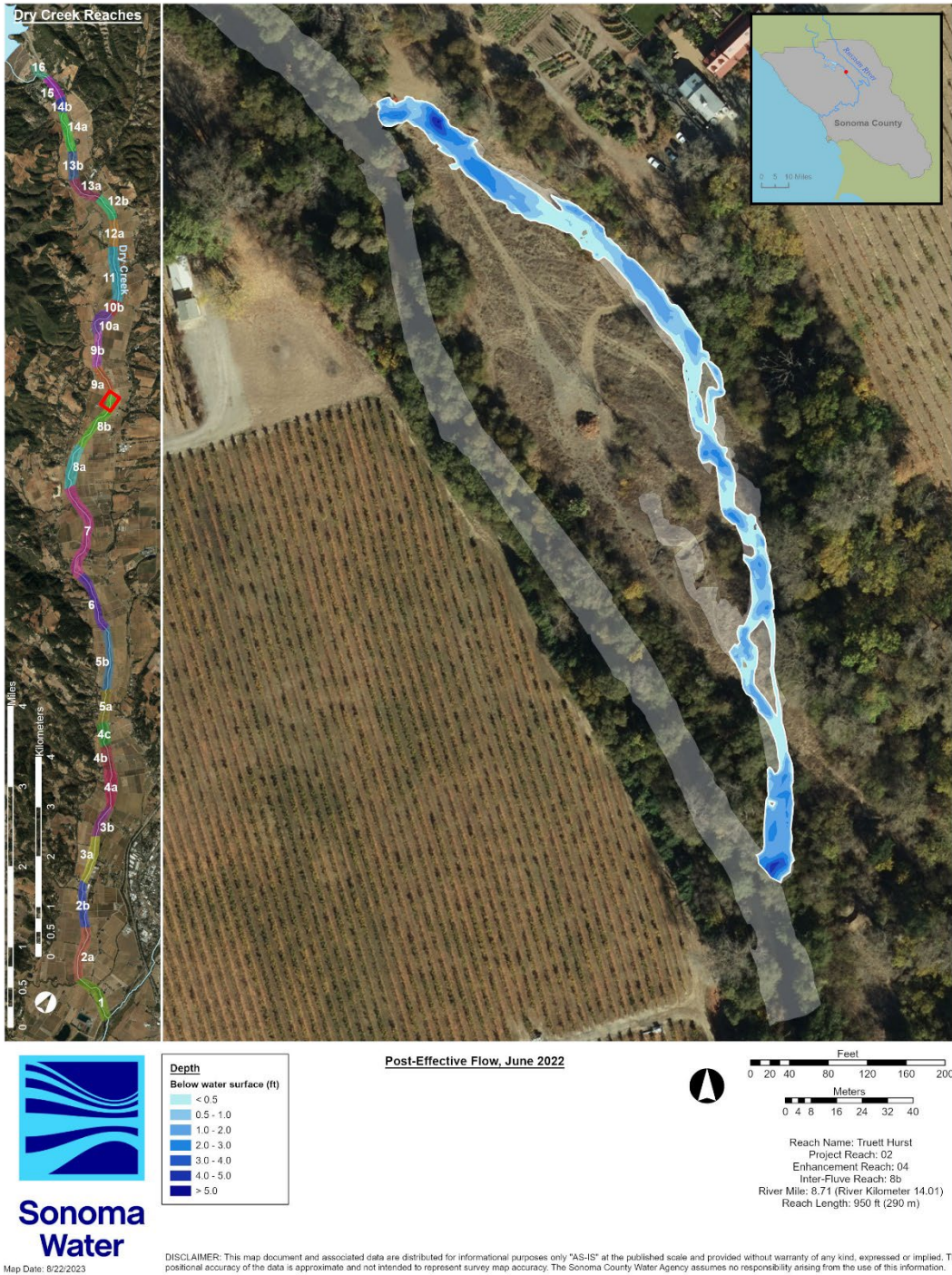
**Truett Hurst, June 2022**

## Depth and Velocity

**Table 34. Areas and percentages of wetted area, optimal depth and velocity, and optimal hydraulic habitat within the Truett Hurst enhancement reach, June 2022.**

Truett Hurst, Post-effective flow, June 2022	Wetted area (ft <sup>2</sup> )	0.5 – 2.0 ft (ft <sup>2</sup> )	2.0 – 4.0 ft (ft <sup>2</sup> )	Total (ft <sup>2</sup> )	< 0.5 ft/s (ft <sup>2</sup> )	0.5 – 2.0 ft, < 0.5 ft/s (ft <sup>2</sup> )	2.0 – 4.0 ft, < 0.5 ft/s (ft <sup>2</sup> )	Total (ft <sup>2</sup> )
Main channel area	0	0	0	0	0	0	0	0
Side channel area	21,511	11,496	2,290	13,786	17,460	9,728	2,281	12,009
Side channel alcove area	840	493	0	493	630	361	0	361
<b>Total area</b>	<b>22,352</b>	<b>11,989</b>	<b>2,290</b>	<b>14,279</b>	<b>18,090</b>	<b>10,089</b>	<b>2,281</b>	<b>12,370</b>
Main channel % of wetted area	0%	0%	0%	0%	0%	0%	0%	0%
Side channel % of wetted area	96%	53%	11%	64%	81%	45%	11%	56%
Side channel alcove area % of wetted area	4%	59%	0%	59%	75%	43%	0%	43%
<b>Total % of wetted area</b>	<b>100%</b>	<b>54%</b>	<b>10%</b>	<b>64%</b>	<b>81%</b>	<b>45%</b>	<b>10%</b>	<b>55%</b>

# Truett Hurst Enhancement Reach



**Figure 57. Measured water depth within the Truett Hurst enhancement reach, June 2022.**

# Truett Hurst Enhancement Reach

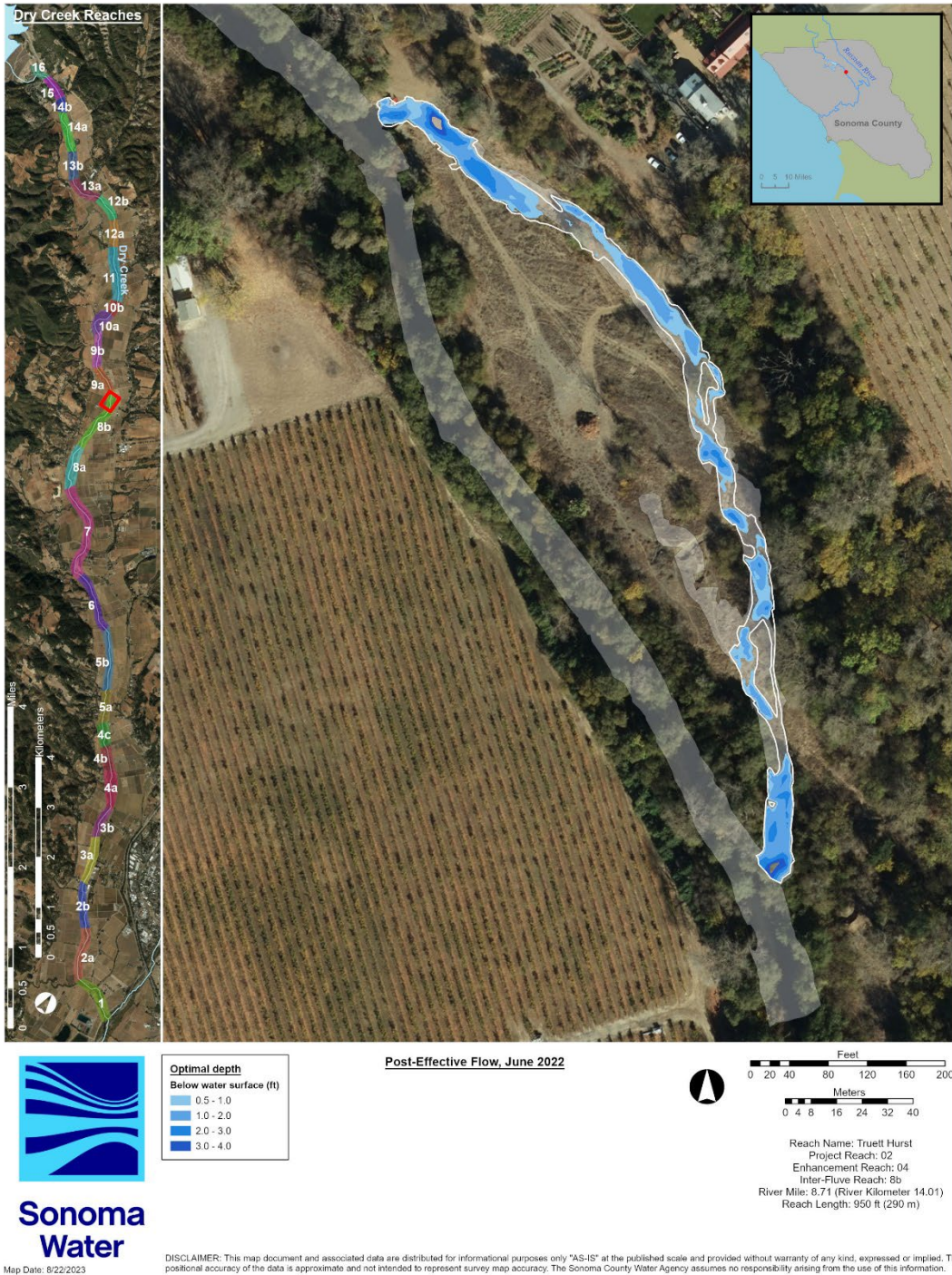


Figure 58. Optimal water depth for fry (0.5-2.0 ft) and parr (2.0-4.0 ft) within the Truett Hurst enhancement reach, June 2022.

# Truett Hurst Enhancement Reach

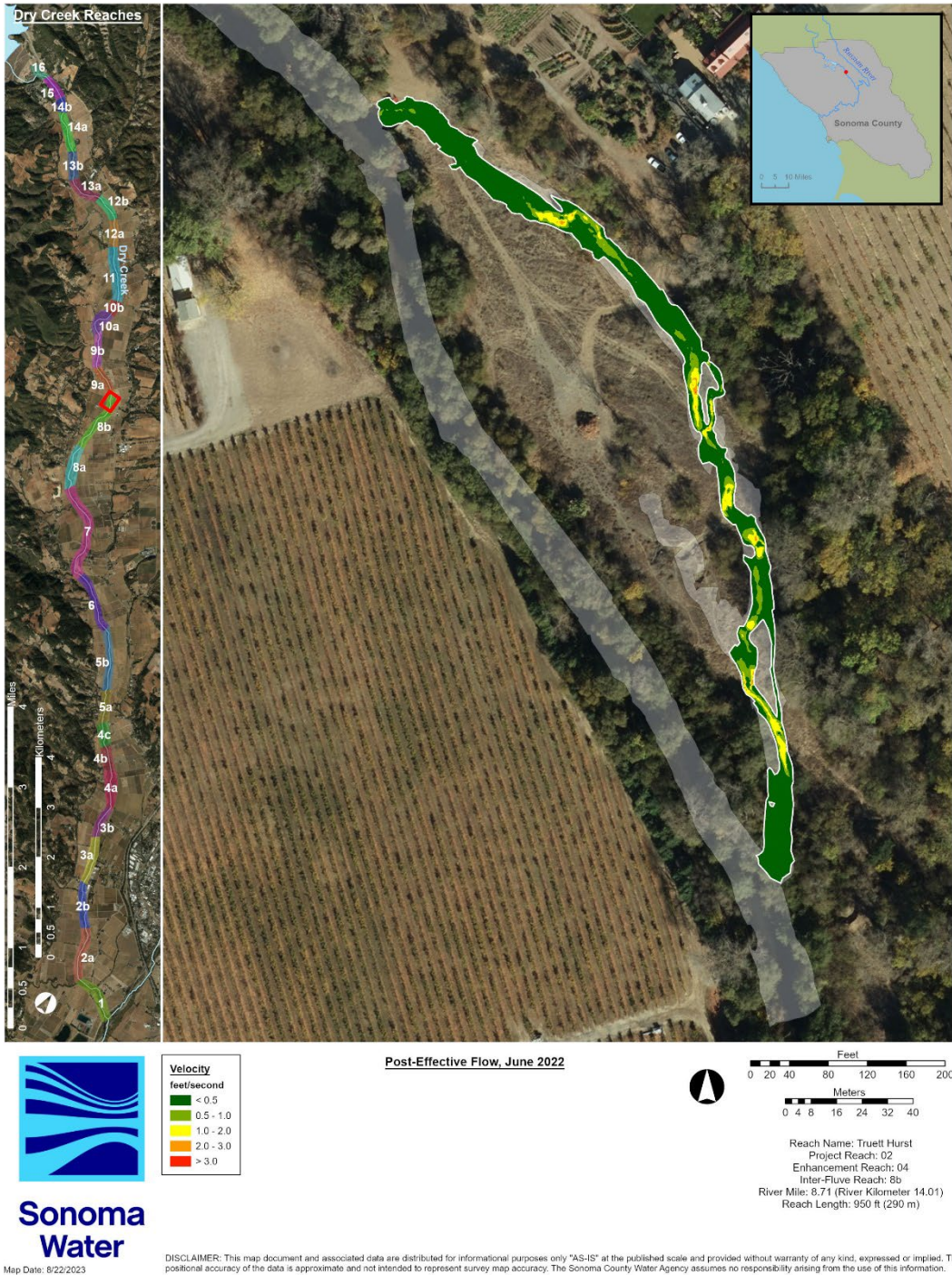
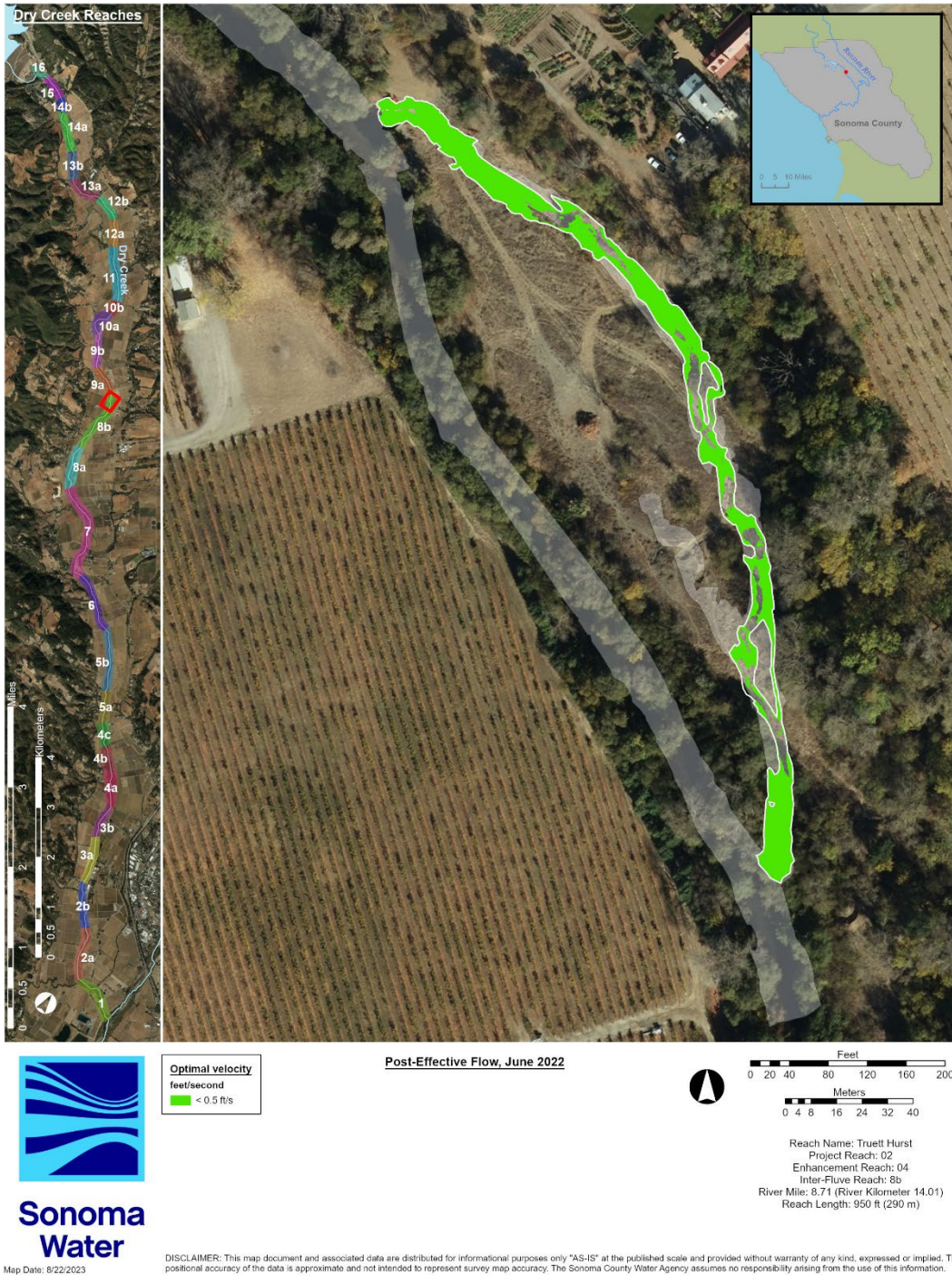


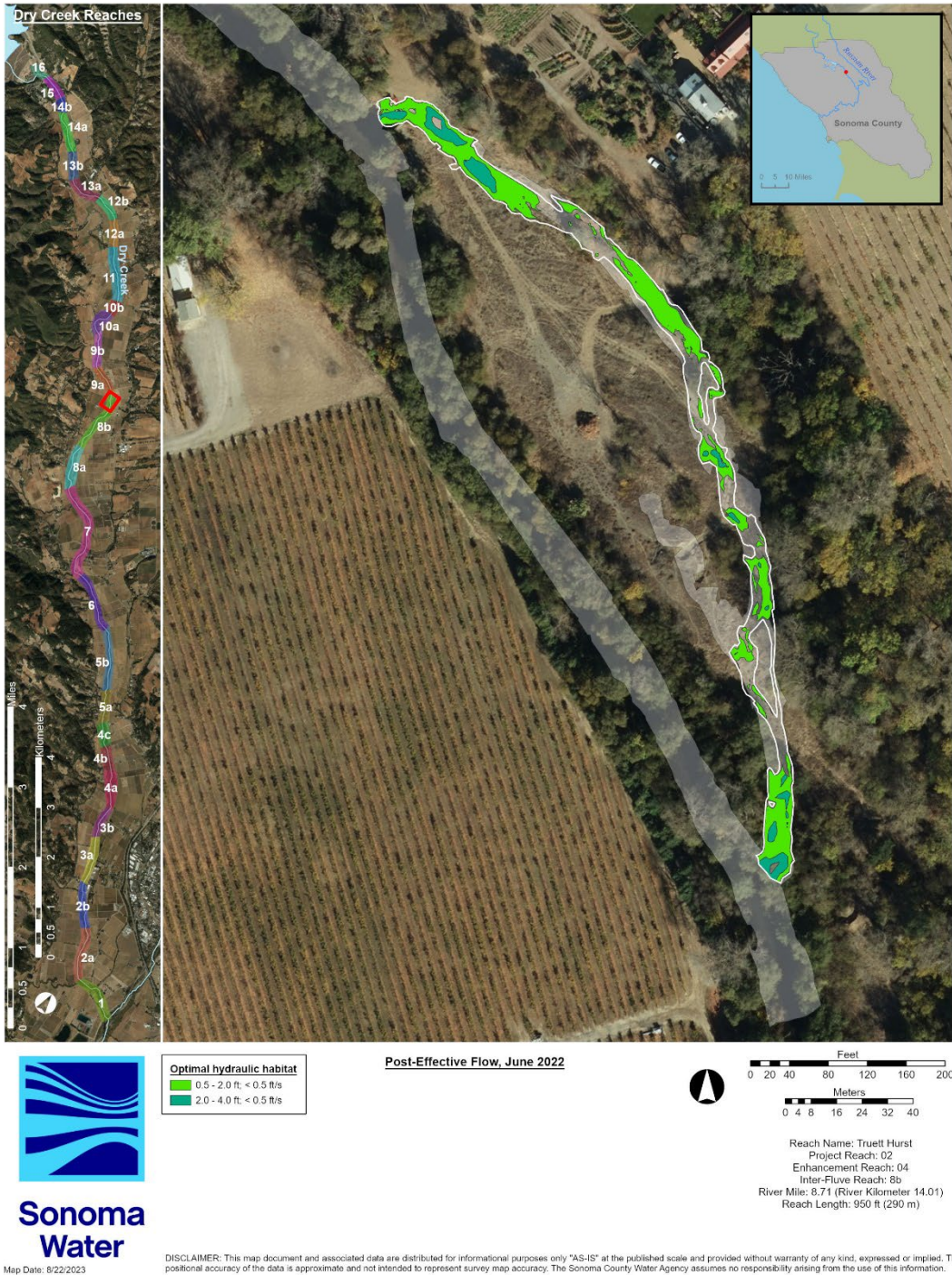
Figure 59. Measured water velocity within the Truett Hurst enhancement reach, June 2022.

# Truett Hurst Enhancement Reach



**Figure 60. Optimal water velocity for fry and parr (< 0.5 ft/s) within the Truett Hurst enhancement reach, June 2022.**

# Truett Hurst Enhancement Reach



**Figure 61. Optimal hydraulic habitat for fry (<0.5 f/s, 0.5-2.0 ft) and parr (<0.5 f/s, 2.0-4.0 ft) within the Truett Hurst enhancement reach, June 2022.**

## Habitat Types and Shelter Values

**Table 35. Habitat, types, shelter value, percent cover, and shelter score for habitat units within the Truett Hurst enhancement reach, June 2022.**

Habitat Unit #	Habitat Type	Shelter Value	Percent Cover	Shelter Score
HU01	Pool	3	60	180
HU02	Riffle	3	15	45
HU03	Flatwater	3	30	90
HU04	Riffle	3	45	135
HU05	Pool	3	45	135
HU06	Riffle	1	5	5
HU07	Riffle	2	65	130
HU08	Flatwater	2	65	130
HU09	Flatwater	3	40	120
HU10	Riffle	3	50	150
HU11	Pool	3	35	105
HU12	Riffle	1	20	20
HU13	Pool	3	60	180
HU14	Flatwater	2	10	20
HU15	Flatwater	2	50	100
HU16	Riffle	2	70	140
HU17	Flatwater	3	90	270
HU18	Flatwater	3	70	210
HU19	Riffle	3	95	285
HU20	Alcove	3	80	240
HU21	Pool	3	70	210
HU22	Pool	3	75	225
HU23	Pool	3	65	195
<b>Pool: riffle</b>	<b>7:8 (0.88)</b>			<b>Avg = 144</b>



# Truett Hurst Enhancement Reach

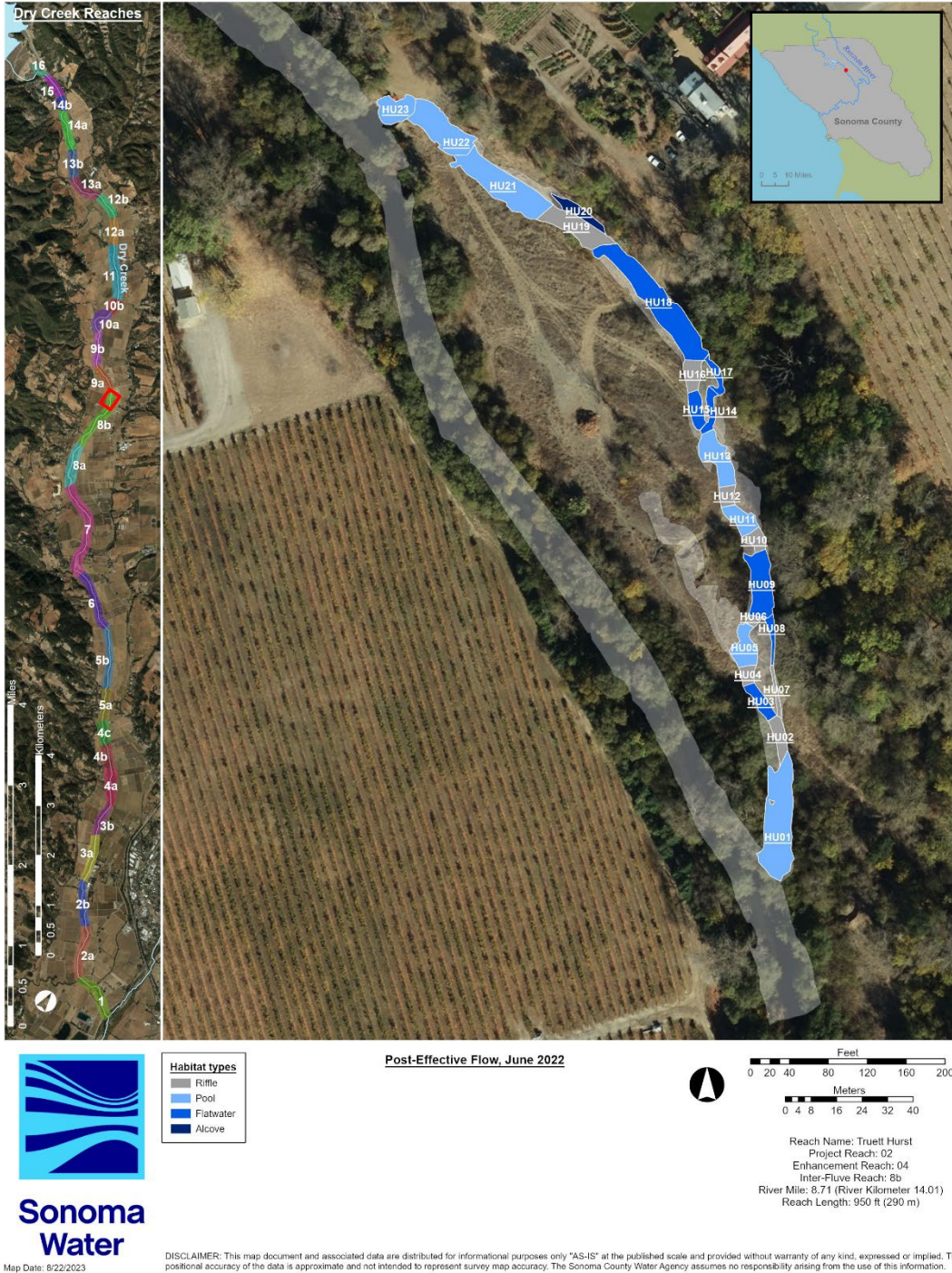


Figure 62. Habitat unit number and type within the Truett Hurst enhancement reach, June 2022.

# Truett Hurst Enhancement Reach

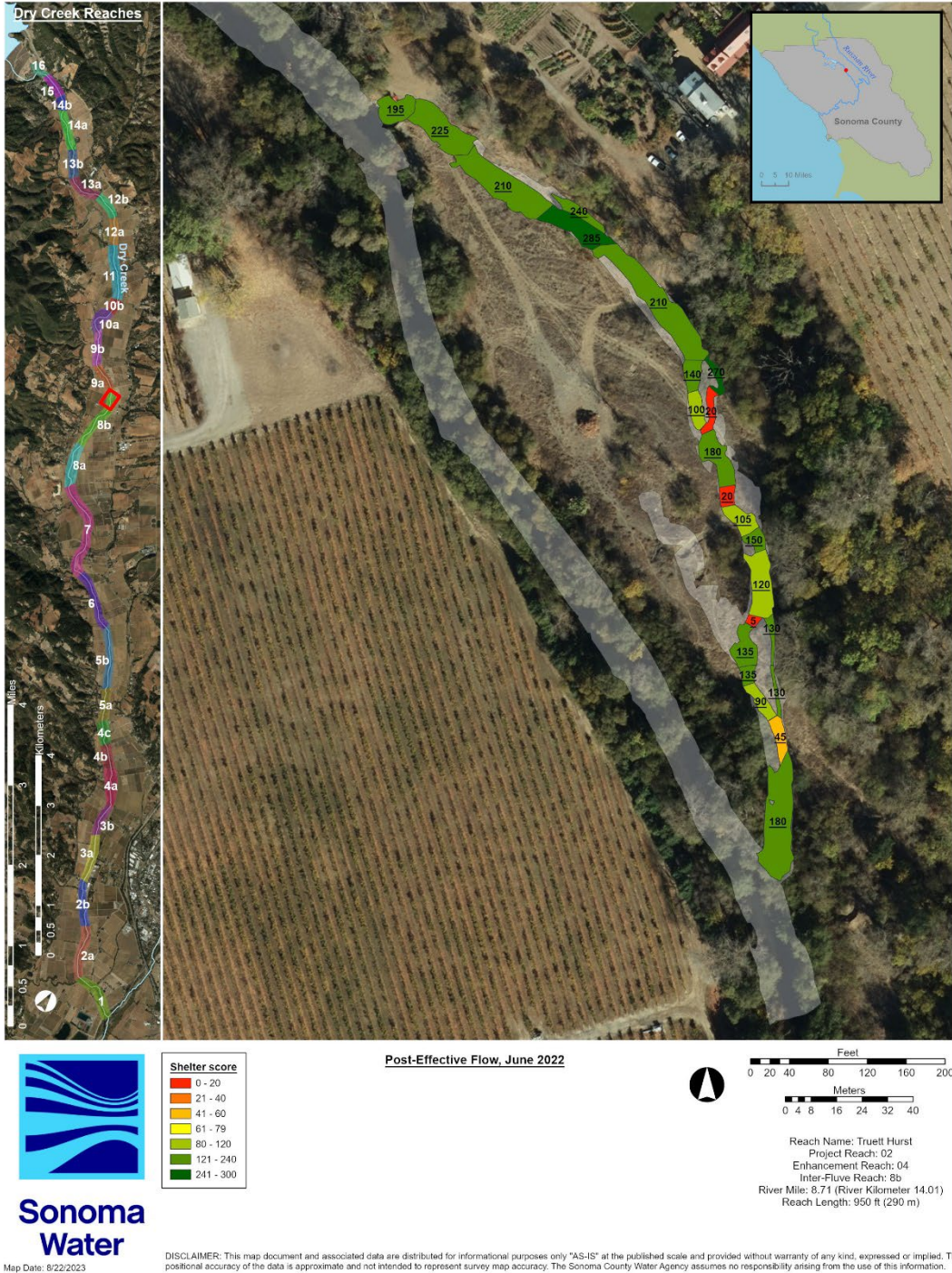


Figure 63. Habitat unit shelter scores within the Truett Hurst enhancement reach, June 2022.

## Feature, Habitat Unit, Site, and Reach Ratings

Table 36. Post-effective flow feature ratings for the Truett Hurst enhancement reach June 2022.

Project Reach		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Enhancement Reach		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Colloquial Name		TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH
mmddyy		60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122
Survey Type		PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF
PROJECT SITE NUMBER		1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
PROJECT FEATURE NUMBER		NA	S2-01	S2-02	S2-03	S2-04	S2-05	S2-06	S2-07	S2-08	S2-09	S2-10	S2-11	S2-12	S2-13	S2-14	S2-15	S2-16	S2-17	
Feature Type Code		NA	BCW	HW	HW	SCW	R	HW	SCW	SCW	HW	HW	HW	SCW	SCW	SCW	HW	HW	HW	HW
Habitat Unit		HU01_W	HU01	HU01	HU01	HU01	HU02	HU03	HU02_D	HU08	HU09	HU09	HU10	HU11	HU02_D	HU13	HU13	HU13	HU13	HU13
Habitat Type		Dry	Pool	Pool	Pool	Pool	Riffle	Flatwater	Dry	Flatwater	Flatwater	Flatwater	Riffle	Pool	Dry	Pool	Pool	Pool	Pool	Pool
4.	Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	NA	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	FAIR	FAIR	GOOD	GOOD	GOOD
5a	Are problems with the feature visible?	NA	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	YES	NO	YES	NO	YES	NO	NO	NO
6a	Is the feature still in its original location?	NA	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
6b	Is the feature still in its original position?	NA	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
6d	Is the feature still in its original orientaton?	NA	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
8.	If an objective, did the feature create the targeted instream habitat type?	NA	YES	YES	YES	YES	YES	YES	NO	YES	YES	YES	NO	NO	NO	NO	NO	YES	YES	YES
9.	Were there any unintended effects by the feature on the habitat type? If Y, comment.	NA	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO
17a	If an objective, did the feature increase instream shelter rating?	NA	YES	YES	YES	YES	YES	YES	NO	YES	YES	YES	NO	YES	NO	NO	YES	YES	YES	YES
19a	If an objective, did the feature increase LWD count in the habitat unit?	NA	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO
21a	If an objective, did the feature lead to the targeted channel conditions?	NA	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
25.	Did the feature achieve the targeted velocity?	NA	YES	YES	YES	YES	YES	YES	NO	YES	YES	YES	NO	YES	NO	YES	YES	YES	YES	YES
PROJECT FEATURE NUMBER		NA	S2-01	S2-02	S2-03	S2-04	S2-05	S2-06	S2-07	S2-08	S2-09	S2-10	S2-11	S2-12	S2-13	S2-14	S2-15	S2-16	S2-17	
4.	Structural condition of feature: EXCL (5 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)	0	4	4	4	4	4	4	4	4	4	4	4	4	3	3	4	4	4	4
5a	Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)	0	1	1	1	1	1	1	0	1	1	1	1	0	1	0	1	0	1	1
6a	Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1
6b	Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6d	Is the feature still in its original orientaton? (YES = 1 pt, NO = 0 pt)	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8.	If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)	0	1	1	1	1	1	1	0	1	1	1	0	0	0	0	1	1	1	1
9.	Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1
17a	If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)	0	1	1	1	1	1	1	0	1	1	1	0	1	0	0	1	1	1	1
19a	If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
21a	If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
25.	Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)	0	1	1	1	1	1	1	0	1	1	1	0	1	0	1	1	1	1	1
PROJECT FEATURE NUMBER		NA	S2-01	S2-02	S2-03	S2-04	S2-05	S2-06	S2-07	S2-08	S2-09	S2-10	S2-11	S2-12	S2-13	S2-14	S2-15	S2-16	S2-17	
FEATURE RATING	Feature quantitative rating out of 15	0	14	13	13	13	12	13	9	13	13	13	9	13	8	9	12	13	13	
	Feature qualitative rating Excellent (>=12), Good (>=9), Fair(>=6), Poor (>=3), Fail (<3)	Not rated	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Good	Excellent	Excellent	Excellent	Good	Excellent	Fair	Good	Excellent	Excellent	Excellent	

Table 36. Post-effective flow feature ratings for the Truett Hurst enhancement reach June 2022.

Project Reach	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Enhancement Reach	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Colloquial Name	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH
nmddy	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122
Survey Type	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF
PROJECT SITE NUMBER	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
PROJECT FEATURE NUMBER	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan
Feature Type Code	S2-18	S2-19	S2-20	S2-21	S2-22	S2-23	S2-24	S2-25	S2-26	S2-27	S2-28	S2-29	S2-30	S2-31	S2-32	S2-33	S2-34	S2-35	S2-35	
Habitat Unit	HW	R	HW	HW	FW	SCW	SCW	HW	R	HW	HW	HW	HW	FW	HW	FW	SCW	SCW	SCW	SCW
Habitat Type	HU14	HU15	HU17	HU02_D	HU02_D	HU02_D	HU02_D	HU02_D	HU02_D	HU02_D	HU02_D	HU02_D	HU02_D	HU02_D	HU02_D	HU02_D	HU02_D	HU02_D	HU02_D	HU02_D
4.	Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	GOOD	GOOD	GOOD	UNKN	UNKN	UNKN	UNKN	UNKN	UNKN	UNKN	GOOD	GOOD	UNKN	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
5a	Are problems with the feature visible?	NO	NO	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	NO	YES	NO	NO	NO
6a	Is the feature still in its original location?	YES	NO	YES	UNKN	UNKN	UNKN	UNKN	UNKN	UNKN	UNKN	YES	YES	UNKN	YES	YES	YES	YES	YES	YES
6b	Is the feature still in its original position?	YES	YES	YES	UNKN	UNKN	UNKN	UNKN	UNKN	UNKN	UNKN	NO	YES	UNKN	YES	YES	NO	YES	YES	YES
6d	Is the feature still in its original orientaton?	YES	YES	YES	UNKN	UNKN	UNKN	UNKN	UNKN	UNKN	UNKN	YES	YES	UNKN	YES	YES	YES	YES	YES	YES
8.	If an objective, did the feature create the targeted instream habitat type?	YES	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	YES	YES	NO	YES	YES	YES
9.	Were there any unintended effects by the feature on the habitat type? If Y, comment.	NO	NO	NO	YES	YES	YES	YES	YES	YES	YES	YES	NO	YES	NO	NO	YES	NO	YES	NO
17a	If an objective, did the feature increase instream shelter rating?	YES	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	YES	YES	NO	YES	NO	YES
19a	If an objective, did the feature increase LWD count in the habitat unit?	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO
21a	If an objective, did the feature lead to the targeted channel conditions?	YES	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	YES	YES	YES	YES	YES	YES
25.	Did the feature achieve the targeted velocity?	YES	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	YES	YES	YES	NO	YES	YES
PROJECT FEATURE NUMBER	S2-18	S2-19	S2-20	S2-21	S2-22	S2-23	S2-24	S2-25	S2-26	S2-27	S2-28	S2-29	S2-30	S2-31	S2-32	S2-33	S2-34	S2-35	S2-35	
4.	Structural condition of feature: EXCL (5 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)	4	4	4	0	0	0	0	0	0	0	4	4	0	4	4	4	4	4	4
5a	Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)	1	1	1	0	0	0	0	0	0	0	0	1	0	1	1	0	1	1	1
6a	Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)	1	0	1	0	0	0	0	0	0	0	1	1	0	1	1	1	1	1	1
6b	Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)	1	1	1	0	0	0	0	0	0	0	0	1	0	1	1	0	1	1	1
6d	Is the feature still in its original orientaton? (YES = 1 pt, NO = 0 pt)	1	1	1	0	0	0	0	0	0	0	1	1	0	1	1	1	1	1	1
8.	If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)	1	1	1	0	0	0	0	0	0	0	0	1	0	1	1	0	1	1	1
9.	Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)	1	1	1	0	0	0	0	0	0	0	0	1	0	1	1	0	1	1	1
17a	If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)	1	1	1	0	0	0	0	0	0	0	0	1	0	1	1	0	1	1	1
19a	If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
21a	If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)	1	1	1	0	0	0	0	0	0	0	0	1	0	1	1	1	1	1	1
25.	Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)	1	1	1	0	0	0	0	0	0	0	0	1	0	1	1	0	1	1	1
FEATURE RATING	Feature quantitative rating out of 15	13	12	13	0	0	0	0	0	0	0	6	13	0	13	13	8	13	13	
FEATURE RATING	Feature qualitative rating Excellent (>=12), Good (>=9), Fair(>=6), Poor (>=3), Fail (<3)	Excellent	Excellent	Excellent	Not rated	Not rated	Not rated	Not rated	Not rated	Not rated	Not rated	Fair	Excellent	Not rated	Excellent	Excellent	Fair	Excellent	Excellent	

Table 36. Post-effective flow feature ratings for the Truett Hurst enhancement reach June 2022.

Project Reach	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Enhancement Reach	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Colloquial Name	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH
nmddy	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122
Survey Type	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF
PROJECT SITE NUMBER	2	2	2	2	2	2	3	3	3	3	3	3	3	4	4	4	4	4	4	4
Project Site Type	SideChan	SideChan	SideChan	SideChan	SideChan	SC Alcove	SC Alcove	SC Alcove	SC Alcove	SC Alcove	SC Alcove	SC Alcove	SC Alcove	SC Alcove	SC Alcove	SC Alcove	SC Alcove	SC Alcove	SC Alcove	SC Alcove
PROJECT FEATURE NUMBER	S2-36	S2-37A	S2-37B	S2-37C	S2-38	S3-01	S3-02	S3-03	S3-04	S3-05	S3-06	S3-07	S4-01	S4-02	S4-03	S4-04	S4-05	S4-06	S4-06	S4-06
Feature Type Code	SCW	ISW	ISW	ISW	R	BCW	HW	BCW	HW	BCW	HW	FW	BCW	HW	HW	HW	HW	HW	HW	HW
Habitat Unit	HU22	HU02 D	HU23	HU23	HU23	HU05	HU03 D	HU03 D	HU03 D	HU03 D	HU03 D	HU03 D	HU04 D	HU04 D	HU04 D	HU18 3	HU04 D	HU18 3	HU04 D	HU18 3
Habitat Type	Pool	Dry	Pool	Pool	Pool	Pool	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Flatwater	Dry	Flatwater	Dry	Flatwater
4. Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	GOOD	GOOD	GOOD	GOOD	FAIL	GOOD	FAIR	UNKN	FAIR	UNKN	UNKN	UNKN	FAIR	UNKN	UNKN	GOOD	UNKN	GOOD	UNKN	GOOD
5a. Are problems with the feature visible?	NO	YES	NO	NO	YES	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO
6a. Is the feature still in its original location?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	UNK	UNK	YES	UNK	UNK	YES	UNK	UNK	YES
6b. Is the feature still in its original position?	YES	YES	YES	YES	YES	YES	YES	NO	NO	NO	NO	UNK	UNK	NO	UNK	UNK	YES	UNK	UNK	YES
6d. Is the feature still in its original orientaton?	YES	YES	YES	YES	YES	YES	YES	UNK	UNK	UNK	UNK	UNK	UNK	YES	UNK	UNK	YES	UNK	UNK	YES
8. If an objective, did the feature create the targeted instream habitat type?	YES	YES	YES	YES	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES
9. Were there any unintended effects by the feature on the habitat type? If Y, comment.	NO	NO	NO	NO	YES	NO	NO	YES	YES	YES	YES	YES	YES	NO	YES	YES	NO	YES	NO	NO
17a. If an objective, did the feature increase instream shelter rating?	YES	NO	YES	YES	YES	YES	YES	NO	NO	NO	NO	NO	NO	YES	NO	NO	YES	NO	NO	YES
19a. If an objective, did the feature increase LWD count in the habitat unit?	NO	YES	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
21a. If an objective, did the feature lead to the targeted channel conditions?	YES	YES	YES	YES	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	YES
25. Did the feature achieve the targeted velocity?	YES	NO	YES	YES	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES
PROJECT FEATURE NUMBER	S2-36	S2-37A	S2-37B	S2-37C	S2-38	S3-01	S3-02	S3-03	S3-04	S3-05	S3-06	S3-07	S4-01	S4-02	S4-03	S4-04	S4-05	S4-06	S4-06	S4-06
4. Structural condition of feature: EXCL (5 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)	4	4	4	4	1	4	3	0	3	0	0	0	3	0	0	4	0	4	0	4
5a. Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
6a. Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	0	0	1	0	0	1	0	1	0	1
6b. Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	0	1	0	1
6d. Is the feature still in its original orientaton? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	0	0	0	0	0	0	0	1	0	0	1	0	0	1
8. If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
9. Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)	1	1	1	1	0	1	0	0	0	0	0	0	1	0	0	0	1	0	0	1
17a. If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)	1	0	1	1	1	1	0	0	0	0	0	0	1	0	0	1	0	1	0	1
19a. If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21a. If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	1
25. Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
PROJECT FEATURE NUMBER	S2-36	S2-37A	S2-37B	S2-37C	S2-38	S3-01	S3-02	S3-03	S3-04	S3-05	S3-06	S3-07	S4-01	S4-02	S4-03	S4-04	S4-05	S4-06	S4-06	S4-06
Feature quantitative rating out of 15	13	11	14	14	5	13	7	1	4	1	0	0	7	0	0	10	0	13	0	13
Feature qualitative rating Excellent (>=12), Good (>=9), Fair(>=6), Poor (>=3), Fail (<3)	Excellent	Good	Excellent	Excellent	Poor	Excellent	Fair	Fail	Poor	Not rated	Not rated	Not rated	Fair	Not rated	Not rated	Good	Not rated	Excellent	Not rated	Excellent

Table 36. Post-effective flow feature ratings for the Truett Hurst enhancement reach June 2022.

Project Reach	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Enhancement Reach	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Colloquial Name	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH
mmdyyy	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122
Survey Type	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF
PROJECT SITE NUMBER	4	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
PROJECT FEATURE NUMBER	S4-07	S4-08	S5-01	S5-02	S5-03	S5-04	S5-05	S5-06	S5-07	S5-08	S5-09	S5-10	S5-11	S5-12	S5-13	S5-14	S5-15	S5-16	S5-16	
4. Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	UNKN	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
5a. Are problems with the feature visible?	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
6a. Is the feature still in its original location?	UNK	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
6b. Is the feature still in its original position?	UNK	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
6d. Is the feature still in its original orientaton?	UNK	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
8. If an objective, did the feature create the targeted instream habitat type?	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
9. Were there any unintended effects by the feature on the habitat type? If Y, comment.	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
17a. If an objective, did the feature increase instream shelter rating?	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
19a. If an objective, did the feature increase LWD count in the habitat unit?	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO
21a. If an objective, did the feature lead to the targeted channel conditions?	NO	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
25. Did the feature achieve the targeted velocity?	NO	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
PROJECT FEATURE NUMBER	S4-07	S4-08	S5-01	S5-02	S5-03	S5-04	S5-05	S5-06	S5-07	S5-08	S5-09	S5-10	S5-11	S5-12	S5-13	S5-14	S5-15	S5-16	S5-16	
4. Structural condition of feature: EXCL (5 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)	0	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
5a. Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6a. Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6b. Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6d. Is the feature still in its original orientaton? (YES = 1 pt, NO = 0 pt)	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8. If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
9. Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
17a. If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19a. If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
21a. If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
25. Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
PROJECT FEATURE NUMBER	S4-07	S4-08	S5-01	S5-02	S5-03	S5-04	S5-05	S5-06	S5-07	S5-08	S5-09	S5-10	S5-11	S5-12	S5-13	S5-14	S5-15	S5-16	S5-16	
FEATURE RATING	Feature quantitative rating out of 15		0	10	12	12	12	12	12	12	12	12	12	12	12	12	12	12	13	12
	Feature qualitative rating Excellent (>=12), Good (>=9), Fair(>=6), Poor (>=3), Fail (<3)		Not rated	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

Table 36. Post-effective flow feature ratings for the Truett Hurst enhancement reach June 2022.

Project Reach	2	2	2	2	2	2	2	2	2
Enhancement Reach	4	4	4	4	4	4	4	4	4
Colloquial Name	TH	TH	TH	TH	TH	TH	TH	TH	TH
mmddyy	60122	60122	60122	60122	60122	60122	60122	60122	60122
Survey Type	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF
PROJECT SITE NUMBER	5	5	5	5	5	5	5	5	5
PROJECT FEATURE NUMBER	S5-17	S5-18	S5-20	S5-21	S5-22	S5-23	S5-24	S5-25	S5-25
Feature Type Code	mental Large	ank Treatme	Willow Baffle	Willow Baffle	Willow Baffle	Willow Baffle	Willow Baffle	Willow Baffle	Willow Baffle
Habitat Unit	HU05 D	HU18 2	HU05 D	HU05 D	HU05 D	HU05 D	HU05 D	HU05 D	HU05 D
Habitat Type	Dry	Flatwater	Dry	Dry	Dry	Dry	Dry	Dry	Dry
4. Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	GOOD	GOOD	FAIR	FAIR	GOOD	GOOD	GOOD	GOOD	GOOD
5a. Are problems with the feature visible?	NO	NO	NO	NO	NO	NO	NO	NO	NO
6a. Is the feature still in its original location?	YES	YES	YES	YES	YES	YES	YES	YES	YES
6b. Is the feature still in its original position?	YES	YES	YES	YES	YES	YES	YES	YES	YES
6d. Is the feature still in its original orientaton?	YES	YES	YES	YES	YES	YES	YES	YES	YES
8. If an objective, did the feature create the targeted instream habitat type?	YES	YES	YES	YES	YES	YES	YES	YES	YES
9. Were there any unintended effects by the feature on the habitat type? If Y, comment.	NO	NO	NO	NO	NO	NO	NO	NO	NO
17a. If an objective, did the feature increase instream shelter rating?	YES	YES	NO	NO	NO	NO	NO	NO	NO
19a. If an objective, did the feature increase LWD count in the habitat unit?	YES	NO	NO	NO	NO	NO	NO	NO	NO
21a. If an objective, did the feature lead to the targeted channel conditions?	YES	YES	YES	YES	YES	YES	YES	YES	YES
25. Did the feature achieve the targeted velocity?	YES	YES	YES	YES	YES	YES	YES	YES	YES
PROJECT FEATURE NUMBER	S5-17	S5-18	S5-20	S5-21	S5-22	S5-23	S5-24	S5-25	S5-25
4. Structural condition of feature: EXCL (5 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)	4	4	3	3	4	4	4	4	4
5a. Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)	1	1	1	1	1	1	1	1	1
6a. Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1
6b. Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1
6d. Is the feature still in its original orientaton? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1
8. If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1
9. Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)	1	1	1	1	1	1	1	1	1
17a. If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)	1	1	0	0	0	0	0	0	0
19a. If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)	1	0	0	0	0	0	0	0	0
21a. If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1
25. Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1
PROJECT FEATURE NUMBER	S5-17	S5-18	S5-20	S5-21	S5-22	S5-23	S5-24	S5-25	S5-25
FEATURE RATING	Feature quantitative rating out of 15								
	14	13	11	11	12	12	12	12	12
	Feature qualitative rating								
	Excellent	Excellent	Good	Good	Excellent	Excellent	Excellent	Excellent	Excellent
	Excellent (>=12), Good (>=9), Fair(>=6), Poor (>=3), Fail (<3)								



# Truett Hurst Enhancement Reach

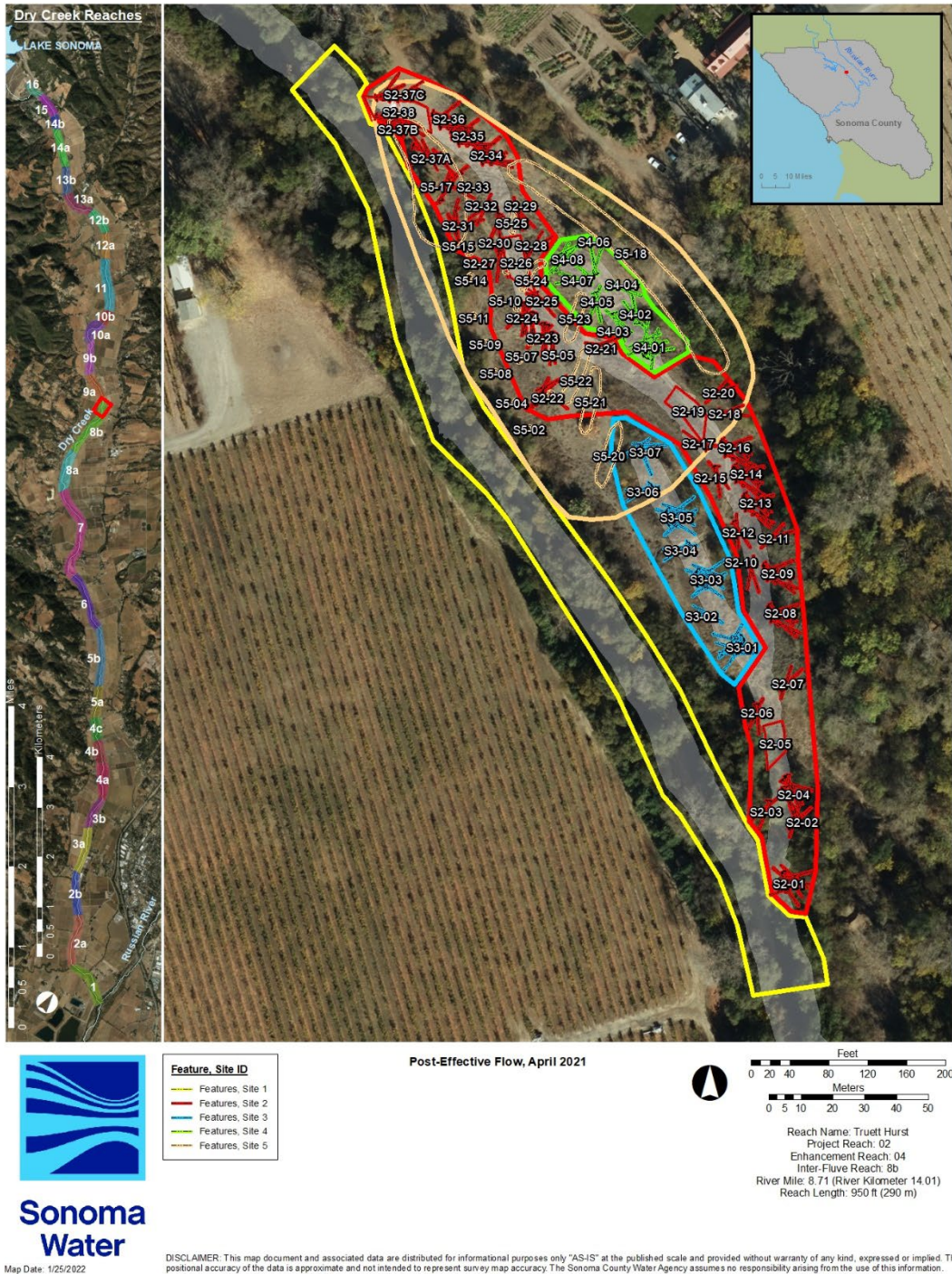


Figure 64. Enhancement sites and features within the Truett Hurst enhancement reach, June 2022.

# Truett Hurst Enhancement Reach

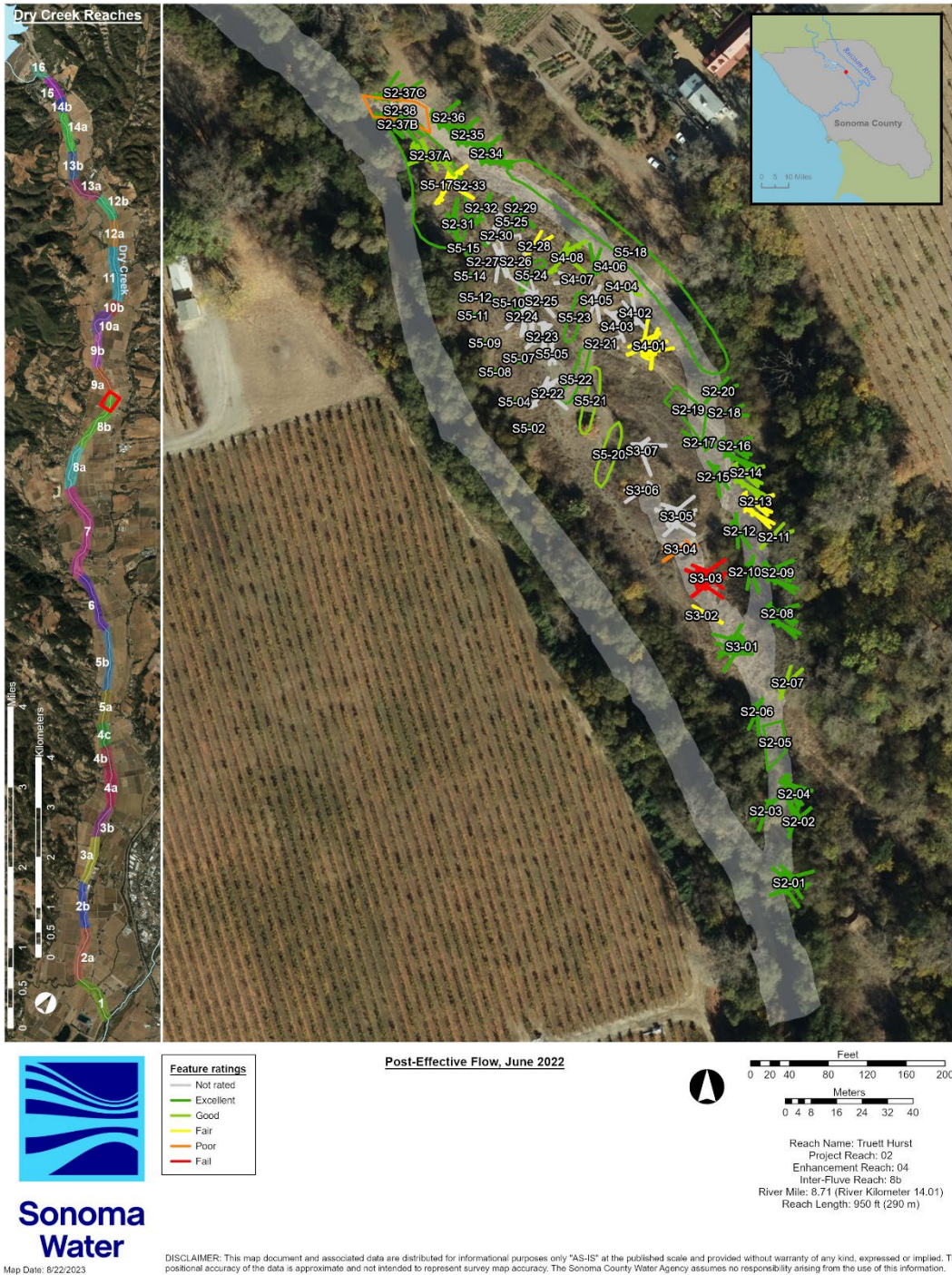


Figure 65. Feature ratings for the Truett Hurst enhancement reach, June 2022.

Table 37. Post-effective flow habitat unit ratings for the Truett Hurst enhancement reach June 2022.

Project Reach	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Enhancement Reach	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Colloquial Name	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH
mmddy	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122
Survey Type	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF
HABITAT UNIT NUMBER	HU01	HU02	HU03	HU04	HU05	HU06	HU07	HU08	HU09	HU10	HU11	HU12	HU13	HU14	HU03 D	HU15	HU16	HU17	HU18	
Habitat Type	Pool	Riffle	Flatwater	Riffle	Pool	Riffle	Riffle	Flatwater	Flatwater	Riffle	Pool	Riffle	Pool	Flatwater	Dry	Flatwater	Riffle	Flatwater	Flatwater	
PROJECT SITE NUMBER	2	2	2	2	3	2	2	2	2	2	2	2	2	2	2	3	2	2	2	
Project Site Type	SideChan	SideChan	SideChan	SideChan	SC Alcove	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SC Alcove	SideChan	SideChan	SideChan	SideChan	
11e	% Area of habitat unit within 0.5 -2.0 ft depth	65%	2%	77%	31%	59%	14%	0%	0%	72%	29%	48%	4%	60%	19%	0%	30%	3%	54%	73%
11f	% Area of habitat unit within 2.0 -4.0 ft depth	23%	0%	0%	0%	0%	0%	0%	0%	2%	0%	9%	0%	12%	0%	0%	0%	0%	0%	0%
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3	3	3	3	3	3	1	2	2	3	3	3	1	3	2	0	2	2	3	3
15.	Percent of habitat unit covered by shelter: %	60	15	30	45	45	5	65	65	40	50	35	20	60	10	0	50	70	90	70
17b	a. Calculate the shelter rating for the habitat unit: 0-300	180	45	90	135	135	5	130	130	120	150	105	20	180	20	0	100	140	270	210
28.	Percent of habitat unit within targeted velocity (see above): (%)	98%	26%	44%	23%	74%	30%	100%	100%	81%	40%	80%	26%	84%	59%	0%	50%	36%	91%	90%
36e	% habitat unit area where < 0.5 f/s; 0.5 to 2 ft and shelter criteria overlap	63%	0%	24%	2%	43%	4%	0%	0%	55%	12%	40%	1%	50%	12%	0%	17%	0%	48%	64%
36f	% habitat unit area where < 0.5 f/s; 2 to 4 ft and shelter criteria overlap	23%	0%	0%	0%	0%	0%	0%	0%	2%	0%	8%	0%	12%	0%	2%	0%	0%	0%	0%
HABITAT UNIT NUMBER	HU01	HU02	HU03	HU04	HU05	HU06	HU07	HU08	HU09	HU10	HU11	HU12	HU13	HU14	HU03 D	HU15	HU16	HU17	HU18	
11e	% area of hab unit within 0.5 -2.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	4	0	4	3	4	1	0	0	4	2	4	0	4	1	0	3	0	4	4
11f	% area of hab unit within 2.0 -4.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3 (3 = 5 pts; 2 = 4 pts, 1 = 3 pts, 0 = 0 pts)	5	5	5	5	5	3	4	4	5	5	3	5	4	0	4	4	5	5	5
15.	% hab unit covered by shelter (≥80 = 5pts; ≥60 = 4 pts; ≥40 = 3 pts; ≥20 = 2 pts; ≥10 = 1 pt; <10 = 0 pt)	4	1	2	3	3	0	4	4	3	3	2	4	1	0	3	4	5	4	4
17b	a. Calculate the shelter rating for the habitat unit: 0-300	5	1	3	4	4	0	4	4	4	5	4	0	5	0	0	4	5	5	5
28.	% area of hab unit within targeted velocity (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	4	2	4	2	4	3	4	4	4	4	2	4	4	0	4	3	4	4	4
36e	% area hab unit with < 0.5 f/s; 0.5 to 2 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	4	0	2	0	4	0	0	0	4	1	4	0	4	1	0	1	0	4	4
36f	% area hab unit with < 0.5 f/s; 2 to 4 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
HABITAT UNIT NUMBER	HU01	HU02	HU03	HU04	HU05	HU06	HU07	HU08	HU09	HU10	HU11	HU12	HU13	HU14	HU03 D	HU15	HU16	HU17	HU18	
HABITAT UNIT RATING	Habitat unit quantitative rating (out of 35)																			
	30	9	20	17	24	7	16	16	24	20	23	7	28	11	0	19	16	27	26	
	Habitat unit qualitative rating: Excellent (>=28), Good (>=21), Fair(>=14), Poor (>=7), Fail (<7)																			
	Excellent	Poor	Fair	Fair	Good	Poor	Fair	Fair	Good	Fair	Good	Poor	Excellent	Poor	Fail	Fair	Fair	Good	Good	

Table 37. Post-effective flow habitat unit ratings for the Truett Hurst enhancement reach June 2022.

Project Reach	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Enhancement Reach	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Colloquial Name	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH
mmddyy	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122	60122
Survey Type	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF
HABITAT UNIT NUMBER	HU19	HU20	HU21	HU22	HU22 2	HU23	HU01 W	HU05 2	HU14 2	HU15 2	HU16 2	HU17 2	HU18 2	HU19 2	HU18 3	HU19 3	HU20 2	HU21 2	HU23 2	HU23 2	
Habitat Type	Riffle	Alcove	Pool	Pool	Pool	Pool	Dry	Pool	Flatwater	Flatwater	Riffle	Flatwater	Flatwater	Riffle	Flatwater	Riffle	Alcove	Pool	Pool	Pool	
PROJECT SITE NUMBER	2	2	2	2	5	2	1	2	5	5	5	5	5	5	5	4	5	4	5	5	
Project Site Type	SideChan	SideChan	SideChan	SideChan	SC Bank FP	SideChan	MainChan	SideChan	SC Bank FP	SC Bank FP	SC Bank FP	SC Bank FP	SC Bank FP	SC Bank FP	SC Bank FP	SC Alcove	SC Alcove	SC Bank FP	SC Bank FP	SC Bank FP	
11e	% Area of habitat unit within 0.5 -2.0 ft depth	12%	75%	62%	55%	55%	64%	0%	59%	19%	30%	3%	54%	73%	12%	73%	12%	75%	62%	64%	
11f	% Area of habitat unit within 2.0 -4.0 ft depth	0%	1%	20%	31%	31%	21%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	20%	21%	
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3	3	3	3	3	3	3	0	3	2	2	2	3	3	3	3	3	3	3	3	
15.	Percent of habitat unit covered by shelter: %	95	80	70	75	75	65	0	45	10	50	70	90	70	95	70	95	80	70	65	
17b	a. Calculate the shelter rating for the habitat unit: 0-300	285	240	210	225	225	195	0	135	20	100	140	270	210	285	210	285	240	210	195	
28.	Percent of habitat unit within targeted velocity (see above): (%)	61%	57%	96%	100%	100%	94%	0%	74%	59%	50%	36%	91%	90%	61%	90%	61%	57%	96%	94%	
36e	% habitat unit area where < 0.5 f/s; 0.5 to 2 ft and shelter criteria overlap	4%	37%	58%	55%	55%	59%	0%	43%	12%	17%	0%	48%	64%	4%	64%	4%	37%	58%	59%	
36f	% habitat unit area where < 0.5 f/s; 2 to 4 ft and shelter criteria overlap	0%	0%	20%	31%	31%	21%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	20%	21%	
HABITAT UNIT NUMBER	HU19	HU20	HU21	HU22	HU22 2	HU23	HU01 W	HU05 2	HU14 2	HU15 2	HU16 2	HU17 2	HU18 2	HU19 2	HU18 3	HU19 3	HU20 2	HU21 2	HU23 2	HU23 2	
11e	% area of hab unit within 0.5 -2.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	1	4	4	4	4	4	0	4	1	3	0	4	4	1	4	1	4	4	4	
11f	% area of hab unit within 2.0 -4.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	0	2	3	3	2	0	0	0	0	0	0	0	0	0	0	0	2	2	
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3 (3 = 5 pts; 2 = 4 pts, 1 = 3 pts, 0 = 0 pts)	5	5	5	5	5	5	0	5	4	4	4	5	5	5	5	5	5	5	5	
15.	% hab unit covered by shelter (≥80 = 5pts; ≥60 = 4 pts; ≥40 = 3 pts; ≥20 = 2 pts; ≥10 = 1 pt; <10 = 0 pt)	5	5	4	4	4	4	0	3	1	3	4	5	4	5	4	5	5	4	4	
17b	a. Calculate the shelter rating for the habitat unit: 0-300	5	5	5	5	5	5	0	4	0	4	5	5	5	5	5	5	5	5	5	
28.	% area of hab unit within targeted velocity (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	4	4	4	4	4	4	0	4	4	4	3	4	4	4	4	4	4	4	4	
36e	% area hab unit with < 0.5 f/s; 0.5 to 2 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	3	4	4	4	4	0	4	1	1	0	4	4	0	4	0	3	4	4	
36f	% area hab unit with < 0.5 f/s; 2 to 4 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	0	2	3	3	2	0	0	0	0	0	0	0	0	0	0	0	2	2	
HABITAT UNIT NUMBER	HU19	HU20	HU21	HU22	HU22 2	HU23	HU01 W	HU05 2	HU14 2	HU15 2	HU16 2	HU17 2	HU18 2	HU19 2	HU18 3	HU19 3	HU20 2	HU21 2	HU23 2	HU23 2	
HABITAT UNIT RATING	Habitat unit quantitative rating (out of 35)																				
	20	26	30	32	32	30	0	24	11	19	16	27	26	20	26	20	26	30	30	30	
	Habitat unit qualitative rating: Excellent (>=28), Good (>=21), Fair(>=14), Poor (>=7), Fail (<7)																				
	Fair	Good	Excellent	Excellent	Excellent	Excellent	Not rated	Good	Poor	Fair	Fair	Good	Good	Fair	Good	Fair	Good	Excellent	Excellent	Excellent	

# Truett Hurst Enhancement Reach

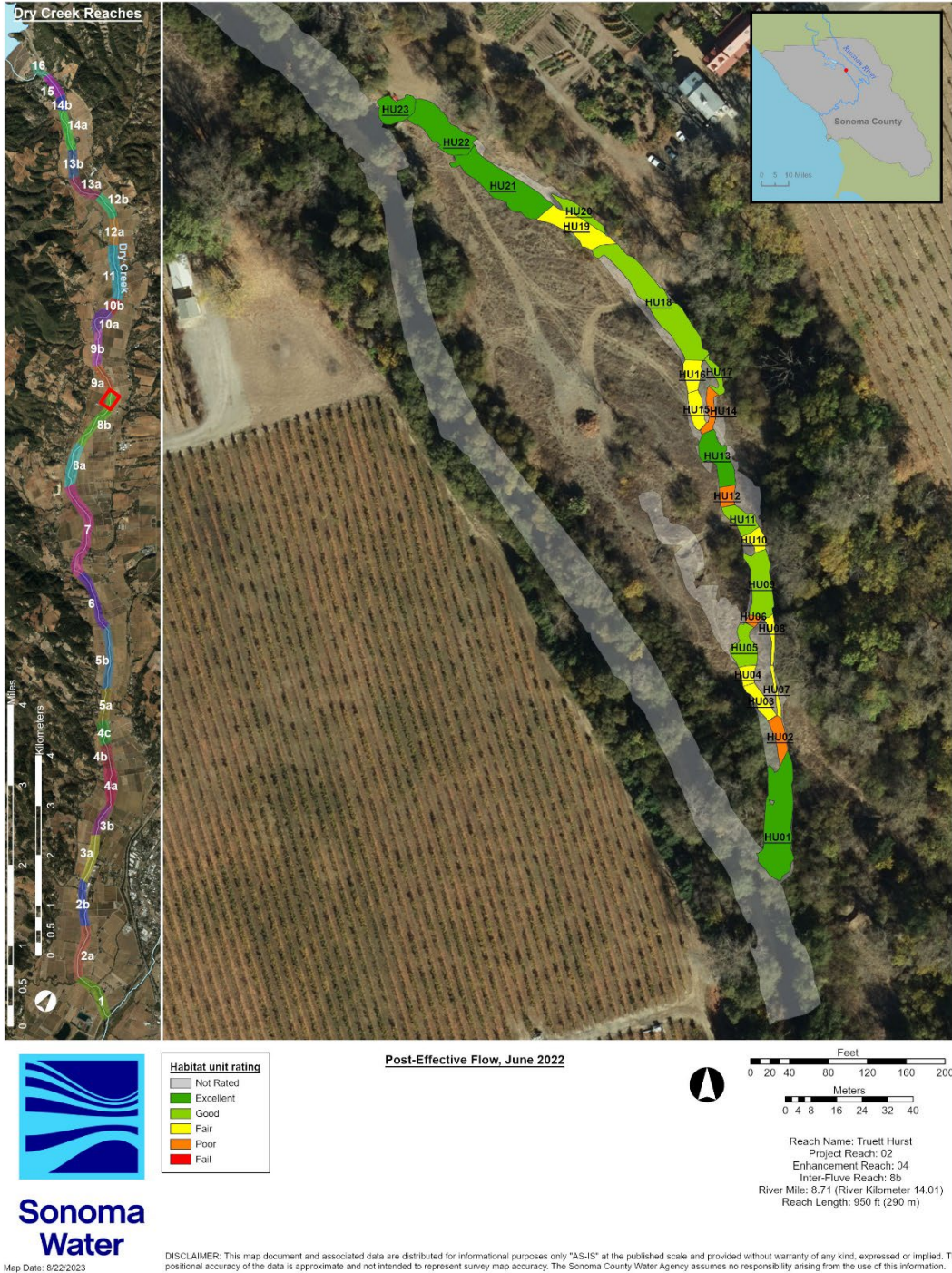


Figure 66. Habitat unit ratings for the Truett Hurst enhancement reach, June 2022.

Table 38. Post-effective flow average feature, average habitat unit, site, and reach ratings for the Truett Hurst enhancement reach, June 2022.

	Project Reach	2	2	2	2	2
	Enhancement Reach	4	4	4	4	4
	<b>ENHANCEMENT REACH NAME</b>	<b>TH</b>	<b>TH</b>	<b>TH</b>	<b>TH</b>	<b>TH</b>
	mmddy	60122	60122	60122	60122	60122
	Survey Type	PEF	PEF	PEF	PEF	PEF
	<b>PROJECT SITE NUMBER</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
	Project Site Type	MainChan	SideChan	SC Alcove	SC Alcove	SC Bank FP
	<b>PROJECT SITE NUMBER</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>SITE AVERAGE FEATURE RATING</b>	Site average feature quantitative rating (out of 15; bold indicates excluded from site rating)	0	12	6	10	12
	Site average feature qualitative rating Excellent (>=12), Good (>=9), Fair(>=6), Poor (>=3), Fail (<3), Not rated (not used to rate site)	Not rated	Good	Fair	Good	Excellent
	<b>PROJECT SITE NUMBER</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>SITE AVERAGE HABITAT UNIT RATING</b>	Site average habitat unit quantitative rating (out of 35; bold indicates excluded from site rating)	0	21	12	23	24
	Site average qualitative rating Excellent (>=28), Good (>=21), Fair(>=14), Poor (>=7), Fail (<7), Not rated (not used to rate site)	Not rated	Fair	Poor	Good	Good
	<b>PROJECT SITE NUMBER</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>SITE RATING</b>	Site quantitative rating (sum of site average feature and habitat unit ratings) (out of 50; bold indicates rating excludes feature or habitat unit rating and scoring out of 15 or 35)	0	33	18	33	36
	Site qualitative rating: Excellent (>=40), Good (>=30), Fair(>=20), Poor (>=10), Fail (<10)	Not rated	Good	Poor	Excellent	Excellent
	<b>ENHANCEMENT REACH NAME</b>	<b>TH</b>				
<b>ENHANCEMENT REACH RATING</b>	Enhancement reach quantitative rating (average of site ratings) (out of 50)	30				
	Enhancement reach qualitative rating: Excellent (>=40), Good (>=30), Fair(>=20), Poor (>=10), Fail (<10)	Good				

# Truett Hurst Enhancement Reach

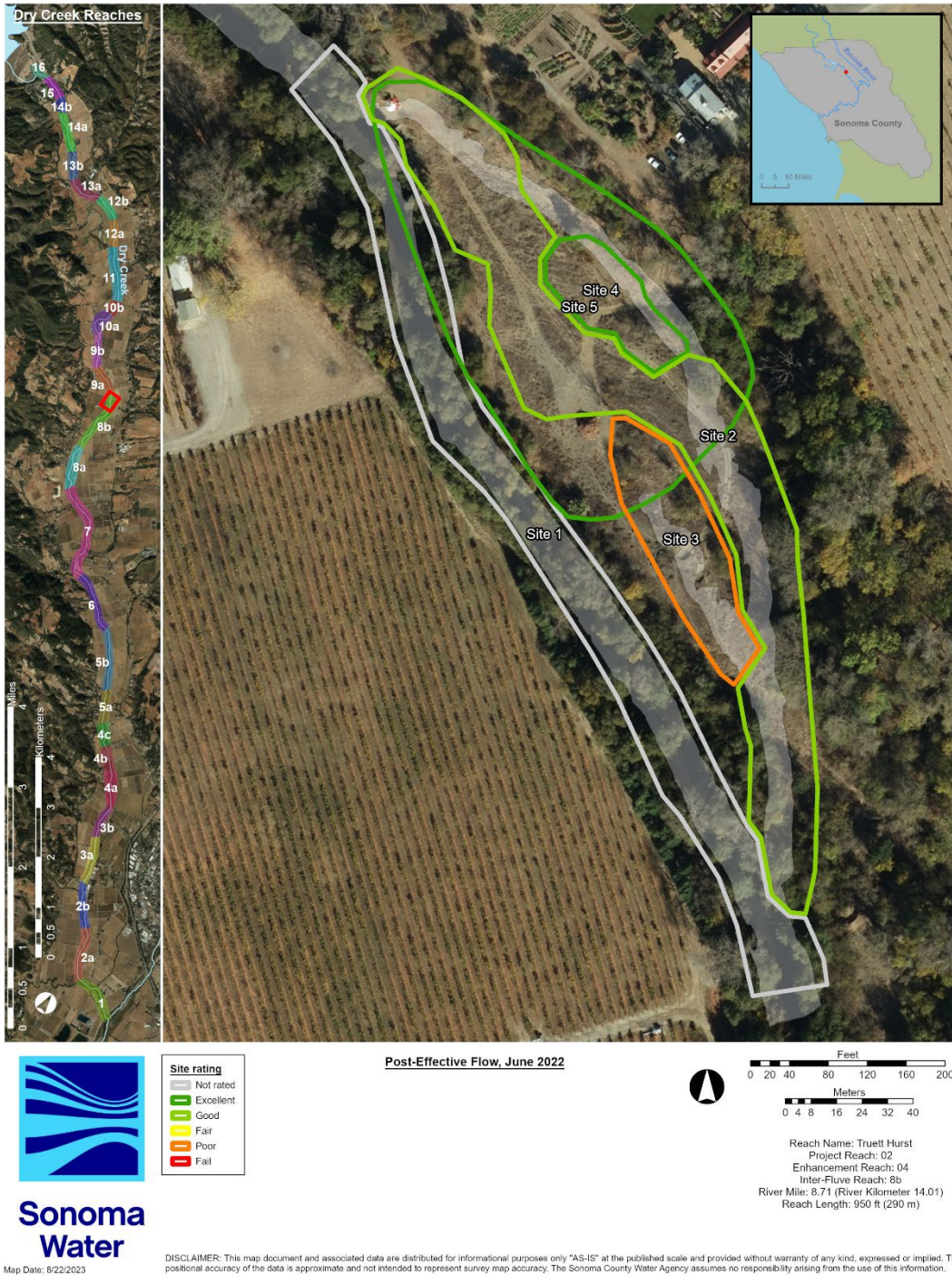


Figure 67. Post-effective flow site ratings for the Truett Hurst enhancement reach, June 2022.

# Truett Hurst Enhancement Reach

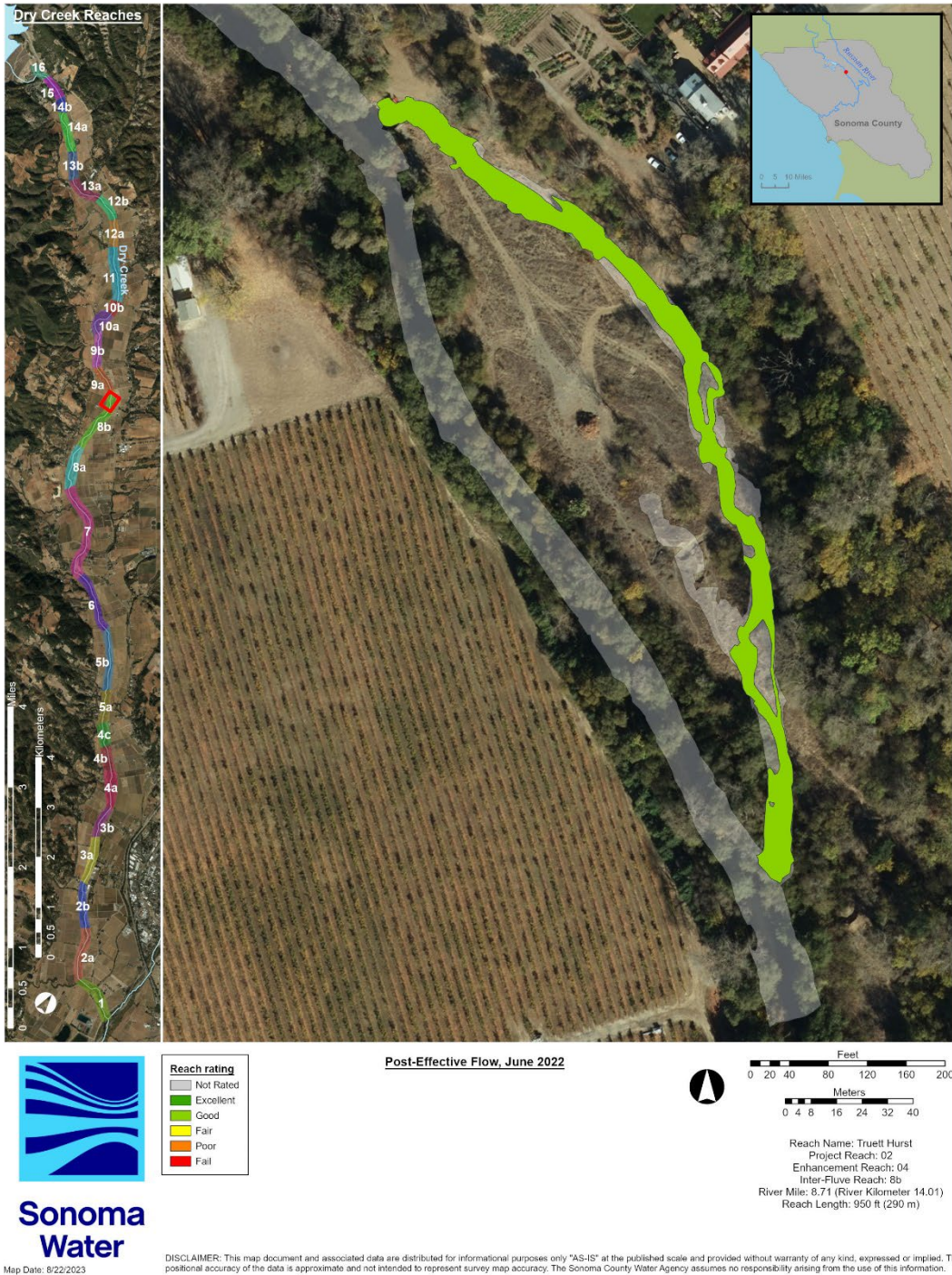


Figure 68. Post-effective flow reach rating for the Truett Hurst enhancement reach, June 2022.



## Feature and Habitat Unit Checklists











Table 39. Adaptive Management Plan targeted checklist for the Truett Hurst enhancement reach, June 2022.

Project Reach	2	2	2	2	2	2	2	2	2
Enhancement Reach	4	4	4	4	4	4	4	4	4
Colloquial Name	TH	TH	TH	TH	TH	TH	TH	TH	TH
mmddyy	60122	60122	60122	60122	60122	60122	60122	60122	60122
Survey Type	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF
Project Site Number	5	5	5	5	5	5	5	5	5
Project Site Type	SC Bank FP	SC Bank FP	SC Bank FP	SC Bank FP	SC Bank FP	SC Bank FP	SC Bank FP	SC Bank FP	SC Bank FP
Project Feature Number	S5-17	S5-18	S5-20	S5-21	S5-22	S5-23	S5-24	S5-25	
Feature Type Code	mental Large	ank Treatme	Willow Baffle	Willow Baffle	Willow Baffle	Willow Baffle	Willow Baffle	Willow Baffle	Willow Baffle
Habitat Unit	HU05_D	HU18_2	HU05_D	HU05_D	HU05_D	HU05_D	HU05_D	HU05_D	HU05_D
Habitat Type	Dry	Flatwater	Dry	Dry	Dry	Dry	Dry	Dry	Dry
4.	Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	GOOD	GOOD	FAIR	FAIR	GOOD	GOOD	GOOD	GOOD
5a	Are problems with the feature visible?	NO	NO	NO	NO	NO	NO	NO	NO
6a	Is the feature still in its original location?	YES	YES	YES	YES	YES	YES	YES	YES
6b	Is the feature still in its original position?	YES	YES	YES	YES	YES	YES	YES	YES
6d	Is the feature still in its original orientaton?	YES	YES	YES	YES	YES	YES	YES	YES
8.	If an objective, did the feature create the targeted instream habitat type?	YES	YES	YES	YES	YES	YES	YES	YES
9.	Were there any unintended effects by the feature on the habitat type? If Y, comment.	NO	NO	NO	NO	NO	NO	NO	NO
11e	% Area of habitat unit within 0.5 -2.0 ft depth	0%	73%	0%	0%	0%	0%	0%	0%
11f	% Area of habitat unit within 2.0 -4.0 ft depth	0%	0%	0%	0%	0%	0%	0%	0%
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3	0	3	0	0	0	0	0	0
15.	Percent of habitat unit covered by shelter: %	0	70	0	0	0	0	0	0
17a	If an objective, did the feature increase instream shelter rating?	YES	YES	NO	NO	NO	NO	NO	NO
17b	a. Calculate the shelter rating for the habitat unit: 0-300	0	210	0	0	0	0	0	0
19a	If an objective, did the feature increase LWD count in the habitat unit?	YES	NO	NO	NO	NO	NO	NO	NO
21a	If an objective, did the feature lead to the targeted channel conditions?	YES	YES	YES	YES	YES	YES	YES	YES
25.	Did the feature achieve the targeted velocity?	YES	YES	YES	YES	YES	YES	YES	YES
28.	Percent of habitat unit within targeted velocity (see above): (%)	0%	90%	0%	0%	0%	0%	0%	0%
36e	% habitat unit area where < 0.5 f/s; 0.5 to 2 ft and shelter criteria overlap	0%	64%	0%	0%	0%	0%	0%	0%
36f	% habitat unit area where < 0.5 f/s; 2 to 4 ft and shelter criteria overlap	0%	0%	0%	0%	0%	0%	0%	0%
	<b>FEATURE NUMBER</b>	<b>S5-17</b>	<b>S5-18</b>	<b>S5-20</b>	<b>S5-21</b>	<b>S5-22</b>	<b>S5-23</b>	<b>S5-24</b>	<b>S5-25</b>
	<b>HABITAT UNIT NUMBER</b>	<b>HU05_D</b>	<b>HU18_2</b>	<b>HU05_D</b>	<b>HU05_D</b>	<b>HU05_D</b>	<b>HU05_D</b>	<b>HU05_D</b>	<b>HU05_D</b>
	<b>SITE NUMBER</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>
	<b>ENHANCEMENT REACH NAME</b>	<b>TH</b>	<b>TH</b>	<b>TH</b>	<b>TH</b>	<b>TH</b>	<b>TH</b>	<b>TH</b>	<b>TH</b>
4.	Structural condition of feature: EXCL (5 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)	4	4	3	3	4	4	4	4
5a	Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)	1	1	1	1	1	1	1	1
6a	Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1
6b	Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1
6d	Is the feature still in its original orientaton? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1
8.	If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1
9.	Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)	1	1	1	1	1	1	1	1
11e	% area of hab unit within 0.5 -2.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	4	0	0	0	0	0	0
11f	% area of hab unit within 2.0 -4.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	0	0	0	0	0	0	0
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3 (3 = 5 pts; 2 = 4 pts, 1 = 3 pts, 0 = 0 pts)	0	5	0	0	0	0	0	0
15.	% hab unit covered by shelter (≥80 = 5pts; ≥60 = 4 pts; ≥40 = 3 pts; ≥20 = 2 pts; ≥10 = 1 pt; <10 = 0 pt)	0	4	0	0	0	0	0	0
17a	If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)	1	1	0	0	0	0	0	0
17b	a. Calculate the shelter rating for the habitat unit: 0-300	0	5	0	0	0	0	0	0
19a	If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)	1	0	0	0	0	0	0	0
21a	If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1
25.	Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1
28.	% area of hab unit within targeted velocity (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	4	0	0	0	0	0	0
36e	% area hab unit with < 0.5 f/s; 0.5 to 2 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	4	0	0	0	0	0	0
36f	% area hab unit with < 0.5 f/s; 2 to 4 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	0	0	0	0	0	0	0















Table 40. Adaptive Management Plan full checklist for the Truett Hurst enhancement reach, June 2022.

	Project Reach	2
	Enhancement Reach	4
	Colloquial Name	TH
	mmddyy	42121
	Survey Type	PEF
	Project Site Number	5
	Project Site Type	SC Bank FP
	Project Feature Number	S5-25
	Feature Type Code	Willow Baffle
	Habitat Unit	HU05 D
	Habitat Type	Dry
1.	Length of targeted treatment (ft)	50
2.	Width of targeted treatment: (ft)	5
3.	Estimate area of the targeted feature: (ft <sup>2</sup> )	250
4.	Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	GOOD
5a	Are problems with the feature visible?	NO
5b	Types: ANC, BBB, CRF, MAT, SHF, STR, SWA, UND, UNS, WSH, OTH, NON	NON
6a	Is the feature still in its original location?	YES
6b	Is the feature still in its original position?	YES
6c	If yes: LBK, MDC, RBK, SPN, OTH	OTH
6d	Is the feature still in its original orientation?	YES
6e	If yes: DNS, MUL, PRL, PRP, UPS, OTH	PRP
7.	Current level II habitat type: FLT, POO, RIF, DRY, ALC, OTH	DRY
8.	If an objective, did the feature create the targeted instream habitat type?	YES
9.	Were there any unintended effects by the feature on the habitat type? If Y, comment.	NO
10.	Mean water depth in habitat unit: ft	0.0
11a	Maximum water depth in habitat unit: ft	0.0
11b	Area of habitat unit within 0.5 -2.0 ft depth: (ft <sup>2</sup> )	0.0
11c	Area of habitat unit within 2.0 -4.0 ft depth: (ft <sup>2</sup> )	0.0
11d	Area of habitat unit within 0.5-4.0 ft depth: (ft <sup>2</sup> )	0.0
11e	% Area of habitat unit within 0.5 -2.0 ft depth	0%
11f	% Area of habitat unit within 2.0 -4.0 ft depth	0%
11g	% Area of habitat unit within 0.5-4.0 ft depth	0%
11h	If an objective, did the feature increase/decrease water depth in the treatment area?	NO
12a	Targeted depth or range (ft) in habitat unit	0.5-4.0
12b	Estimate area of feature within targeted depth or range ft <sup>2</sup> :	
13.	Were there any unintended effects of the feature on the water depth? If Y, comment.	NO
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3	0
15.	Percent of habitat unit covered by shelter: %	0
16a	1st dominant cover in habitat unit: BED, BOL, BUB, LWD, RTW, SWD, UCB, VEG, OTH	NON
16b	2nd dominant in habitat unit: BED, BOL, BUB, LWD, RTW, SWD, UCB, VEG, OTH	NON
17a	If an objective, did the feature increase instream shelter rating?	NO
17b	a. Calculate the shelter rating for the habitat unit: 0-300	0
18a	Large woody debris count in habitat unit: D >1', L 6-20'	0
18b	Large woody debris count in habitat unit: D >1', L >20'	0
19a	If an objective, did the feature increase LWD count in the habitat unit?	NO
19b	LWD recruitment mechanisms in habitat unit: ANC, EXC, EXH, INT, RPR, UNA, OTH	NR
20.	Current stream channel problems in the habitat unit: AGG, BRD, FLO, GRC, HDC, INC, NAR, SCU, STT, WID, NON, OTH	NON
21a	If an objective, did the feature lead to the targeted channel conditions?	YES
21b	Overall Offchannel Condition (site): AGG, FPD, GRC, INC, NAR, SIN, STB, TOG, WID, OTH	STB
21c	Outlet Conditions (site): AGG, FPD, GRC, INC, NAR, SIN, STB, TOG, WID, OTH	STB
21d	Inlet Conditions (site): AGG, FPD, GRC, INC, NAR, SIN, STB, TOG, WID, OTH	STB
22.	Were there any unintended effects on the stream channel at the feature? If Y, comment.	NO
23.	If an objective, did the feature decrease/increase velocity in the treatment area?	NA
24.	Targeted velocity/range in the habitat unit: (ft/sec)	0.5
25.	Did the feature achieve the targeted velocity?	YES
26a	Measured minimum velocity (ft/sec) in habitat unit	0
26b	Measured max velocity (ft/sec) in habitat unit	0.0
26c	Measured mean velocity (ft/sec) in habitat unit	0.0
27.	Area of habitat unit within targeted velocity: (ft <sup>2</sup> )	0.0
28.	Percent of habitat unit within targeted velocity (see above): (%)	0%
29.	Were there any unintended effects of feature on velocity? If Y, comment.	NO
30a	1st/2nd dominant substrate in habitat unit: BED, BOL, COB, GRV, SND, SLC, OTH	GRV
30b	2nd dominant substrate in habitat unit: BED, BOL, COB, GRV, SND, SLC, OTH	SND
31.	If an objective, did the feature achieve the targeted substrate composition?	YES
32.	% Canopy Measurement:	NR
33.	Photopoint data collected: YES/NO	NR
34.	Temperature Profile: YES/NO	NR
35.	Dissolved Oxygen Profile: YES/NO	NR
36a	Total habitat unit area where targeted depth, velocity and shelter criteria overlap	0.0
36b	Total habitat unit area where < 0.5 f/s; 0.5 to 2 ft and shelter criteria overlap	0.0
36c	Total habitat unit area where < 0.5 f/s; 2 to 4 ft and shelter criteria overlap	0.0
36d	% habitat unit area where targeted depth, velocity and shelter criteria overlap	0%
36e	% habitat unit area where < 0.5 f/s; 0.5 to 2 ft and shelter criteria overlap	0%
36f	% habitat unit area where < 0.5 f/s; 2 to 4 ft and shelter criteria overlap	0%
37.	Does this feature need: DEC, ENH, MNT, REP, NON, OTH	NON
38.	Are additional restoration treatments recommended at this site?	NO

**Farrow Wallace, October 2022**

## Depth and Velocity

**Table 41. Areas and percentages of wetted area, optimal depth and velocity, and optimal hydraulic habitat within the Farrow Wallace enhancement reach, October 2022.**

<b>Farrow Wallace, Post-effective flow, October 2022</b>	<b>Wetted area (ft<sup>2</sup>)</b>	<b>0.5 – 2.0 ft (ft<sup>2</sup>)</b>	<b>2.0 – 4.0 ft (ft<sup>2</sup>)</b>	<b>Total (ft<sup>2</sup>)</b>	<b>&lt; 0.5 ft/s (ft<sup>2</sup>)</b>	<b>0.5 – 2.0 ft, &lt; 0.5 ft/s (ft<sup>2</sup>)</b>	<b>2.0 – 4.0 ft, &lt; 0.5 ft/s (ft<sup>2</sup>)</b>	<b>Total (ft<sup>2</sup>)</b>
Main channel area	51,799	25,557	16,287	41,844	16,266	5,635	5,065	10,701
Main channel alcove area	13,536	5,042	6,031	11,073	9,602	3,714	3,743	7,457
Side channel area	13,600	5,794	5,102	10,895	12,450	5,196	4,568	9,764
<b>Total area</b>	<b>78,935</b>	<b>36,393</b>	<b>27,419</b>	<b>63,812</b>	<b>38,319</b>	<b>14,545</b>	<b>13,376</b>	<b>27,921</b>
Main channel % of wetted area	66%	49%	31%	81%	31%	11%	10%	21%
Main channel alcove % of wetted area	17%	37%	45%	82%	71%	27%	28%	55%
Side channel % of wetted area	17%	43%	38%	80%	92%	38%	34%	72%
<b>Total % of wetted area</b>	<b>100%</b>	<b>46%</b>	<b>35%</b>	<b>81%</b>	<b>49%</b>	<b>18%</b>	<b>17%</b>	<b>35%</b>



# Farrow, Wallace Enhancement Reach



Figure 69. Measured water depth within the Farrow Wallace enhancement reach, October 2022.

# Farrow, Wallace Enhancement Reach



Figure 70. Optimal water depth for fry (0.5-2.0 ft) and parr (2.0-4.0 ft) within the Farrow Wallace enhancement reach, October 2022.

# Farrow, Wallace Enhancement Reach

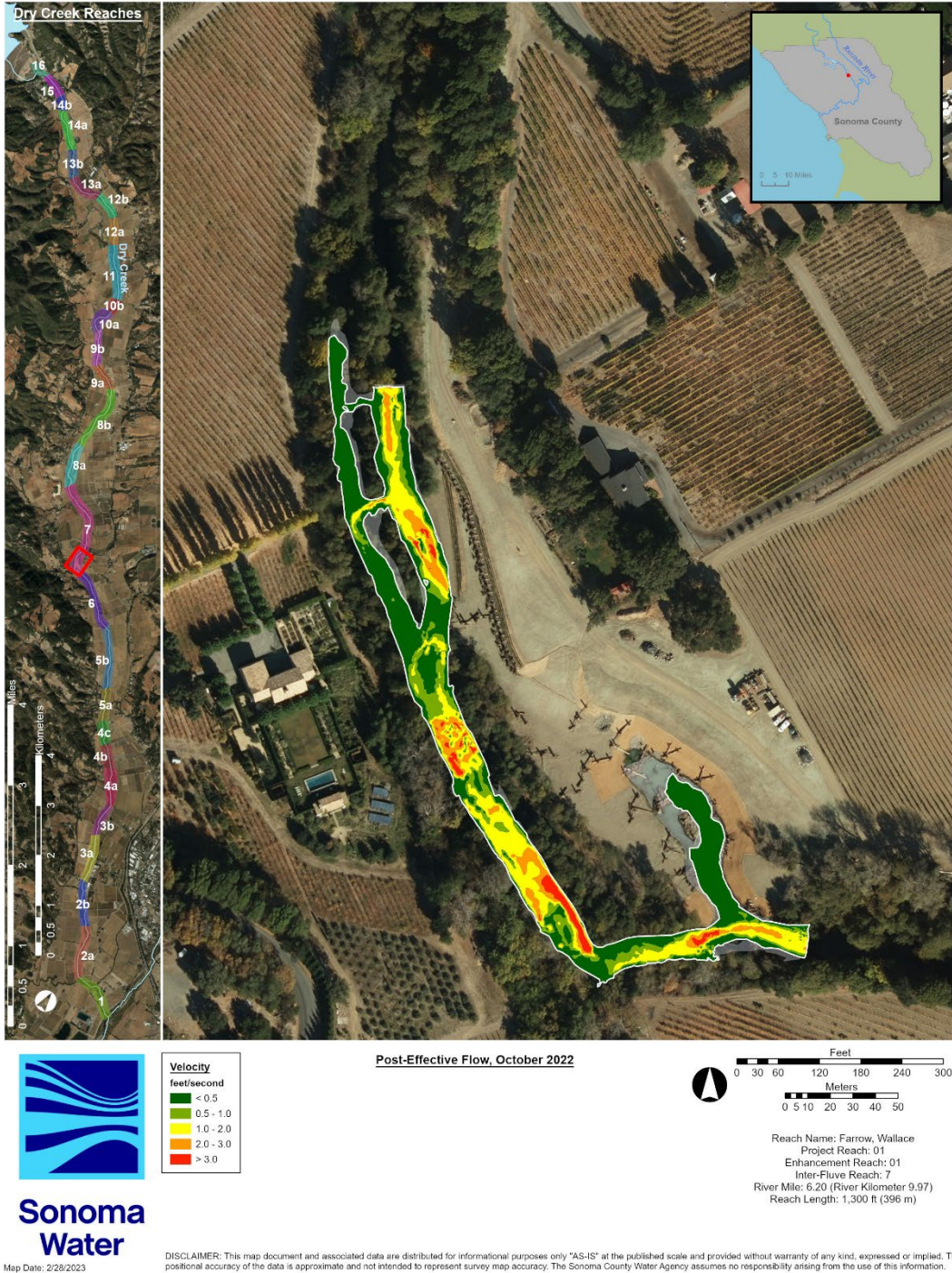


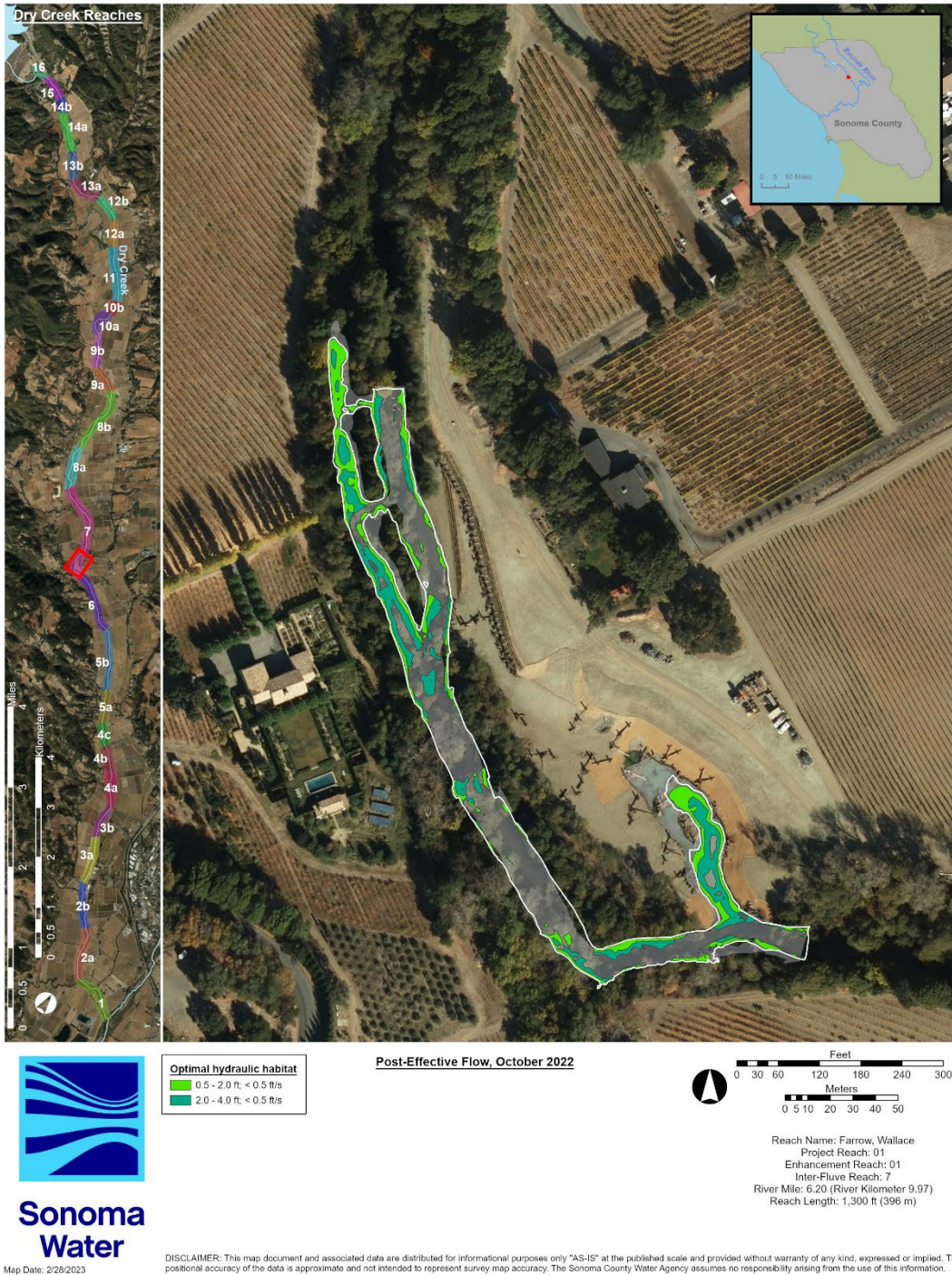
Figure 71. Measured water velocity within the Farrow Wallace enhancement reach, October 2022.

# Farrow, Wallace Enhancement Reach



**Figure 72. Optimal water velocity for fry and parr (< 0.5 ft/s) within the Farrow Wallace enhancement reach, October 2022.**

# Farrow, Wallace Enhancement Reach



**Figure 73. Optimal hydraulic habitat for fry (<0.5 ft/s, 0.5-2.0 ft) and parr (<0.5 ft/s, 2.0-4.0 ft) within the Farrow Wallace enhancement reach, October 2022.**

## Habitat Types and Shelter Values

**Table 42. Habitat, types, shelter value, percent cover, and shelter score for habitat units within the Farrow Wallace enhancement reach, October 2022.**

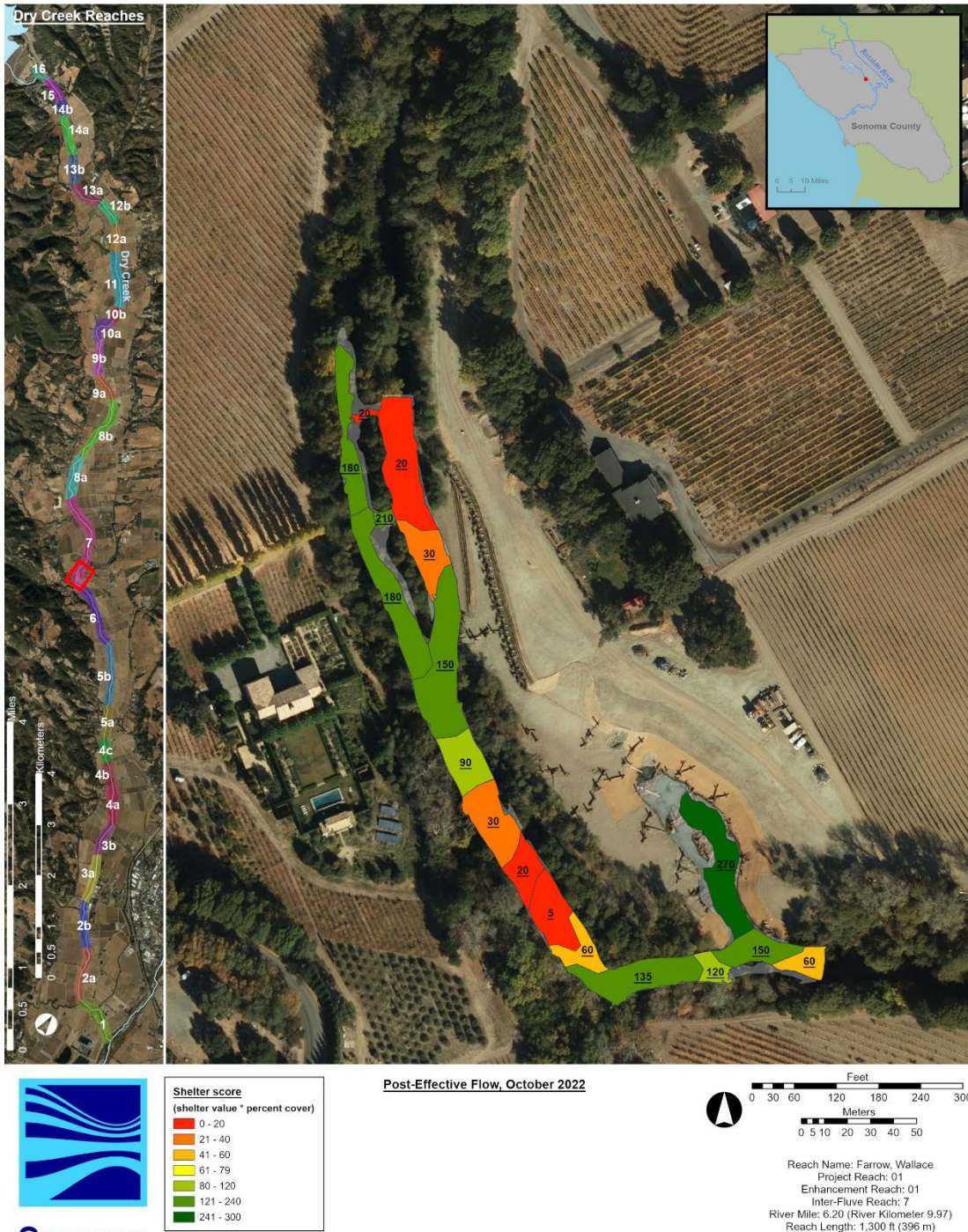
Habitat Unit #	Habitat Type	Shelter Value	Percent Cover	Shelter Score
HU01	Flatwater	2	30	60
HU02	Pool	3	50	150
HU03	Alcove	3	90	270
HU04	Riffle	3	40	120
HU05	Pool	3	45	135
HU06	Flatwater	2	30	60
HU07	Riffle	1	5	5
HU08	Flatwater	2	10	20
HU09	Pool	2	15	30
HU10	Riffle	2	45	90
HU11	Pool	3	50	150
HU12	Flatwater	3	60	180
HU13	Alcove	2	90	180
HU14	Riffle	2	15	30
HU15	Pool	2	10	20
HU16	Riffle	3	70	210
HU17	Riffle	2	10	20
<b>Pool: riffle</b>	<b>5:6 (0.83)</b>			<b>Avg = 102</b>

# Farrow, Wallace Enhancement Reach



**Figure 74. Habitat unit number and type within the Farrow Wallace enhancement reach, October 2022.**

# Farrow, Wallace Enhancement Reach



**Figure 75. Habitat unit shelter scores within the Farrow Wallace enhancement reach, October 2022.**



## Feature, Habitat Unit, Site, and Reach Ratings

Table 43. Post-effective flow feature ratings for the Farrow Wallace enhancement reach, October 2022.

Project Reach	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Enhancement Reach	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Colloquial Name	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW
nmddy	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422
Survey Type	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF
PROJECT SITE NUMBER	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Project Site Type	MC Alcove	MC Alcove	MC Alcove	MC Alcove	MC Alcove	MC Alcove	MC Alcove	MC Alcove	MC Alcove	MC Alcove	MC Alcove	MC Alcove	MC Alcove	MC Alcove	MC Alcove	MC Alcove	MC Alcove	MC Alcove	MC Alcove	MC Alcove
PROJECT FEATURE NUMBER	S1-01	S1-02	S1-03	S1-04	S1-05	S1-06	S1-07	S1-08	S1-09	S1-10	S1-11	S1-12	S1-13	S1-14	S1-15	S1-16	S1-17	S1-18	S1-18	
Feature Type Code	LWD	LWD	LWD	LWD	LWD	LWD	LWD	LWD	LWD	LWD	LWD	LWD	LWD	LWD	LWD	LWD	LWD	LWD	LWD	LWD
Habitat Unit	HU01 D	HU01 D	HU01 D	HU01 D	HU01 D	HU01 D	HU01 D	HU01 D	HU01 D	HU01 D	HU01 D	HU01 D	HU01 D	HU01 D	HU01 D	HU01 D	HU01 D	HU01 D	HU01 D	HU01 D
Habitat Type	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
4. Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
5a. Are problems with the feature visible?	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
6a. Is the feature still in its original location?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
6b. Is the feature still in its original position?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
6d. Is the feature still in its original orientaton?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
8. If an objective, did the feature create the targeted instream habitat type?	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	NO	YES	NO	YES	YES	YES	YES	YES	YES	YES
9. Were there any unintended effects by the feature on the habitat type? If Y, comment.	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES	NO	YES	NO	NO	NO	NO	NO	NO	NO
17a. If an objective, did the feature increase instream shelter rating?	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	NO	YES	NO	YES	YES	YES	YES	YES	YES	YES
19a. If an objective, did the feature increase LWD count in the habitat unit?	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
21a. If an objective, did the feature lead to the targeted channel conditions?	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	NO	NO	YES	YES	YES	YES	YES	YES	YES	YES
25. Did the feature achieve the targeted velocity?	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	NO	YES	NO	YES	YES	YES	YES	YES	YES	YES
PROJECT FEATURE NUMBER	S1-01	S1-02	S1-03	S1-04	S1-05	S1-06	S1-07	S1-08	S1-09	S1-10	S1-11	S1-12	S1-13	S1-14	S1-15	S1-16	S1-17	S1-18	S1-18	
4. Structural condition of feature: EXCL (5 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
5a. Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)	1	1	1	1	1	1	1	1	1	0	0	1	0	1	1	1	1	1	1	1
6a. Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6b. Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6d. Is the feature still in its original orientaton? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8. If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	0	0	1	0	1	1	1	1	1	1	1
9. Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)	1	1	1	1	1	1	1	1	1	0	0	1	0	1	1	1	1	1	1	1
17a. If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	0	0	1	0	1	1	1	1	1	1	1
19a. If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21a. If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1	1
25. Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	0	0	1	0	1	1	1	1	1	1	1
PROJECT FEATURE NUMBER	S1-01	S1-02	S1-03	S1-04	S1-05	S1-06	S1-07	S1-08	S1-09	S1-10	S1-11	S1-12	S1-13	S1-14	S1-15	S1-16	S1-17	S1-18	S1-18	
FEATURE RATING	Feature quantitative rating out of 15																			
	13	13	13	13	13	13	13	13	7	7	12	7	13	13	13	13	13	13	13	
	Feature qualitative rating Excellent (>=12), Good (>=9), Fair(>=6), Poor (>=3), Fail (<3)																			
	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Fair	Fair	Excellent	Fair	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	

Table 43. Post-effective flow feature ratings for the Farrow Wallace enhancement reach, October 2022.

Project Reach	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Enhancement Reach	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Colloquial Name	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW
mmddyy	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422
Survey Type	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF
PROJECT SITE NUMBER	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Project Site Type	MC Alcove	MC Alcove	MC Alcove	MC Alcove	MC Alcove	MC Alcove	MC Alcove	MC Alcove	MC Alcove	MC Alcove	MainChan	MainChan	MainChan	MainChan	MainChan	MainChan	MC Bank FP	MC Bank FP	MC Bank FP	MC Bank FP
PROJECT FEATURE NUMBER	S1-19	S1-20	S1-21	S1-22	S1-23	S1-24	S1-25	S1-26	S1-27	NA	S3-01	S3-02	S3-03	S3-04	S3-05	S4-01	S4-02	S4-03	S4-03	
Feature Type Code	LWD	LWD	Boulder field	LWD	LWD	LWD	LWD	LWD	LWD	NA	BC	BC	BC	BC	BC	LWD	LWD	LWD	LWD	LWD
Habitat Unit	HU03	HU02	HU01	HU01 D	HU01 D	HU01 D	HU01 D	HU01 D	HU01 D	HU04	HU15 W	HU15 W	HU15 W	HU15 W	HU15	HU15	HU02 D	HU02 D	HU02 D	HU02 D
Habitat Type	Alcove	Pool	Flatwater	Dry	Dry	Dry	Dry	Dry	Dry	Rifle	Pool	Pool	Pool	Pool	Pool	Dry	Dry	Dry	Dry	Dry
4. Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	GOOD	GOOD	GOOD	GOOD	GOOD	NR	NR	NR	NR	NR	NA	NR	NR	NR	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD
5a. Are problems with the feature visible?	NO	YES	YES	NO	NO	NR	NR	NR	NR	NR	NA	NR	NR	NR	NO	NO	NO	NO	NO	NO
6a. Is the feature still in its original location?	YES	YES	YES	YES	YES	NR	NR	NR	NR	NR	NA	NR	NR	NR	YES	YES	YES	YES	YES	YES
6b. Is the feature still in its original position?	YES	YES	YES	YES	YES	NR	NR	NR	NR	NR	NA	NR	NR	NR	YES	YES	YES	YES	YES	YES
6d. Is the feature still in its original orientaton?	YES	YES	YES	YES	YES	NR	NR	NR	NR	NR	NA	NR	NR	NR	YES	YES	YES	YES	YES	YES
8. If an objective, did the feature create the targeted instream habitat type?	YES	YES	YES	YES	YES	NR	NR	NR	NR	NR	NA	NR	NR	NR	YES	YES	YES	YES	YES	YES
9. Were there any unintended effects by the feature on the habitat type? If Y, comment.	NO	NO	NO	NO	NO	NR	NR	NR	NR	NR	NA	NR	NR	NR	NO	NO	NO	NO	NO	NO
17a. If an objective, did the feature increase instream shelter rating?	YES	YES	YES	YES	YES	NR	NR	NR	NR	NR	NA	NR	NR	NR	YES	YES	YES	YES	YES	YES
19a. If an objective, did the feature increase LWD count in the habitat unit?	NO	YES	NO	NO	NO	NR	NR	NR	NR	NR	NA	NR	NR	NR	NO	NO	NO	NO	NO	NO
21a. If an objective, did the feature lead to the targeted channel conditions?	YES	YES	YES	YES	YES	NR	NR	NR	NR	NR	NA	NR	NR	NR	YES	YES	YES	YES	YES	YES
25. Did the feature achieve the targeted velocity?	YES	YES	YES	YES	YES	NR	NR	NR	NR	NR	NA	NR	NR	NR	YES	YES	YES	YES	YES	YES
PROJECT FEATURE NUMBER	S1-19	S1-20	S1-21	S1-22	S1-23	S1-24	S1-25	S1-26	S1-27	NA	S3-01	S3-02	S3-03	S3-04	S3-05	S4-01	S4-02	S4-03	S4-03	
4. Structural condition of feature: EXCL (5 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)	4	4	4	4	4	0	0	0	0	0	0	0	0	0	4	4	4	4	4	4
5a. Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)	1	0	0	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
6a. Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
6b. Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
6d. Is the feature still in its original orientaton? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
8. If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
9. Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
17a. If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
19a. If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21a. If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
25. Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
PROJECT FEATURE NUMBER	S1-19	S1-20	S1-21	S1-22	S1-23	S1-24	S1-25	S1-26	S1-27	NA	S3-01	S3-02	S3-03	S3-04	S3-05	S4-01	S4-02	S4-03	S4-03	
FEATURE RATING	Feature quantitative rating out of 15																			
	13	13	12	13	13	0	0	0	0	0	0	0	0	0	13	13	13	13	13	13
	Feature qualitative rating Excellent (>=12), Good (>=9), Fair(>=6), Poor (>=3), Fail (<3)																			
	Excellent	Excellent	Excellent	Excellent	Excellent	Not rated	Not rated	Not rated	Not rated	Not rated	Not rated	Not rated	Not rated	Not rated	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

Table 43. Post-effective flow feature ratings for the Farrow Wallace enhancement reach, October 2022.

Project Reach	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Enhancement Reach	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Colloquial Name	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW
nmddy	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422
Survey Type	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF
PROJECT SITE NUMBER	5	5	5	5	5	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Project Site Type	MainChan	MainChan	MainChan	MainChan	MainChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan
PROJECT FEATURE NUMBER	S5-01	S5-02	S5-03	S5-04	S5-05	S6-01	S6-02	S6-03	S6-04	S6-05	S6-06	S6-07	S6-08	S6-09	S6-10	S6-11	S6-12	S6-13	S6-13	
Feature Type Code	TER	FLP	LWD	LWD	LWD	LWD	LWD	LWD	LWD	LWD	LWD	LWD	LWD	LWD	LWD	LWD	LWD	LWD	LWD	LWD
Habitat Unit	HU03 D	HU03 D	HU11	HU11	HU03 D	HU04 D	HU04 D	HU17	HU13	HU13	HU16	HU12	HU12	HU12	HU12	HU12	HU12	HU12	HU12	HU13
Habitat Type	Dry	Dry	Pool	Pool	Dry	Dry	Dry	Rifle	Alcove	Alcove	Rifle	Flatwater	Flatwater	Flatwater	Flatwater	Flatwater	Flatwater	Flatwater	Flatwater	Alcove
4. Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	FAIR	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	FAIR
5a. Are problems with the feature visible?	NO	NO	NO	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES
6a. Is the feature still in its original location?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
6b. Is the feature still in its original position?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
6d. Is the feature still in its original orientaton?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
8. If an objective, did the feature create the targeted instream habitat type?	YES	YES	YES	YES	YES	YES	NO	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO
9. Were there any unintended effects by the feature on the habitat type? If Y, comment.	NO	NO	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES
17a. If an objective, did the feature increase instream shelter rating?	YES	YES	YES	YES	YES	NO	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO
19a. If an objective, did the feature increase LWD count in the habitat unit?	NO	NO	YES	NO	NO	YES	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
21a. If an objective, did the feature lead to the targeted channel conditions?	YES	YES	YES	YES	YES	YES	NO	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO
25. Did the feature achieve the targeted velocity?	YES	YES	YES	YES	YES	YES	NO	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO
PROJECT FEATURE NUMBER	S5-01	S5-02	S5-03	S5-04	S5-05	S6-01	S6-02	S6-03	S6-04	S6-05	S6-06	S6-07	S6-08	S6-09	S6-10	S6-11	S6-12	S6-13	S6-13	
4. Structural condition of feature: EXCL (5 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)	4	4	4	4	4	4	4	3	4	4	4	4	4	4	4	4	4	4	3	
5a. Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	0	
6a. Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
6b. Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
6d. Is the feature still in its original orientaton? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
8. If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	0	
9. Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	0	
17a. If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	0	
19a. If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	
21a. If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	0	
25. Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	0	
PROJECT FEATURE NUMBER	S5-01	S5-02	S5-03	S5-04	S5-05	S6-01	S6-02	S6-03	S6-04	S6-05	S6-06	S6-07	S6-08	S6-09	S6-10	S6-11	S6-12	S6-13	S6-13	
FEATURE RATING	Feature quantitative rating out of 15																			
	13	13	14	13	13	13	7	8	13	13	13	13	13	13	13	13	13	13	6	
	Feature qualitative rating																			
	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Fair	Fair	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Fair	
	Excellent (>=12), Good (>=9), Fair(>=6), Poor (>=3), Fail (<3)																			

Table 43. Post-effective flow feature ratings for the Farrow Wallace enhancement reach, October 2022.

	Project Reach	1
	Enhancement Reach	1
	Colloquial Name	FW
	mmddy	100422
	Survey Type	PEF
	<b>PROJECT SITE NUMBER</b>	7
	Project Site Type	MainChan
	<b>PROJECT FEATURE NUMBER</b>	S7-01
	Feature Type Code	Constructed Riff
	Habitat Unit	HU10
	Habitat Type	Riff
4.	Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	GOOD
5a	Are problems with the feature visible?	NO
6a	Is the feature still in its original location?	YES
6b	Is the feature still in its original position?	YES
6d	Is the feature still in its original orientation?	YES
8.	If an objective, did the feature create the targeted instream habitat type?	YES
9.	Were there any unintended effects by the feature on the habitat type? If Y, comment.	NO
17a	If an objective, did the feature increase instream shelter rating?	YES
19a	If an objective, did the feature increase LWD count in the habitat unit?	NO
21a	If an objective, did the feature lead to the targeted channel conditions?	YES
25.	Did the feature achieve the targeted velocity?	YES
	<b>PROJECT FEATURE NUMBER</b>	<b>S7-01</b>
4.	Structural condition of feature: EXCL (5 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)	4
5a	Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)	1
6a	Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)	1
6b	Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)	1
6d	Is the feature still in its original orientation? (YES = 1 pt, NO = 0 pt)	1
8.	If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)	1
9.	Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)	1
17a	If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)	1
19a	If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)	0
21a	If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)	1
25.	Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)	1
	<b>PROJECT FEATURE NUMBER</b>	<b>S7-01</b>
<b>FEATURE RATING</b>	Feature quantitative rating out of 15	13
	Feature qualitative rating Excellent (>=12), Good (>=9), Fair(>=6), Poor (>=3), Fail (<3)	Excellent

# Farrow Wallace Enhancement Reach

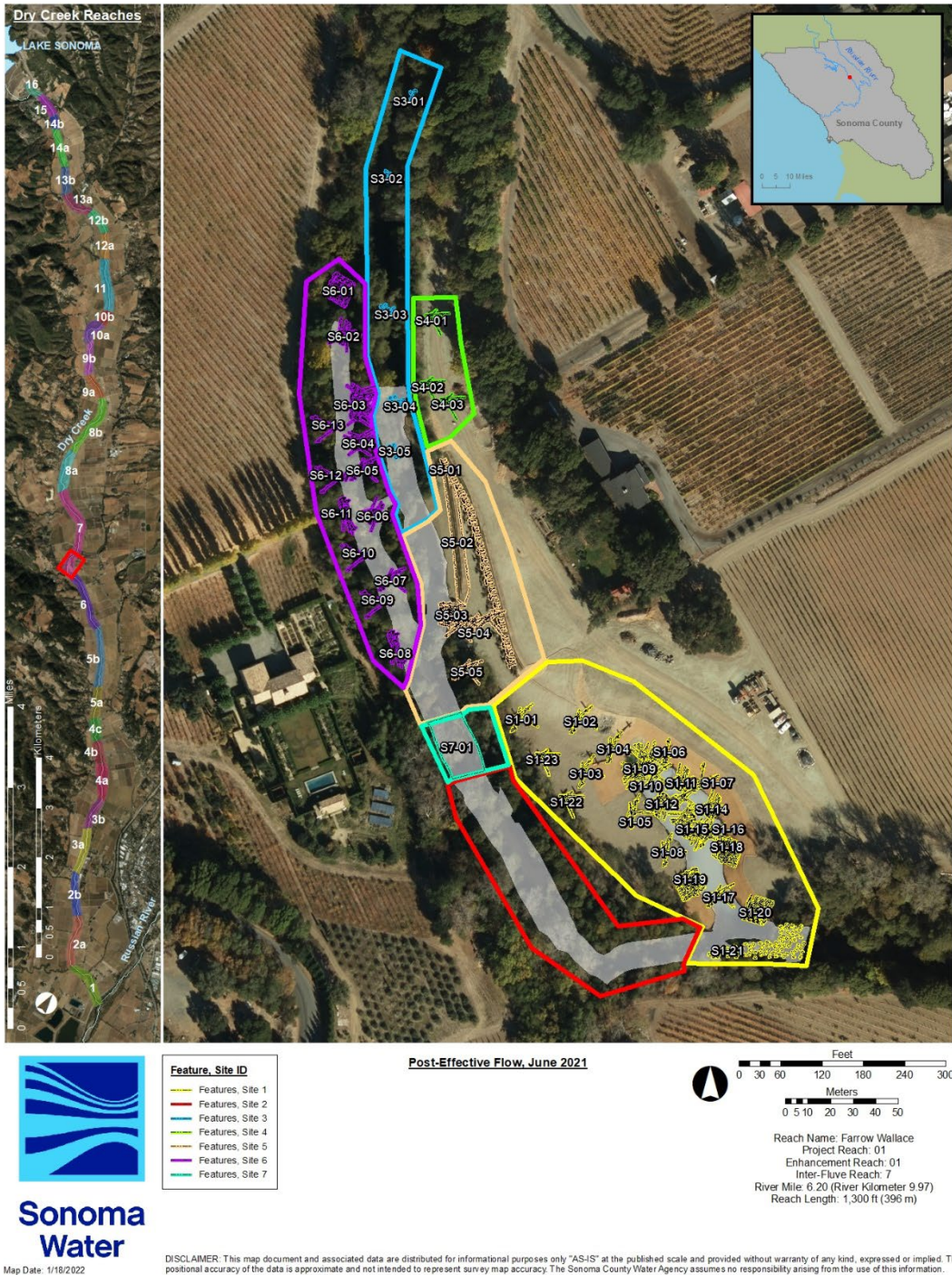
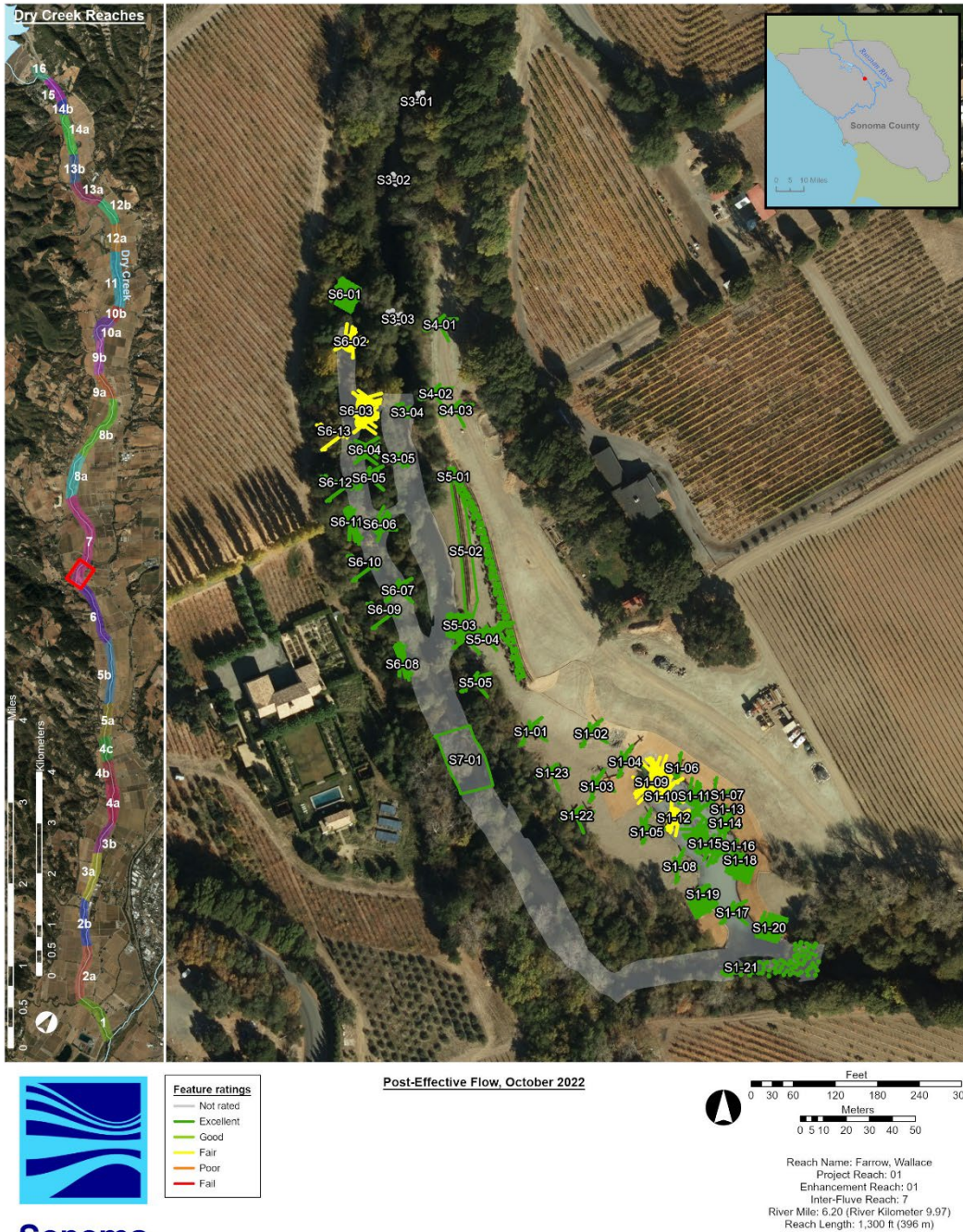


Figure 76. Enhancement sites and features within the Farrow Wallace enhancement reach, October 2022.

# Farrow, Wallace Enhancement Reach



**Sonoma Water**

Map Date: 2/28/2023

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**Figure 77. Feature ratings for the Farrow Wallace enhancement reach, October 2022. Gray = not rated, dark green = Excellent, light green = Good, yellow = Fair, orange = Poor, red = Fail.**

Table 44. Post-effective flow habitat unit ratings for the Farrow Wallace enhancement reach, October 2022.

Project Reach	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Enhancement Reach	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Colloquial Name	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW	FW
nmddyy	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422	100422
Survey Type	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF
HABITAT UNIT NUMBER	HU01	HU02	HU03	HU04	HU05	HU06	HU07	HU08	HU09	HU10	HU11	HU12	HU13	HU14	HU02 D	HU15	HU16	HU17	
Habitat Type	Flatwater	Pool	Alcove	Riffle	Pool	Flatwater	Riffle	Flatwater	Pool	Riffle	Pool	Flatwater	Alcove	Riffle	Dry	Pool	Riffle	Riffle	
PROJECT SITE NUMBER	1	1	1	2	2	2	2	2	2	2	2	5	6	6	5	4	3	6	6
Project Site Type	MC Alcove	MC Alcove	MC Alcove	MainChan	MainChan	MainChan	MainChan	MainChan	MainChan	MainChan	MainChan	SideChan	SideChan	MainChan	MC Bank F	MainChan	SideChan	SideChan	
11e	% Area of habitat unit within 0.5 -2.0 ft depth	63%	24%	37%	77%	24%	84%	47%	95%	53%	90%	27%	29%	59%	77%	0%	32%	76%	49%
11f	% Area of habitat unit within 2.0 -4.0 ft depth	30%	62%	40%	1%	48%	3%	0%	0%	39%	0%	48%	49%	27%	11%	0%	60%	0%	0%
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3	2	3	3	3	3	2	1	2	2	2	3	3	2	2	0	2	3	2
15.	Percent of habitat unit covered by shelter: %	30	50	90	40	45	30	5	10	15	45	50	60	90	15	0	10	70	10
17b	a. Calculate the shelter rating for the habitat unit: 0-300	60	150	270	120	135	60	5	20	30	90	150	180	180	30	0	20	210	20
28.	Percent of habitat unit within targeted velocity (see above): (%)	25%	38%	100%	33%	52%	25%	10%	9%	29%	6%	46%	88%	100%	23%	0%	35%	53%	100%
36e	% habitat unit area where < 0.5 f/s; 0.5 to 2 ft and shelter criteria overlap	18%	14%	37%	18%	16%	15%	0%	5%	10%	1%	12%	24%	59%	13%	0%	15%	30%	49%
36f	% habitat unit area where < 0.5 f/s; 2 to 4 ft and shelter criteria overlap	0%	19%	40%	0%	20%	2%	0%	0%	11%	0%	16%	42%	27%	1%	0%	14%	0%	0%
HABITAT UNIT NUMBER	HU01	HU02	HU03	HU04	HU05	HU06	HU07	HU08	HU09	HU10	HU11	HU12	HU13	HU14	HU02 D	HU15	HU16	HU17	
11e	% area of hab unit within 0.5 -2.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	4	2	3	4	2	4	4	4	4	2	4	4	4	0	3	4	4	
11f	% area of hab unit within 2.0 -4.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	3	4	4	0	4	0	0	3	0	4	4	2	1	0	4	0	0	
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3 (3 = 5 pts, 2 = 4 pts, 1 = 3 pts, 0 = 0 pts)	4	5	5	5	5	4	3	4	4	5	5	4	4	0	4	5	4	
15.	% hab unit covered by shelter (≥80 = 5pts; ≥60 = 4 pts; ≥40 = 3 pts; ≥20 = 2 pts; ≥10 = 1 pt; <10 = 0 pt)	2	3	5	3	3	2	0	1	1	3	4	5	1	0	1	4	1	
17b	a. Calculate the shelter rating for the habitat unit: 0-300	2	5	5	4	4	2	0	0	3	5	5	5	0	0	0	5	0	
28.	% area of hab unit within targeted velocity (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	2	3	4	3	4	2	1	0	2	0	4	4	4	2	0	3	4	
36e	% area hab unit with < 0.5 f/s; 0.5 to 2 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	1	1	3	1	1	1	0	0	1	0	1	2	4	1	0	1	4	
36f	% area hab unit with < 0.5 f/s; 2 to 4 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	1	4	0	2	0	0	1	0	1	4	2	0	0	1	0	0	
HABITAT UNIT RATING	HU01	HU02	HU03	HU04	HU05	HU06	HU07	HU08	HU09	HU10	HU11	HU12	HU13	HU14	HU02 D	HU15	HU16	HU17	
	Habitat unit quantitative rating (out of 35)	18	24	33	20	25	15	8	9	16	14	25	30	30	13	0	17	25	17
	Habitat unit qualitative rating: Excellent (>=28), Good (>=21), Fair(>=14), Poor (>=7), Fail (<7)	Fair	Good	Excellent	Fair	Good	Fair	Poor	Poor	Fair	Fair	Good	Excellent	Excellent	Poor	Not rated	Fair	Good	Fair



# Farrow, Wallace Enhancement Reach

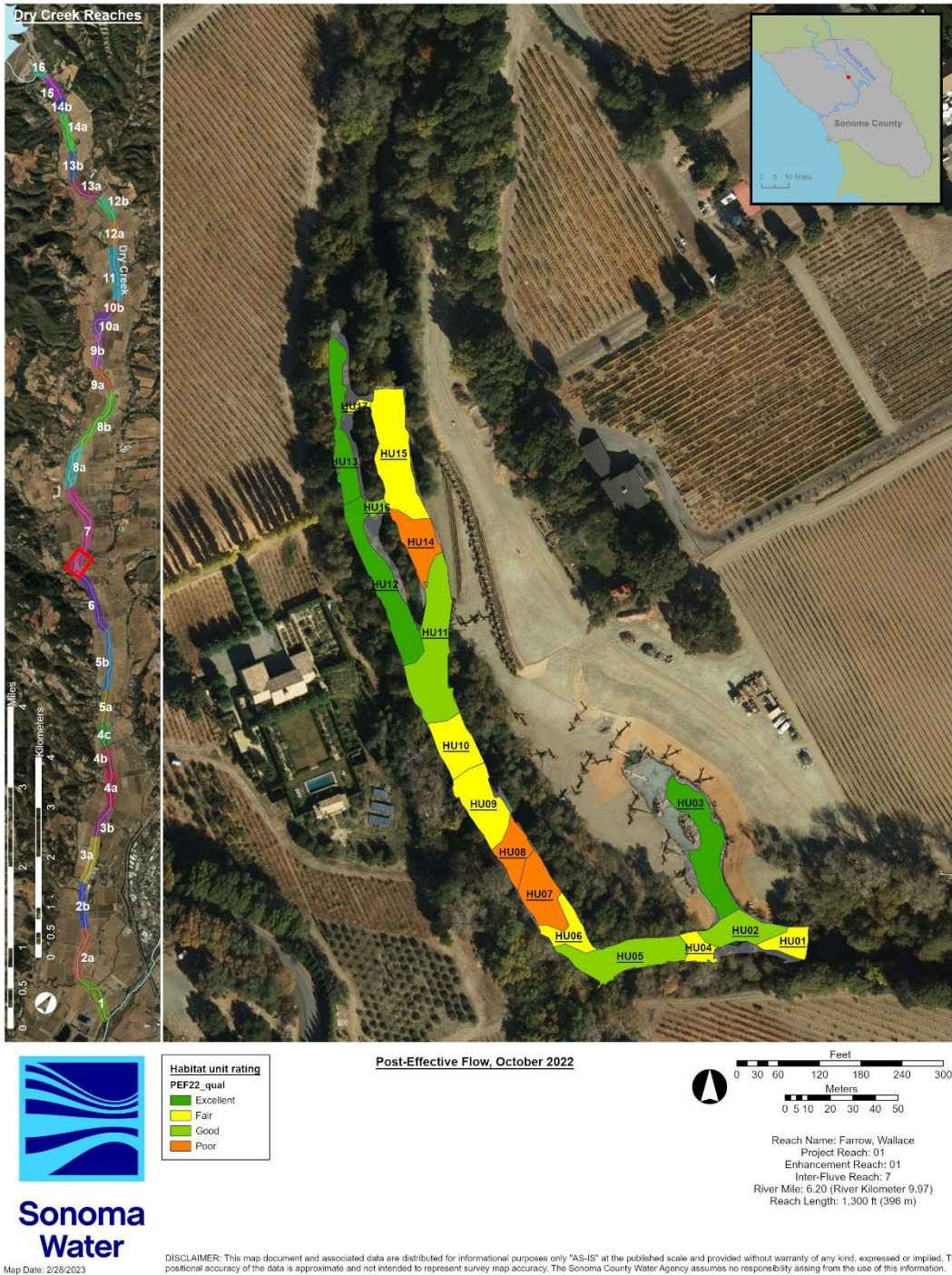


Figure 78. Habitat unit ratings for the Farrow Wallace enhancement reach, October 2022.

Table 45. Post-effective flow average feature, average habitat unit, site, and reach ratings for the Farrow Wallace enhancement reach, October 2022.

	Project Reach	1	1	1	1	1	1	1
	Enhancement Reach	1	1	1	1	1	1	1
	<b>ENHANCEMENT REACH NAME</b>	<b>FW</b>	<b>FW</b>	<b>FW</b>	<b>FW</b>	<b>FW</b>	<b>FW</b>	<b>FW</b>
	mmdyy	100422	100422	100422	100422	100422	100422	100422
	Survey Type	PEF	PEF	PEF	PEF	PEF	PEF	PEF
	<b>PROJECT SITE NUMBER</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
	Project Site Type	MC Alcove	MainChan	MainChan	MC Bank FP	MainChan	SideChan	MainChan
	<b>PROJECT SITE NUMBER</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>SITE AVERAGE FEATURE RATING</b>	Site average feature quantitative rating (out of 15; bold indicates excluded from site rating)	12	0	13	13	13	12	13
	Site average feature qualitative rating Excellent (>=12), Good (>=9), Fair(>=6), Poor (>=3), Fail (<3), Not rated (not used to rate site)	Excellent	Not rated	Excellent	Excellent	Excellent	Good	Excellent
	<b>PROJECT SITE NUMBER</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>SITE AVERAGE HABITAT UNIT RATING</b>	Site average habitat unit quantitative rating (out of 35; bold indicates excluded from site rating)	25	16	17	0	19	26	14
	Site average qualitative rating Excellent (>=28), Good (>=21), Fair(>=14), Poor (>=7), Fail (<7), Not rated (not used to rate site)	Good	Fair	Fair	Not rated	Fair	Good	Fair
	<b>PROJECT SITE NUMBER</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
<b>SITE RATING</b>	Site quantitative rating (sum of site average feature and habitat unit ratings) (out of 50; bold indicates rating excludes feature or habitat unit rating and scoring out of 15 or 35)	37	16	30	13	32	37	27
	Site qualitative rating: Excellent (>=40,28,12), Good (>=30,21,9), Fair(>=20,14,6), Poor (>=10,7,3), Fail (<10,7,3)	Good	Fair	Good	Excellent	Excellent	Excellent	Excellent
	<b>ENHANCEMENT REACH NAME</b>	<b>FW</b>						
<b>ENHANCEMENT REACH RATING</b>	Enhancement reach quantitative rating (average of site ratings) (out of 43)	27						
	Enhancement reach qualitative rating: Excellent (>=34), Good (>=26), Fair(>=17), Poor (>=9), Fail (<9)	Good						

# Farrow, Wallace Enhancement Reach



**Figure 79. Post-effective flow site ratings for the Farrow Wallace enhancement reach, October 2022.**

# Farrow, Wallace Enhancement Reach



Figure 80. Post-effective flow reach rating for the Farrow Wallace enhancement reach, October 2022.

## Feature and Habitat Unit Checklists









Table 46. Adaptive Management Plan targeted checklist for the Farrow Wallace enhancement reach, October 2022.

Project Reach	1	1	1	1	1	1	1
Enhancement Reach	1	1	1	1	1	1	1
Colloquial Name	FW	FW	FW	FW	FW	FW	FW
mmddyy	100422	100422	100422	100422	100422	100422	100422
Survey Type	PEF	PEF	PEF	PEF	PEF	PEF	PEF
Project Site Number	6	6	6	6	6	6	7
Project Site Type	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	MainChan
Project Feature Number	S6-08	S6-09	S6-10	S6-11	S6-12	S6-13	S7-01
Feature Type Code	LWD	LWD	LWD	LWD	LWD	LWD	Constructed Ri
Habitat Unit	HU12	HU12	HU12	HU12	HU12	HU13	HU10
Habitat Type	Flatwater	Flatwater	Flatwater	Flatwater	Flatwater	Alcove	Riffle
4. Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	GOOD	GOOD	GOOD	GOOD	GOOD	FAIR	GOOD
5a. Are problems with the feature visible?	NO	NO	NO	NO	NO	YES	NO
6a. Is the feature still in its original location?	YES	YES	YES	YES	YES	YES	YES
6b. Is the feature still in its original position?	YES	YES	YES	YES	YES	YES	YES
6d. Is the feature still in its original orientaton?	YES	YES	YES	YES	YES	YES	YES
8. If an objective, did the feature create the targeted instream habitat type?	YES	YES	YES	YES	YES	NO	YES
9. Were there any unintended effects by the feature on the habitat type? If Y, comment.	NO	NO	NO	NO	NO	YES	NO
11e. % Area of habitat unit within 0.5 -2.0 ft depth	29%	29%	29%	29%	29%	59%	90%
11f. % Area of habitat unit within 2.0 -4.0 ft depth	49%	49%	49%	49%	49%	27%	0%
14. Instream shelter value in the habitat unit: 0, 1, 2, 3	3	3	3	3	3	2	2
15. Percent of habitat unit covered by shelter: %	60	60	60	60	60	90	45
17a. If an objective, did the feature increase instream shelter rating?	YES	YES	YES	YES	YES	NO	YES
17b. a. Calculate the shelter rating for the habitat unit: 0-300	180	180	180	180	180	180	90
19a. If an objective, did the feature increase LWD count in the habitat unit?	NO	NO	NO	NO	NO	NO	NO
21a. If an objective, did the feature lead to the targeted channel conditions?	YES	YES	YES	YES	YES	NO	YES
25. Did the feature achieve the targeted velocity?	YES	YES	YES	YES	YES	NO	YES
28. Percent of habitat unit within targeted velocity (see above): (%)	88%	88%	88%	88%	88%	100%	6%
36e. % habitat unit area where < 0.5 f/s; 0.5 to 2 ft and shelter criteria overlap	24%	24%	24%	24%	24%	59%	1%
36f. % habitat unit area where < 0.5 f/s; 2 to 4 ft and shelter criteria overlap	42%	42%	42%	42%	42%	27%	0%
<b>FEATURE NUMBER</b>	<b>S6-08</b>	<b>S6-09</b>	<b>S6-10</b>	<b>S6-11</b>	<b>S6-12</b>	<b>S6-13</b>	<b>S7-01</b>
<b>HABITAT UNIT NUMBER</b>	<b>HU12</b>	<b>HU12</b>	<b>HU12</b>	<b>HU12</b>	<b>HU12</b>	<b>HU13</b>	<b>HU10</b>
<b>SITE NUMBER</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>7</b>
<b>ENHANCEMENT REACH NAME</b>	<b>FW</b>	<b>FW</b>	<b>FW</b>	<b>FW</b>	<b>FW</b>	<b>FW</b>	<b>FW</b>
4. Structural condition of feature: EXCL (5 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)	4	4	4	4	4	3	4
5a. Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)	1	1	1	1	1	0	1
6a. Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1
6b. Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1
6d. Is the feature still in its original orientaton? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1
8. If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	0	1
9. Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)	1	1	1	1	1	0	1
11e. % area of hab unit within 0.5 -2.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	2	2	2	2	2	4	4
11f. % area of hab unit within 2.0 -4.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	4	4	4	4	4	2	0
14. Instream shelter value in the habitat unit: 0, 1, 2, 3 (3 = 5 pts; 2 = 4 pts, 1 = 3 pts, 0 = 0 pts)	5	5	5	5	5	4	4
15. % hab unit covered by shelter (≥80 = 5pts; ≥60 = 4 pts; ≥40 = 3 pts; ≥20 = 2 pts; ≥10 = 1 pt; <10 = 0 pt)	4	4	4	4	4	5	3
17a. If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	0	1
17b. a. Calculate the shelter rating for the habitat unit: 0-300	5	5	5	5	5	5	3
19a. If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0	0
21a. If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	0	1
25. Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	0	1
28. % area of hab unit within targeted velocity (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	4	4	4	4	4	4	0
36e. % area hab unit with < 0.5 f/s; 0.5 to 2 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	2	2	2	2	2	4	0
36f. % area hab unit with < 0.5 f/s; 2 to 4 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	4	4	4	4	4	2	0







Table 47. Adaptive Management Plan full checklist for the Farrow Wallace enhancement reach, October 2022.

	1	1	1	1	1	1	1
Project Reach	1	1	1	1	1	1	1
Enhancement Reach	1	1	1	1	1	1	1
Colloquial Name	FW	FW	FW	FW	FW	FW	FW
mmddyy	100422	100422	100422	100422	100422	100422	100422
Survey Type	PEF	PEF	PEF	PEF	PEF	PEF	PEF
Project Site Number	6	6	6	6	6	6	7
Project Site Type	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	MainChan
Project Feature Number	S6-08	S6-09	S6-10	S6-11	S6-12	S6-13	S7-01
Feature Type Code	LWD	LWD	LWD	LWD	LWD	LWD	Constructed Ri
Habitat Unit	HU12	HU12	HU12	HU12	HU12	HU13	HU10
Habitat Type	Flatwater	Flatwater	Flatwater	Flatwater	Flatwater	Alcove	Rifle
1.	50	25	25	50	25	25	100
2.	15	40	40	15	40	40	55
3.	750	1000	1000	750	1000	1000	5500
4.	GOOD	GOOD	GOOD	GOOD	GOOD	FAIR	GOOD
5a	NO	NO	NO	NO	NO	YES	NO
5b	NON	NON	NON	NON	NON	BBB	NON
6a	YES	YES	YES	YES	YES	YES	YES
6b	YES	YES	YES	YES	YES	YES	YES
6c	RBK	RBK	RBK	RBK	RBK	RBK	SPN
6d	YES	YES	YES	YES	YES	YES	YES
6e	PRL	PRL	PRL	PRL	PRL	UPS	OTH
7.	FLT	FLT	FLT	FLT	FLT	ALC	RIF
8.	YES	YES	YES	YES	YES	NO	YES
9.	NO	NO	NO	NO	NO	YES	NO
10.	2.5	2.5	2.5	2.5	2.5	1.5	0.9
11a	5.3	5.3	5.3	5.3	5.3	3.8	1.8
11b	2164.9	2164.9	2164.9	2164.9	2164.9	3045.8	3790.6
11c	3709.7	3709.7	3709.7	3709.7	3709.7	1390.0	0.0
11d	5874.6	5874.6	5874.6	5874.6	5874.6	4435.8	3790.6
11e	29%	29%	29%	29%	29%	59%	90%
11f	49%	49%	49%	49%	49%	27%	0%
11g	78%	78%	78%	78%	78%	86%	90%
11h	YES	YES	YES	YES	YES	NO	YES
12a	0.5-4.0	0.5-4.0	0.5-4.0	0.5-4.0	0.5-4.0	0.5-4.0	0.5-4.0
12b	750	1000	1000	750	1000	1000	5500
13.	NO	NO	NO	NO	NO	YES	NO
14.	3	3	3	3	3	2	2
15.	60	60	60	60	60	90	45
16a	AVG	AVG	AVG	AVG	AVG	AVG	BOL
16b	TVG	TVG	TVG	TVG	TVG	TVG	TVG
17a	YES	YES	YES	YES	YES	NO	YES
17b	180	180	180	180	180	180	90
18a	0	0	0	0	0	0	0
18b	0	0	0	0	0	0	0
19a	NO	NO	NO	NO	NO	NO	NO
19b	NON	NON	NON	NON	NON	NON	NON
20.	NON	NON	NON	NON	NON	NON	NON
21a	YES	YES	YES	YES	YES	NO	YES
21b	STB	STB	STB	STB	STB	AGG	STB
21c							
21d							
22.	NO	NO	NO	NO	NO	YES	NO
23.	DEC	DEC	DEC	DEC	DEC	NA	INC
24.	0.5	0.5	0.5	0.5	0.5	0.5	0.5
25.	YES	YES	YES	YES	YES	NO	YES
26a	0	0	0	0	0	0	0
26b	2.0	2.0	2.0	2.0	2.0	0.0	5.3
26c	0.3	0.3	0.3	0.3	0.3	0.0	2.0
27.	6664.7	6664.7	6664.7	6664.7	6664.7	5147.9	251.1
28.	88%	88%	88%	88%	88%	100%	6%
29.	NO	NO	NO	NO	NO	YES	NO
30a	SLC	SLC	SLC	SLC	SLC	SLC	COB
30b	GRV	GRV	GRV	GRV	GRV	GRV	GRV
31.	YES	YES	YES	YES	YES	YES	YES
32.	NR	NR	NR	NR	NR	NR	NR
33.	NR	NR	NR	NR	NR	NR	NR
34.	NR	NR	NR	NR	NR	NR	NR
35.	NR	NR	NR	NR	NR	NR	NR
36a	4993.2	4993.2	4993.2	4993.2	4993.2	4435.8	33.6
36b	1815.4	1815.4	1815.4	1815.4	1815.4	3045.8	33.6
36c	3177.8	3177.8	3177.8	3177.8	3177.8	1390.0	0.0
36d	66%	66%	66%	66%	66%	86%	1%
36e	24%	24%	24%	24%	24%	59%	1%
36f	42%	42%	42%	42%	42%	27%	0%
37.	NO	NO	NO	NO	NO	NO	NO
38.	NO	NO	NO	NO	NO	NO	NO

**Boaz Gros-Balthazard, March 2022**

## Depth and Velocity

**Table 48. Areas and percentages of wetted area, optimal depth and velocity, and optimal hydraulic habitat within the Boaz Gros-Balthazard enhancement reach, March 2022.**

<b>Boaz Gros-Balthazard, Post-effective flow, March 2022</b>	<b>Wetted area (ft<sup>2</sup>)</b>	<b>0.5 – 2.0 ft (ft<sup>2</sup>)</b>	<b>2.0 – 4.0 ft (ft<sup>2</sup>)</b>	<b>Total (ft<sup>2</sup>)</b>	<b>&lt; 0.5 ft/s (ft<sup>2</sup>)</b>	<b>0.5 – 2.0 ft, &lt; 0.5 ft/s (ft<sup>2</sup>)</b>	<b>2.0 – 4.0 ft, &lt; 0.5 ft/s (ft<sup>2</sup>)</b>	<b>Total (ft<sup>2</sup>)</b>
Main channel area	35,170	20,499	10,285	30,783	15,661	9,148	3,560	12,708
Side channel area	21,631	9,193	9,691	18,884	17,969	6,690	8,798	15,489
Side channel alcove area	2,706	874	1,544	2,418	2,706	874	1,544	2,418
<b>Total area</b>	<b>59,506</b>	<b>30,566</b>	<b>21,520</b>	<b>52,086</b>	<b>36,336</b>	<b>16,712</b>	<b>13,903</b>	<b>30,615</b>
Main channel % of wetted area	59%	58%	29%	88%	45%	26%	10%	36%
Side channel % of wetted area	36%	43%	45%	87%	83%	31%	41%	72%
Side channel alcove area % of wetted area	5%	32%	57%	89%	100%	32%	57%	89%
<b>Total % of wetted area</b>	<b>100%</b>	<b>51%</b>	<b>36%</b>	<b>88%</b>	<b>61%</b>	<b>28%</b>	<b>23%</b>	<b>51%</b>

## Boaz, Gros-Balthazard Enhancement Reach



**Figure 81. Measured water depth within the Boaz Gros-Balthazard enhancement reach, March 2022.**



## Boaz, Gros-Balthazard Enhancement Reach



**Figure 82. Optimal water depth for fry (0.5-2.0 ft) and parr (2.0-4.0 ft) within the Boaz Gros-Balthazard enhancement reach, March 2022.**

## Boaz, Gros-Balthazard Enhancement Reach



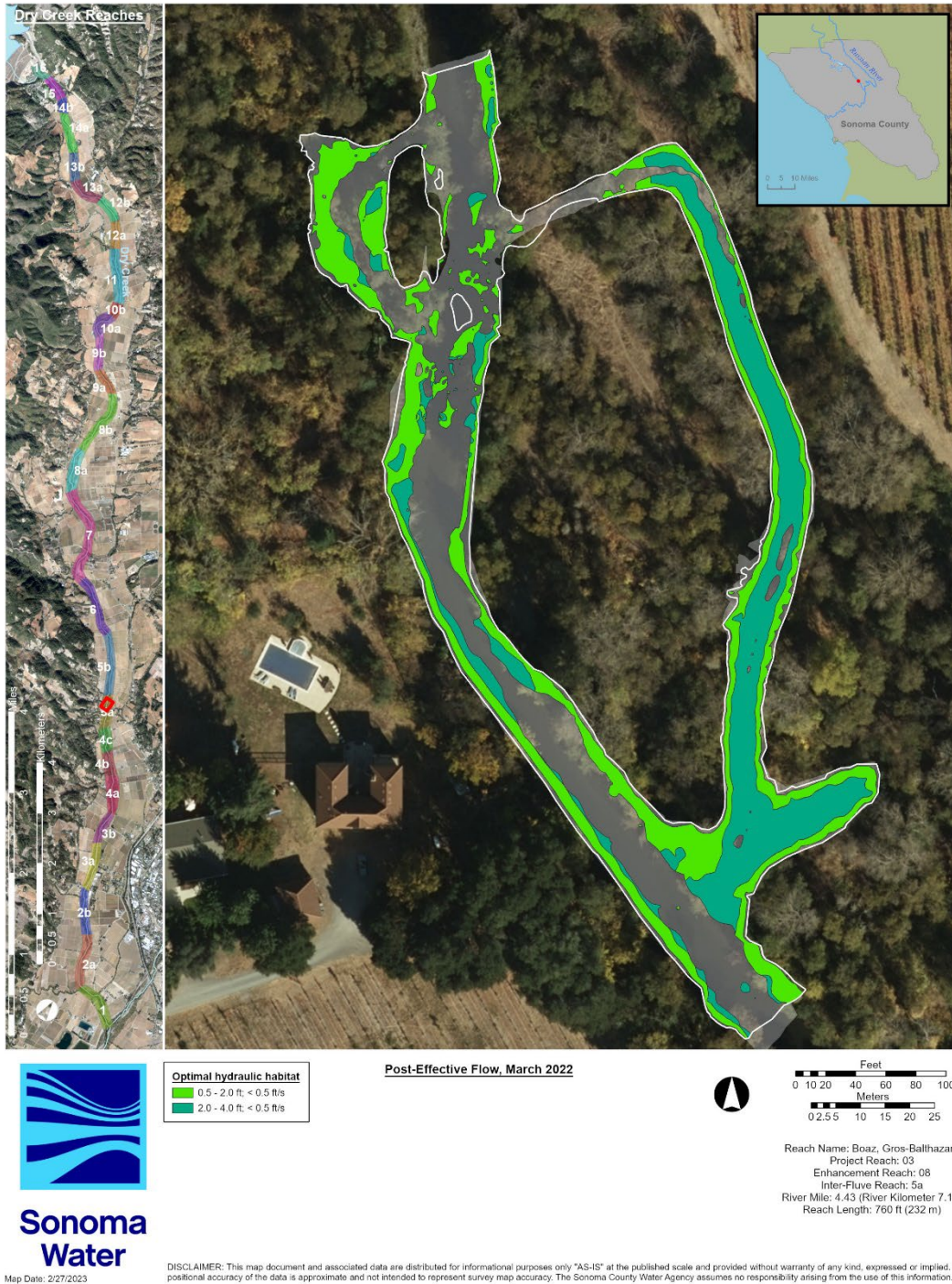
**Figure 83. Measured water velocity within the Boaz Gros-Balthazard enhancement reach, March 2022.**

## Boaz, Gros-Balthazard Enhancement Reach



**Figure 84. Optimal water velocity for fry and parr (< 0.5 ft/s) within the Boaz Gros-Balthazard enhancement reach, March 2022.**

## Boaz, Gros-Balthazard Enhancement Reach



**Figure 85. Optimal hydraulic habitat for fry (<0.5 f/s, 0.5-2.0 ft) and parr (<0.5 f/s, 2.0-4.0 ft) within the Boaz Gros-Balthazard enhancement reach, March 2022.**

## Habitat Types and Shelter Values

**Table 49. Habitat, types, shelter value, percent cover, and shelter score for habitat units within the Boaz Gros-Balthazard enhancement reach, March 2022.**

Habitat Unit #	Habitat Type	Shelter Value	Percent Cover	Shelter Score
HU01	Pool	3	60	180
HU02	Flatwater	3	45	135
HU03	Riffle	3	50	150
HU04	Pool	3	30	90
HU05	Flatwater	3	40	120
HU06	Flatwater	3	45	135
HU07	Alcove	3	50	150
HU08	Riffle	2	20	40
HU09	Pool	3	45	135
HU10	Riffle	1	5	5
HU11	Alcove	3	80	240
<b>Pool: riffle</b>	<b>3:3 (1.00)</b>			<b>Avg = 125</b>

## Boaz, Gros-Balthazard Enhancement Reach



**Figure 86. Habitat unit number and type within the Boaz Gros-Balthazard enhancement reach, March 2022.**

## Boaz, Gros-Balthazard Enhancement Reach



**Sonoma Water**

Map Date: 2/27/2023

DISCLAIMER: This map document and associated data are distributed for informational purposes only "AS-IS" at the published scale and provided without warranty of any kind, expressed or implied. The positional accuracy of the data is approximate and not intended to represent survey map accuracy. The Sonoma County Water Agency assumes no responsibility arising from the use of this information.

**Figure 87. Habitat unit shelter scores within the Boaz Gros-Balthazard enhancement reach, March 2022.**

## Feature, Habitat Unit, Site, and Reach Ratings



Table 50. Post-effective flow feature ratings for the Boaz Gros-Balthazard enhancement reach March 2022.

Project Reach	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Enhancement Reach	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Colloquial Name	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG
mmddyy	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122
Survey Type	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF
PROJECT SITE NUMBER	1	1	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
PROJECT FEATURE NUMBER	S1-01	S1-02	S2-01	S3-01	S3-02	S3-03	S3-04	S3-05	S3-06	S3-07	S3-08	S3-10	S3-11	S3-12	S3-13	S3-14	S3-15	S3-16	
Feature Type Code	BF	BF	BR	PW	PW	HW2	HW2	HW2	HW2	LW	PW	PW	TT						
Habitat Unit	HU02	HU03	HU01 2	HU01 3	HU06	HU06	HU06	HU06	HU06	HU06	HU06	HU06	HU06	HU06	HU06	HU06	HU06	HU06	HU06
Habitat Type	Flatwater	Riffle	Pool	Pool	Flatwater	Flatwater	Flatwater	Flatwater	Flatwater	Flatwater	Pool	Flatwater	Flatwater	Flatwater	Flatwater	Flatwater	Flatwater	Flatwater	Flatwater
4. Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL
5a. Are problems with the feature visible?	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
6a. Is the feature still in its original location?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
6b. Is the feature still in its original position?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
6d. Is the feature still in its original orientaton?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
8. If an objective, did the feature create the targeted instream habitat type?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
9. Were there any unintended effects by the feature on the habitat type? If Y, comment.	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
17a. If an objective, did the feature increase instream shelter rating?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
19a. If an objective, did the feature increase LWD count in the habitat unit?	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
21a. If an objective, did the feature lead to the targeted channel conditions?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
25. Did the feature achieve the targeted velocity?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
PROJECT FEATURE NUMBER	S1-01	S1-02	S2-01	S3-01	S3-02	S3-03	S3-04	S3-05	S3-06	S3-07	S3-08	S3-10	S3-11	S3-12	S3-13	S3-14	S3-15	S3-16	
4. Structural condition of feature: EXCL (5 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	2
5a. Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
6a. Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6b. Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6d. Is the feature still in its original orientaton? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8. If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
9. Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
17a. If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
19a. If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21a. If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
25. Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
PROJECT FEATURE NUMBER	S1-01	S1-02	S2-01	S3-01	S3-02	S3-03	S3-04	S3-05	S3-06	S3-07	S3-08	S3-10	S3-11	S3-12	S3-13	S3-14	S3-15	S3-16	
Feature quantitative rating out of 15	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	10
Feature qualitative rating Excellent (>=12), Good (>=9), Fair(>=6), Poor (>=3), Fail (<3)	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Good

Table 50. Post-effective flow feature ratings for the Boaz Gros-Balthazard enhancement reach March 2022.

Project Reach	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Enhancement Reach	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Colloquial Name	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG
mmddyy	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122
Survey Type	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF
PROJECT SITE NUMBER	3	3	3	3	3	3	3	3	4	4	4	4	4	4	5	5	5	5	5
PROJECT FEATURE NUMBER	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SC Alcove	SC Alcove	SC Alcove	SC Alcove	SC Alcove	SC Alcove	SC Bank FP	SC Bank FP	SC Bank FP	SC Bank FP	SC Bank FP
Feature Type Code	S3-17	S3-18	S3-20	S3-21	S3-22	S3-23	S3-24	S4-01	S4-02	S4-03	S4-04	S4-05	S4-06	S5-01	S5-02	S5-03	S5-04	S5-05	
Habitat Unit	TT	TT	HW2	HW2	LW	LW	TP	TT	HW1	TT	HW1	HW1	TT	HW1	HW1	TT	HW1	HW1	
Habitat Type	HU01 D	HU01 D	HU06	HU06	HU04 2	HU04 2	HU01 D	HU07	HU07	HU07	HU07	HU07	HU07	HU07	HU06 2	HU06 2	HU02 D	HU06 2	HU02 D
4. Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	FAIR	POOR	EXCL	EXCL	EXCL	EXCL	EXCL	FAIR	EXCL	FAIR	EXCL	EXCL	FAIR	EXCL	EXCL	FAIR	EXCL	EXCL	EXCL
5a. Are problems with the feature visible?	YES	YES	NO	NO	NO	NO	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO
6a. Is the feature still in its original location?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
6b. Is the feature still in its original position?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
6d. Is the feature still in its original orientaton?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
8. If an objective, did the feature create the targeted instream habitat type?	YES	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
9. Were there any unintended effects by the feature on the habitat type? If Y, comment.	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
17a. If an objective, did the feature increase instream shelter rating?	YES	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
19a. If an objective, did the feature increase LWD count in the habitat unit?	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
21a. If an objective, did the feature lead to the targeted channel conditions?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
25. Did the feature achieve the targeted velocity?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
PROJECT FEATURE NUMBER	S3-17	S3-18	S3-20	S3-21	S3-22	S3-23	S3-24	S4-01	S4-02	S4-03	S4-04	S4-05	S4-06	S5-01	S5-02	S5-03	S5-04	S5-05	
4. Structural condition of feature: EXCL (5 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)	3	2	5	5	5	5	5	3	5	3	5	5	3	5	5	3	5	5	
5a. Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)	0	0	1	1	1	1	1	0	1	0	1	0	1	1	1	0	1	1	
6a. Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
6b. Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
6d. Is the feature still in its original orientaton? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
8. If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
9. Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
17a. If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	
19a. If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
21a. If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
25. Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
PROJECT FEATURE NUMBER	S3-17	S3-18	S3-20	S3-21	S3-22	S3-23	S3-24	S4-01	S4-02	S4-03	S4-04	S4-05	S4-06	S5-01	S5-02	S5-03	S5-04	S5-05	
<b>FEATURE RATING</b>	Feature quantitative rating out of 15																		
	11	7	14	14	14	14	14	14	11	14	11	14	14	11	14	14	10	14	14
	Feature qualitative rating Excellent (>=12), Good (>=9), Fair(>=6), Poor (>=3), Fail (<3)																		
	Good	Fair	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Good	Excellent	Good	Excellent	Excellent	Good	Excellent	Excellent	Good	Excellent	Excellent

Table 50. Post-effective flow feature ratings for the Boaz Gros-Balthazard enhancement reach March 2022.

Project Reach		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Enhancement Reach		8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Colloquial Name		BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG
mmddyy		32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122
Survey Type		PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF
PROJECT SITE NUMBER		5	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
PROJECT FEATURE NUMBER		SC Bank FP	SC Bank FP	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan
Feature Type Code		S5-06	S5-07	S6-01	S6-02	S6-04	S6-05	S6-06	S6-07	S6-08	S6-09	S6-10	S6-11	S6-12	S6-13	S6-14	S6-15	S6-16	S6-17
Habitat Unit		TT	HW1	LW	HW1	BM	HW1	TT	HW1	PW	HW2	HW2	HW1	TT	HW1	HW1	TT	HW1	TT
Habitat Type		HU02 D	HU02 D	Flatwater	HU09	HU03 D	HU09	HU09	HU09	HU09	HU09	HU09	HU09	HU03 D	HU09	HU11	HU03 D	HU09	HU10
4.	Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	FAIR	EXCL	EXCL	EXCL	EXCL	EXCL	FAIR	EXCL	EXCL	EXCL	EXCL	EXCL	FAIR	EXCL	EXCL	FAIR	EXCL	FAIR
5a	Are problems with the feature visible?	YES	YES	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	YES	NO	NO	YES	NO	YES
6a	Is the feature still in its original location?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
6b	Is the feature still in its original position?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
6d	Is the feature still in its original orientaton?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
8.	If an objective, did the feature create the targeted instream habitat type?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
9.	Were there any unintended effects by the feature on the habitat type? If Y, comment.	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
17a	If an objective, did the feature increase instream shelter rating?	NO	NO	YES	YES	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	YES
19a	If an objective, did the feature increase LWD count in the habitat unit?	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
21a	If an objective, did the feature lead to the targeted channel conditions?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
25.	Did the feature achieve the targeted velocity?	YES	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
PROJECT FEATURE NUMBER		S5-06	S5-07	S6-01	S6-02	S6-04	S6-05	S6-06	S6-07	S6-08	S6-09	S6-10	S6-11	S6-12	S6-13	S6-14	S6-15	S6-16	S6-17
4.	Structural condition of feature: EXCL (5 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)	3	5	5	5	5	5	3	5	5	5	5	5	3	5	5	3	5	3
5a	Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)	0	0	1	1	1	1	0	1	1	1	1	1	0	1	1	0	1	0
6a	Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6b	Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6d	Is the feature still in its original orientaton? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8.	If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
9.	Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
17a	If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)	0	0	1	1	0	1	1	1	1	1	1	1	1	1	1	0	1	1
19a	If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21a	If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
25.	Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
PROJECT FEATURE NUMBER		S5-06	S5-07	S6-01	S6-02	S6-04	S6-05	S6-06	S6-07	S6-08	S6-09	S6-10	S6-11	S6-12	S6-13	S6-14	S6-15	S6-16	S6-17
FEATURE RATING	Feature quantitative rating out of 15	10	10	14	14	13	14	11	14	14	14	14	14	11	14	14	10	14	11
	Feature qualitative rating Excellent (>=12), Good (>=9), Fair(>=6), Poor (>=3), Fail (<3)	Good	Good	Excellent	Excellent	Excellent	Excellent	Good	Excellent	Excellent	Excellent	Excellent	Excellent	Good	Excellent	Excellent	Good	Excellent	Good

Table 50. Post-effective flow feature ratings for the Boaz Gros-Balthazard enhancement reach March 2022.

	Project Reach	3
	Enhancement Reach	8
	Colloquial Name	BG
	mmdyy	32122
	Survey Type	PEF
	<b>PROJECT SITE NUMBER</b>	6
	Project Site Type	SideChan
	<b>PROJECT FEATURE NUMBER</b>	S6-18
	Feature Type Code	LW
	Habitat Unit	HU05_2
	Habitat Type	Flatwater
4.	Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	EXCL
5a	Are problems with the feature visible?	NO
6a	Is the feature still in its original location?	YES
6b	Is the feature still in its original position?	YES
6d	Is the feature still in its original orientaton?	YES
8.	If an objective, did the feature create the targeted instream habitat type?	YES
9.	Were there any unintended effects by the feature on the habitat type? If Y, comment.	NO
17a	If an objective, did the feature increase instream shelter rating?	YES
19a	If an objective, did the feature increase LWD count in the habitat unit?	NO
21a	If an objective, did the feature lead to the targeted channel conditions?	YES
25.	Did the feature achieve the targeted velocity?	YES
	<b>PROJECT FEATURE NUMBER</b>	<b>S6-18</b>
4.	Structural condition of feature: EXCL (5 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)	5
5a	Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)	1
6a	Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)	1
6b	Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)	1
6d	Is the feature still in its original orientaton? (YES = 1 pt, NO = 0 pt)	1
8.	If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)	1
9.	Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)	1
17a	If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)	1
19a	If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)	0
21a	If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)	1
25.	Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)	1
	<b>PROJECT FEATURE NUMBER</b>	<b>S6-18</b>
<b>FEATURE RATING</b>	Feature quantitative rating out of 15	14
	Feature qualitative rating Excellent (>=12), Good (>=9), Fair(>=6), Poor (>=3), Fail (<3)	Excellent

## Boaz Gros-Balthazard Enhancement Reach

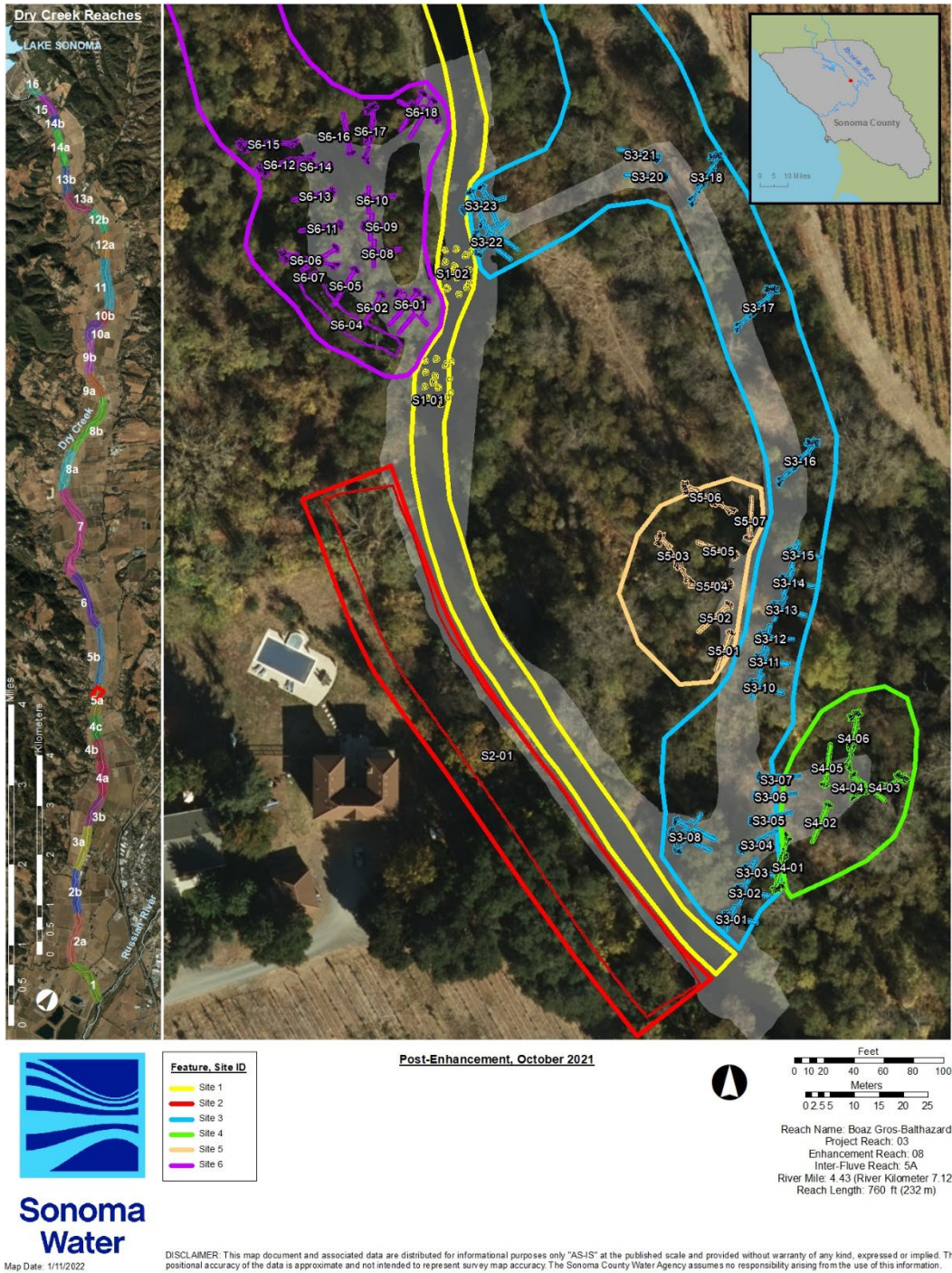


Figure 88. Enhancement sites and features within the Boaz Gros-Balthazard enhancement reach, March 2022.

# Boaz, Gros-Balthazard Enhancement Reach

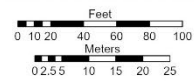


**Sonoma  
Water**

Map Date: 2/27/2023

Feature ratings	
Not rated	(Grey line)
Excellent	(Green line)
Good	(Yellow-green line)
Fair	(Yellow line)
Poor	(Orange line)
Fail	(Red line)

Post-Effective Flow, March 2022



Reach Name: Boaz, Gros-Balthazard  
 Project Reach: 03  
 Enhancement Reach: 08  
 Inter-Fluve Reach: 5a  
 River Mile: 4.43 (River Kilometer 7.12)  
 Reach Length: 760 ft (232 m)

DISCLAIMER: This map document and associated data are distributed for informational purposes only "AS-IS" at the published scale and provided without warranty of any kind, expressed or implied. The positional accuracy of the data is approximate and not intended to represent survey map accuracy. The Sonoma County Water Agency assumes no responsibility arising from the use of this information.

Figure 89. Feature ratings for the Boaz Gros-Balthazard enhancement reach, March 2022.

Table 51. Post-effective flow habitat unit ratings for the Boaz Gros-Balthazard enhancement reach March 2022.

Project Reach	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Enhancement Reach	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Colloquial Name	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG
mmddyy	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122
Survey Type	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF
HABITAT UNIT NUMBER	HU01	HU02	HU02 2	HU03	HU04	HU05	HU06	HU06 2	HU07	HU08	HU09	HU10	HU11	HU01 2	HU01 3	HU04 2	HU05 2	
Habitat Type	Pool	Flatwater	Flatwater	Riffle	Pool	Flatwater	Flatwater	Flatwater	Alcove	Riffle	Pool	Riffle	Alcove	Pool	Pool	Pool	Flatwater	
PROJECT SITE NUMBER	1	1	6	1	1	1	3	5	4	3	6	6	6	2	3	3	6	
Project Site Type	MainChan	MainChan	SideChan	MainChan	MainChan	MainChan	SideChan	SC Bank FP	SC Alcove	SideChan	SideChan	SideChan	SideChan	MC Bank Ff	SideChan	SideChan	SideChan	
11e	% Area of habitat unit within 0.5 -2.0 ft depth	47%	73%	73%	72%	62%	79%	28%	28%	32%	77%	73%	71%	53%	47%	47%	62%	79%
11f	% Area of habitat unit within 2.0 -4.0 ft depth	43%	16%	16%	0%	20%	4%	61%	61%	57%	1%	17%	10%	0%	43%	43%	20%	4%
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3	3	3	3	3	3	3	3	3	3	2	3	1	3	3	3	3	3
15.	Percent of habitat unit covered by shelter: %	60	45	45	50	30	40	45	45	50	20	45	5	80	60	60	30	40
17b	a. Calculate the shelter rating for the habitat unit: 0-300	180	135	135	150	90	120	135	135	150	40	135	5	240	180	180	90	120
28.	Percent of habitat unit within targeted velocity (see above): (%)	50%	44%	44%	28%	29%	30%	96%	96%	100%	25%	65%	22%	100%	50%	50%	29%	30%
36e	% habitat unit area where < 0.5 f/s; 0.5 to 2 ft and shelter criteria overlap	29%	28%	28%	16%	13%	17%	27%	27%	32%	15%	49%	9%	53%	29%	29%	13%	17%
36f	% habitat unit area where < 0.5 f/s; 2 to 4 ft and shelter criteria overlap	14%	7%	7%	0%	5%	3%	59%	59%	57%	0%	8%	1%	0%	14%	14%	5%	3%
HABITAT UNIT NUMBER	HU01	HU02	HU02 2	HU03	HU04	HU05	HU06	HU06 2	HU07	HU08	HU09	HU10	HU11	HU01 2	HU01 3	HU04 2	HU05 2	
11e	% area of hab unit within 0.5 -2.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	4	4	4	4	4	4	2	2	3	4	4	4	4	4	4	4	
11f	% area of hab unit within 2.0 -4.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	4	1	1	0	2	0	4	4	0	1	1	0	4	4	2	0	
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3 (3 = 5 pts; 2 = 4 pts, 1 = 3 pts, 0 = 0 pts)	5	5	5	5	5	5	5	5	4	5	3	5	5	5	5	5	
15.	% hab unit covered by shelter (≥80 = 5pts; ≥60 = 4 pts; ≥40 = 3 pts; ≥20 = 2 pts; ≥10 = 1 pt; <10 = 0 pt)	4	3	3	3	2	3	3	3	2	3	0	5	4	4	2	3	
17b	a. Calculate the shelter rating for the habitat unit: 0-300	5	4	4	5	3	4	4	4	5	1	4	0	5	5	5	4	
28.	% area of hab unit within targeted velocity (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	4	4	4	2	2	3	4	4	4	2	4	2	4	4	4	3	
36e	% area hab unit with < 0.5 f/s; 0.5 to 2 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	2	2	2	1	1	1	2	2	3	1	4	0	4	2	2	1	
36f	% area hab unit with < 0.5 f/s; 2 to 4 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	1	0	0	0	0	4	4	4	0	0	0	0	1	1	0	0	
HABITAT UNIT NUMBER	HU01	HU02	HU02 2	HU03	HU04	HU05	HU06	HU06 2	HU07	HU08	HU09	HU10	HU11	HU01 2	HU01 3	HU04 2	HU05 2	
Habitat unit quantitative rating (out of 35)	29	23	23	20	19	20	28	28	31	14	25	10	27	29	29	19	20	
Habitat unit qualitative rating: Excellent (>=28), Good (>=21), Fair(>=14), Poor (>=7), Fail (<7)	Excellent	Good	Good	Fair	Fair	Fair	Excellent	Excellent	Excellent	Fair	Good	Poor	Good	Excellent	Excellent	Fair	Fair	

## Boaz, Gros-Balthazard Enhancement Reach

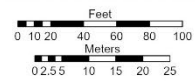


**Sonoma  
Water**

Map Date: 2/27/2023

Habitat unit rating	
Grey square	Not Rated
Green square	Excellent
Light Green square	Good
Yellow square	Fair
Orange square	Poor
Red square	Fail

Post-Effective Flow, March 2022



Reach Name: Boaz, Gros-Balthazard  
 Project Reach: 03  
 Enhancement Reach: 08  
 Inter-Fluve Reach: 5a  
 River Mile: 4.43 (River Kilometer 7.12)  
 Reach Length: 760 ft (232 m)

DISCLAIMER: This map document and associated data are distributed for informational purposes only "AS-IS" at the published scale and provided without warranty of any kind, expressed or implied. The positional accuracy of the data is approximate and not intended to represent survey map accuracy. The Sonoma County Water Agency assumes no responsibility arising from the use of this information.

Figure 90. Habitat unit ratings for the Boaz Gros-Balthazard enhancement reach, March 2022.



Table 52. Post-effective flow average feature, average habitat unit, site, and reach ratings for the Boaz Gros-Balthazard enhancement reach, March 2022.

	Project Reach	3	3	3	3	3	3
	Enhancement Reach	8	8	8	8	8	8
	<b>ENHANCEMENT REACH NAME</b>	<b>BG</b>	<b>BG</b>	<b>BG</b>	<b>BG</b>	<b>BG</b>	<b>BG</b>
	mmdyy	32122	32122	32122	32122	32122	32122
	Survey Type	PEF	PEF	PEF	PEF	PEF	PEF
	<b>PROJECT SITE NUMBER</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
	Project Site Type	MainChan	MC Bank FP	SideChan	SC Alcove	SC Bank FP	SideChan
	<b>PROJECT SITE NUMBER</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
<b>SITE AVERAGE FEATURE RATING</b>	Site average feature quantitative rating (out of 15; bold indicates excluded from site rating)	14	14	13	13	12	13
	Site average feature qualitative rating Excellent (>=12), Good (>=9), Fair(>=6), Poor (>=3), Fail (<3), Not rated (not used to rate site)	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
	<b>PROJECT SITE NUMBER</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
<b>SITE AVERAGE HABITAT UNIT RATING</b>	Site average habitat unit quantitative rating (out of 35; bold indicates excluded from site rating)	19	29	18	31	28	21
	Site average qualitative rating Excellent (>=28), Good (>=21), Fair(>=14), Poor (>=7), Fail (<7), Not rated (not used to rate site)	Fair	Excellent	Fair	Excellent	Excellent	Good
	<b>PROJECT SITE NUMBER</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
<b>SITE RATING</b>	Site quantitative rating (sum of site average feature and habitat unit ratings) (out of 50; bold indicates rating excludes feature or habitat unit rating and scoring out of 15 or 35)	33	43	31	44	40	34
	Site qualitative rating: Excellent (>=40), Good (>=30), Fair(>=20), Poor (>=10), Fail (<10)	Good	Excellent	Good	Excellent	Excellent	Good
	<b>ENHANCEMENT REACH NAME</b>	<b>BG</b>					
<b>ENHANCEMENT REACH RATING</b>	Enhancement reach quantitative rating (average of site ratings) (out of 50)	37					
	Enhancement reach qualitative rating: Excellent (>=40), Good (>=30), Fair(>=20), Poor (>=10), Fail (<10)	Good					

## Boaz, Gros-Balthazard Enhancement Reach



Figure 91. Post-effective flow site ratings for the Boaz Gros-Balthazard enhancement reach, March 2022.

## Boaz, Gros-Balthazard Enhancement Reach



Figure 92. Post-effective flow reach rating for the Boaz Gros-Balthazard enhancement reach, March 2022.

## Feature and Habitat Unit Checklists





Table 53. Adaptive Management Plan targeted checklist for the Boaz Gros-Balthazard enhancement reach, March 2022.

Project Reach	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Enhancement Reach	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Colloquial Name	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG
mmdyy	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122	32122
Survey Type	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF
Project Site Number	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	6	6	6	6
Project Site Type	SC Bank FP	SC Bank FP	SC Bank FP	SC Bank FP	SC Bank FP	SC Bank FP	SC Bank FP	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan
Project Feature Number	S5-02	S5-03	S5-04	S5-05	S5-06	S5-07	S6-01	S6-02	S6-04	S6-05	S6-06	S6-07	S6-08	S6-09	S6-10	S6-11	S6-12	S6-13	S6-13
Feature Type Code	HW1	TT	HW1	HW1	TT	HW1	LW	HW1	BM	HW1	TT	HW1	PW	HW2	HW2	HW1	TT	HW1	HW1
Habitat Unit	HU06 2	HU02 D	HU06 2	HU02 D	HU02 D	HU02 D	HU02 2	HU09	HU03 D	HU09	HU09	HU09	HU09	HU09	HU09	HU09	HU03 D	HU09	HU09
Habitat Type	Flatwater	Dry	Flatwater	Dry	Dry	Dry	Flatwater	Pool	Dry	Pool	Pool	Pool	Pool	Pool	Pool	Pool	Dry	Pool	Pool
4.	Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL																		
5a	Are problems with the feature visible?																		
6a	Is the feature still in its original location?																		
6b	Is the feature still in its original position?																		
6d	Is the feature still in its original orientaton?																		
8.	If an objective, did the feature create the targeted instream habitat type?																		
9.	Were there any unintended effects by the feature on the habitat type? If Y, comment.																		
11e	% Area of habitat unit within 0.5 -2.0 ft depth																		
11f	% Area of habitat unit within 2.0 -4.0 ft depth																		
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3																		
15.	Percent of habitat unit covered by shelter: %																		
17a	If an objective, did the feature increase instream shelter rating?																		
17b	a. Calculate the shelter rating for the habitat unit: 0-300																		
19a	If an objective, did the feature increase LWD count in the habitat unit?																		
21a	If an objective, did the feature lead to the targeted channel conditions?																		
25.	Did the feature achieve the targeted velocity?																		
28.	Percent of habitat unit within targeted velocity (see above): (%)																		
36e	% habitat unit area where < 0.5 f/s; 0.5 to 2 ft and shelter criteria overlap																		
36f	% habitat unit area where < 0.5 f/s; 2 to 4 ft and shelter criteria overlap																		
	<b>FEATURE NUMBER</b>																		
	S5-02	S5-03	S5-04	S5-05	S5-06	S5-07	S6-01	S6-02	S6-04	S6-05	S6-06	S6-07	S6-08	S6-09	S6-10	S6-11	S6-12	S6-13	S6-13
	<b>HABITAT UNIT NUMBER</b>																		
	HU06 2	HU02 D	HU06 2	HU02 D	HU02 D	HU02 D	HU02 2	HU09	HU03 D	HU09	HU09	HU09	HU09	HU09	HU09	HU09	HU03 D	HU09	HU09
	<b>SITE NUMBER</b>																		
	5	5	5	5	5	5	6	6	6	6	6	6	6	6	6	6	6	6	6
	<b>ENHANCEMENT REACH NAME</b>																		
	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG	BG
4.	Structural condition of feature: EXCL (6 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)																		
5a	Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)																		
6a	Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)																		
6b	Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)																		
6d	Is the feature still in its original orientaton? (YES = 1 pt, NO = 0 pt)																		
8.	If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)																		
9.	Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)																		
11e	% area of hab unit within 0.5 -2.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)																		
11f	% area of hab unit within 2.0 -4.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)																		
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3 (3 = 5 pts; 2 = 4 pts, 1 = 3 pts, 0 = 0 pts)																		
15.	% hab unit covered by shelter (≥80 = 5pts; ≥60 = 4 pts; ≥40 = 3 pts; ≥20 = 2 pts; ≥10 = 1 pt; <10 = 0 pt)																		
17a	If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)																		
17b	a. Calculate the shelter rating for the habitat unit: 0-300																		
19a	If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)																		
21a	If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)																		
25.	Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)																		
28.	% area of hab unit within targeted velocity (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)																		
36e	% area hab unit with < 0.5 f/s; 0.5 to 2 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)																		
36f	% area hab unit with < 0.5 f/s; 2 to 4 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)																		

Table 53. Adaptive Management Plan targeted checklist for the Boaz Gros-Balthazard enhancement reach, March 2022.

Project Reach	3	3	3	3	3	
Enhancement Reach	8	8	8	8	8	
Colloquial Name	BG	BG	BG	BG	BG	
mmddy	32122	32122	32122	32122	32122	
Survey Type	PEF	PEF	PEF	PEF	PEF	
Project Site Number	6	6	6	6	6	
Project Site Type	SideChan	SideChan	SideChan	SideChan	SideChan	
Project Feature Number	S6-14	S6-15	S6-16	S6-17	S6-18	
Feature Type Code	HW1	TT	HW1	TT	LW	
Habitat Unit	HU11	HU03 D	HU09	HU10	HU05 2	
Habitat Type	Alcove	Dry	Pool	Riffle	Flatwater	
4.	Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	EXCL	FAIR	EXCL	FAIR	EXCL
5a	Are problems with the feature visible?	NO	YES	NO	YES	NO
6a	Is the feature still in its original location?	YES	YES	YES	YES	YES
6b	Is the feature still in its original position?	YES	YES	YES	YES	YES
6d	Is the feature still in its original orientaton?	YES	YES	YES	YES	YES
8.	If an objective, did the feature create the targeted instream habitat type?	YES	YES	YES	YES	YES
9.	Were there any unintended effects by the feature on the habitat type? If Y, comment.	NO	NO	NO	NO	NO
11e	% Area of habitat unit within 0.5 -2.0 ft depth	53%	0%	73%	71%	79%
11f	% Area of habitat unit within 2.0 -4.0 ft depth	0%	0%	17%	10%	4%
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3	3	0	3	1	3
15.	Percent of habitat unit covered by shelter: %	80	0	45	5	40
17a	If an objective, did the feature increase instream shelter rating?	YES	NO	YES	YES	YES
17b	a. Calculate the shelter rating for the habitat unit: 0-300	240	0	135	5	120
19a	If an objective, did the feature increase LWD count in the habitat unit?	NO	NO	NO	NO	NO
21a	If an objective, did the feature lead to the targeted channel conditions?	YES	YES	YES	YES	YES
25.	Did the feature achieve the targeted velocity?	YES	YES	YES	YES	YES
28.	Percent of habitat unit within targeted velocity (see above): (%)	100%	0%	65%	22%	30%
36e	% habitat unit area where < 0.5 f/s; 0.5 to 2 ft and shelter criteria overlap	53%	0%	49%	9%	17%
36f	% habitat unit area where < 0.5 f/s; 2 to 4 ft and shelter criteria overlap	0%	0%	8%	1%	3%
	<b>FEATURE NUMBER</b>	<b>S6-14</b>	<b>S6-15</b>	<b>S6-16</b>	<b>S6-17</b>	<b>S6-18</b>
	<b>HABITAT UNIT NUMBER</b>	<b>HU11</b>	<b>HU03 D</b>	<b>HU09</b>	<b>HU10</b>	<b>HU05 2</b>
	<b>SITE NUMBER</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>
	<b>ENHANCEMENT REACH NAME</b>	<b>BG</b>	<b>BG</b>	<b>BG</b>	<b>BG</b>	<b>BG</b>
4.	Structural condition of feature: EXCL (5 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)	5	3	5	3	5
5a	Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)	1	0	1	0	1
6a	Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1
6b	Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1
6d	Is the feature still in its original orientaton? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1
8.	If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1
9.	Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)	1	1	1	1	1
11e	% area of hab unit within 0.5 -2.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	4	0	4	4	4
11f	% area of hab unit within 2.0 -4.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	0	1	1	0
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3 (3 = 5 pts; 2 = 4 pts, 1 = 3 pts, 0 = 0 pts)	5	0	5	3	5
15.	% hab unit covered by shelter (≥80 = 5pts; ≥60 = 4 pts; ≥40 = 3 pts; ≥20 = 2 pts; ≥10 = 1 pt; <10 = 0 pt)	5	0	3	0	3
17a	If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)	1	0	1	1	1
17b	a. Calculate the shelter rating for the habitat unit: 0-300	5	0	4	0	4
19a	If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0
21a	If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1
25.	Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1
28.	% area of hab unit within targeted velocity (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	4	0	4	2	3
36e	% area hab unit with < 0.5 f/s; 0.5 to 2 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	4	0	4	0	1
36f	% area hab unit with < 0.5 f/s; 2 to 4 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	0	0	0	0









Table 54. Adaptive Management Plan full checklist for the Boaz Gros-Balthazard enhancement reach, March 2022.

	3	3	3	3	3	
Project Reach	3	3	3	3	3	
Enhancement Reach	8	8	8	8	8	
Colloquial Name	BG	BG	BG	BG	BG	
mmddyy	32122	32122	32122	32122	32122	
Survey Type	PEF	PEF	PEF	PEF	PEF	
Project Site Number	6	6	6	6	6	
Project Site Type	SideChan	SideChan	SideChan	SideChan	SideChan	
Project Feature Number	S6-14	S6-15	S6-16	S6-17	S6-18	
Feature Type Code	HW1	TT	HW1	TT	LW	
Habitat Unit	HU11	HU03 D	HU09	HU10	HU05 2	
Habitat Type	Alcove	Dry	Pool	Riffle	Flatwater	
1.	Length of targeted treatment (ft)	8	53	12	40	22
2.	Width of targeted treatment: (ft)	15	18	6	13	20
3.	Estimate area of the targeted feature: (ft <sup>2</sup> )	120	954	72	520	
4.	Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	EXCL	FAIR	EXCL	FAIR	EXCL
5a	Are problems with the feature visible?	NO	YES	NO	YES	NO
5b	Types: ANC, BBB, CRF, MAT, SHF, STR, SWA, UND, UNS, WSH, OTH, NON	NON	STR	NON	OTH	NON
6a	Is the feature still in its original location?	YES	YES	YES	YES	YES
6b	Is the feature still in its original position?	YES	YES	YES	YES	YES
6c	If yes: LBK, MDC, RBK, SPN, OTH	RBK	RBK	RBK	RBK	RBK
6d	Is the feature still in its original orientation?	YES	YES	YES	YES	YES
6e	If yes: DNS, MUL, PRL, PRP, UPS, OTH	PRP	PRP	DNS	DNS	UPS
7.	Current level II habitat type: FLT, POO, RIF, DRY, ALC, OTH	ALC	FALSE	POO	RIF	FLT
8.	If an objective, did the feature create the targeted instream habitat type?	YES	YES	YES	YES	YES
9.	Were there any unintended effects by the feature on the habitat type? If Y, comment.	NO	NO	NO	NO	NO
10.	Mean water depth in habitat unit: ft	0.6	0.0	1.4	1.1	1.2
11a	Maximum water depth in habitat unit: ft	1.7	0.0	3.4	2.5	2.5
11b	Area of habitat unit within 0.5 -2.0 ft depth: (ft <sup>2</sup> )	376.5	0.0	3212.1	490.0	2934.9
11c	Area of habitat unit within 2.0 -4.0 ft depth: (ft <sup>2</sup> )	0.0	0.0	748.7	66.6	164.7
11d	Area of habitat unit within 0.5-4.0 ft depth: (ft <sup>2</sup> )	376.5	0.0	3960.8	556.6	3099.6
11e	% Area of habitat unit within 0.5 -2.0 ft depth	53%	0%	73%	71%	79%
11f	% Area of habitat unit within 2.0 -4.0 ft depth	0%	0%	17%	10%	4%
11g	% Area of habitat unit within 0.5-4.0 ft depth	53%	0%	90%	81%	83%
11h	If an objective, did the feature increase/decrease water depth in the treatment area?	YES	YES	YES	YES	YES
12a	Targeted depth or range (ft) in habitat unit	0.5-4.0	0.5-4.0	0.5-4.0	0.5-4.0	0.5-4.0
12b	Estimate area of feature within targeted depth or range ft <sup>2</sup> :	41	222	42	90	191
13.	Were there any unintended effects of the feature on the water depth? If Y, comment.	NO	NO	NO	NO	NO
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3	3	0	3	1	3
15.	Percent of habitat unit covered by shelter: %	80	0	45	5	40
16a	1st dominant cover in habitat unit: BED, BOL, BUB, LWD, RTW, SWD, UCB, VEG, OTH	TVG	0	RTW	UCB	TVG
16b	2nd dominant in habitat unit: BED, BOL, BUB, LWD, RTW, SWD, UCB, VEG, OTH	RTW	0	TVG	AVG	AVG
17a	If an objective, did the feature increase instream shelter rating?	YES	NO	YES	YES	YES
17b	a. Calculate the shelter rating for the habitat unit: 0-300	240	0	135	5	120
18a	Large woody debris count in habitat unit: D >1', L 6-20'	0	0	0	0	0
18b	Large woody debris count in habitat unit: D >1', L >20'	0	0	0	0	0
19a	If an objective, did the feature increase LWD count in the habitat unit?	NO	NO	NO	NO	NO
19b	LWD recruitment mechanisms in habitat unit: ANC, EXC, EXH, INT, RPR, UNA, OTH	NON	0	NON	NON	NON
20.	Current stream channel problems in the habitat unit: AGG, BRD, FLO, GRC, HDC, INC, NAR, SCU, STT, WID, NON, OTH	NON	0	NON	NON	NON
21a	If an objective, did the feature lead to the targeted channel conditions?	YES	YES	YES	YES	YES
21b	Overall Offchannel Condition (site): AGG, FPD, GRC, INC, NAR, SIN, STB, TOG, WID, OTH	YES	YES	YES	YES	YES
21c	Outlet Conditions (site): AGG, FPD, GRC, INC, NAR, SIN, STB, TOG, WID, OTH	STB	STB	STB	STB	STB
21d	Inlet Conditions (site): AGG, FPD, GRC, INC, NAR, SIN, STB, TOG, WID, OTH	STB	STB	STB	STB	STB
22.	Were there any unintended effects on the stream channel at the feature? If Y, comment.	NO	NO	NO	NO	NO
23.	If an objective, did the feature decrease/increase velocity in the treatment area?	DEC	NA	DEC	DEC	DEC
24.	Targeted velocity/range in the habitat unit: (ft/sec)	0.5	0.5	0.5	0.5	0.5
25.	Did the feature achieve the targeted velocity?	YES	YES	YES	YES	YES
26a	Measured minimum velocity (ft/sec) in habitat unit	0	0	0	0	0
26b	Measured max velocity (ft/sec) in habitat unit	0.5	0.0	2.6	3.6	2.2
26c	Measured mean velocity (ft/sec) in habitat unit	0.1	0.0	0.5	1.5	1.0
27.	Area of habitat unit within targeted velocity: (ft <sup>2</sup> )	712.1	0.0	2858.3	150.6	1117.6
28.	Percent of habitat unit within targeted velocity (see above): (%)	100%	0%	65%	22%	30%
29.	Were there any unintended effects of feature on velocity? If Y, comment.	NO	NO	NO	NO	NO
30a	1st/2nd dominant substrate in habitat unit: BED, BOL, COB, GRV, SND, SLC, OTH	BOL	0	SLC	GRV	GRV
30b	2nd dominant substrate in habitat unit: BED, BOL, COB, GRV, SND, SLC, OTH	SND	0	SND	SND	SND
31.	If an objective, did the feature achieve the targeted substrate composition?	YES	YES	YES	YES	YES
32.	% Canopy Measurement:	NR	0	NR	NR	NR
33.	Photopoint data collected: YES /NO	NR	0	NR	NR	NR
34.	Temperature Profile: YES /NO	NR	0	NR	NR	NR
35.	Dissolved Oxygen Profile: YES/NO	NR	0	NR	NR	NR
36a	Total habitat unit area where targeted depth, velocity and shelter criteria overlap	376.5	0.0	2480.4	72.1	764.1
36b	Total habitat unit area where < 0.5 ft/s; 0.5 to 2 ft and shelter criteria overlap	376.5	0.0	2136.1	63.6	639.9
36c	Total habitat unit area where < 0.5 ft/s; 2 to 4 ft and shelter criteria overlap	0.0	0.0	344.3	8.5	124.2
36d	% habitat unit area where targeted depth, velocity and shelter criteria overlap	53%	0%	57%	10%	21%
36e	% habitat unit area where < 0.5 ft/s; 0.5 to 2 ft and shelter criteria overlap	53%	0%	49%	9%	17%
36f	% habitat unit area where < 0.5 ft/s; 2 to 4 ft and shelter criteria overlap	0%	0%	8%	1%	3%
37.	Does this feature need: DEC, ENH, MNT, REP, NON, OTH	NON	NON	NON	NON	NON
38.	Are additional restoration treatments recommended at this site?	NO	NO	NO	NO	NO

Table 54. Adaptive Management Plan full checklist for the Boaz Gros-Balthazard enhancement reach, March 2022.

	Project Reach	2
	Enhancement Reach	4
	Colloquial Name	TH
	mmddyy	42121
	Survey Type	PEF
	Project Site Number	5
	Project Site Type	SC Bank FP
	Project Feature Number	S5-25
	Feature Type Code	Willow Baffle
	Habitat Unit	HU05 D
	Habitat Type	Dry
1.	Length of targeted treatment (ft)	50
2.	Width of targeted treatment: (ft)	5
3.	Estimate area of the targeted feature: (ft <sup>2</sup> )	250
4.	Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	GOOD
5a	Are problems with the feature visible?	NO
5b	Types: ANC, BBB, CRF, MAT, SHF, STR, SWA, UND, UNS, WSH, OTH, NON	NON
6a	Is the feature still in its original location?	YES
6b	Is the feature still in its original position?	YES
6c	If yes: LBK, MDC, RBK, SPN, OTH	OTH
6d	Is the feature still in its original orientation?	YES
6e	If yes: DNS, MUL, PRL, PRP, UPS, OTH	PRP
7.	Current level II habitat type: FLT, POO, RIF, DRY, ALC, OTH	DRY
8.	If an objective, did the feature create the targeted instream habitat type?	YES
9.	Were there any unintended effects by the feature on the habitat type? If Y, comment.	NO
10.	Mean water depth in habitat unit: ft	0.0
11a	Maximum water depth in habitat unit: ft	0.0
11b	Area of habitat unit within 0.5 -2.0 ft depth: (ft <sup>2</sup> )	0.0
11c	Area of habitat unit within 2.0 -4.0 ft depth: (ft <sup>2</sup> )	0.0
11d	Area of habitat unit within 0.5-4.0 ft depth: (ft <sup>2</sup> )	0.0
11e	% Area of habitat unit within 0.5 -2.0 ft depth	0%
11f	% Area of habitat unit within 2.0 -4.0 ft depth	0%
11g	% Area of habitat unit within 0.5-4.0 ft depth	0%
11h	If an objective, did the feature increase/decrease water depth in the treatment area?	NO
12a	Targeted depth or range (ft) in habitat unit	0.5-4.0
12b	Estimate area of feature within targeted depth or range ft <sup>2</sup> :	
13.	Were there any unintended effects of the feature on the water depth? If Y, comment.	NO
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3	0
15.	Percent of habitat unit covered by shelter: %	0
16a	1st dominant cover in habitat unit: BED, BOL, BUB, LWD, RTW, SWD, UCB, VEG, OTH	NON
16b	2nd dominant in habitat unit: BED, BOL, BUB, LWD, RTW, SWD, UCB, VEG, OTH	NON
17a	If an objective, did the feature increase instream shelter rating?	NO
17b	a. Calculate the shelter rating for the habitat unit: 0-300	0
18a	Large woody debris count in habitat unit: D >1', L 6-20'	0
18b	Large woody debris count in habitat unit: D >1', L >20'	0
19a	If an objective, did the feature increase LWD count in the habitat unit?	NO
19b	LWD recruitment mechanisms in habitat unit: ANC, EXC, EXH, INT, RPR, UNA, OTH	NR
20.	Current stream channel problems in the habitat unit: AGG, BRD, FLO, GRC, HDC, INC, NAR, SCU, STT, WID, NON, OTH	NON
21a	If an objective, did the feature lead to the targeted channel conditions?	YES
21b	Overall Offchannel Condition (site): AGG, FPD, GRC, INC, NAR, SIN, STB, TOG, WID, OTH	STB
21c	Outlet Conditions (site): AGG, FPD, GRC, INC, NAR, SIN, STB, TOG, WID, OTH	STB
21d	Inlet Conditions (site): AGG, FPD, GRC, INC, NAR, SIN, STB, TOG, WID, OTH	STB
22.	Were there any unintended effects on the stream channel at the feature? If Y, comment.	NO
23.	If an objective, did the feature decrease/increase velocity in the treatment area?	NA
24.	Targeted velocity/range in the habitat unit: (ft/sec)	0.5
25.	Did the feature achieve the targeted velocity?	YES
26a	Measured minimum velocity (ft/sec) in habitat unit	0
26b	Measured max velocity (ft/sec) in habitat unit	0.0
26c	Measured mean velocity (ft/sec) in habitat unit	0.0
27.	Area of habitat unit within targeted velocity: (ft <sup>2</sup> )	0.0
28.	Percent of habitat unit within targeted velocity (see above): (%)	0%
29.	Were there any unintended effects of feature on velocity? If Y, comment.	NO
30a	1st/2nd dominant substrate in habitat unit: BED, BOL, COB, GRV, SND, SLC, OTH	GRV
30b	2nd dominant substrate in habitat unit: BED, BOL, COB, GRV, SND, SLC, OTH	SND
31.	If an objective, did the feature achieve the targeted substrate composition?	YES
32.	% Canopy Measurement:	NR
33.	Photopoint data collected: YES/NO	NR
34.	Temperature Profile: YES/NO	NR
35.	Dissolved Oxygen Profile: YES/NO	NR
36a	Total habitat unit area where targeted depth, velocity and shelter criteria overlap	0.0
36b	Total habitat unit area where < 0.5 f/s; 0.5 to 2 ft and shelter criteria overlap	0.0
36c	Total habitat unit area where < 0.5 f/s; 2 to 4 ft and shelter criteria overlap	0.0
36d	% habitat unit area where targeted depth, velocity and shelter criteria overlap	0%
36e	% habitat unit area where < 0.5 f/s; 0.5 to 2 ft and shelter criteria overlap	0%
36f	% habitat unit area where < 0.5 f/s; 2 to 4 ft and shelter criteria overlap	0%
37.	Does this feature need: DEC, ENH, MNT, REP, NON, OTH	NON
38.	Are additional restoration treatments recommended at this site?	NO

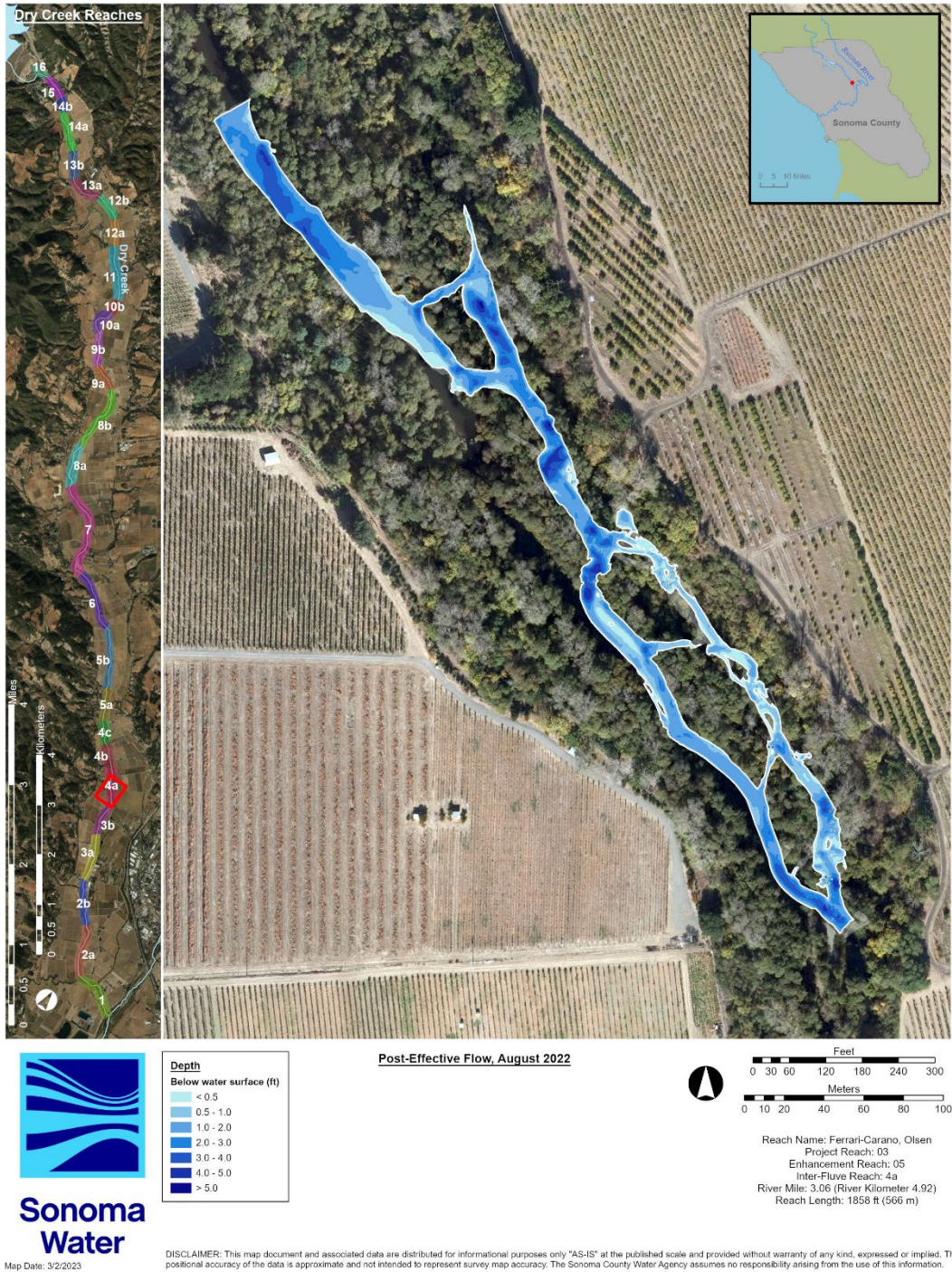
**Ferrari-Carano Olson, August 2022**

## Depth and Velocity

**Table 55. Areas and percentages of wetted area, optimal depth and velocity, and optimal hydraulic habitat within the Ferrari-Carrano Olson enhancement reach, August 2022.**

<b>Ferrari-Carano Olson, Post-effective flow, August 2022</b>	<b>Wetted area (ft<sup>2</sup>)</b>	<b>0.5 – 2.0 ft (ft<sup>2</sup>)</b>	<b>2.0 – 4.0 ft (ft<sup>2</sup>)</b>	<b>Total (ft<sup>2</sup>)</b>	<b>&lt; 0.5 ft/s (ft<sup>2</sup>)</b>	<b>0.5 – 2.0 ft, &lt; 0.5 ft/s (ft<sup>2</sup>)</b>	<b>2.0 – 4.0 ft, &lt; 0.5 ft/s (ft<sup>2</sup>)</b>	<b>Total (ft<sup>2</sup>)</b>
Main channel area	71,329	37,624	23,241	60,864	22,485	9,105	6,183	15,288
Side channel area	26,961	14,070	4,334	18,404	16,915	7,582	3,123	10,705
<b>Total area</b>	<b>98,290</b>	<b>51,693</b>	<b>27,575</b>	<b>79,268</b>	<b>39,399</b>	<b>16,687</b>	<b>9,306</b>	<b>25,993</b>
Main channel % of wetted area	73%	53%	33%	85%	32%	13%	9%	21%
Side channel % of wetted area	27%	52%	16%	68%	63%	28%	12%	40%
<b>Total % of wetted area</b>	<b>100%</b>	<b>53%</b>	<b>28%</b>	<b>81%</b>	<b>40%</b>	<b>17%</b>	<b>9%</b>	<b>26%</b>

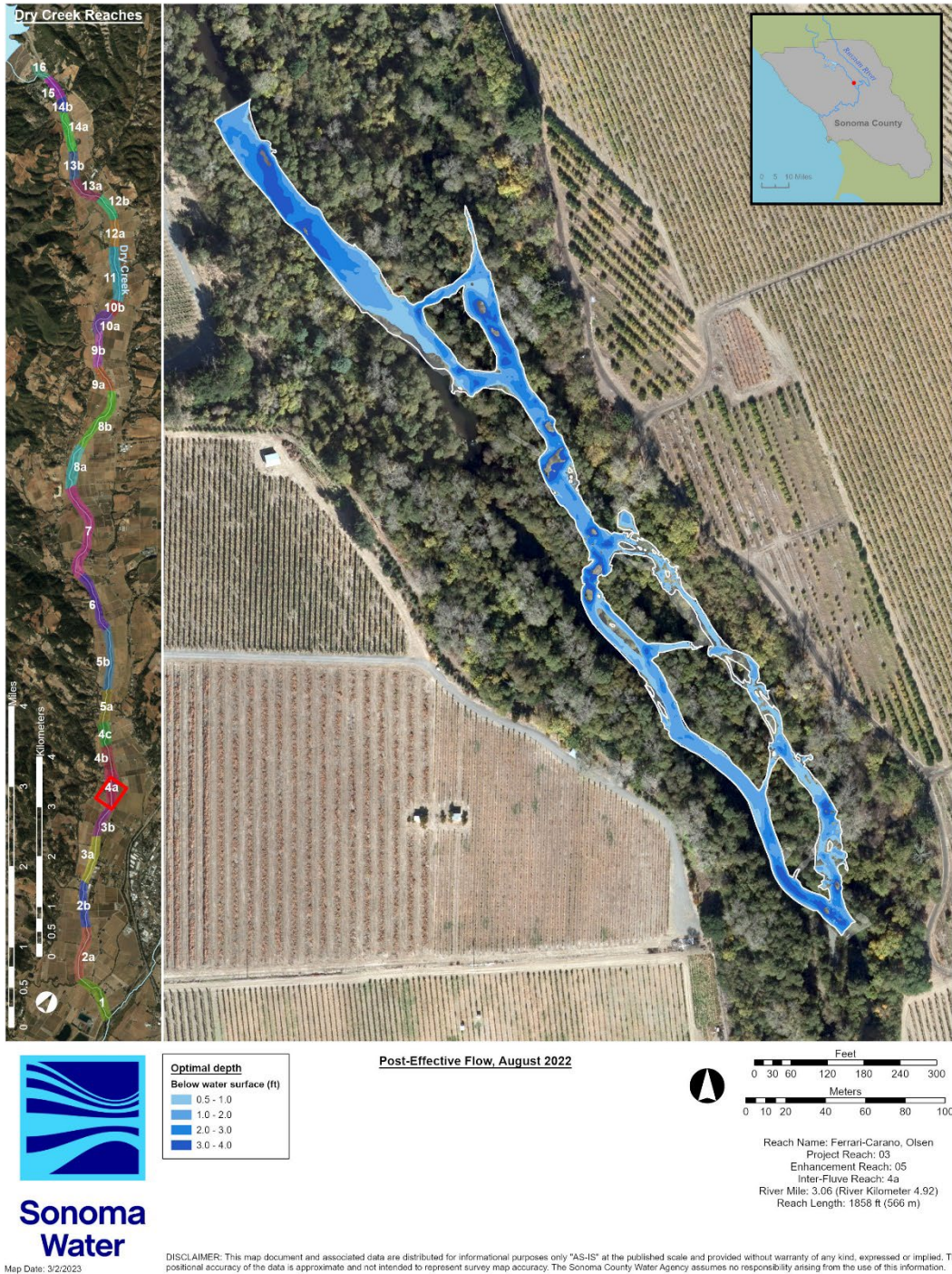
## Ferrari-Carano, Olsen Enhancement Reach



**Figure 93. Measured water depth within the Ferrari-Carano Olson enhancement reach, August 2022.**

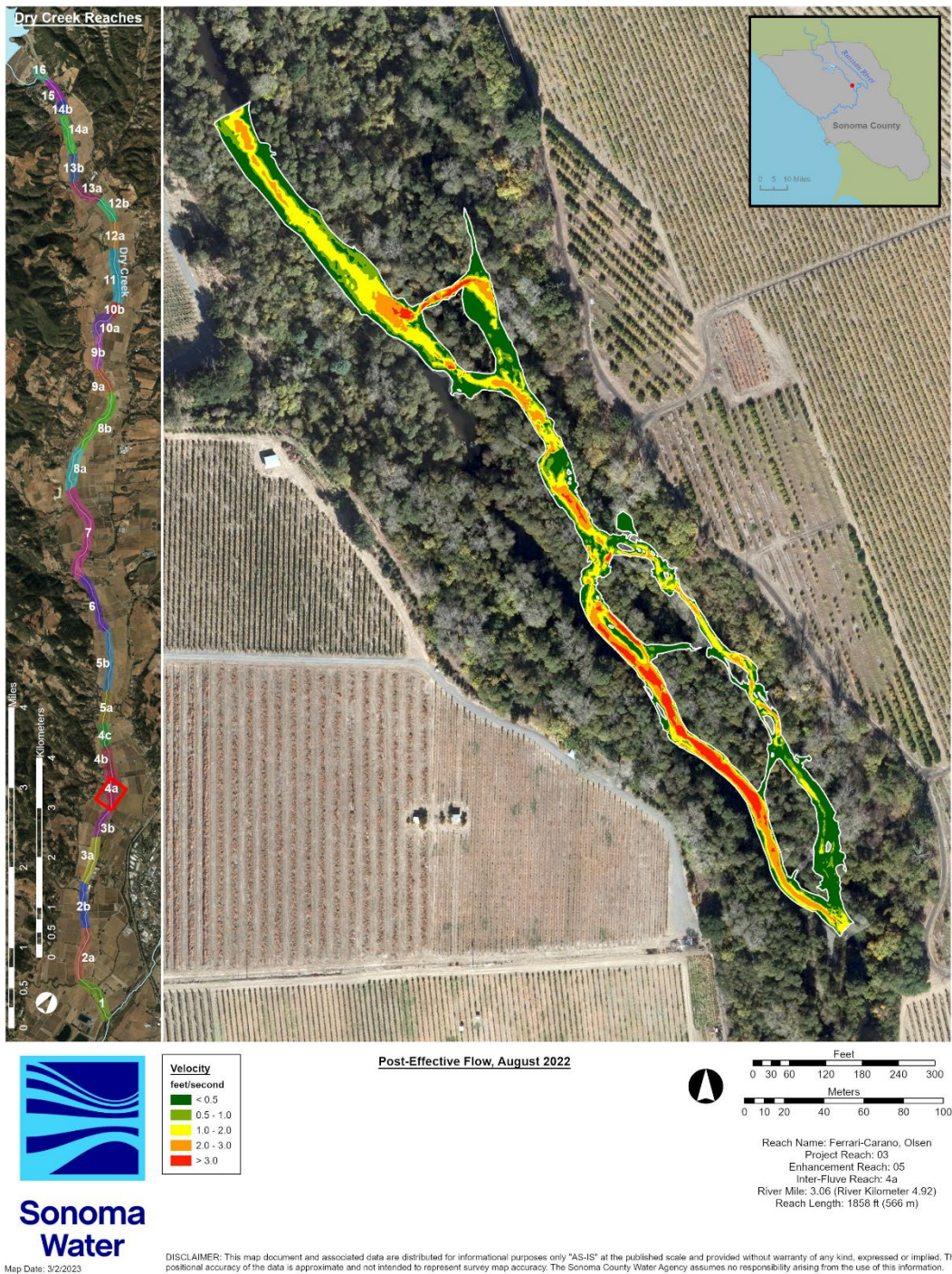


## Ferrari-Carano, Olsen Enhancement Reach



**Figure 94. Optimal water depth for fry (0.5-2.0 ft) and parr (2.0-4.0 ft) within the Ferrari-Carano Olsen enhancement reach, August 2022.**

## Ferrari-Carano, Olsen Enhancement Reach



**Figure 95. Measured water velocity within the Ferrari-Carano Olson enhancement reach, August 2022.**

## Ferrari-Carano, Olsen Enhancement Reach

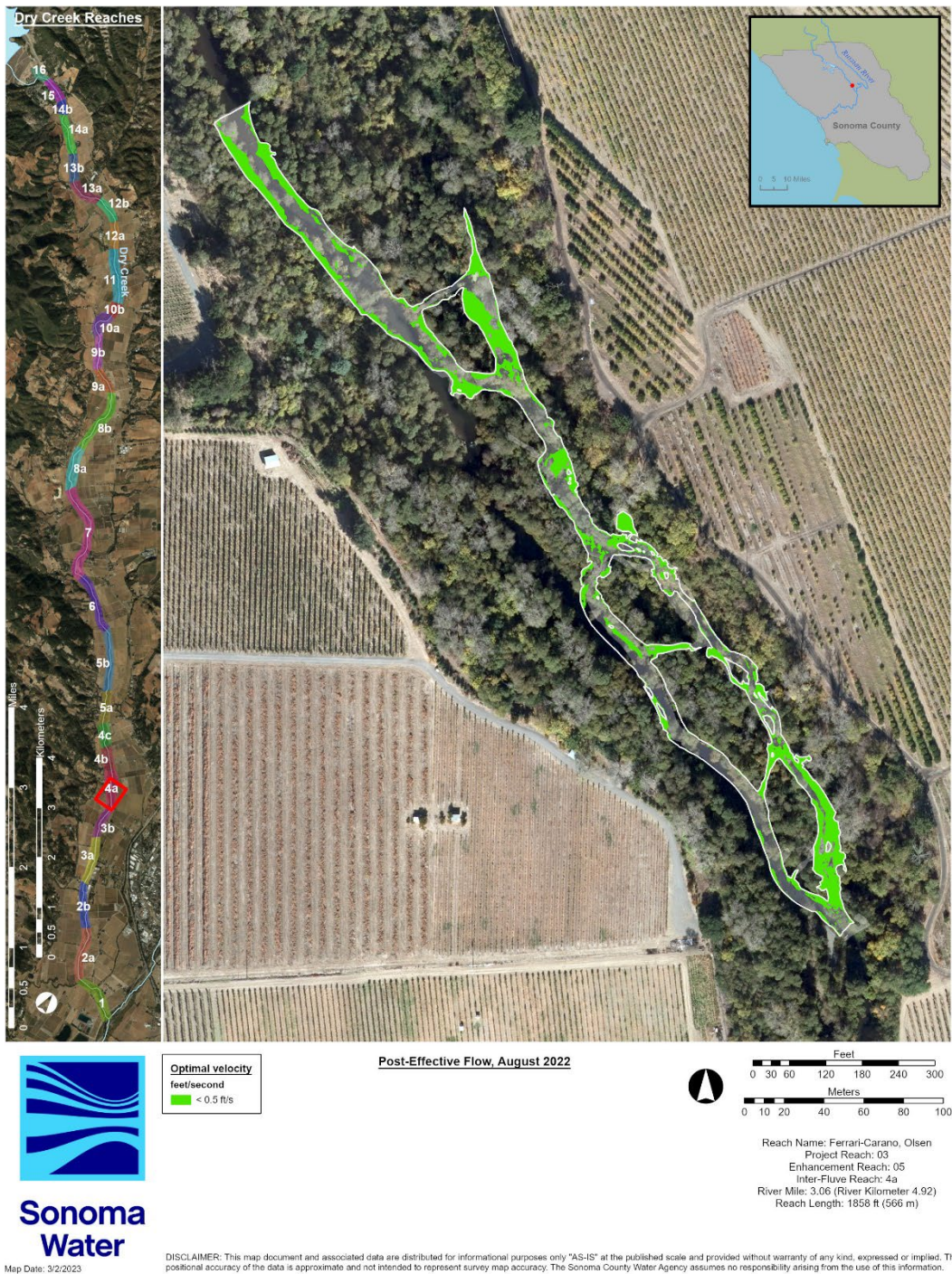
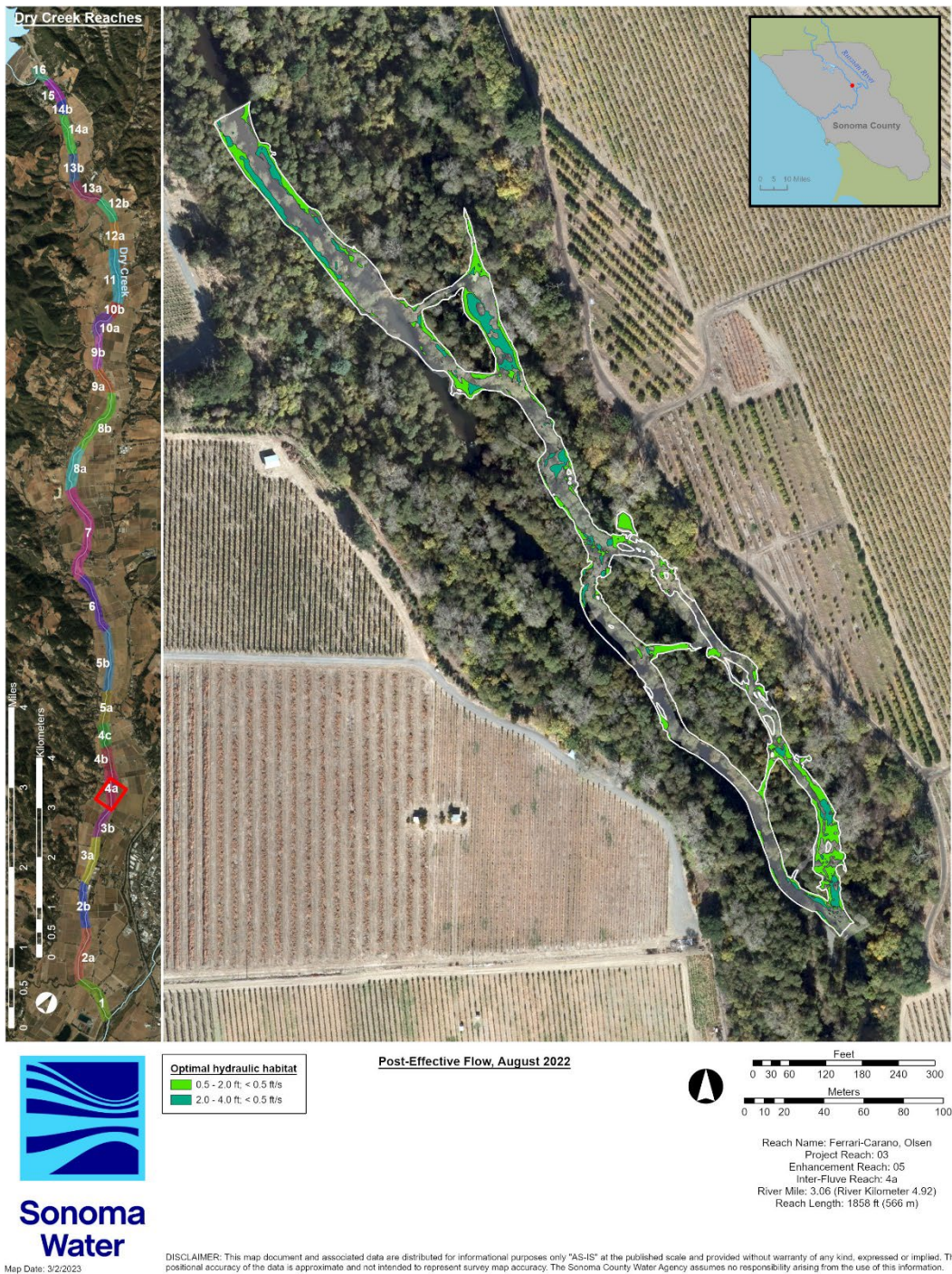


Figure 96. Optimal water velocity for fry and parr (< 0.5 ft/s) within the Ferrari-Carano Olson enhancement reach, August 2022.

## Ferrari-Carano, Olsen Enhancement Reach



**Figure 97. Optimal hydraulic habitat for fry (<0.5 ft/s, 0.5-2.0 ft) and parr (<0.5 ft/s, 2.0-4.0 ft) within the Ferrari-Carano Olson enhancement reach, August 2022.**

## Habitat Types and Shelter Values

**Table 56. Habitat, types, shelter value, percent cover, and shelter score for habitat units within the Ferrari-Carano Olson enhancement reach, August 2022.**

Habitat Unit #	Habitat Type	Shelter Value	Percent Cover	Shelter Score
HU01	Pool	3	95	285
HU02	Flatwater	3	80	240
HU03	Pool	3	75	225
HU04	Flatwater	2	45	90
HU05	Pool	3	75	225
HU06	Alcove	3	75	225
HU07	Flatwater	3	70	210
HU08	Riffle	3	25	75
HU09	Pool	3	30	90
HU10	Alcove	3	50	150
HU11	Flatwater	2	30	60
HU12	Pool	3	35	105
HU13	Riffle	1	10	10
HU14	Pool	3	40	120
HU15	Flatwater	2	30	60
HU16	Riffle	3	40	120
HU17	Riffle	3	30	90
HU18	Alcove	0	99	0
HU19	Pool	3	35	105
HU20	Flatwater	3	25	75
HU21	Riffle	3	20	60
HU22	Pool	3	30	90
HU23	Alcove	3	70	210
HU24	Pool	3	40	120
HU25	Pool	3	45	135
HU26	Flatwater	3	15	45
HU27	Pool	3	50	150
HU28	Pool	3	30	90
HU29	Flatwater	3	60	180
HU30	Pool	3	55	165
HU31	Riffle	3	20	60
HU32	Pool	3	80	240
HU33	Flatwater	2	30	60
HU34	Alcove	3	80	240
HU35	Pool	2	20	40
HU36	Flatwater	2	15	30
HU37	Pool	3	40	120
HU38	Flatwater	3	30	90
<b>Pool: riffle</b>	<b>16:6 (2.67)</b>			<b>Avg = 123</b>

## Ferrari-Carano, Olsen Enhancement Reach

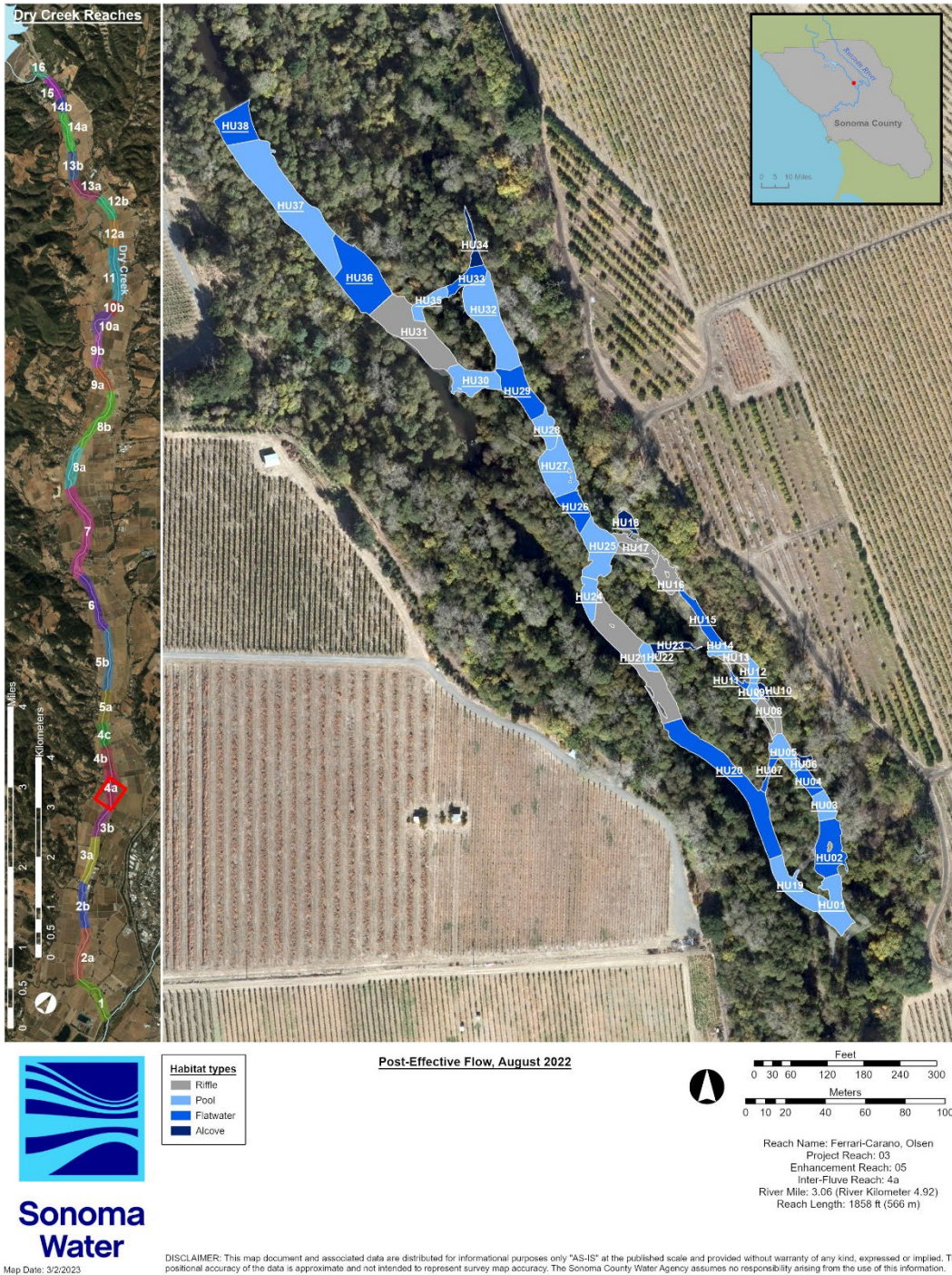


Figure 98. Habitat unit number and type within the Ferrari-Carano Olson enhancement reach, August 2022.

## Ferrari-Carano, Olsen Enhancement Reach

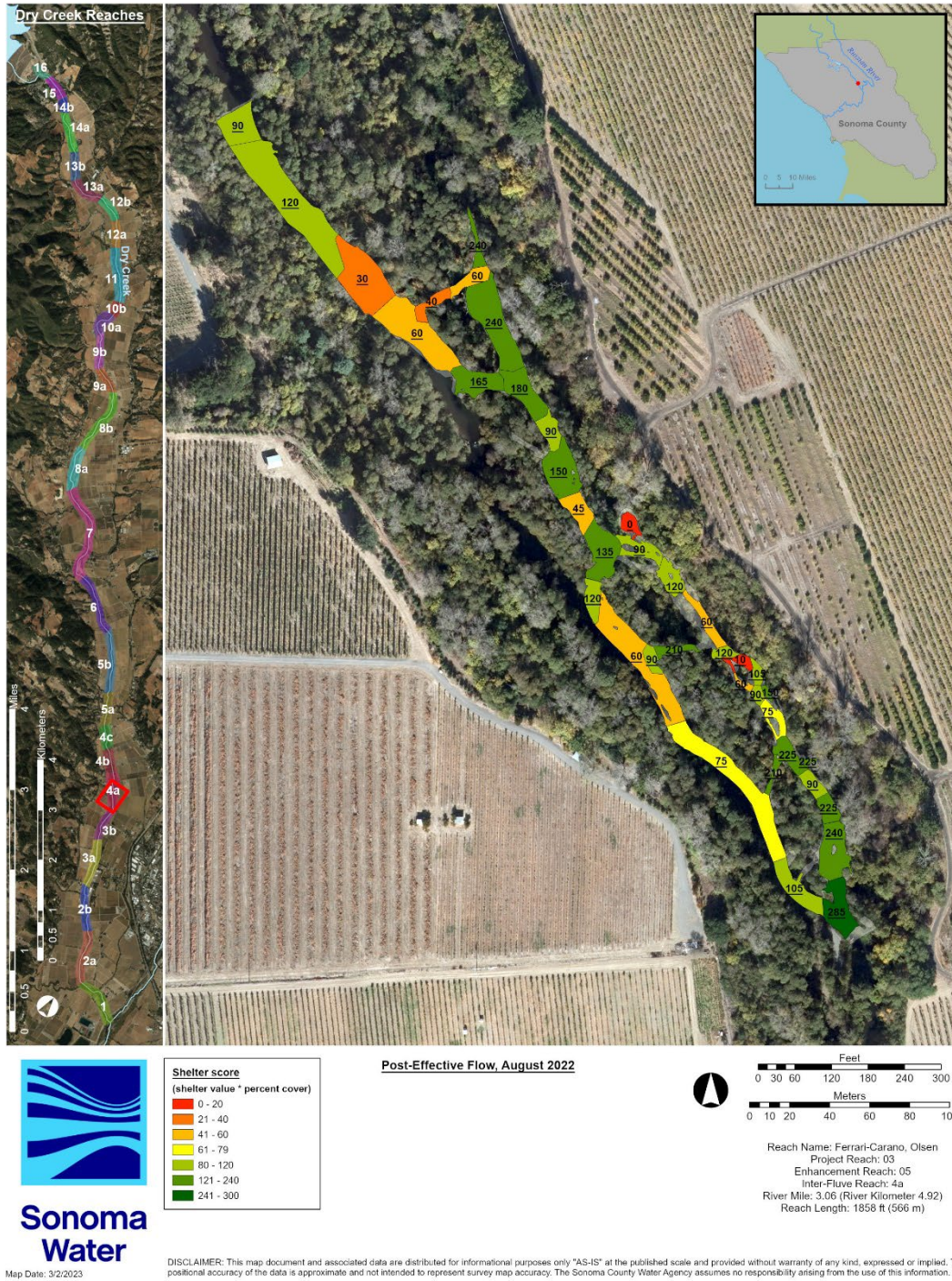


Figure 99. Habitat unit shelter scores within the Ferrari-Carano Olson enhancement reach, August 2022.

## Feature, Habitat Unit, Site, and Reach Ratings



Table 57. Post-enhancement feature ratings for the Ferrari-Carano Olson enhancement reach August 2022.

Project Reach	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Enhancement Reach	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Colloquial Name	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO
nmddy	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522
Survey Type	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF
PROJECT SITE NUMBER	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Project Site Type	MainChan	MainChan	MainChan	MainChan	MainChan	MainChan	MainChan	MainChan	MainChan	MainChan	MainChan	MainChan	MainChan	MainChan	MainChan	MainChan	MainChan	MainChan	MainChan
PROJECT FEATURE NUMBER	S1-01	S1-02	S1-03	S1-04	S1-05	S1-06	S1-07	S1-08	S1-09	S1-10	S1-11	S1-12	S1-13	S1-14	S1-15	S1-16	S1-17	S1-18	
Feature Type Code	BF	TT	TT	TT	BF	TT	BF	TT	TT	TT	TT	TT	TT	LW	TT	TT	TT	LW	LW
Habitat Unit	HU01	HU01 D	HU20	HU01 D	HU21	HU01 D	HU21	HU01 D	HU01 D	HU01 D	HU01 D	HU01 D	HU01 D	HU01 D	HU01 D	HU21	HU20	HU01 D	
Habitat Type	Pool	Dry	Flatwater	Dry	Riffle	Dry	Riffle	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Riffle	Flatwater	Dry	
4. Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	GOOD	FAIL	GOOD	FAIL	GOOD	FAIL	FAIL	FAIL	FAIL	GOOD	GOOD	UNKN	POOR	FAIL	GOOD	GOOD	GOOD	FAIL	
5a. Are problems with the feature visible?	YES	NA	NO	NA	NO	YES	NA	YES	YES	YES	YES	YES	YES	YES	YES	NO	NO	YES	
6a. Is the feature still in its original location?	YES	NA	YES	NA	YES	NO	NA	NO	NO	NO	YES	YES	YES	YES	NO	YES	YES	NO	
6b. Is the feature still in its original position?	YES	NA	YES	NA	YES	NO	NA	NO	NO	NO	NO	YES	YES	NO	NO	YES	YES	NO	
6d. Is the feature still in its original orientaton?	YES	NA	YES	NA	YES	NO	NA	NO	NO	NO	NO	YES	YES	YES	NO	YES	YES	NO	
8. If an objective, did the feature create the targeted instream habitat type?	YES	NA	YES	NA	YES	NO	NA	NO	NO	NO	NO	NO	YES	YES	NO	NO	YES	NO	
9. Were there any unintended effects by the feature on the habitat type? If Y, comment.	NO	NA	NO	NA	NO	NO	NA	NO	NO	NO	NO	YES	NO	YES	YES	NO	NO	YES	
17a. If an objective, did the feature increase instream shelter rating?	YES	NA	YES	NA	YES	NO	NA	NO	NO	NO	NO	YES	YES	NO	NO	YES	YES	YES	
19a. If an objective, did the feature increase LWD count in the habitat unit?	NO	NA	NO	NA	NO	NO	NA	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
21a. If an objective, did the feature lead to the targeted channel conditions?	YES	NA	NO	NA	YES	NO	NA	NO	NO	NO	NO	YES	NO	NO	NO	YES	YES	NO	
25. Did the feature achieve the targeted velocity?	YES	NA	YES	NA	YES	NO	NA	NO	NO	NO	NO	YES	YES	NO	NO	YES	YES	NO	
PROJECT FEATURE NUMBER	S1-01	S1-02	S1-03	S1-04	S1-05	S1-06	S1-07	S1-08	S1-09	S1-10	S1-11	S1-12	S1-13	S1-14	S1-15	S1-16	S1-17	S1-18	
4. Structural condition of feature: EXCL (5 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)	4	1	4	1	4	1	1	1	1	1	4	4	0	2	1	4	4	1	
5a. Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)	0	0	1	0	1	0	0	0	0	0	0	1	0	0	0	1	1	0	
6a. Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)	1	0	1	0	1	0	0	0	0	0	1	1	1	0	1	1	1	0	
6b. Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)	1	0	1	0	1	0	0	0	0	0	0	1	1	0	0	1	1	0	
6d. Is the feature still in its original orientaton? (YES = 1 pt, NO = 0 pt)	1	0	1	0	1	0	0	0	0	0	1	1	1	0	0	1	1	0	
8. If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)	1	0	1	0	1	0	0	0	0	0	0	1	0	0	0	1	1	0	
9. Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)	1	0	1	0	1	0	1	0	1	1	0	1	0	0	1	1	1	0	
17a. If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)	1	0	1	0	1	0	0	0	0	0	0	1	1	0	0	1	1	1	
19a. If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
21a. If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)	1	0	0	0	1	0	0	0	0	0	0	1	0	0	0	1	1	0	
25. Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)	1	0	1	0	1	0	0	0	0	0	0	1	1	0	0	1	1	0	
PROJECT FEATURE NUMBER	S1-01	S1-02	S1-03	S1-04	S1-05	S1-06	S1-07	S1-08	S1-09	S1-10	S1-11	S1-12	S1-13	S1-14	S1-15	S1-16	S1-17	S1-18	
FEATURE RATING	12	1	12	1	13	2	1	2	2	2	6	13	4	4	2	13	13	2	
Feature quantitative rating out of 15																			
Feature qualitative rating Excellent (>=12), Good (>=9), Fair(>=6), Poor (>=3), Fail (<3)	Excellent	Not rated	Excellent	Not rated	Excellent	Not rated	Not rated	Not rated	Not rated	Not rated	Not rated	Excellent	Not rated	Not rated	Not rated	Excellent	Excellent	Fail	

Table 57. Post-enhancement feature ratings for the Ferrari-Carano Olson enhancement reach August 2022.

Project Reach	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Enhancement Reach	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Colloquial Name	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO
mmdyyy	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522
Survey Type	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF
PROJECT SITE NUMBER	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
PROJECT FEATURE NUMBER	S1-19	S1-20	S1-21	NA	S2-01	S2-02	S2-03	S2-04	S2-05	S2-06	S2-07	S2-08	S2-09	S2-10	S2-11	S2-12	S2-13	S2-14	S2-14	
Feature Type Code	FB	FB	FB	NA	LW	HW2	HW1	HW2	HW1	LWV	HW1	HW1	LWV	HW1	PW	HW1	R	HW1	HW1	
Habitat Unit	HU01 D	HU01 D	HU01 D	HU01 2	HU01 2	HU02	HU02	HU02	HU02	HU02	HU02 D	HU02	HU03	HU03	HU03	HU02 D	HU04	HU02 D	HU02 D	
Habitat Type	Dry	Dry	Dry	Pool	Pool	Flatwater	Flatwater	Flatwater	Flatwater	Flatwater	Dry	Flatwater	Pool	Pool	Pool	Dry	Flatwater	Flatwater	Dry	
4. Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	GOOD	GOOD	GOOD	NA	FAIR	GOOD	EXCL	FAIR	EXCL	FAIL	EXCL	GOOD	GOOD	EXCL	EXCL	EXCL	EXCL	FAIR	EXCL	
5a. Are problems with the feature visible?	NO	NO	NO	NA	YES	NO	NO	YES	NO	YES	NO	YES	NO	NO	NO	NO	NO	NO	NO	
6a. Is the feature still in its original location?	YES	YES	YES	NA	YES	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	
6b. Is the feature still in its original position?	YES	YES	YES	NA	NO	NO	NO	NO	YES	NO	YES	NO	YES	NO	YES	YES	NO	YES	YES	
6d. Is the feature still in its original orientaton?	YES	YES	YES	NA	YES	YES	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	YES	YES	
8. If an objective, did the feature create the targeted instream habitat type?	YES	YES	YES	NA	YES	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	
9. Were there any unintended effects by the feature on the habitat type? If Y, comment.	NO	NO	NO	NA	NO	NO	NO	YES	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	
17a. If an objective, did the feature increase instream shelter rating?	NO	NO	NO	NA	YES	YES	YES	YES	YES	NO	NO	YES	YES	YES	YES	YES	NO	YES	NO	
19a. If an objective, did the feature increase LWD count in the habitat unit?	NO	NO	NO	NA	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
21a. If an objective, did the feature lead to the targeted channel conditions?	YES	YES	YES	NA	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	
25. Did the feature achieve the targeted velocity?	NO	NO	NO	NA	YES	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	
PROJECT FEATURE NUMBER	S1-19	S1-20	S1-21	NA	S2-01	S2-02	S2-03	S2-04	S2-05	S2-06	S2-07	S2-08	S2-09	S2-10	S2-11	S2-12	S2-13	S2-14	S2-14	
4. Structural condition of feature: EXCL (5 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)	4	4	4	0	3	4	5	3	5	1	5	4	4	5	5	5	3	5	5	
5a. Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)	1	1	1	0	0	1	1	1	0	1	0	1	1	1	1	1	1	1	1	
6a. Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	
6b. Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)	1	1	1	0	0	0	0	0	1	0	1	0	1	0	1	0	1	1	1	
6d. Is the feature still in its original orientaton? (YES = 1 pt, NO = 0 pt)	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	
8. If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	
9. Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)	1	1	1	0	1	1	1	0	1	0	1	1	1	1	1	1	1	1	1	
17a. If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)	0	0	0	0	1	1	1	1	1	0	0	1	1	1	1	0	1	0	0	
19a. If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
21a. If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	
25. Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)	0	0	0	0	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	
PROJECT FEATURE NUMBER	S1-19	S1-20	S1-21	NA	S2-01	S2-02	S2-03	S2-04	S2-05	S2-06	S2-07	S2-08	S2-09	S2-10	S2-11	S2-12	S2-13	S2-14	S2-14	
FEATURE RATING	11	11	11	0	10	12	13	9	14	2	13	12	13	14	13	13	12	12	12	
Feature quantitative rating out of 15																				
Feature qualitative rating Excellent (>=12), Good (>=9), Fair(>=6), Poor (>=3), Fail (<3)	Good	Good	Good	Not rated	Good	Excellent	Excellent	Good	Excellent	Not rated	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	

Table 57. Post-enhancement feature ratings for the Ferrari-Carano Olson enhancement reach August 2022.

		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Project Reach		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Enhancement Reach		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Colloquial Name		FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO
nmddy		82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522
Survey Type		PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF
PROJECT SITE NUMBER		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
PROJECT FEATURE NUMBER		S2-15	S2-16	S2-17	S2-18	S2-19	S2-20	S2-21	S2-22	S2-23	S2-24	S2-25	S2-26	S2-27	S2-28	S2-29	S2-30	S2-31	S2-32	
Feature Type Code		PW	HW2	HW1	HW1	HW1	HW1	LWW	R	HW1	HW1	PW	TT	R	HW1	HW2	HW1	LW	ALS	
Habitat Unit		HU05	HU06	HU05	HU06	HU02 D	HU05	HU06	HU08	HU09	HU12	HU12	HU02 D	HU13	HU02 D	HU02 D	HU02 D	HU23 2	HU22 2	
Habitat Type		Pool	Alcove	Pool	Alcove	Dry	Pool	Alcove	Rifle	Pool	Dry	Pool	Dry	Rifle	Dry	Dry	Dry	Alcove	Pool	
4.	Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	EXCL	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	GOOD	EXCL	GOOD	GOOD	FAIL	GOOD	FAIR	POOR	POOR	FAIR	GOOD	
5a	Are problems with the feature visible?	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	YES	NO	YES	YES	YES	YES	NO	
6a	Is the feature still in its original location?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	
6b	Is the feature still in its original position?	YES	YES	NO	YES	NO	NO	YES	YES	NO	NO	YES	NO	YES	NO	NO	NO	NO	NO	
6d	Is the feature still in its original orientaton?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	
8.	If an objective, did the feature create the targeted instream habitat type?	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	NO	YES	NO	NO	NO	NO	YES	
9.	Were there any unintended effects by the feature on the habitat type? If Y, comment.	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES	YES	YES	NO	
17a	If an objective, did the feature increase instream shelter rating?	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	NO	YES	NO	NO	YES	YES	YES	
19a	If an objective, did the feature increase LWD count in the habitat unit?	NO	NO	NO	NO	NO	YES	NO	YES	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	
21a	If an objective, did the feature lead to the targeted channel conditions?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	
25.	Did the feature achieve the targeted velocity?	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	NO	YES	YES	
PROJECT FEATURE NUMBER		S2-15	S2-16	S2-17	S2-18	S2-19	S2-20	S2-21	S2-22	S2-23	S2-24	S2-25	S2-26	S2-27	S2-28	S2-29	S2-30	S2-31	S2-32	
4.	Structural condition of feature: EXCL (5 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)	5	4	4	4	4	4	4	4	5	4	4	1	4	3	2	2	3	4	
5a	Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)	1	1	1	1	0	1	1	1	1	1	1	0	1	0	0	0	0	1	
6a	Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	
6b	Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)	1	1	0	1	0	0	1	1	0	0	1	0	1	0	0	0	0	0	
6d	Is the feature still in its original orientaton? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	
8.	If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)	1	1	1	1	0	1	1	1	1	1	1	0	1	0	0	0	0	1	
9.	Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)	1	1	1	1	0	1	1	1	1	1	1	1	1	0	0	0	0	1	
17a	If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)	1	1	1	1	0	1	1	1	1	1	1	0	1	0	0	1	1	1	
19a	If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	
21a	If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
25.	Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)	1	1	1	1	0	1	1	1	1	1	1	1	1	0	0	1	1	1	
PROJECT FEATURE NUMBER		S2-15	S2-16	S2-17	S2-18	S2-19	S2-20	S2-21	S2-22	S2-23	S2-24	S2-25	S2-26	S2-27	S2-28	S2-29	S2-30	S2-31	S2-32	
FEATURE RATING		Feature quantitative rating out of 15																		
		14	13	12	13	7	13	13	14	13	12	13	4	13	7	5	7	8	12	
FEATURE RATING		Feature qualitative rating Excellent (>=12), Good (>=9), Fair(>=6), Poor (>=3), Fail (<3)																		
		Excellent	Excellent	Excellent	Excellent	Fair	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Not rated	Excellent	Not rated	Not rated	Not rated	Not rated	Excellent	

Table 57. Post-enhancement feature ratings for the Ferrari-Carano Olson enhancement reach August 2022.

Project Reach	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Enhancement Reach	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Colloquial Name	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO
nmddy	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522
Survey Type	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF
	PROJECT SITE NUMBER																			
Project Site Type	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan
	PROJECT FEATURE NUMBER																			
Feature Type Code	S2-35	S2-36	S2-37	S2-38	S2-39	S2-40	S2-41	S2-42	S2-43	S2-44	S2-45	S2-46	S2-47	S2-48	S2-49	S2-50	S2-51	S2-52	S2-52	S2-52
Habitat Unit	PW	R	PW	HW2	LW	LW	HW2	HW1	ALS	TT	R	PW	HW1	HW1	HW1	HW1	HW1	HW1	R	PW
Habitat Type	HU02 D	HU16	HU16	HU16	HU16	HU02 D	HU25 2	HU25 2	HU24 2	HU02 D	HU17	HU25 2	HU17	HU17	HU18	HU18	HU18	HU26 2	HU27 2	HU27 2
	Dry	Riffle	Riffle	Riffle	Riffle	Dry	Pool	Pool	Pool	Dry	Riffle	Pool	Riffle	Riffle	Alcove	Alcove	Flatwater	Flatwater	Pool	Pool
4.	Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	FAIR	GOOD	EXCL	EXCL	FAIR	FAIR	GOOD	GOOD	GOOD	GOOD	FAIL	GOOD	EXCL	EXCL	EXCL	EXCL	EXCL	EXCL	GOOD
5a	Are problems with the feature visible?	YES	NO	NO	NO	YES	YES	NO	NO	NO	NO	YES	NO	NO	YES	YES	YES	YES	YES	NO
6a	Is the feature still in its original location?	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	YES	NO	YES
6b	Is the feature still in its original position?	YES	YES	YES	NO	NO	NO	NO	NO	NO	NO	YES	NO	YES	YES	YES	YES	YES	NO	YES
6d	Is the feature still in its original orientaton?	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES
8.	If an objective, did the feature create the targeted instream habitat type?	NO	YES	YES	YES	YES	NO	YES	YES	YES	NO	YES	NO	YES	NO	NO	NO	NO	NO	YES
9.	Were there any unintended effects by the feature on the habitat type? If Y, comment.	YES	NO	NO	NO	YES	YES	NO	NO	NO	NO	NO	NO	YES	YES	YES	YES	YES	YES	NO
17a	If an objective, did the feature increase instream shelter rating?	NO	YES	YES	YES	YES	NO	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES
19a	If an objective, did the feature increase LWD count in the habitat unit?	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES	NO	NO	YES	NO	NO	NO	YES
21a	If an objective, did the feature lead to the targeted channel conditions?	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	NO	NO	NO	NO	NO	YES
25.	Did the feature achieve the targeted velocity?	NO	YES	YES	YES	YES	NO	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES
	PROJECT FEATURE NUMBER																			
	S2-35	S2-36	S2-37	S2-38	S2-39	S2-40	S2-41	S2-42	S2-43	S2-44	S2-45	S2-46	S2-47	S2-48	S2-49	S2-50	S2-51	S2-52	S2-52	S2-52
4.	Structural condition of feature: EXCL (5 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)	3	4	5	5	3	3	4	4	4	1	4	5	5	5	5	1	4	4	4
5a	Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)	0	1	1	1	0	0	1	1	1	0	1	1	0	0	0	0	0	0	1
6a	Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	1
6b	Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)	1	1	1	0	0	0	0	0	0	0	1	0	1	1	1	1	1	0	1
6d	Is the feature still in its original orientaton? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1
8.	If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)	0	1	1	1	1	0	1	1	1	0	1	0	0	0	0	0	0	0	1
9.	Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)	0	1	1	1	0	0	1	1	1	1	1	0	0	0	0	0	0	0	1
17a	If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)	0	1	1	1	1	0	1	1	1	0	1	1	1	1	1	1	1	1	1
19a	If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	1
21a	If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	1
25.	Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)	0	1	1	1	1	0	1	1	1	0	1	1	1	1	1	1	1	1	1
	PROJECT FEATURE NUMBER																			
	S2-35	S2-36	S2-37	S2-38	S2-39	S2-40	S2-41	S2-42	S2-43	S2-44	S2-45	S2-46	S2-47	S2-48	S2-49	S2-50	S2-51	S2-52	S2-52	S2-52
FEATURE RATING	Feature quantitative rating out of 15	7	13	14	13	9	6	12	12	12	3	14	14	10	10	11	10	4	14	14
	Feature qualitative rating Excellent (>=12), Good (>=9), Fair(>=6), Poor (>=3), Fail (<3)	Fair	Excellent	Excellent	Excellent	Good	Fair	Excellent	Excellent	Excellent	Not rated	Excellent	Excellent	Good	Good	Good	Good	Good	Poor	Excellent



Table 57. Post-enhancement feature ratings for the Ferrari-Carano Olson enhancement reach August 2022.

Project Reach	3																					
Enhancement Reach	5																					
Colloquial Name	FO																					
mmdyy	82522																					
Survey Type	PEF																					
PROJECT SITE NUMBER	2																					
PROJECT SITE TYPE	SideChan																					
PROJECT FEATURE NUMBER	S2-94																					
Feature Type Code	BF																					
Habitat Unit	HU16																					
Habitat Type	Rifle																					
4.	Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	EXCL	GOOD	FAIR	FAIR	UNKN	FAIL	POOR	UNKN	FAIL	FAIR	FAIR	FAIR	FAIR	UNKN	FAIL	FAIL	UNKN	UNKN	GOOD	GOOD	GOOD
5a	Are problems with the feature visible?	NO	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
6a	Is the feature still in its original location?	YES	YES	YES	YES	YES	NO	YES	YES	NO	YES	YES	YES	YES	YES	UNK	NO	NO	YES	UNK	YES	YES
6b	Is the feature still in its original position?	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	UNK	NO	NO	NO	NO	NO	NO	NO
6d	Is the feature still in its original orientation?	YES	YES	YES	YES	YES	NO	YES	YES	NO	YES	YES	YES	YES	UNK	NO	NO	UNK	UNK	YES	YES	YES
8.	If an objective, did the feature create the targeted instream habitat type?	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
9.	Were there any unintended effects by the feature on the habitat type? If Y, comment.	NO	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO
17a	If an objective, did the feature increase instream shelter rating?	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
19a	If an objective, did the feature increase LWD count in the habitat unit?	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
21a	If an objective, did the feature lead to the targeted channel conditions?	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
25.	Did the feature achieve the targeted velocity?	YES	YES	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
	<b>PROJECT FEATURE NUMBER</b>	<b>S2-94</b>	<b>S3-01</b>	<b>S3-02</b>	<b>S3-03</b>	<b>S3-04</b>	<b>S3-05</b>	<b>S3-06</b>	<b>S3-07</b>	<b>S3-08</b>	<b>S3-09</b>	<b>S3-10</b>	<b>S3-11</b>	<b>S3-12</b>	<b>S3-13</b>	<b>S3-14</b>	<b>S3-15</b>	<b>S3-16</b>	<b>S3-17</b>	<b>S3-18</b>	<b>S3-19</b>	<b>S3-20</b>
4.	Structural condition of feature: EXCL (5 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)	5	4	3	3	0	1	2	0	1	3	3	3	3	0	1	1	0	4	4	4	4
5a	Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6a	Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	0	1	1	0	1	1	1	1	0	0	1	0	1	1	1	1
6b	Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6d	Is the feature still in its original orientation? (YES = 1 pt, NO = 0 pt)	1	1	1	1	1	0	1	1	0	1	1	1	1	0	0	0	0	1	1	1	1
8.	If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
9.	Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
17a	If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19a	If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21a	If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25.	Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<b>PROJECT FEATURE NUMBER</b>	<b>S2-94</b>	<b>S3-01</b>	<b>S3-02</b>	<b>S3-03</b>	<b>S3-04</b>	<b>S3-05</b>	<b>S3-06</b>	<b>S3-07</b>	<b>S3-08</b>	<b>S3-09</b>	<b>S3-10</b>	<b>S3-11</b>	<b>S3-12</b>	<b>S3-13</b>	<b>S3-14</b>	<b>S3-15</b>	<b>S3-16</b>	<b>S3-17</b>	<b>S3-18</b>	<b>S3-19</b>	<b>S3-20</b>
<b>FEATURE RATING</b>	Feature quantitative rating out of 15	14	13	5	5	2	1	4	2	1	5	5	5	5	0	1	1	1	0	7	8	8
	Feature qualitative rating Excellent (>=12), Good (>=9), Fair(>=6), Poor (>=3), Fail (<3)	Excellent	Excellent	Not rated	Not rated	Not rated	Not rated	Not rated	Not rated	Not rated	Not rated	Not rated	Not rated	Not rated	Not rated	Not rated	Not rated	Not rated	Not rated	Not rated	Not rated	Not rated

## Ferrari-Carano, Olson Enhancement Reach

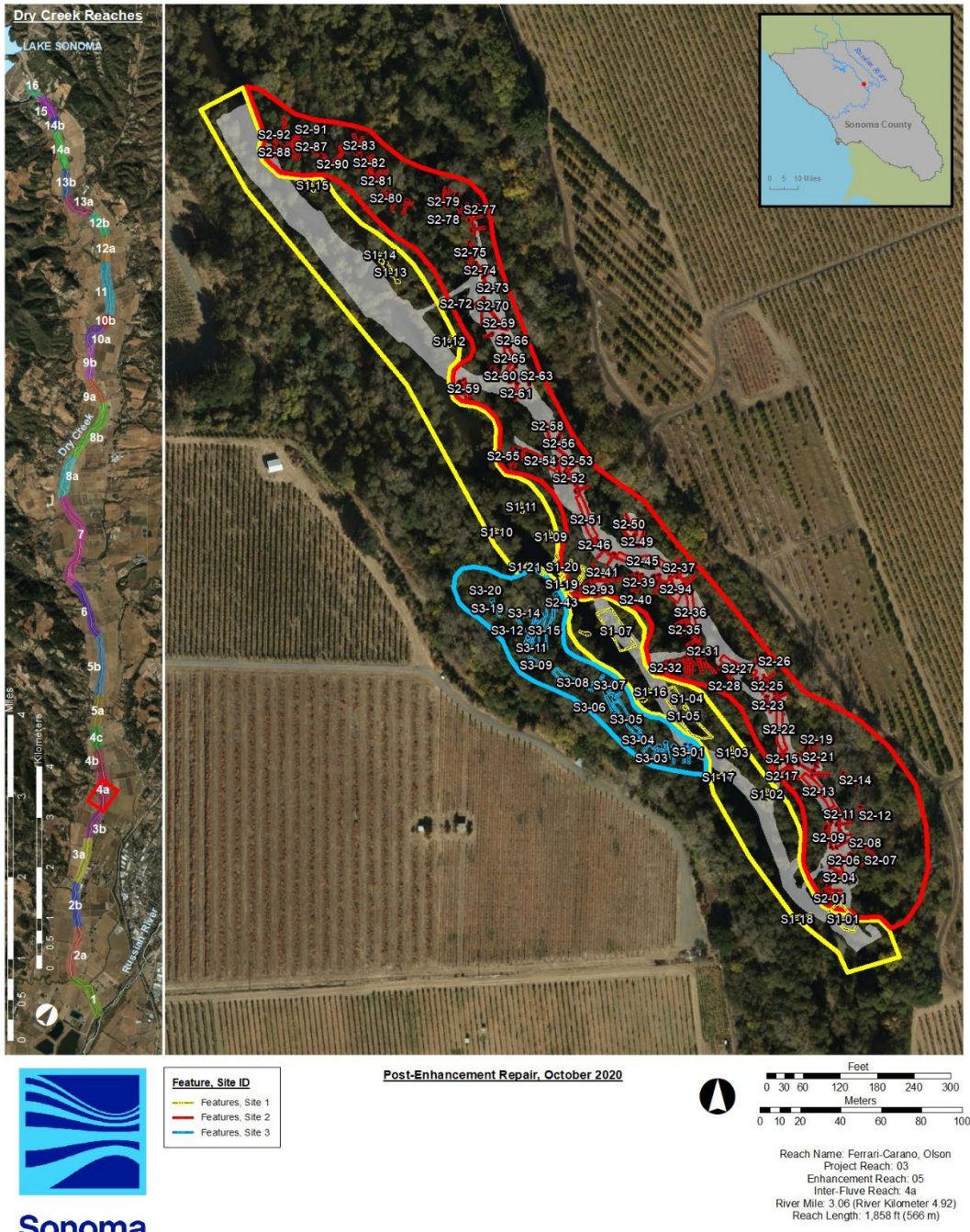


Figure 100. Enhancement sites and features within the Ferrari-Carano Olson enhancement reach, August 2022.

# Ferrari-Carano, Olsen Enhancement Reach

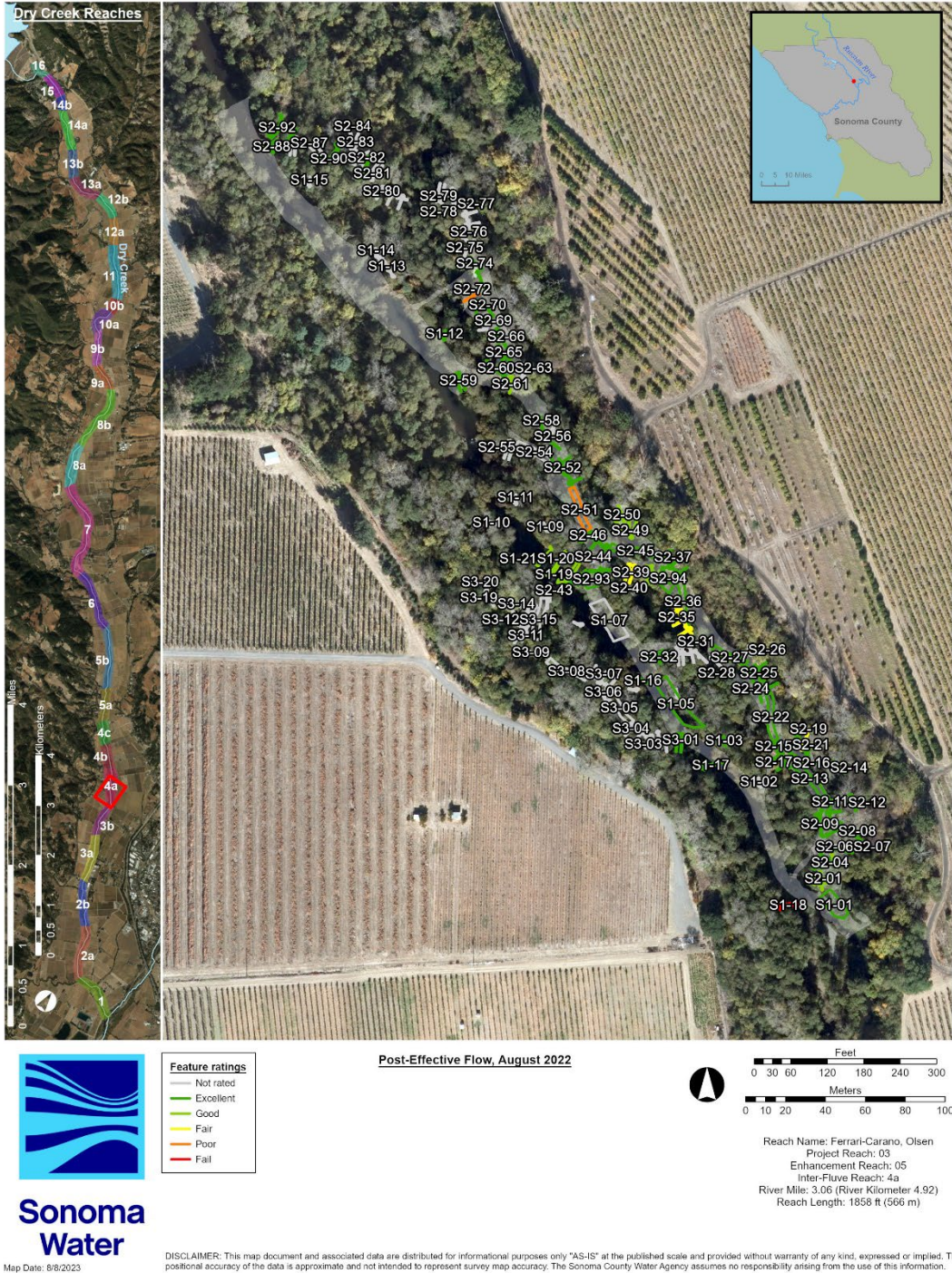


Figure 101. Feature ratings for the Ferrari-Carano Olson enhancement reach, August 2022.



Table 58. Post-enhancement habitat unit ratings for the Ferrari-Carrano, Olson enhancement reach August 2022.

Project Reach		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Enhancement Reach		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Colloquial Name		FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO
mmddy		82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522
Survey Type		PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF
HABITAT UNIT NUMBER		HU01	HU02	HU03	HU04	HU05	HU06	HU07	HU08	HU09	HU10	HU11	HU12	HU13	HU14	HU01 2	HU15	HU16	HU17	HU18
Habitat Type		Pool	Flatwater	Pool	Flatwater	Pool	Alcove	Flatwater	Riffle	Pool	Alcove	Flatwater	Pool	Riffle	Pool	Pool	Flatwater	Riffle	Riffle	Alcove
PROJECT SITE NUMBER		1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Project Site Type		MainChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan
11e	% Area of habitat unit within 0.5 -2.0 ft depth	34%	67%	44%	72%	70%	26%	60%	43%	63%	38%	14%	73%	5%	69%	34%	61%	49%	37%	60%
11f	% Area of habitat unit within 2.0 -4.0 ft depth	51%	3%	43%	0%	12%	0%	0%	0%	0%	0%	0%	0%	0%	0%	51%	0%	0%	0%	0%
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3	3	3	3	2	3	3	3	3	3	2	3	1	3	3	2	3	3	3	0
15.	Percent of habitat unit covered by shelter: %	95	80	75	45	75	75	70	25	30	50	30	35	10	40	95	30	40	30	99
17b	a. Calculate the shelter rating for the habitat unit: 0-300	285	240	225	90	225	210	75	90	150	60	105	10	120	285	60	120	90	0	
28.	Percent of habitat unit within targeted velocity (see above): (%)	59%	86%	85%	58%	70%	100%	100%	38%	42%	100%	98%	40%	30%	56%	59%	24%	38%	51%	100%
36e	% habitat unit area where < 0.5 f/s; 0.5 to 2 ft and shelter criteria overlap	22%	54%	37%	35%	41%	26%	60%	5%	13%	38%	14%	23%	2%	35%	22%	3%	16%	16%	60%
36f	% habitat unit area where < 0.5 f/s; 2 to 4 ft and shelter criteria overlap	24%	3%	35%	0%	12%	0%	0%	0%	0%	0%	0%	0%	0%	24%	0%	24%	0%	0%	0%
HABITAT UNIT NUMBER		HU01	HU02	HU03	HU04	HU05	HU06	HU07	HU08	HU09	HU10	HU11	HU12	HU13	HU14	HU01 2	HU15	HU16	HU17	HU18
11e	% area of hab unit within 0.5 -2.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	3	4	4	4	4	2	4	4	3	1	4	0	4	3	4	4	4	3	4
11f	% area of hab unit within 2.0 -4.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	4	0	4	0	1	0	0	0	0	0	0	0	0	0	4	0	0	0	0
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3 (3 = 5 pts; 2 = 4 pts, 1 = 3 pts, 0 = 0 pts)	5	5	5	4	5	5	5	5	5	4	5	3	5	5	4	5	5	5	0
15.	% hab unit covered by shelter (≥80 = 5pts; ≥60 = 4 pts; ≥40 = 3 pts; ≥20 = 2 pts; ≥10 = 1 pt; <10 = 0 pt)	5	5	4	3	4	4	4	2	2	3	2	2	1	3	5	2	3	2	5
17b	a. Calculate the shelter rating for the habitat unit: 0-300	5	5	5	3	5	5	5	2	3	5	2	4	0	4	5	2	4	3	0
28.	% area of hab unit within targeted velocity (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	4	4	4	4	4	4	4	3	4	4	4	3	4	4	2	3	4	4	4
36e	% area hab unit with < 0.5 f/s; 0.5 to 2 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	2	4	3	3	4	2	4	0	1	3	1	2	0	3	2	0	1	1	4
36f	% area hab unit with < 0.5 f/s; 2 to 4 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	2	0	3	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0
HABITAT UNIT NUMBER		HU01	HU02	HU03	HU04	HU05	HU06	HU07	HU08	HU09	HU10	HU11	HU12	HU13	HU14	HU01 2	HU15	HU16	HU17	HU18
HABITAT UNIT RATING	Habitat unit quantitative rating (out of 35)	30	27	32	21	28	22	26	16	19	23	14	21	7	23	30	14	20	18	17
	Habitat unit qualitative rating: Excellent (>=28), Good (>=21), Fair(>=14), Poor (>=7), Fail (<7)	Excellent	Good	Excellent	Good	Excellent	Good	Good	Fair	Fair	Good	Fair	Good	Poor	Good	Excellent	Fair	Fair	Fair	Fair

Table 58. Post-enhancement habitat unit ratings for the Ferrari-Carrano, Olson enhancement reach August 2022.

Project Reach		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Enhancement Reach		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Colloquial Name		FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO
mmdddy		82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522
Survey Type		PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF
HABITAT UNIT NUMBER		HU19	HU20	HU21	HU22	HU22_2	HU23	HU24	HU25	HU26	HU26_2	HU27	HU28	HU29	HU30	HU30_2	HU31	HU32	HU33	HU34	HU35	
Habitat Type		Pool	Flatwater	Riffle	Pool	Pool	Alcove	Pool	Pool	Flatwater	Flatwater	Pool	Pool	Flatwater	Pool	Pool	Riffle	Pool	Flatwater	Alcove	Pool	
PROJECT SITE NUMBER		1	1	1	1	2	1	1	1	1	2	1	1	1	1	2	1	2	2	2	1	
Project Site Type		MainChan	MainChan	MainChan	MainChan	SideChan	MainChan	MainChan	MainChan	MainChan	SideChan	MainChan	MainChan	MainChan	MainChan	SideChan	MainChan	SideChan	SideChan	SideChan	MainChan	
11e	% Area of habitat unit within 0.5 -2.0 ft depth	28%	82%	68%	58%	58%	77%	33%	34%	88%	88%	32%	35%	53%	52%	52%	65%	38%	81%	57%	46%	
11f	% Area of habitat unit within 2.0 -4.0 ft depth	61%	9%	4%	38%	38%	1%	47%	52%	6%	6%	40%	46%	36%	30%	30%	5%	51%	13%	2%	45%	
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	3	2	
15.	Percent of habitat unit covered by shelter: %	35	25	20	30	30	70	40	45	15	15	50	30	60	55	55	20	80	30	80	20	
17b	a. Calculate the shelter rating for the habitat unit: 0-300	105	75	60	90	90	210	120	135	45	45	150	90	180	165	165	60	240	60	240	40	
28.	Percent of habitat unit within targeted velocity (see above): (%)	30%	12%	18%	25%	25%	95%	30%	34%	23%	23%	47%	15%	25%	55%	55%	27%	65%	29%	100%	28%	
36e	% habitat unit area where < 0.5 f/s; 0.5 to 2 ft and shelter criteria overlap	13%	5%	3%	14%	14%	73%	10%	14%	17%	17%	10%	5%	12%	29%	29%	8%	18%	19%	57%	13%	
36f	% habitat unit area where < 0.5 f/s; 2 to 4 ft and shelter criteria overlap	7%	0%	0%	6%	6%	0%	13%	13%	0%	0%	18%	3%	3%	10%	10%	2%	35%	4%	2%	8%	
HABITAT UNIT NUMBER		HU19	HU20	HU21	HU22	HU22_2	HU23	HU24	HU25	HU26	HU26_2	HU27	HU28	HU29	HU30	HU30_2	HU31	HU32	HU33	HU34	HU35	
11e	% area of hab unit within 0.5 -2.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	2	4	4	4	4	4	3	3	4	4	3	3	4	4	4	4	3	4	4	4	
11f	% area of hab unit within 2.0 -4.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	4	0	0	3	3	0	4	4	0	0	4	4	3	3	3	0	4	1	0	4	
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3 (3 = 5 pts; 2 = 4 pts, 1 = 3 pts, 0 = 0 pts)	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	5	4	
15.	% hab unit covered by shelter (≥80 = 5pts; ≥60 = 4 pts; ≥40 = 3 pts; ≥20 = 2 pts; ≥10 = 1 pt; <10 = 0 pt)	2	2	2	2	2	4	3	3	1	1	3	2	4	3	3	2	5	2	5	2	
17b	a. Calculate the shelter rating for the habitat unit: 0-300	4	2	2	3	3	5	4	4	1	1	5	3	5	5	5	2	5	2	5	1	
28.	% area of hab unit within targeted velocity (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	3	1	1	2	2	4	3	3	2	2	4	1	2	4	4	2	4	2	4	2	
36e	% area hab unit with < 0.5 f/s; 0.5 to 2 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	1	0	0	1	1	4	1	1	1	1	0	1	2	2	2	0	1	1	4	1	
36f	% area hab unit with < 0.5 f/s; 2 to 4 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	0	0	0	0	0	1	0	0	0	1	0	0	1	1	0	3	0	0	0	
HABITAT UNIT NUMBER		HU19	HU20	HU21	HU22	HU22_2	HU23	HU24	HU25	HU26	HU26_2	HU27	HU28	HU29	HU30	HU30_2	HU31	HU32	HU33	HU34	HU35	
Habitat unit quantitative rating (out of 35)		21	14	14	20	20	26	24	24	14	14	26	18	24	27	27	15	30	16	27	18	
Habitat unit qualitative rating: Excellent (>=28), Good (>=21), Fair(>=14), Poor (>=7), Fail (<7)		Good	Fair	Fair	Fair	Fair	Good	Good	Good	Fair	Fair	Good	Fair	Good	Good	Good	Fair	Excellent	Fair	Good	Fair	

Table 58. Post-enhancement habitat unit ratings for the Ferrari-Carrano, Olson enhancement reach August 2022.

Project Reach	3	3	3	3	3	3	3	3	3	3	3	3
Enhancement Reach	5	5	5	5	5	5	5	5	5	5	5	5
Colloquial Name	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO
mmdy	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522
Survey Type	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF
HABITAT UNIT NUMBER	HU36	HU37	HU38	HU20 2	HU23 2	HU24 2	HU25 2	HU37 2	HU28 2	HU29 2	HU27 2	
Habitat Type	Flatwater	Pool	Flatwater	Flatwater	Alcove	Pool	Pool	Pool	Pool	Flatwater	Pool	
PROJECT SITE NUMBER	1	1	1	3	2	2	2	2	2	2	2	
Project Site Type	MainChan	MainChan	MainChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan
11e	% Area of habitat unit within 0.5 -2.0 ft depth	76%	21%	72%	82%	77%	33%	34%	21%	35%	53%	32%
11f	% Area of habitat unit within 2.0 -4.0 ft depth	15%	73%	22%	8%	1%	47%	52%	73%	46%	36%	40%
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3	2	3	3	3	3	3	3	3	3	3	3
15.	Percent of habitat unit covered by shelter: %	15	40	30	25	70	40	45	40	30	60	50
17b	a. Calculate the shelter rating for the habitat unit: 0-300	30	120	90	75	210	120	135	120	90	180	150
28.	Percent of habitat unit within targeted velocity (see above): (%)	20%	45%	27%	12%	95%	30%	34%	45%	15%	25%	47%
36e	% habitat unit area where < 0.5 f/s; 0.5 to 2 ft and shelter criteria overlap	10%	17%	14%	5%	73%	10%	14%	17%	5%	12%	10%
36f	% habitat unit area where < 0.5 f/s; 2 to 4 ft and shelter criteria overlap	3%	22%	7%	0%	0%	13%	13%	22%	3%	3%	18%
HABITAT UNIT NUMBER	HU36	HU37	HU38	HU20 2	HU23 2	HU24 2	HU25 2	HU37 2	HU28 2	HU29 2	HU27 2	
11e	% area of hab unit within 0.5 -2.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	4	2	4	4	4	3	3	2	3	4	3
11f	% area of hab unit within 2.0 -4.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	1	4	2	0	0	4	4	4	4	3	4
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3 (3 = 5 pts; 2 = 4 pts, 1 = 3 pts, 0 = 0 pts)	4	5	5	5	5	5	5	5	5	5	5
15.	% hab unit covered by shelter (≥80 = 5pts; ≥60 = 4 pts; ≥40 = 3 pts; ≥20 = 2 pts; ≥10 = 1 pt; <10 = 0 pt)	1	3	2	2	4	3	3	3	2	4	3
17b	a. Calculate the shelter rating for the habitat unit: 0-300	0	4	3	2	5	4	4	4	3	5	5
28.	% area of hab unit within targeted velocity (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	2	4	2	1	4	3	3	4	1	2	4
36e	% area hab unit with < 0.5 f/s; 0.5 to 2 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	1	1	1	0	4	1	1	1	0	1	1
36f	% area hab unit with < 0.5 f/s; 2 to 4 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	2	0	0	0	1	1	2	0	0	1
HABITAT UNIT NUMBER	HU36	HU37	HU38	HU20 2	HU23 2	HU24 2	HU25 2	HU37 2	HU28 2	HU29 2	HU27 2	
Habitat unit quantitative rating (out of 35)	13	25	19	14	26	24	24	25	18	24	26	
Habitat unit qualitative rating: Excellent (>=28), Good (>=21), Fair(>=14), Poor (>=7), Fail (<7)	Poor	Good	Fair	Fair	Good	Good	Good	Good	Fair	Good	Good	

# Ferrari-Carano, Olsen Enhancement Reach

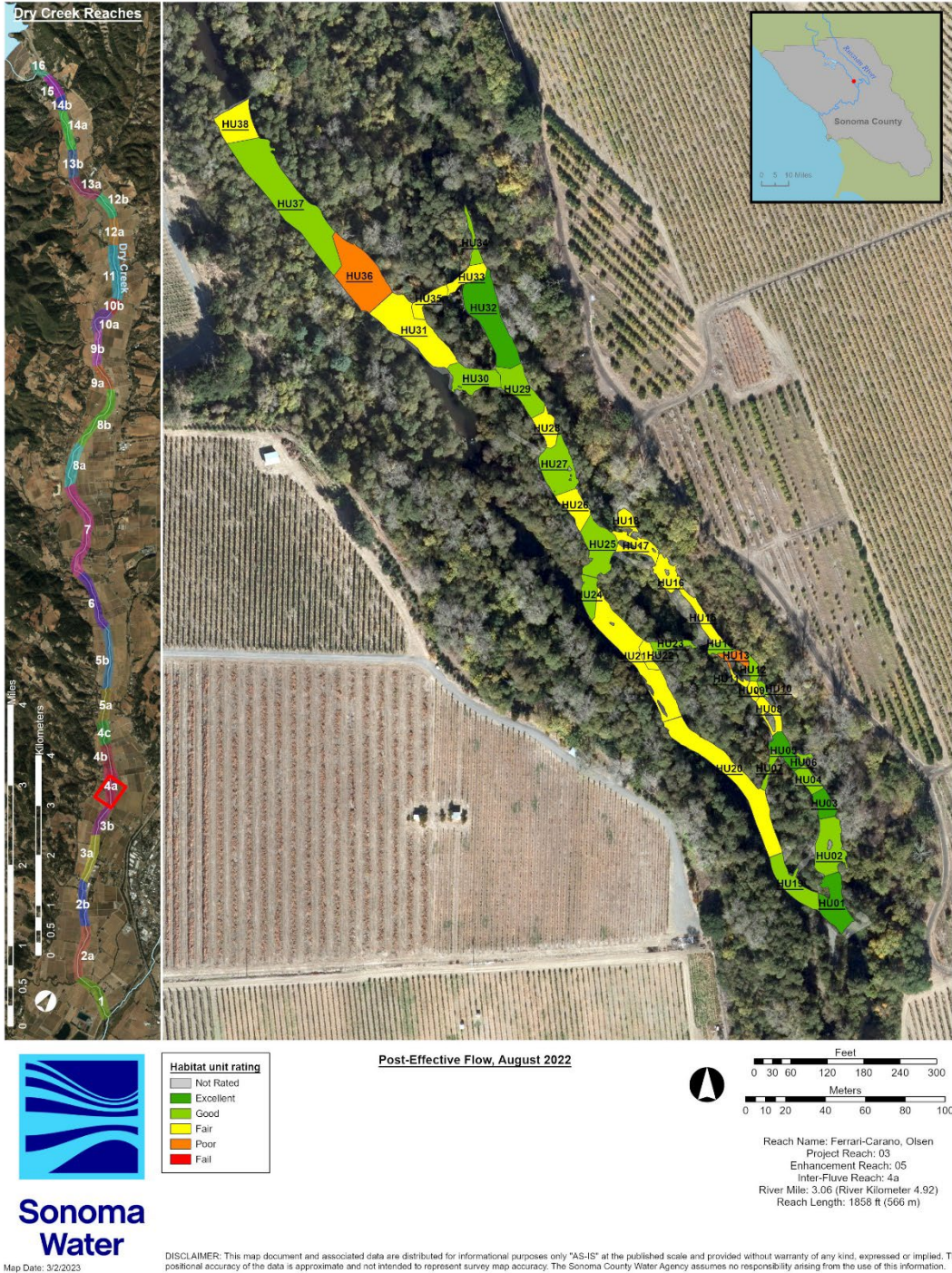


Figure 102. Habitat unit ratings for the Ferrari-Carano Olson enhancement reach, August 2022.

Table 59. Post-enhancement average feature, average habitat unit, site, and reach ratings for the Ferrari-Carrano, Olson enhancement reach, August 2022.

	Project Reach	3	3	3
	Enhancement Reach	5	5	5
	<b>ENHANCEMENT REACH NAME</b>	<b>FO</b>	<b>FO</b>	<b>FO</b>
	mmddy	82522	82522	82522
	Survey Type	PEF	PEF	PEF
	<b>PROJECT SITE NUMBER</b>	<b>1</b>	<b>2</b>	<b>3</b>
	Project Site Type	MainChan	SideChan	SideChan
	<b>PROJECT SITE NUMBER</b>	<b>1</b>	<b>2</b>	<b>2</b>
<b>SITE AVERAGE FEATURE RATING</b>	Site average feature quantitative rating (out of 15; bold indicates excluded from site rating)	11	12	13
	Site average feature qualitative rating Excellent (>=12), Good (>=9), Fair(>=6), Poor (>=3), Fail (<3), Not rated (not used to rate site)	Good	Good	Excellent
	<b>PROJECT SITE NUMBER</b>	<b>1</b>	<b>2</b>	<b>3</b>
<b>SITE AVERAGE HABITAT UNIT RATING</b>	Site average habitat unit quantitative rating (out of 35; bold indicates excluded from site rating)	21	22	14
	Site average qualitative rating Excellent (>=28), Good (>=21), Fair(>=14), Poor (>=7), Fail (<7), Not rated (not used to rate site)	Fair	Good	Fair
	<b>PROJECT SITE NUMBER</b>	<b>1</b>	<b>2</b>	<b>3</b>
<b>SITE RATING</b>	Site quantitative rating (sum of site average feature and habitat unit ratings) (out of 50; bold indicates rating excludes feature or habitat unit rating and scoring out of 15 or 35)	32	34	27
	Site qualitative rating: Excellent (>=40), Good (>=30), Fair(>=20), Poor (>=10), Fail (<10)	Good	Good	Fair
	<b>ENHANCEMENT REACH NAME</b>	<b>FO</b>		
<b>ENHANCEMENT REACH RATING</b>	Enhancement reach quantitative rating (average of site ratings) (out of 50)	31		
	Enhancement reach qualitative rating: Excellent (>=40), Good (>=30), Fair(>=20), Poor (>=10), Fail (<10)	Good		

## Ferrari-Carano, Olsen Enhancement Reach

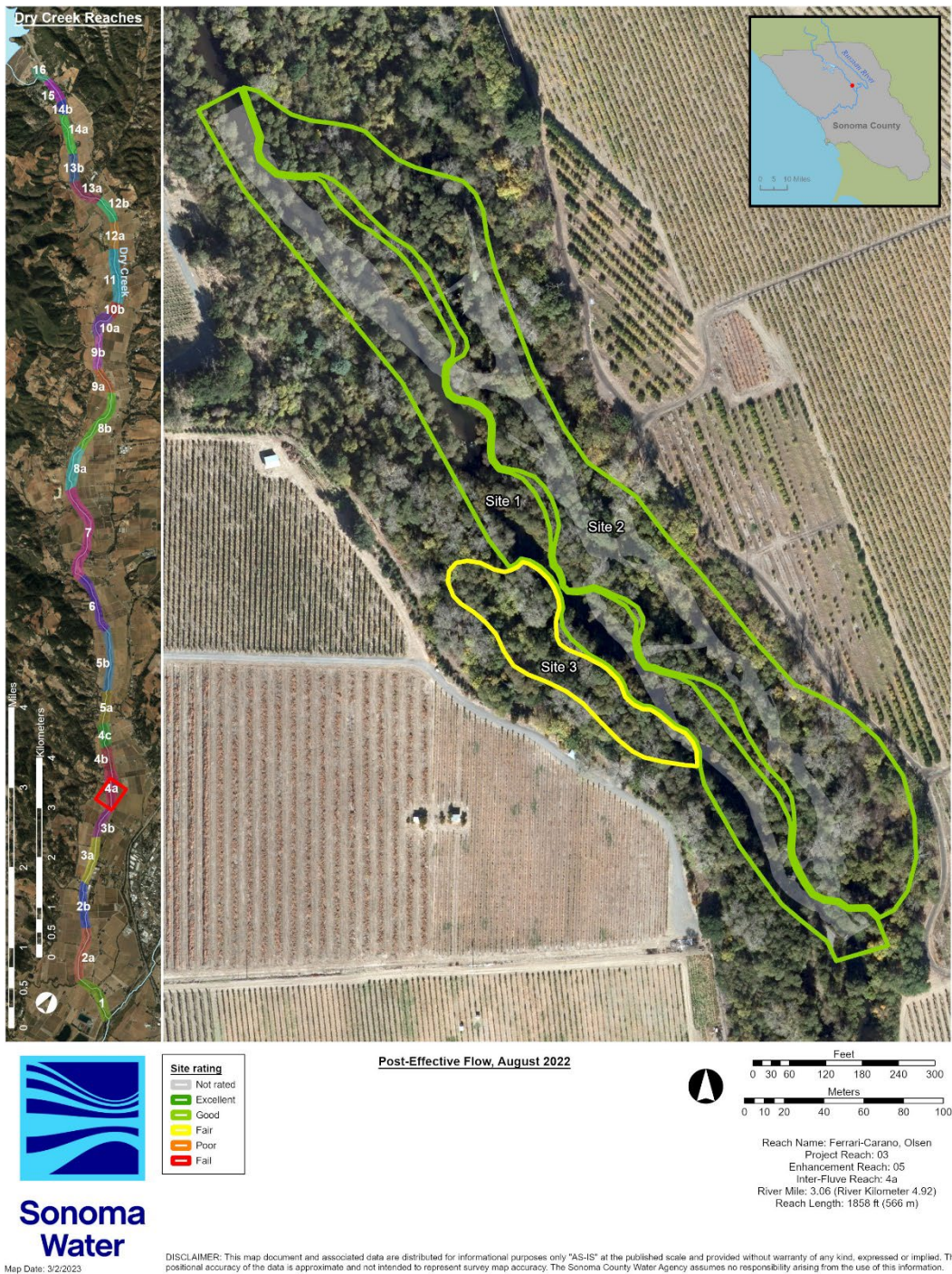


Figure 103. Post enhancement site ratings for the Ferrari-Carano Olsen enhancement reach, August 2022.

## Ferrari-Carano, Olsen Enhancement Reach

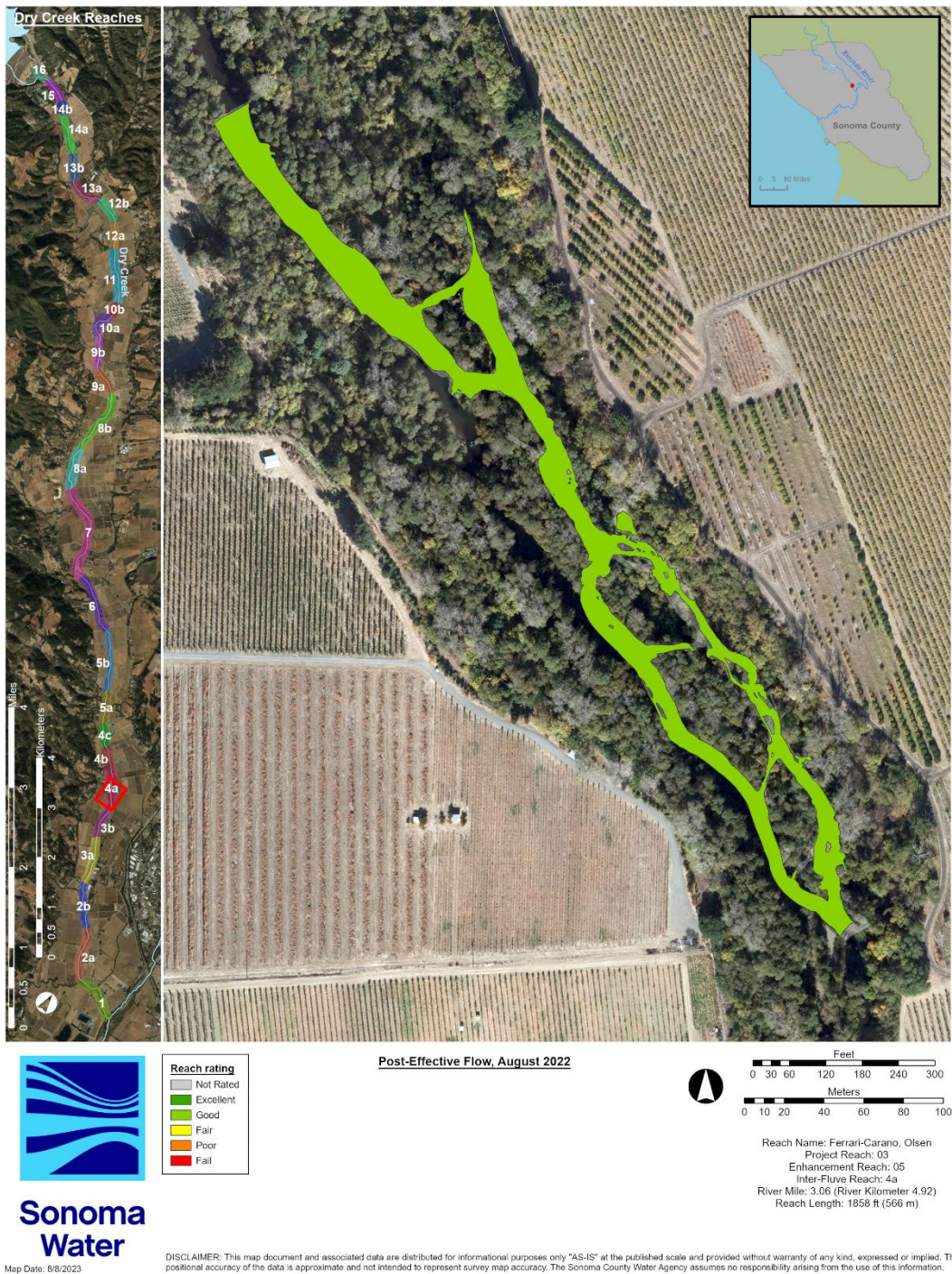


Figure 104. Post-enhancement reach rating for the Ferrari-Carano Olson enhancement reach, August 2022.

## Feature and Habitat Unit Checklists











Table 60. Adaptive Management Plan targeted checklist for the Ferrari-Carano Olson enhancement reach, August 2022.

Project Reach	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Enhancement Reach	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Colloquial Name	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO	FO
mmddyy	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522	82522
Survey Type	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF	PEF
Project Site Number	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Project Site Type	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan
Project Feature Number	S2-31	S2-32	S2-35	S2-36	S2-37	S2-38	S2-39	S2-40	S2-41	S2-42	S2-43	S2-44	S2-45	S2-46	S2-47	S2-48	S2-49	S2-50	
Feature Type Code	LW	ALS	PW	R	PW	HW2	LW	HW1	ALS	TT	R	PW	HW1	HW1	HW1	HW1	HW1	HW1	HW1
Habitat Unit	HU23_2	HU22_2	HU02_D	HU16	HU16	HU16	HU16	HU02_D	HU25_2	HU25_2	HU24_2	HU02_D	HU17	HU25_2	HU17	HU17	HU17	HU18	HU18
Habitat Type	Alcove	Pool	Dry	Rifle	Rifle	Rifle	Rifle	Dry	Pool	Pool	Pool	Dry	Rifle	Pool	Rifle	Rifle	Alcove	Alcove	Alcove
4.	Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL																		
5a	Are problems with the feature visible?																		
6a	Is the feature still in its original location?																		
6b	Is the feature still in its original position?																		
6d	Is the feature still in its original orientation?																		
8.	If an objective, did the feature create the targeted instream habitat type?																		
9.	Were there any unintended effects by the feature on the habitat type? If Y, comment.																		
11e	% Area of habitat unit within 0.5 -2.0 ft depth																		
11f	% Area of habitat unit within 2.0 -4.0 ft depth																		
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3																		
15.	Percent of habitat unit covered by shelter: %																		
17a	If an objective, did the feature increase instream shelter rating?																		
17b	a. Calculate the shelter rating for the habitat unit: 0-300																		
19a	If an objective, did the feature increase LWD count in the habitat unit?																		
21a	If an objective, did the feature lead to the targeted channel conditions?																		
25.	Did the feature achieve the targeted velocity?																		
28.	Percent of habitat unit within targeted velocity (see above): (%)																		
36e	% habitat unit area where < 0.5 f/s; 0.5 to 2 ft and shelter criteria overlap																		
36f	% habitat unit area where < 0.5 f/s; 2 to 4 ft and shelter criteria overlap																		
FEATURE NUMBER																			
HABITAT UNIT NUMBER																			
SITE NUMBER																			
ENHANCEMENT REACH NAME																			
4.	3	4	3	4	5	5	3	3	4	4	4	1	4	5	5	5	5	5	5
5a	0	1	0	1	1	1	0	0	1	1	1	0	1	1	0	0	0	0	0
6a	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6b	0	0	1	1	1	1	0	0	0	0	0	0	1	0	1	1	1	1	1
6d	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8.	0	1	0	1	1	1	1	0	1	1	1	0	1	1	0	0	0	0	0
9.	0	1	0	1	1	1	0	0	1	1	1	1	1	1	0	0	0	0	0
11e	4	4	0	4	4	4	4	0	3	3	3	0	3	3	3	3	4	4	4
11f	0	3	0	0	0	0	0	0	4	4	4	0	0	4	0	0	0	0	0
14.	5	5	0	5	5	5	5	0	5	5	5	0	5	5	5	5	5	5	5
15.	4	2	0	3	3	3	3	0	3	3	3	0	2	3	2	2	5	5	5
17a	1	1	0	1	1	1	1	0	1	1	1	1	0	1	1	1	1	1	1
17b	5	3	0	4	4	4	4	0	4	4	4	0	3	4	3	3	0	0	0
19a	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0
21a	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0
25.	1	1	0	1	1	1	1	0	1	1	1	0	1	1	1	1	1	1	1
28.	4	2	0	3	3	3	3	0	3	3	3	0	4	3	4	4	4	4	4
36e	4	1	0	1	1	1	1	0	1	1	1	0	1	1	1	1	1	4	4
36f	0	0	0	0	0	0	0	0	1	1	1	0	0	1	0	0	0	0	0

Table 60. Adaptive Management Plan targeted checklist for the Ferrari-Carano Olson enhancement reach, August 2022.

Project Reach	3																			
Enhancement Reach	5																			
Colloquial Name	FO																			
mmddyy	82522																			
Survey Type	PEF																			
Project Site Number	2																			
Project Site Type	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan
Project Feature Number	S2-51	S2-52	S2-53	S2-54	S2-55	S2-56	S2-57	S2-58	S2-59	S2-60	S2-61	S2-62	S2-63	S2-64	S2-65	S2-66	S2-67	S2-68	S2-69	S2-70
Feature Type Code	R	PW	HW1	R	LW	HW1	TT	HW1	LW	LWV	HW1	TT	TT	HW1	HW1	HW1	HW1	HW1	HW1	TT
Habitat Unit	HU26 2	HU27 2	HU27 2	HU02 D	HU02 D	HU28 2	HU28 2	HU28 2	HU30 2	HU29 2	HU29 2	HU02 D	HU02 D	HU32	HU32	HU32	HU32	HU32	HU32	HU02 D
Habitat Type	Flatwater	Pool	Pool	Dry	Dry	Pool	Pool	Pool	Pool	Flatwater	Flatwater	Dry	Dry	Pool	Pool	Pool	Pool	Pool	Pool	Dry
4.	Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL																			
5a	Are problems with the feature visible?																			
6a	Is the feature still in its original location?																			
6b	Is the feature still in its original position?																			
6d	Is the feature still in its original orientation?																			
8.	If an objective, did the feature create the targeted instream habitat type?																			
9.	Were there any unintended effects by the feature on the habitat type? If Y, comment.																			
11e	% Area of habitat unit within 0.5 -2.0 ft depth																			
11f	% Area of habitat unit within 2.0 -4.0 ft depth																			
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3																			
15.	Percent of habitat unit covered by shelter: %																			
17a	If an objective, did the feature increase instream shelter rating?																			
17b	a. Calculate the shelter rating for the habitat unit: 0-300																			
19a	If an objective, did the feature increase LWD count in the habitat unit?																			
21a	If an objective, did the feature lead to the targeted channel conditions?																			
25.	Did the feature achieve the targeted velocity?																			
28.	Percent of habitat unit within targeted velocity (see above): (%)																			
36e	% habitat unit area where < 0.5 f/s; 0.5 to 2 ft and shelter criteria overlap																			
36f	% habitat unit area where < 0.5 f/s; 2 to 4 ft and shelter criteria overlap																			
FEATURE NUMBER																				
HABITAT UNIT NUMBER																				
SITE NUMBER																				
ENHANCEMENT REACH NAME																				
4.	Structural condition of feature: EXCL (6 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)																			
5a	Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)																			
6a	Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)																			
6b	Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)																			
6d	Is the feature still in its original orientation? (YES = 1 pt, NO = 0 pt)																			
8.	If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)																			
9.	Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)																			
11e	% area of hab unit within 0.5 -2.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)																			
11f	% area of hab unit within 2.0 -4.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)																			
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3 (3 = 5 pts, 2 = 4 pts, 1 = 3 pts, 0 = 0 pts)																			
15.	% hab unit covered by shelter (≥80 = 5pts; ≥60 = 4 pts; ≥40 = 3 pts; ≥20 = 2 pts; ≥10 = 1 pt, <10 = 0 pt)																			
17a	If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)																			
17b	a. Calculate the shelter rating for the habitat unit: 0-300																			
19a	If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)																			
21a	If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)																			
25.	Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)																			
28.	% area of hab unit within targeted velocity (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)																			
36e	% area hab unit with < 0.5 f/s; 0.5 to 2 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)																			
36f	% area hab unit with < 0.5 f/s; 2 to 4 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)																			







Table 60. Adaptive Management Plan targeted checklist for the Ferrari-Carano Olson enhancement reach, August 2022.

	Project Reach	3	3	3	3
	Enhancement Reach	5	5	5	5
	Colloquial Name	FO	FO	FO	FO
	mddy	82522	82522	82522	82522
	Survey Type	PEF	PEF	PEF	PEF
	Project Site Number	3	3	3	3
	Project Site Type	SideChan	SideChan	SideChan	SideChan
	Project Feature Number	S3-17	S3-18	S3-19	S3-20
	Feature Type Code	HW2	HW1	HW1	HW1
	Habitat Unit	HU03 D	HU03 D	HU03 D	HU03 D
	Habitat Type	Dry	Dry	Dry	Dry
4.	Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	UNKN	GOOD	GOOD	GOOD
5a	Are problems with the feature visible?	YES	YES	YES	YES
6a	Is the feature still in its original location?	UNK	YES	YES	YES
6b	Is the feature still in its original position?	NO	NO	NO	NO
6d	Is the feature still in its original orientaton?	UNK	YES	YES	YES
8.	If an objective, did the feature create the targeted instream habitat type?	NO	YES	YES	YES
9.	Were there any unintended effects by the feature on the habitat type? If Y, comment.	YES	YES	NO	NO
11e	% Area of habitat unit within 0.5 -2.0 ft depth	0%	0%	0%	0%
11f	% Area of habitat unit within 2.0 -4.0 ft depth	0%	0%	0%	0%
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3	0	0	0	0
15.	Percent of habitat unit covered by shelter: %	0	0	0	0
17a	If an objective, did the feature increase instream shelter rating?	NO	NO	NO	NO
17b	a. Calculate the shelter rating for the habitat unit: 0-300	0	0	0	0
19a	If an objective, did the feature increase LWD count in the habitat unit?	NO	NO	NO	NO
21a	If an objective, did the feature lead to the targeted channel conditions?	NO	NO	NO	NO
25.	Did the feature achieve the targeted velocity?	NO	NO	NO	NO
28.	Percent of habitat unit within targeted velocity (see above): (%)	0%	0%	0%	0%
36e	% habitat unit area where < 0.5 f/s; 0.5 to 2 ft and shelter criteria overlap	0%	0%	0%	0%
36f	% habitat unit area where < 0.5 f/s; 2 to 4 ft and shelter criteria overlap	0%	0%	0%	0%
	<b>FEATURE NUMBER</b>	<b>S3-17</b>	<b>S3-18</b>	<b>S3-19</b>	<b>S3-20</b>
	<b>HABITAT UNIT NUMBER</b>	<b>HU03 D</b>	<b>HU03 D</b>	<b>HU03 D</b>	<b>HU03 D</b>
	<b>SITE NUMBER</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>
	<b>ENHANCEMENT REACH NAME</b>	<b>FO</b>	<b>FO</b>	<b>FO</b>	<b>FO</b>
4.	Structural condition of feature: EXCL (5 pts), GOOD (4 pts), FAIR (3 pts), POOR (2 pts), FAIL (1 pt)	0	4	4	4
5a	Are problems with the feature visible? (NO = 1 pt, YES = 0 pt)	0	0	0	0
6a	Is the feature still in its original location? (YES = 1 pt, NO = 0 pt)	0	1	1	1
6b	Is the feature still in its original position? (YES = 1 pt, NO = 0 pt)	0	0	0	0
6d	Is the feature still in its original orientaton? (YES = 1 pt, NO = 0 pt)	0	1	1	1
8.	If an objective, did the feature create the targeted instream habitat type? (YES = 1 pt, NO = 0 pt)	0	1	1	1
9.	Were there any unintended effects by the feature on the habitat type? (NO = 1 pt, YES = 0 pt)	0	0	1	1
11e	% area of hab unit within 0.5 -2.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	0	0	0
11f	% area of hab unit within 2.0 -4.0 ft depth (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	0	0	0
14.	Instream shelter value in the habitat unit: 0, 1, 2, 3 (3 = 5 pts; 2 = 4 pts, 1 = 3 pts, 0 = 0 pts)	0	0	0	0
15.	% hab unit covered by shelter (≥80 = 5pts; ≥60 = 4 pts; ≥40 = 3 pts; ≥20 = 2 pts; ≥10 = 1 pt, <10 = 0 pt)	0	0	0	0
17a	If an objective, did the feature increase instream shelter rating? (YES = 1 pt, NO = 0 pt)	0	0	0	0
17b	a. Calculate the shelter rating for the habitat unit: 0-300	0	0	0	0
19a	If an objective, did the feature increase LWD count in the habitat unit? (YES = 1 pt, NO = 0 pt)	0	0	0	0
21a	If an objective, did the feature lead to the targeted channel conditions? (YES = 1 pt, NO = 0 pt)	0	0	0	0
25.	Did the feature achieve the targeted velocity? (YES = 1 pt, NO = 0 pt)	0	0	0	0
28.	% area of hab unit within targeted velocity (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	0	0	0
36e	% area hab unit with < 0.5 f/s; 0.5 to 2 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	0	0	0
36f	% area hab unit with < 0.5 f/s; 2 to 4 ft (≥40 = 4 pts, ≥30 = 3 pts, ≥20 = 2 pts, ≥10 = 1 pt, <10 = 0 pt)	0	0	0	0



















**Table 61. Adaptive Management Plan full checklist for the Ferrari-Carano Olson enhancement reach, August 2022.**

	3	3	3	3	3	3	3
Project Reach	3	3	3	3	3	3	3
Enhancement Reach	5	5	5	5	5	5	5
Colloquial Name	FO	FO	FO	FO	FO	FO	FO
mmddy	82522	82522	82522	82522	82522	82522	82522
Survey Type	PEF	PEF	PEF	PEF	PEF	PEF	PEF
Project Site Number	3	3	3	3	3	3	3
Project Site Type	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan	SideChan
Project Feature Number	S3-14	S3-15	S3-16	S3-17	S3-18	S3-19	S3-20
Feature Type Code	LWV	R	HW2	HW2	HW1	HW1	HW1
Habitat Unit	HU03 D	HU03 D	HU03 D	HU03 D	HU03 D	HU03 D	HU03 D
Habitat Type	Dry	Dry	Dry	Dry	Dry	Dry	Dry
1. Length of targeted treatment (ft)	47	NR	18	18	13	18	18
2. Width of targeted treatment: (ft)	11	NR	7	7	6	8	7
3. Estimate area of the targeted feature: (ft <sup>2</sup> )							
4. Structural condition of feature: EXCL, GOOD, FAIR, POOR, FAIL	FAIL	FAIL	UNKN	UNKN	GOOD	GOOD	GOOD
5a. Are problems with the feature visible?	YES	YES	YES	YES	YES	YES	YES
5b. Types: ANC, BBB, CRF, MAT, SHF, STR, SWA, UND, UNS, WSH, OTH, NON	BBB	AGG	BBB	BBB	STR	STR	STR
6a. Is the feature still in its original location?	NO	NO	YES	UNK	YES	YES	YES
6b. Is the feature still in its original orientation?	NO	NO	NO	NO	NO	NO	NO
6c. If yes: LBK, MDC, RBK, SPN, OTH	OTH	OTH	OTH	UNK	OTH	OTH	OTH
6d. Is the feature still in its original orientation?	NO	NO	UNK	UNK	YES	YES	YES
6e. If yes: DNS, MUL, PRL, PRP, UPS, OTH	OTH	OTH	OTH	UNK	UPS	UPS	UPS
7. Current level II habitat type: FLT, POO, RIF, DRY, ALC, OTH	DRY	DRY	DRY	DRY	DRY	DRY	DRY
8. If an objective, did the feature create the targeted instream habitat type?	NO	NO	NO	NO	YES	YES	YES
9. Were there any unintended effects by the feature on the habitat type? If Y, comment.	YES	YES	YES	YES	YES	NO	NO
10. Mean water depth in habitat unit: ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11a. Maximum water depth in habitat unit: ft	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11b. Area of habitat unit within 0.5 -2.0 ft depth: (ft <sup>2</sup> )	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11c. Area of habitat unit within 2.0 -4.0 ft depth: (ft <sup>2</sup> )	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11d. Area of habitat unit within 0.5-4.0 ft depth: (ft <sup>2</sup> )	0.0	0.0	0.0	0.0	0.0	0.0	0.0
11e. % Area of habitat unit within 0.5 -2.0 ft depth	0%	0%	0%	0%	0%	0%	0%
11f. % Area of habitat unit within 2.0 -4.0 ft depth	0%	0%	0%	0%	0%	0%	0%
11g. % Area of habitat unit within 0.5-4.0 ft depth	0%	0%	0%	0%	0%	0%	0%
11h. If an objective, did the feature increase/decrease water depth in the treatment area?	NO	NO	NO	NO	NO	NO	NO
12a. Targeted depth or range (ft) in habitat unit	0.5-4.0	0.5-4.0	0.5-4.0	0.5-4.0	0.5-4.0	0.5-4.0	0.5-4.0
12b. Estimate area of feature within targeted depth or range ft <sup>2</sup> :	150	55	53	68	60	50	50
13. Were there any unintended effects of the feature on the water depth? If Y, comment.	YES	YES	YES	YES	YES	YES	YES
14. Instream shelter value in the habitat unit: 0, 1, 2, 3	0	0	0	0	0	0	0
15. Percent of habitat unit covered by shelter: %	0	0	0	0	0	0	0
16a. 1st dominant cover in habitat unit: BED, BOL, BUB, LWD, RTW, SWD, UCB, VEG, OTH	NA	NA	NA	NA	NA	NA	NA
16b. 2nd dominant in habitat unit: BED, BOL, BUB, LWD, RTW, SWD, UCB, VEG, OTH	NA	NA	NA	NA	NA	NA	NA
17a. If an objective, did the feature increase instream shelter rating?	NO	NO	NO	NO	NO	NO	NO
17b. a. Calculate the shelter rating for the habitat unit: 0-300	0	0	0	0	0	0	0
18a. Large woody debris count in habitat unit: D >1', L 6-20'	0	0	0	0	0	0	0
18b. Large woody debris count in habitat unit: D >1', L >20'	0	0	0	0	0	0	0
19a. If an objective, did the feature increase LWD count in the habitat unit?	NO	NO	NO	NO	NO	NO	NO
19b. LWD recruitment mechanisms in habitat unit: ANC, EXC, EXH, INT, RPR, UNA, OTH	NA	NA	NA	NA	NA	NA	NA
20. Current stream channel problems in the habitat unit: AGG, BRD, FLO, GRC, HDC, INC, NAR, SCU, STT, WID, NON, OTH	NA	NA	NA	NA	NA	NA	NA
21a. If an objective, did the feature lead to the targeted channel conditions?	NO	NO	NO	NO	NO	NO	NO
21b. Overall Offchannel Condition (site): AGG, FPD, GRC, INC, NAR, SIN, STB, TOG, WID, OTH	STB	STB	STB	STB	STB	STB	STB
21c. Outlet Conditions (site): AGG, FPD, GRC, INC, NAR, SIN, STB, TOG, WID, OTH	STB	STB	STB	STB	STB	STB	STB
21d. Inlet Conditions (site): AGG, FPD, GRC, INC, NAR, SIN, STB, TOG, WID, OTH	STB	STB	STB	STB	STB	STB	STB
22. Were there any unintended effects on the stream channel at the feature? If Y, comment.	YES	YES	YES	YES	YES	YES	YES
23. If an objective, did the feature decrease/increase velocity in the treatment area?	NA	NA	NA	NA	DEC	DEC	DEC
24. Targeted velocity/range in the habitat unit: (ft/sec)	0.5	0.5	0.5	0.5	0.5	0.5	0.5
25. Did the feature achieve the targeted velocity?	NO	NO	NO	NO	NO	NO	NO
26a. Measured minimum velocity (ft/sec) in habitat unit	0	0	0	0	0	0	0
26b. Measured max velocity (ft/sec) in habitat unit	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26c. Measured mean velocity (ft/sec) in habitat unit	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27. Area of habitat unit within targeted velocity: (ft <sup>2</sup> )	0.0	0.0	0.0	0.0	0.0	0.0	0.0
28. Percent of habitat unit within targeted velocity (see above): (%)	0%	0%	0%	0%	0%	0%	0%
29. Were there any unintended effects of feature on velocity? If Y, comment.	YES	YES	YES	YES	YES	YES	YES
30a. 1st/2nd dominant substrate in habitat unit: BED, BOL, COB, GRV, SND, SLC, OTH	GRV	GRV	GRV	GRV	GRV	GRV	GRV
30b. 2nd dominant substrate in habitat unit: BED, BOL, COB, GRV, SND, SLC, OTH	SND	SND	SND	SND	SND	SND	SND
31. If an objective, did the feature achieve the targeted substrate composition?	YES	YES	YES	YES	YES	YES	YES
32. % Canopy Measurement:	NR	NR	NR	NR	NR	NR	NR
33. Photopoint data collected: YES /NO	NR	NR	NR	NR	NR	NR	NR
34. Temperature Profile: YES /NO	NR	NR	NR	NR	NR	NR	NR
35. Dissolved Oxygen Profile: YES/NO	NR	NR	NR	NR	NR	NR	NR
36a. Total habitat unit area where targeted depth, velocity and shelter criteria overlap	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36b. Total habitat unit area where < 0.5 f/s; 0.5 to 2 ft and shelter criteria overlap	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36c. Total habitat unit area where < 0.5 f/s; 2 to 4 ft and shelter criteria overlap	0.0	0.0	0.0	0.0	0.0	0.0	0.0
36d. % habitat unit area where targeted depth, velocity and shelter criteria overlap	0%	0%	0%	0%	0%	0%	0%
36e. % habitat unit area where < 0.5 f/s; 0.5 to 2 ft and shelter criteria overlap	0%	0%	0%	0%	0%	0%	0%
36f. % habitat unit area where < 0.5 f/s; 2 to 4 ft and shelter criteria overlap	0%	0%	0%	0%	0%	0%	0%
37. Does this feature need: DEC, ENH, MNT, REP, NON, OTH	NON	NON	NON	NON	NON	NON	NON
38. Are additional restoration treatments recommended at this site?	NO	NO	NO	NO	NO	NO	NO

