REACH CHARACTERIZATION FIELD DATA SHEET

STREAM NAME French Creek	LOCATION Scott Valley, Calif.	
REACH ID # FR-01	RIVER BASIN Scott	
UTM (us end) N 0512339 E 4584915	TOPOS	
UTM (ds end) N 0512484 E 4584915	STREAM ORDER ELEVATION	
INVESTIGATORS Erika, Mike, Preston and Raffi		
FORM COMPLETED BY Preston	DATE 6/18/03 TIME 1:00 PM	ASSOCIATED SITE ID #s FR01-XA, FR01-XB,

WEATHER CONDITIONS

Now		Past 24 hours
☐	storm (heavy rain)	☐
☐	rain (steady rain)	☐
☐	showers (intermittent)	☐
85 % ☑	% cloud cover	☑ ___%
☐	clear/sunny	☐

Has there been a heavy rain in the last 7 days? ☐ Yes ☑ No

Air Temperature 29 °C

Other_____

STREAM MORPHOLOGY

Stream Subsystem: ☑ Perennial ☐ Intermittent ☐ Tidal

Stream Origin: ☐ Glacial ☐ Spring-fed ☐ Non-glacial montane ☑ Mixture of origins ☐ Swamp and bog ☐ Other_____

Reach Type: ☑ Riffle-Pool ☐ Cascade ☐ Plane-Bed ☐ Bedrock w/alluvial veneer ☐ Step-Pool ☐ Bedrock

Rosgen Type_____

WATERSHED FEATURES

Predominant Surrounding Landuse: ☐ Forest/Natural ☐ Residential ☑ Field/Pasture ☐ Commercial/Industrial ☐ Agricultural ☐ Other_____

Local Hydrologic Alterations: ☑ No Evidence ☐ Augmentation ☐ Dam/Retention ☐ Channelization ☐ Diversion ☐ Other_____

SEDIMENT SOURCES

MANAGEMENT ACTIVITIES (include short description)

Timber Harvesting: ☐ Yes ☑ No no evidence

Mining (Hardrock / Placer): ☐ Yes ☑ No no evidence

Grazing and/or Agriculture: ☑ Yes ☐ No pasture along river left

Evidence of Fire: ☐ Yes ☑ No no evidence

EROSIONAL FEATURES

Local Hillslopes: ☑ No Evidence ☐ Minor gullying/rilling ☐ Moderate gullying/rilling ☐ Major gullying/rilling ☐ Mass wasting (slides,debris) ☐ Other_____

Does sediment reach channel directly? ☐ Yes ☑ No

Roads and related features: ☐ No Evidence ☑ Unpaved ☐ Paved ☐ Culvert/Bridge ☐ Ditch/Roadcut ☐ Other_____

Does sediment reach channel directly? ☐ Yes ☑ No

Channel Stability: ☐ Stable ☑ Moderately stable ☐ Unstable ☐ Aggrading ☐ Downcutting ☐ Widening

Is the channel armored? ☑ Yes ☐ No

Evidence of bank undercutting? ☑ Yes ☐ No

Percent of streambank with deep binding root mass: ☐ >85% ☐ 85-65% ☑ 65-35% ☐ <35%

DEPOSITIONAL FEATURES

☐ Pool In-filling ☑ Floodplain ☐ Lee (DS) deposits ☐ Terraces ☐ Channel bars ☐ Other_____

Degree of instream sedimentation: ☐ None ☐ Low ☐ Medium ☑ High

CHANNEL FEATURES

Estimated Reach Length 200 m

Average Stream Width 10 m

Average Stream Depth 0.25 m

Sampling Reach Area 2000 m²

Estimated Manning's n _____

Canopy Cover: ☑ Open ☐ Partly shaded ☐ Shaded

Proportion of Reach Represented by Stream Morphology Types

Riffle 40 % Run 0 %

Pool 60 %

Form # D - _____

REACH CHARACTERIZATION FIELD DATA SHEET

STREAM NAME French Creek	LOCATION Scott Valley, Calif.

RIPARIAN VEGETATION

Indicate the dominant type and record the dominant species present

☐ Trees ☑ Shrubs ☐ Grasses ☐ Herbaceous

dominant species present willow

Extent of Riparian Buffer Zone	Width of Riparian Buffer Zone	Riparian Vegetation Age
☐ None	☑ < 1 Channel width	☑ Immature (< 5yrs)
☑ Fragmentary	☐ 1-5 Channel widths	☐ Established (5-30 yrs)
☐ Continuous	☐ > 5 Channel widths	☐ Mature/Old Growth (>30 yrs)

Extent of vegetation encroachment into stream channel

☐ None ☑ Minimal ☐ Moderate ☐ Heavy ☐ Extreme

LARGE WOODY DEBRIS

☐ Not Present ☑ Present in Cutbank ☐ Present in Channel

Density of LWD <5% m^2/km^2 (area of LWD/ reach area)

AQUATIC VEGETATION

Indicate the dominant type

☑ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating

☐ Floating Algae ☑ Attached Algae

Portion of the reach with aquatic vegetation 10 %

WATER QUALITY

Temperature 16.3 ^{0}C

Specific Conductance 68 uS

Dissolved Oxygen N/A

pH 6.26

Turbidity 35ppm

Water Odors

☑ Normal/None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other

Water Surface Oils

☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☑ None ☐ Other

Turbidity (visual)

☑ Clear ☐ Slightly turbid ☐ Turbid ☐ Opaque ☐ Stained ☐ Other

DISCHARGE

Velocity-Area Method

Distance from water's edge (m)	Depth (m)	Velocity (m/s)	Discharge (cms)	Notes
1.2	0.010	0.1	0.0012	
2.6	0.190	0.5	0.133	
4.3	0.245	1.1	0.458	
5.6	0.38	1.0	0.494	
7.1	0.490	1.5	1.10	
8.4	0.370	1.7	0.818	
10.6	0.090	0.6	0.119	
12.6	0.025	0.3	0.15	

Total Discharge (cms) 3.27

Float Method

	Width (m)	Avg Depth (m)	Float Distance (m)	Time (s)	Discharge (cms)
XS 1					
XS 2					

Estimated Discharge (cms) _____

HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS

STREAM NAME French Creek	LOCATION Scott Valley, Calif.	
STATION # FR01 REACH ID# _____	STREAM CLASS Riffle- Pool	
UTM N 0512484 UTM E 4584915	RIVER BASIN Scott	
STORET #	AGENCY	
INVESTIGATORS Erika, Mike, Preston and Raffi		
FORM COMPLETED BY Raffi and Preston	DATE 6/18/2003 TIME 1:15 PM	REASON FOR SURVEY

Parameters to be evaluated in sampling reach

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
1. Epifaunal Substrate/ Available Cover	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE 13	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.
SCORE 17	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Pool Variability	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large-deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small-shallow or pools absent.
SCORE 16	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE 9	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE 9	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS

Parameters to be evaluated broader than sampling reach

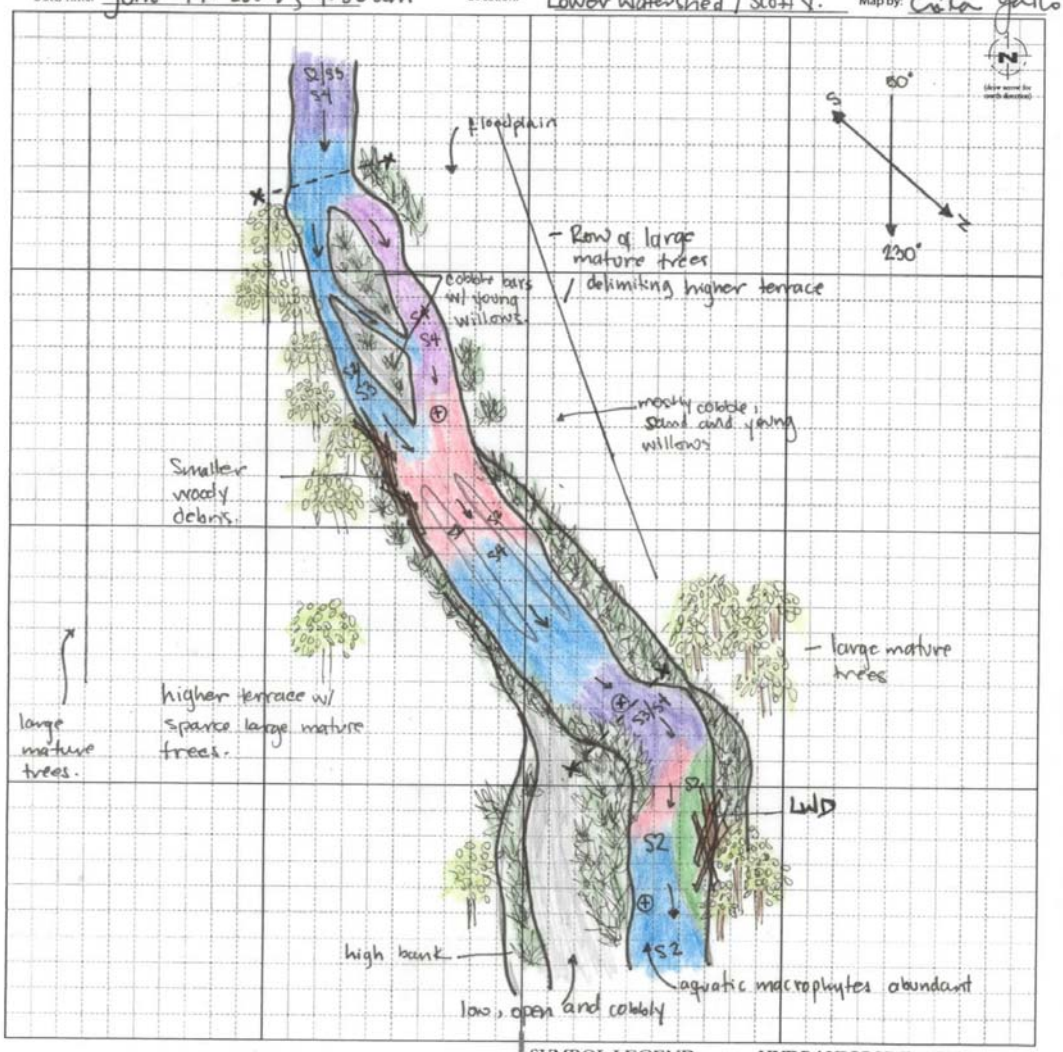
Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
SCORE 17	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
SCORE 6	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE 9 (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE 2 (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE 5 (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE 6 (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
SCORE 3 (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE 2 (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0

Total Score 114

Stream Assessment Field Sketch Form

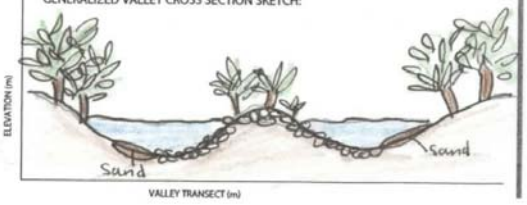
River/Stream: French Creek Reach ID: FR-01

Date/Time: June 19. 2003, 9:30 am Location: Lower Watershed / Scott V. Map by: Erika Gallo



Map Scale (if applicable): 1 ☐ = _____

GENERALIZED VALLEY CROSS SECTION SKETCH:



SYMBOL LEGEND:

Geomorphic Unit Boundary

Flow Direction

UTM Coordinate Location: RS-1

Fish Sampling Location & ID: F1

Invertebrate Sampling Location & ID: I1

Cross-section Location:

HYDRAULIC UNIT KEY:

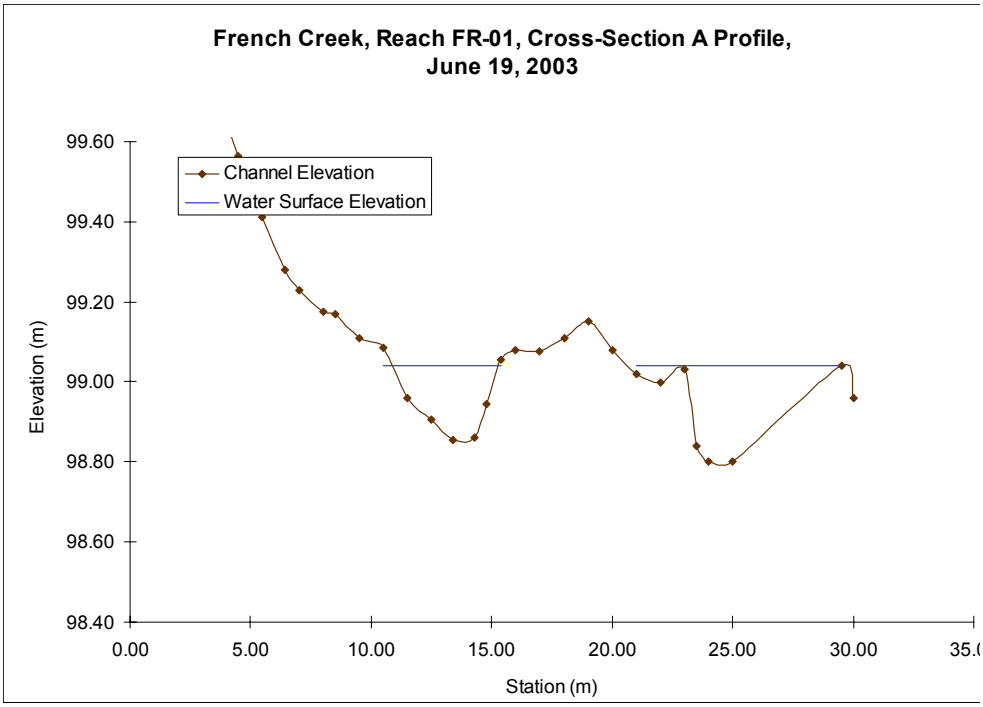
Flow Types:

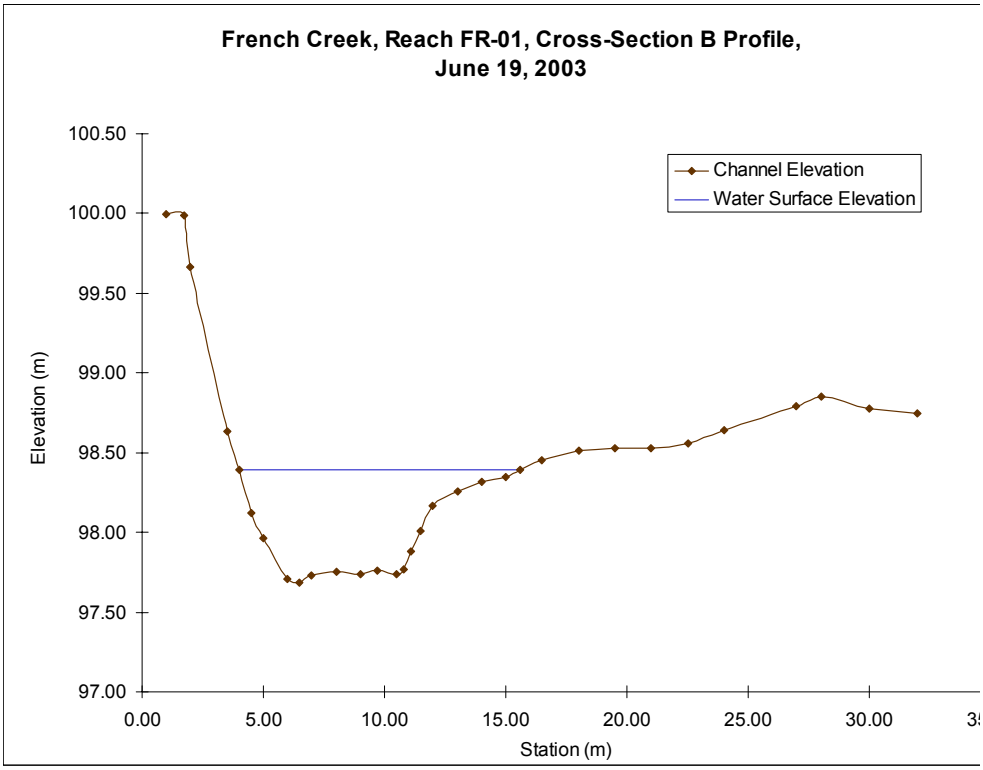
- ☐ H9 Free Fall
- ☐ H8 Chute
- ☐ H7 Broken standing waves
- ☐ H6 Unbroken standing waves
- ☐ H5 Rippled
- ☐ H4 Upwelling
- ☐ H3 Smooth surface flow
- ☐ H2 Scarcely perceptible flow
- ☐ H1 Standing water/pool

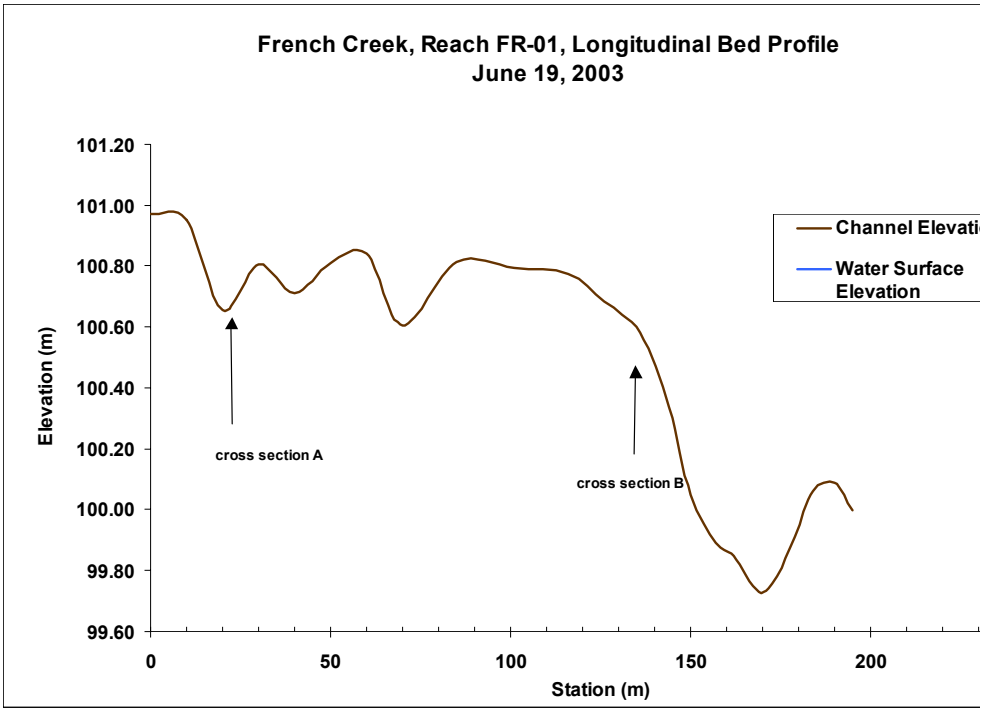
Substrate Categories:

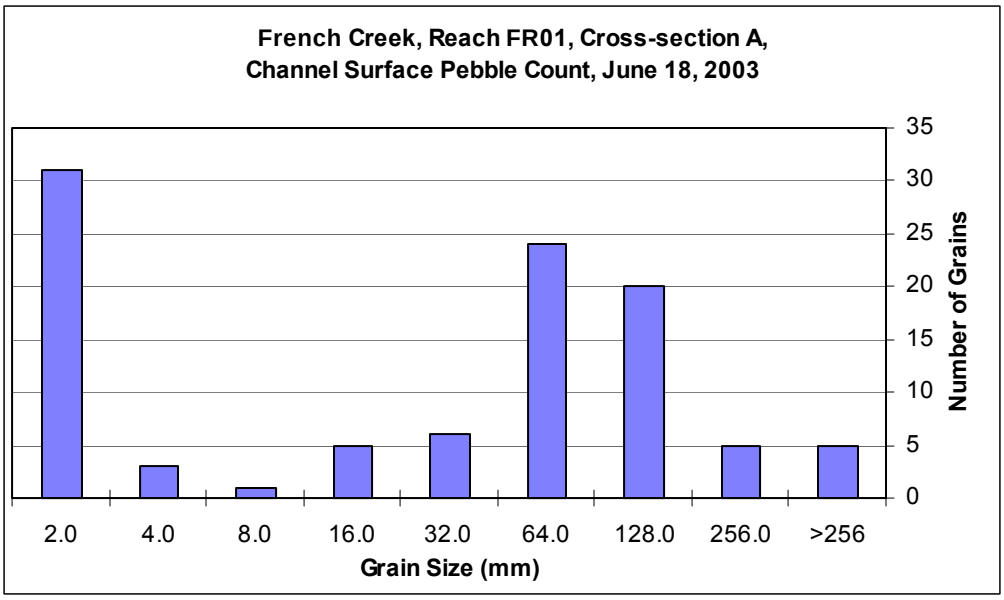
- ☐ S1 Silt
- ☐ S2 Sand
- ☐ S3 Gravel
- ☐ S4 Cobble Sm.
- ☐ S5 Cobble Lg.
- ☐ S6 Boulder Sm.
- ☐ S7 Boulder Lg.
- ☐ S8 Bimodal

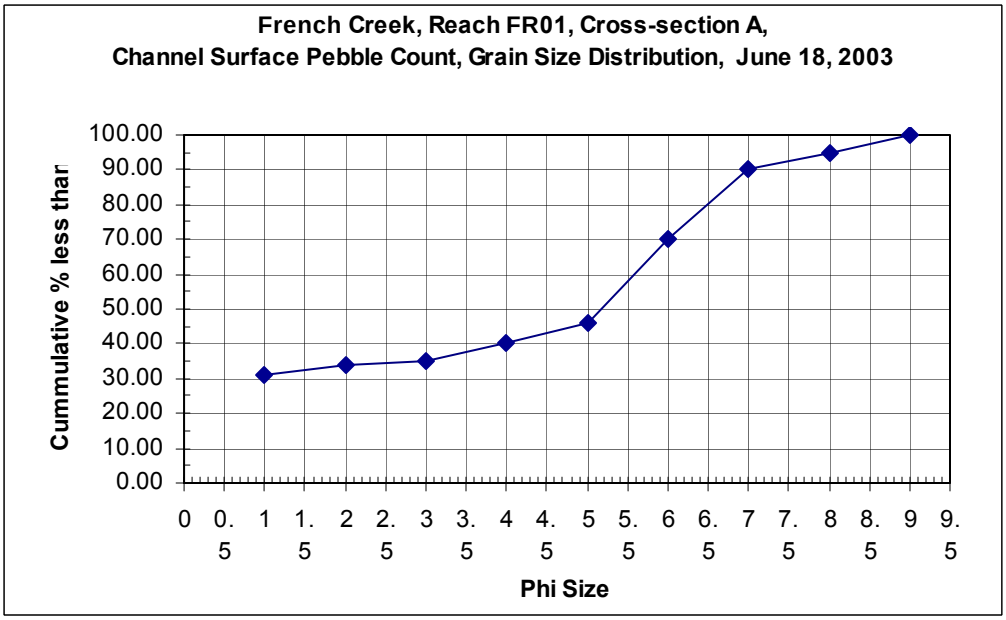
Form # C - _____

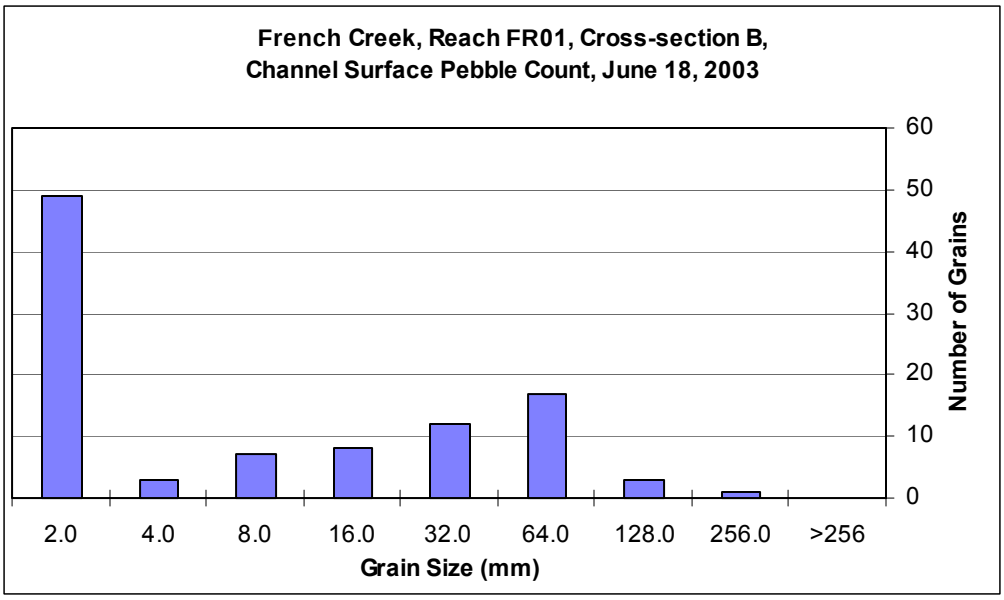

French Creek, Reach FR-01, Cross-Section A Profile,
June 19, 2003
Channel Elevation
Water Surface Elevation
Elevation (m)
99.60
99.40
99.20
99.00
98.80
98.60
98.40
0.00
5.00
10.00
15.00
20.00
25.00
30.00
Station (m)

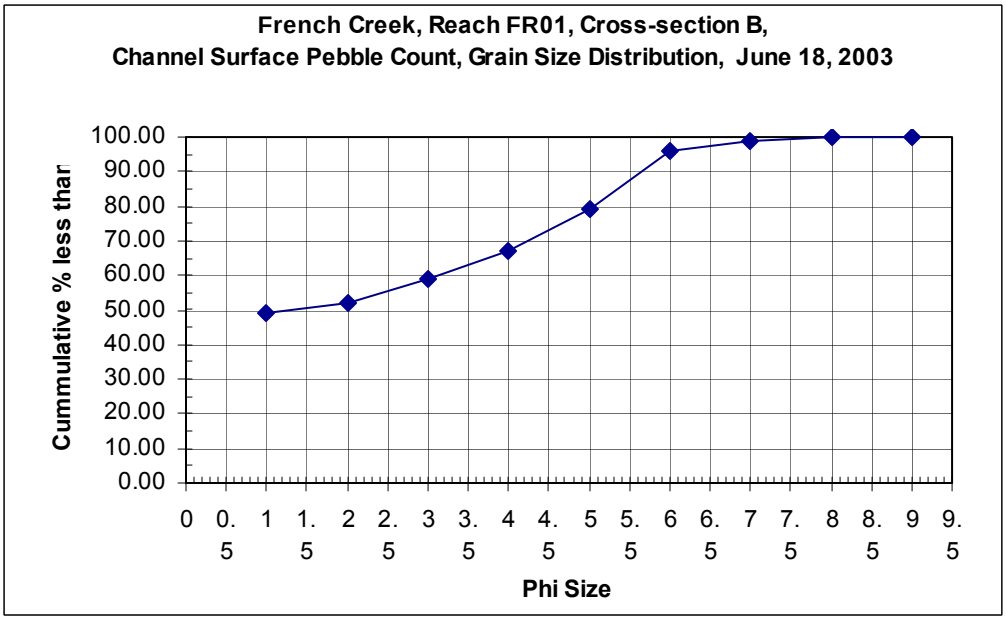

French Creek, Reach FR-01, Cross-Section B Profile,
June 19, 2003
Channel Elevation
Water Surface Elevation
Elevation (m)
100.50
100.00
99.50
99.00
98.50
98.00
97.50
97.00
0.00
5.00
10.00
15.00
20.00
25.00
30.00
Station (m)


French Creek, Reach FR-01, Longitudinal Bed Profile
June 19, 2003
101.20
101.00
100.80
100.60
100.40
100.20
100.00
99.80
99.60
Elevation (m)
0
50
100
150
200
Station (m)
cross section A
cross section B
Channel Elevati
Water Surface Elevation


French Creek, Reach FR01, Cross-section A,
Channel Surface Pebble Count, June 18, 2003
35
30
25
20
15
10
5
0
Number of Grains
2.0
4.0
8.0
16.0
32.0
64.0
128.0
256.0
>256
Grain Size (mm)


French Creek, Reach FR01, Cross-section A,
Channel Surface Pebble Count, Grain Size Distribution, June 18, 2003
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Cummulative % less thar
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
5.5
6
6.5
7
7.5
8
8.5
9
9.5
Phi Size


French Creek, Reach FR01, Cross-section B,
Channel Surface Pebble Count, June 18, 2003
60
50
40
30
20
10
0
Number of Grains
2.0
4.0
8.0
16.0
32.0
64.0
128.0
256.0
>256
Grain Size (mm)


French Creek, Reach FR01, Cross-section B,
Channel Surface Pebble Count, Grain Size Distribution, June 18, 2003
Cummulative % less thar
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
5.5
6
6.5
7
7.5
8
8.5
9
9.5
Phi Size

REACH CHARACTERIZATION FIELD DATA SHEET

STREAM NAME French Creek	LOCATION Scott Valley, Calif.	
REACH ID # FR02a	RIVER BASIN Scott	
UTM (us end) N 0512128 E 4584677	TOPOS	
UTM (ds end) N 0512226 E 4584758	STREAM ORDER ELEVATION	
INVESTIGATORS Erika, Mike, Preston, and Raffi		
FORM COMPLETED BY Mike	DATE 6/22/2003 TIME 10:30 AM	ASSOCIATED SITE ID #s

WEATHER CONDITIONS

Now		Past 24 hours
☐	storm (heavy rain)	☐
☐	rain (steady rain)	☐
☐	showers (intermittent)	☐
___% ☐	% cloud cover	☑ 25 %
☑	clear/sunny	☐

Has there been a heavy rain in the last 7 days? ☐ Yes ☑ No

Air Temperature 24 °C

Other_____

STREAM MORPHOLOGY

Stream Subsystem: ☑ Perennial ☐ Intermittent ☐ Tidal

Stream Origin: ☐ Glacial ☐ Spring-fed ☐ Non-glacial montane ☐ Mixture of origins ☐ Swamp and bog ☐ Other_____

Reach Type: ☐ Riffle-Pool ☐ Cascade ☐ Plane-Bed ☐ Bedrock w/alluvial veneer ☑ Step-Pool ☐ Bedrock

Rosgen Type_____

WATERSHED FEATURES

Predominant Surrounding Landuse: ☐ Forest/Natural ☐ Residential ☑ Field/Pasture ☐ Commercial/Industrial ☐ Agricultural ☐ Other_____

Local Hydrologic Alterations: ☑ No Evidence ☐ Augmentation ☐ Dam/Retention ☐ Channelization ☐ Diversion ☐ Other_____

SEDIMENT SOURCES

MANAGEMENT ACTIVITIES (include short description)

Timber Harvesting: ☐ Yes ☑ No _____

Mining (Hardrock / Placer): ☐ Yes ☑ No _____

Grazing and/or Agriculture: ☑ Yes ☐ No cow feces and ranches

Evidence of Fire: ☐ Yes ☑ No _____

EROSIONAL FEATURES

Local Hillslopes: ☑ No Evidence ☐ Minor gullying/rilling ☐ Moderate gullying/rilling ☐ Major gullying/rilling ☐ Mass wasting (slides,debris) ☐ Other_____

Roads and related features: ☑ No Evidence ☐ Unpaved ☐ Paved ☐ Culvert/Bridge ☐ Ditch/Roadcut ☐ Other_____

Does sediment reach channel directly? ☐ Yes ☑ No

Does sediment reach channel directly? ☐ Yes ☑ No

Channel Stability: ☐ Stable ☑ Moderately stable ☐ Unstable ☐ Aggrading ☐ Downcutting ☐ Widening

Is the channel armored? ☐ Yes ☑ No

Evidence of bank undercutting? ☑ Yes ☐ No

Percent of streambank with deep binding root mass: ☐ >85% ☑ 85-65% ☐ 65-35% ☐ <35%

DEPOSITIONAL FEATURES

☐ Pool In-filling ☐ Lee (DS) deposits ☑ Channel bars ☑ Floodplain ☐ Terraces ☐ Other_____

Degree of instream sedimentation: ☐ None ☐ Low ☑ Medium ☐ High

CHANNEL FEATURES

Estimated Reach Length 100 m

Average Stream Width 10 m

Average Stream Depth 0.25 m

Sampling Reach Area 1000 m²

Estimated Manning's n _____

Canopy Cover: ☑ Open ☐ Partly shaded ☐ Shaded

Proportion of Reach Represented by Stream Morphology Types

Riffle 30 % Run 40 %

Pool 30 %

Form # D - _____

REACH CHARACTERIZATION FIELD DATA SHEET

STREAM NAME French Creek	LOCATION Scott Valley, Calif.

RIPARIAN VEGETATION

Indicate the dominant type and record the dominant species present

☑ Trees ☐ Shrubs ☑ Grasses ☐ Herbaceous

dominant species present willow (young) and mature alders

Extent of Riparian Buffer Zone	Width of Riparian Buffer Zone	Riparian Vegetation Age
☐ None	☐ < 1 Channel width	☑ Immature (< 5yrs)
☑ Fragmentary	☑ 1-5 Channel widths	☐ Established (5-30 yrs)
☐ Continuous	☐ > 5 Channel widths	☐ Mature/Old Growth (>30 yrs)

Extent of vegetation encroachment into stream channel

☐ None ☐ Minimal ☑ Moderate ☐ Heavy ☐ Extreme

LARGE WOODY DEBRIS

☐ Not Present ☐ Present in Cutbank ☑ Present in Channel

Density of LWD 10% m^2/km^2 (area of LWD/ reach area)

AQUATIC VEGETATION

Indicate the dominant type

☑ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating

☐ Floating Algae ☐ Attached Algae

Portion of the reach with aquatic vegetation 20 %

WATER QUALITY

Temperature 12.8 °C

Specific Conductance 56uS

Dissolved Oxygen N/A

pH 6.31

Turbidity 28ppm

Water Odors

☑ Normal/None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other

Water Surface Oils

☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☑ None ☐ Other

Turbidity (visual)

☑ Clear ☐ Slightly turbid ☐ Turbid ☐ Opaque ☐ Stained ☐ Other

DISCHARGE

Velocity-Area Method

Distance from water's edge (m)	Depth (m)	Velocity (m/s)	Discharge (cms)	Notes
1.2	0.26	0.1	0.010	REF @ .6m
1.6	0.35	0.7	0.098	
2.0	0.49	0.7	0.137	
2.4	0.61	0.8	0.195	
2.8	0.61	1.3	0.317	
3.2	0.58	1.0	0.232	
3.6	0.50	0.7	0.140	
4.0	0.48	0.4	0.077	
4.4	0.34	0.2	0.027	
4.8	0.28	0.1	0.011	

Total Discharge (cms) 1.24

Float Method

	Width (m)	Avg Depth (m)	Float Distance (m)	Time (s)	Discharge (cms)
XS 1	5.0	0.4	9	7	
XS 2					

Estimated Discharge (cms) 2.0

Form # D2 - _____

HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS

STREAM NAME French Creek	LOCATION Scott Valley, Calif.	
STATION # FR02a REACH ID# _____	STREAM CLASS	
UTM N 051739 UTM E 4582251	RIVER BASIN Scott	
STORET #	AGENCY	
INVESTIGATORS Erika, Mike, Preston and Raffi		
FORM COMPLETED BY Mike and Preston	DATE 6/22/03 TIME 10:00 AM	REASON FOR SURVEY

Parameters to be evaluated in sampling reach

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
1. Epifaunal Substrate/ Available Cover	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE 14	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.
SCORE 17	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Pool Variability	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large-deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small-shallow or pools absent.
SCORE 7	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE 15	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE 15	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS

Parameters to be evaluated broader than sampling reach

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
SCORE 19	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
SCORE 8	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE 6 (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE 8 (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE 6 (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE 8 (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
SCORE 3 (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE 6 (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0

Total Score 132

Stream Assessment Field Sketch Form

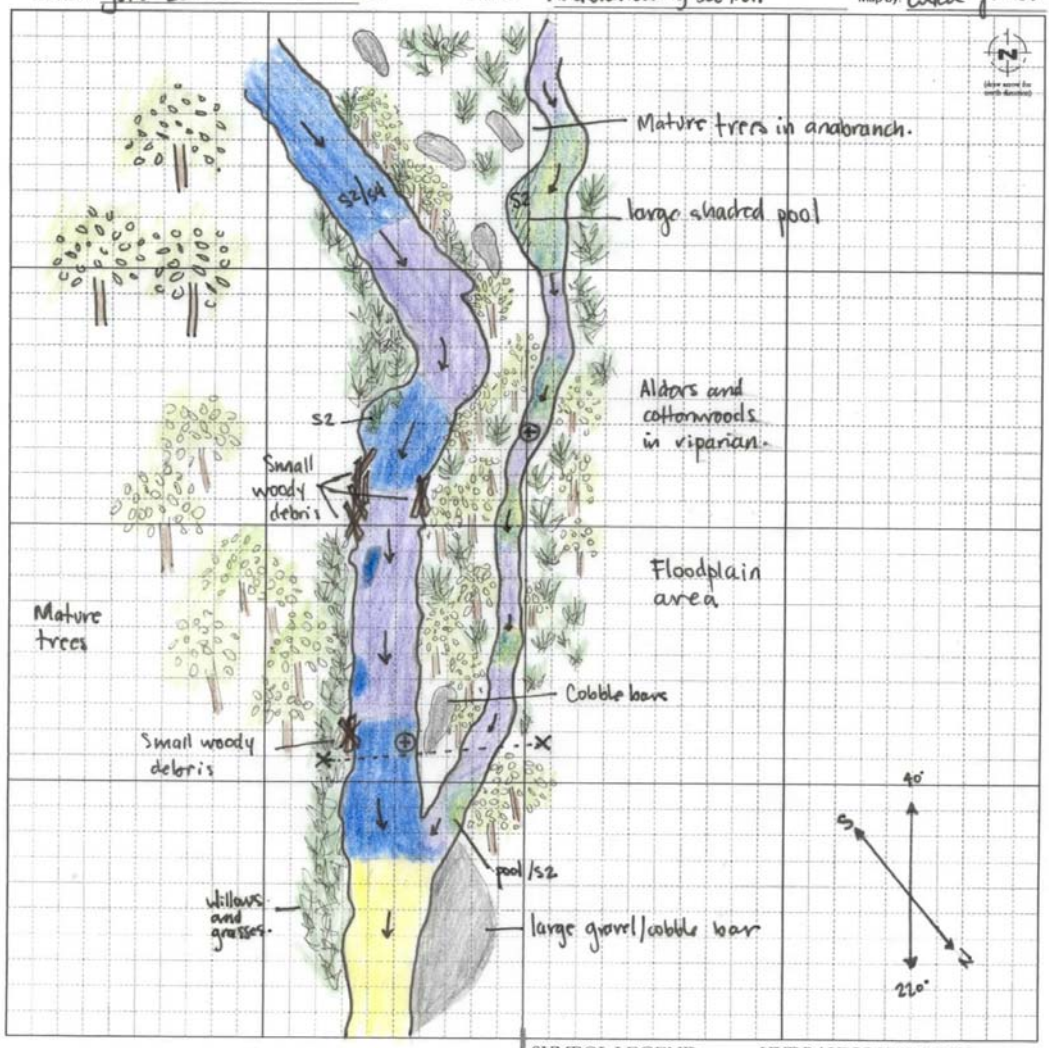
River/Stream: French Creek

Reach ID: FR-02a

Date/Time: June 22, 2003 - 10:00am

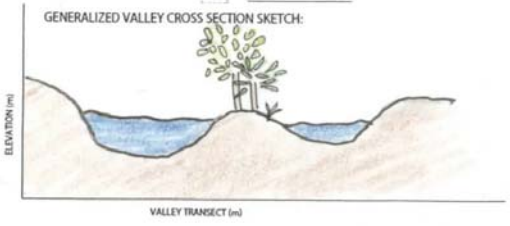
Location: Anabranching section

Map by: Erica Gullo



Map Scale (if applicable): 1 ☐ = _____

GENERALIZED VALLEY CROSS SECTION SKETCH:



SYMBOL LEGEND:

- Geomorphic Unit Boundary
- Flow Direction
- UTM Coordinate Location: RS-1
- Fish Sampling Location & ID: F1
- Invertebrate Sampling Location & ID: I1
- Cross-section Location: x---x

HYDRAULIC UNIT KEY:

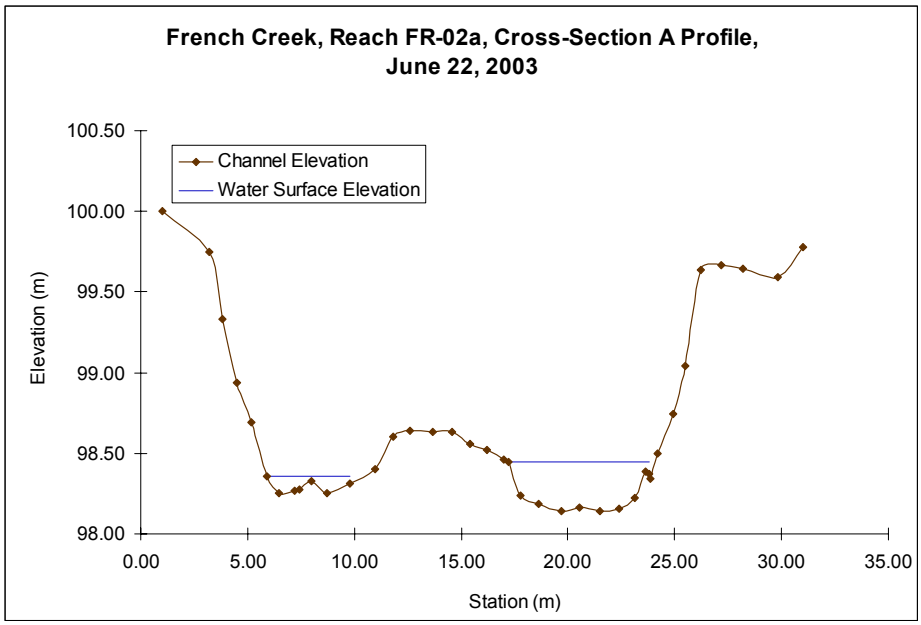
Flow Types:

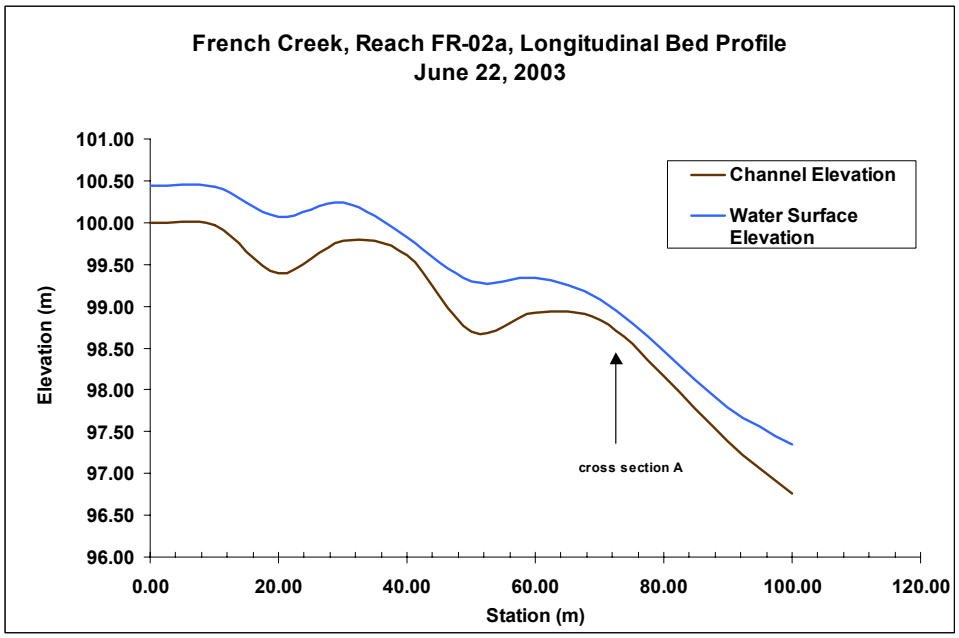
- ☐ H9 Free Fall
- ☐ H8 Chute
- ☐ H7 Broken standing waves
- ☐ H6 Unbroken standing waves
- ☐ H5 Rippled
- ☐ H4 Upwelling
- ☐ H3 Smooth surface flow
- ☐ H2 Scarcely perceptible flow
- ☐ H1 Standing water/pool

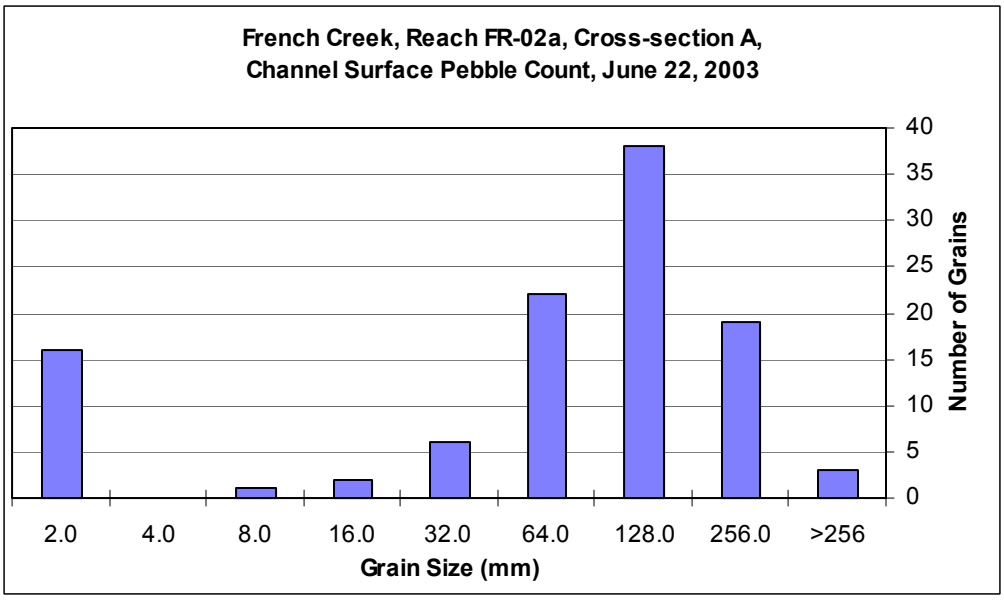
Substrate Categories:

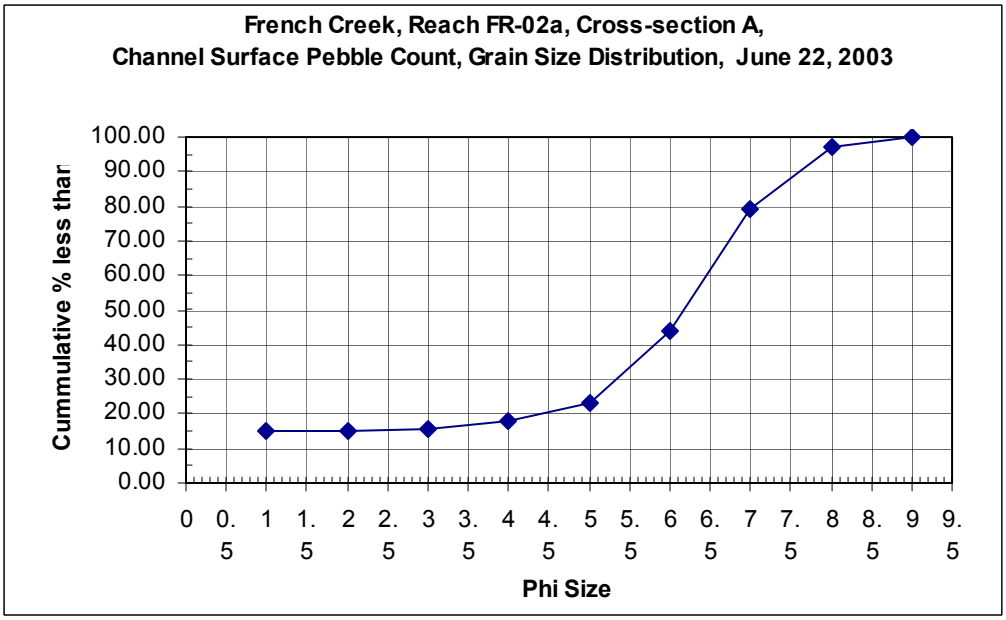
- ☐ S1 Silt
- ☐ S2 Sand
- ☐ S3 Gravel
- ☐ S4 Cobble Sm.
- ☐ S5 Cobble Lg.
- ☐ S6 Boulder Sm.
- ☐ S7 Boulder Lg.
- ☐ S8 Bimodal

Form # C - _____


French Creek, Reach FR-02a, Cross-Section A Profile,
June 22, 2003
Channel Elevation
Water Surface Elevation
Elevation (m)
100.50
100.00
99.50
99.00
98.50
98.00
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
Station (m)


French Creek, Reach FR-02a, Longitudinal Bed Profile
June 22, 2003
Channel Elevation
Water Surface Elevation
cross section A
Elevation (m)
101.00
100.50
100.00
99.50
99.00
98.50
98.00
97.50
97.00
96.50
96.00
0.00
20.00
40.00
60.00
80.00
100.00
120.00
Station (m)


French Creek, Reach FR-02a, Cross-section A,
Channel Surface Pebble Count, June 22, 2003
40
35
30
25
20
15
10
5
0
Number of Grains
2.0
4.0
8.0
16.0
32.0
64.0
128.0
256.0
>256
Grain Size (mm)


French Creek, Reach FR-02a, Cross-section A,
Channel Surface Pebble Count, Grain Size Distribution, June 22, 2003
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Cummulative % less thar
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
5.5
6
6.5
7
7.5
8
8.5
9
9.5
Phi Size

REACH CHARACTERIZATION FIELD DATA SHEET

STREAM NAME French Creek	LOCATION Scott Valley, Calif.	
REACH ID # FR-02b	RIVER BASIN Scott	
UTM (us end) N 0510739 E 4582251	TOPOS	
UTM (ds end) N 0510645 E 4582450	STREAM ORDER ELEVATION	
INVESTIGATORS Erika, Mike, Preston and Raffi		
FORM COMPLETED BY Mike	DATE 6/20/03 TIME 3:50 PM	ASSOCIATED SITE ID #s FR01-XA, FR01-XB,

WEATHER CONDITIONS

Now		Past 24 hours
☐	storm (heavy rain)	☐
☐	rain (steady rain)	☐
☐	showers (intermittent)	☐
35 % ☑	% cloud cover	☑ 40 %
☐	clear/sunny	☐

Has there been a heavy rain in the last 7 days? ☑ Yes ☐ No

Air Temperature 29 °C

Other_____

STREAM MORPHOLOGY

Stream Subsystem
☑ Perennial ☐ Intermittent ☐ Tidal

Stream Origin
☐ Glacial ☐ Spring-fed
☑ Non-glacial montane ☐ Mixture of origins
☐ Swamp and bog ☐ Other_____

Reach Type
☐ Riffle-Pool ☐ Cascade
☐ Plane-Bed ☐ Bedrock w/alluvial veneer
☐ Step-Pool ☐ Bedrock

Rosgen Type_____

WATERSHED FEATURES

Predominant Surrounding Landuse
☐ Forest/Natural ☐ Residential
☑ Field/Pasture ☐ Commercial/Industrial
☐ Agricultural ☐ Other_____

Local Hydrologic Alterations
☑ No Evidence ☐ Augmentation
☐ Dam/Retention ☐ Channelization
☐ Diversion ☐ Other_____

SEDIMENT SOURCES

MANAGEMENT ACTIVITIES (include short description)

Timber Harvesting
☐ Yes ☑ No no evidence

Mining (Hardrock / Placer)
☑ Yes ☐ No no evidence

Grazing and/or Agriculture
☑ Yes ☐ No 20m of pasture

Evidence of Fire
☑ Yes ☐ No no evidence

EROSIONAL FEATURES

Local Hillslopes
☑ No Evidence ☐ Major gullying/rilling
☐ Minor gullying/rilling ☐ Mass wasting (slides,debris)
☐ Moderate gullying/rilling ☐ Other_____

Does sediment reach channel directly?
☐ Yes ☑ No

Roads and related features
☑ No Evidence ☐ Culvert/Bridge
☐ Unpaved ☐ Ditch/Roadcut
☐ Paved ☐ Other_____

Does sediment reach channel directly?
☐ Yes ☑ No

Channel Stability
☐ Stable ☐ Aggrading
☑ Moderately stable ☐ Downcutting
☐ Unstable ☐ Widening

Is the channel armored? ☐ Yes ☑ No
Evidence of bank undercutting? ☑ Yes ☐ No

Percent of streambank with deep binding root mass
☑ >85% ☐ 85-65% ☐ 65-35% ☐ <35%

DEPOSITIONAL FEATURES
☐ Pool In-filling ☑ Floodplain
☑ Lee (DS) deposits ☐ Terraces
☑ Channel bars ☐ Other_____

Degree of instream sedimentation
☐ None ☐ Low ☑ Medium ☐ High

CHANNEL FEATURES

Estimated Reach Length 200 m
Average Stream Width 15 m
Average Stream Depth .3 m
Sampling Reach Area 3000 m²
Estimated Manning's n _____

Canopy Cover
☐ Open ☑ Partly shaded ☐ Shaded

Proportion of Reach Represented by Stream Morphology Types
Riffle 47 % Run 47 %
Pool 6 %

Form # D - _____

REACH CHARACTERIZATION FIELD DATA SHEET

STREAM NAME French Creek	LOCATION Scott Valley, Calif.

RIPARIAN VEGETATION

Indicate the dominant type and record the dominant species present

☐ Trees ☑ Shrubs ☑ Grasses ☐ Herbaceous

dominant species present alder

Extent of Riparian Buffer Zone	Width of Riparian Buffer Zone	Riparian Vegetation Age
☐ None	☐ < 1 Channel width	☐ Immature (< 5yrs)
☐ Fragmentary	☑ 1-5 Channel widths	☑ Established (5-30 yrs)
☑ Continuous	☐ > 5 Channel widths	☐ Mature/Old Growth (>30 yrs)

Extent of vegetation encroachment into stream channel

☑ None ☐ Minimal ☐ Moderate ☐ Heavy ☐ Extreme

LARGE WOODY DEBRIS

☐ Not Present ☑ Present in Cutbank ☑ Present in Channel

Density of LWD 10% m^2/km^2 (area of LWD/ reach area)

AQUATIC VEGETATION

Indicate the dominant type

☑ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating

☐ Floating Algae ☐ Attached Algae

Portion of the reach with aquatic vegetation 5 %

WATER QUALITY

Temperature 14 ^{0}C

Specific Conductance 49 uS

Dissolved Oxygen N/A

pH 6.28

Turbidity 24ppm

Water Odors

☑ Normal/None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other

Water Surface Oils

☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☑ None ☐ Other

Turbidity (visual)

☑ Clear ☐ Slightly turbid ☐ Turbid ☐ Opaque ☐ Stained ☐ Other

DISCHARGE

Velocity-Area Method

Distance from water's edge (m)	Depth (m)	Velocity (m/s)	Discharge (cms)	Notes
2.4	0.15	0.1	0.008	REF @ 1.6r
2.9	0.21	0.3	0.032	
3.4	0.29	0.6	0.087	
3.9	0.29	0.7	0.102	
4.4	0.30	0.7	0.105	
4.9	0.31	0.8	0.124	
5.4	0.32	1.1	0.176	
5.9	0.33	1.0	0.165	
6.4	0.30	0.9	0.135	
6.9	0.31	1.0	0.155	
7.4	0.27	0.7	0.095	
7.9	0.21	0.4	0.042	
8.4	0.19	0.8	0.076	
8.9	0.20	0.5	0.050	
9.4	0.15	0.3	0.023	

Total Discharge (cms) 1.38

Float Method

	Width (m)	Avg Depth (m)	Float Distance (m)	Time (s)	Discharge (cms)
XS 1	8.0	0.25	10.0	10	1.6
XS 2					

Estimated Discharge (cms) 1.6

HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS

STREAM NAME French Creek	LOCATION Scott Valley, Calif.	
STATION # FR02b REACH ID# _____	STREAM CLASS	
UTM N 0510739 UTM E 4584677	RIVER BASIN Scott	
STORET #	AGENCY	
INVESTIGATORS Erika, Mike, Preston and Raffi		
FORM COMPLETED BY Preston and Raffi	DATE 6/20/03 TIME 3:50 PM	REASON FOR SURVEY

Parameters to be evaluated in sampling reach

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
1. Epifaunal Substrate/ Available Cover	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE 17	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.
SCORE 14	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Pool Variability	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large-deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small-shallow or pools absent.
SCORE 3	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE 14	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE 18	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS

Parameters to be evaluated broader than sampling reach

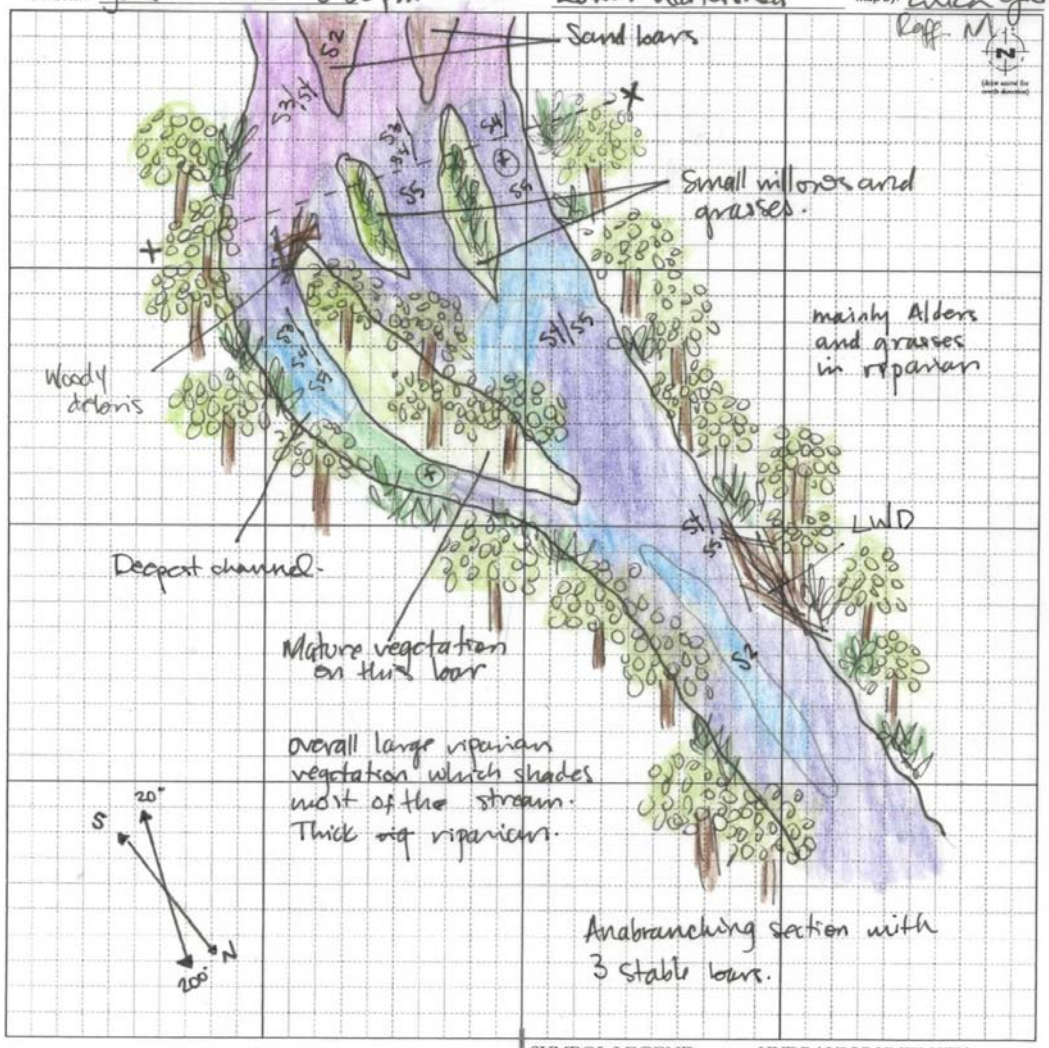
Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
SCORE 18	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
SCORE 10	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE 8 (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE 7 (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE 9 (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE 8 (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
SCORE 10 (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE 7 (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0

Total Score 144

Stream Assessment Field Sketch Form

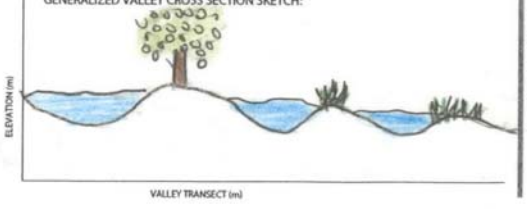
River/Stream: French Creek Reach ID: FR-026

Date/Time: June 22. 2003 - 3:30 pm Location: Lower watershed Map by: Eilean Gwilo Raff. M



Map Scale (if applicable): 1 ☐ = _____

GENERALIZED VALLEY CROSS SECTION SKETCH:



SYMBOL LEGEND:

Geomorphic Unit Boundary

Flow Direction

UTM Coordinate Location: RS-1

Fish Sampling Location & ID: F1

Invertebrate Sampling Location & ID: I1

Cross-section Location:

HYDRAULIC UNIT KEY:

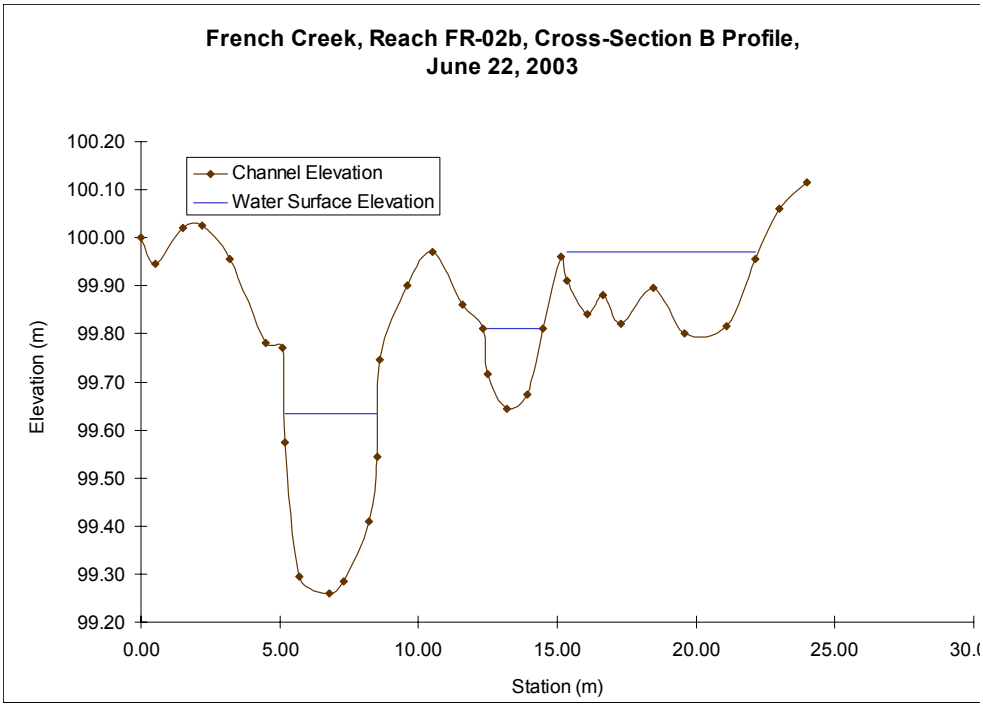
Flow Types:

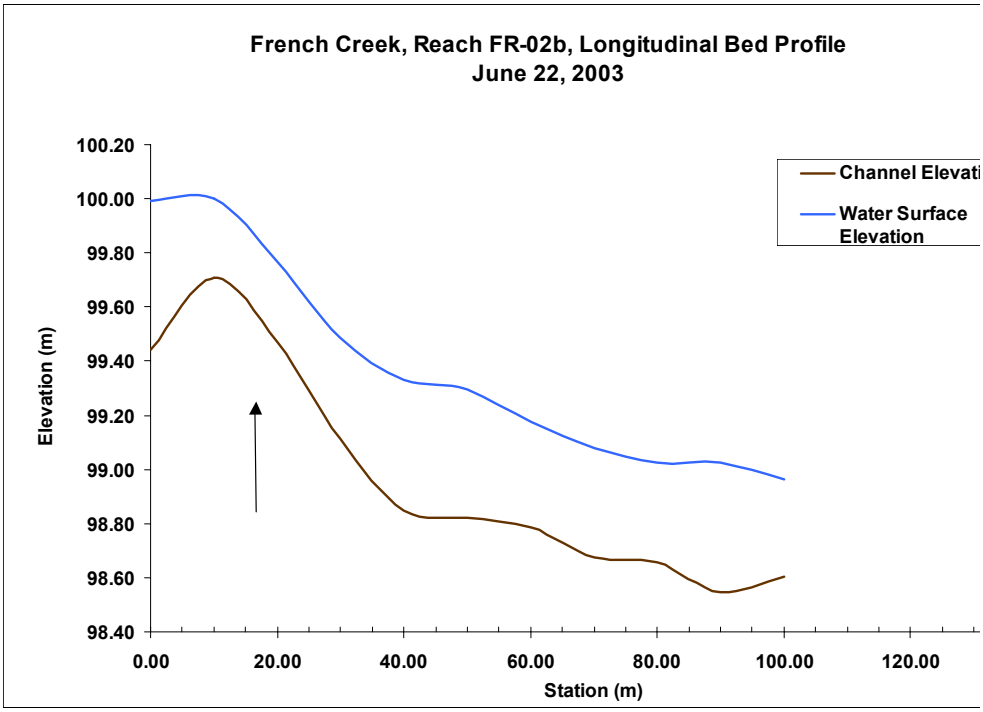
- ☐ H9 Free Fall
- ☐ H8 Chute
- ☐ H7 Broken standing waves
- ☐ H6 Unbroken standing waves
- ☐ H5 Rippled
- ☐ H4 Upwelling
- ☐ H3 Smooth surface flow
- ☐ H2 Scarcely perceptible flow
- ☐ H1 Standing water

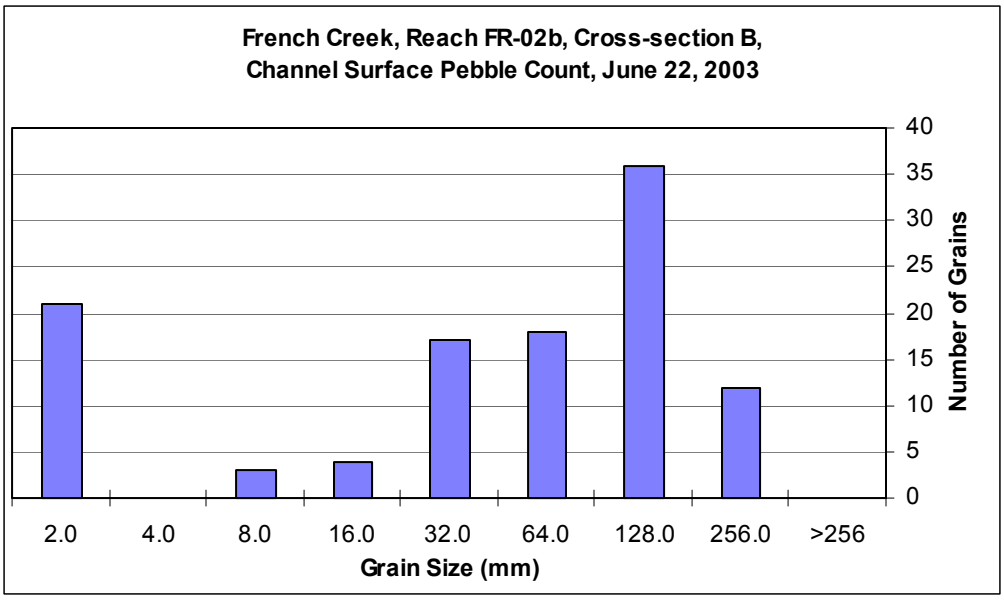
Substrate Categories:

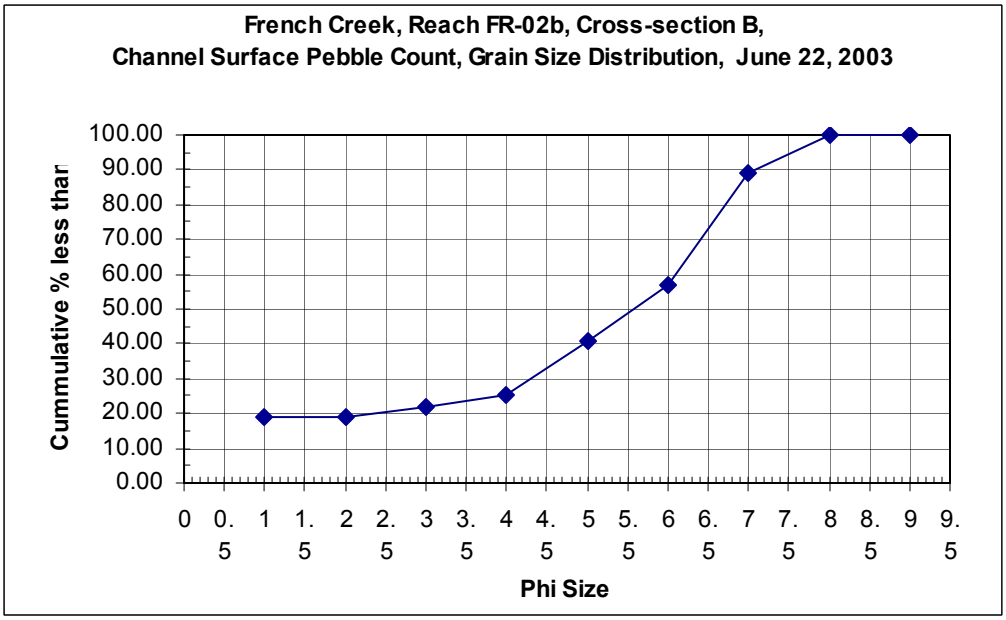
- ☐ S1 Silt
- ☐ S2 Sand
- ☐ S3 Gravel
- ☐ S4 Cobble Sm.
- ☐ S5 Cobble Lg.
- ☐ S6 Boulder Sm.
- ☐ S7 Boulder Lg.
- ☐ S8 Bimodal

Form # C - _____


French Creek, Reach FR-02b, Cross-Section B Profile,
June 22, 2003
Channel Elevation
Water Surface Elevation
Elevation (m)
100.20
100.10
100.00
99.90
99.80
99.70
99.60
99.50
99.40
99.30
99.20
0.00
5.00
10.00
15.00
20.00
25.00
Station (m)


French Creek, Reach FR-02b, Longitudinal Bed Profile
June 22, 2003
Channel Elevati
Water Surface Elevation
Elevation (m)
100.20
100.00
99.80
99.60
99.40
99.20
99.00
98.80
98.60
98.40
0.00
20.00
40.00
60.00
80.00
100.00
120.00
Station (m)


French Creek, Reach FR-02b, Cross-section B,
Channel Surface Pebble Count, June 22, 2003
40
35
30
25
20
15
10
5
0
Number of Grains
2.0
4.0
8.0
16.0
32.0
64.0
128.0
256.0
>256
Grain Size (mm)


French Creek, Reach FR-02b, Cross-section B,
Channel Surface Pebble Count, Grain Size Distribution, June 22, 2003
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Cummulative % less thar
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
5.5
6
6.5
7
7.5
8
8.5
9
9.5
Phi Size

REACH CHARACTERIZATION FIELD DATA SHEET

STREAM NAME French Creek	LOCATION Scott Valley, Calif.	
REACH ID # FR-03	RIVER BASIN Scott	
UTM (us end) N 0510739 E 4582251	TOPOS	
UTM (ds end) N 0510645 E 4582450	STREAM ORDER ELEVATION	
INVESTIGATORS Erika, Mike, Preston and Raffi		
FORM COMPLETED BY Raffi	DATE 6/19/03 TIME 3:50 PM	ASSOCIATED SITE ID #s FR03-XA, FR03-XB,

WEATHER CONDITIONS

Now		Past 24 hours
☐	storm (heavy rain)	☐
☐	rain (steady rain)	☐
☐	showers (intermittent)	☐
40 % ☑	% cloud cover	☑ 90 %
☐	clear/sunny	☐

Has there been a heavy rain in the last 7 days? ☐ Yes ☑ No

Air Temperature 22 °C

Other_____

STREAM MORPHOLOGY

Stream Subsystem: ☑ Perennial ☐ Intermittent ☐ Tidal

Stream Origin: ☐ Glacial ☐ Spring-fed ☐ Non-glacial montane ☑ Mixture of origins ☐ Swamp and bog ☐ Other_____

Reach Type: ☐ Riffle-Pool ☐ Cascade ☐ Plane-Bed ☐ Bedrock w/alluvial veneer ☐ Step-Pool ☐ Bedrock

Rosgen Type_____

WATERSHED FEATURES

Predominant Surrounding Landuse: ☐ Forest/Natural ☐ Residential ☑ Field/Pasture ☐ Commercial/Industrial ☐ Agricultural ☐ Other_____

Local Hydrologic Alterations: ☑ No Evidence ☐ Augmentation ☐ Dam/Retention ☐ Channelization ☐ Diversion ☐ Other_____

SEDIMENT SOURCES

MANAGEMENT ACTIVITIES (include short description)

Timber Harvesting: ☐ Yes ☑ No no evidence

Mining (Hardrock / Placer): ☐ Yes ☑ No no evidence

Grazing and/or Agriculture: ☑ Yes ☐ No cows and one llama

Evidence of Fire: ☐ Yes ☑ No no evidence

EROSIONAL FEATURES

Local Hillslopes: ☑ No Evidence ☐ Minor gullying/rilling ☐ Moderate gullying/rilling ☐ Major gullying/rilling ☐ Mass wasting (slides,debris) ☐ Other_____

Does sediment reach channel directly? ☐ Yes ☑ No

Roads and related features: ☑ No Evidence ☐ Unpaved ☑ Paved ☐ Culvert/Bridge ☐ Ditch/Roadcut ☐ Other_____

Does sediment reach channel directly? ☐ Yes ☑ No

Channel Stability: ☑ Stable ☐ Moderately stable ☐ Unstable ☐ Aggrading ☐ Downcutting ☐ Widening

Is the channel armored? ☐ Yes ☑ No

Evidence of bank undercutting? ☑ Yes ☐ No

Percent of streambank with deep binding root mass: ☑ >85% ☐ 85-65% ☐ 65-35% ☐ <35%

DEPOSITIONAL FEATURES

☐ Pool In-filling ☐ Lee (DS) deposits ☐ Channel bars ☐ Floodplain ☐ Terraces ☐ Other_____

Degree of instream sedimentation: ☐ None ☐ Low ☑ Medium ☐ High

CHANNEL FEATURES

Estimated Reach Length 200 m

Average Stream Width 15 m

Average Stream Depth 0.4 m

Sampling Reach Area 2000 m²

Estimated Manning's n _____

Canopy Cover: ☐ Open ☑ Partly shaded ☐ Shaded

Proportion of Reach Represented by Stream Morphology Types

Riffle 25 % Run 75 %

Pool 0 %

Form # D - _____

REACH CHARACTERIZATION FIELD DATA SHEET

STREAM NAME French Creek	LOCATION Scott Valley, Calif.

RIPARIAN VEGETATION

Indicate the dominant type and record the dominant species present

☑ Trees ☐ Shrubs ☑ Grasses ☐ Herbaceous

dominant species present alder

Extent of Riparian Buffer Zone	Width of Riparian Buffer Zone	Riparian Vegetation Age
☐ None	☑ < 1 Channel width	☐ Immature (< 5yrs)
☐ Fragmentary	☐ 1-5 Channel widths	☑ Established (5-30 yrs)
☑ Continuous	☐ > 5 Channel widths	☐ Mature/Old Growth (>30 yrs)

Extent of vegetation encroachment into stream channel

☐ None ☑ Minimal ☐ Moderate ☐ Heavy ☐ Extreme

LARGE WOODY DEBRIS

☐ Not Present ☑ Present in Cutbank ☑ Present in Channel

Density of LWD <5% m^2/km^2 (area of LWD/ reach area)

AQUATIC VEGETATION

Indicate the dominant type

☑ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating

☐ Floating Algae ☐ Attached Algae

Portion of the reach with aquatic vegetation 5 %

WATER QUALITY

Temperature 14.4 °C

Specific Conductance 45 uS

Dissolved Oxygen N/A

pH 6.27

Turbidity 25ppm

Water Odors

☑ Normal/None ☐ Sewage

☐ Petroleum ☐ Chemical

☐ Fishy ☐ Other

Water Surface Oils

☐ Slick ☐ Sheen ☐ Globs ☐ Flecks

☑ None ☐ Other

Turbidity (visual)

☑ Clear ☐ Slightly turbid ☐ Turbid

☐ Opaque ☐ Stained ☐ Other

DISCHARGE

Velocity-Area Method

Distance from water's edge (m)	Depth (m)	Velocity (m/s)	Discharge (cms)	Notes
4.7	0.35	0.1	0.025	REF @ 4m
5.45	0.44	0.1	0.033	
6.2	0.37	0.2	0.056	
6.85	0.51	0.3	0.099	
7.5	0.55	0.4	0.143	
8.3	0.51	0.3	0.122	
9.0	0.53	0.5	0.190	
10.5	0.51	0.3	0.2295	
11.6	0.48	0.2	0.1056	
12.7	0.34	0.1	0.037	
14.2	0.24	0.05	0.018	

Total Discharge (cms) 1.05

Float Method

	Width (m)	Avg Depth (m)	Float Distance (m)	Time (s)	Discharge (cms)
XS 1					
XS 2					

Estimated Discharge (cms) _____

HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS

STREAM NAME French Creek	LOCATION Scott Valley, Calif.	
STATION # FR03 REACH ID# _____	STREAM CLASS	
UTM N 0510739 UTM E 458251	RIVER BASIN Scott	
STORET #	AGENCY	
INVESTIGATORS Erika, Mike, Preston and Raffi		
FORM COMPLETED BY Preston and Raffi	DATE 6/19/03 TIME 3:30 PM	REASON FOR SURVEY

Parameters to be evaluated in sampling reach

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
1. Epifaunal Substrate/ Available Cover	Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE 10	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Pool Substrate Characterization	Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.	Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.	All mud or clay or sand bottom; little or no root mat; no submerged vegetation.	Hard-pan clay or bedrock; no root mat or vegetation.
SCORE 16	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Pool Variability	Even mix of large-shallow, large-deep, small-shallow, small-deep pools present.	Majority of pools large-deep; very few shallow.	Shallow pools much more prevalent than deep pools.	Majority of pools small-shallow or pools absent.
SCORE 3	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE 8	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE 17	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS

Parameters to be evaluated broader than sampling reach

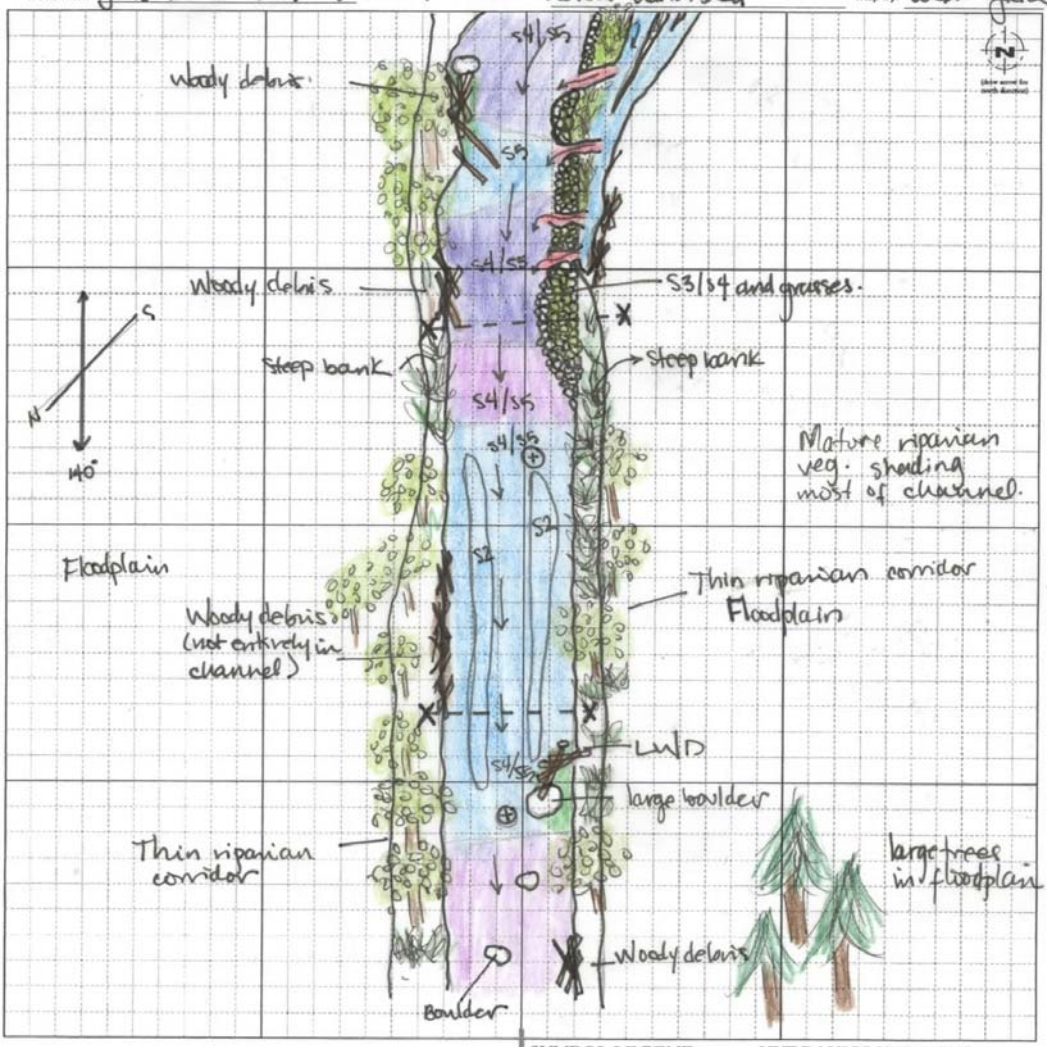
Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
SCORE 18	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Channel Sinuosity	The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.	Channel straight; waterway has been channelized for a long distance.
SCORE 4	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE 8 (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE 8 (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
9. Vegetative Protection (score each bank) Note: determine left or right side by facing downstream.	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE 10 (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE 10 (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
SCORE 2 (LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE 2 (RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0

Total Score 116

Stream Assessment Field Sketch Form

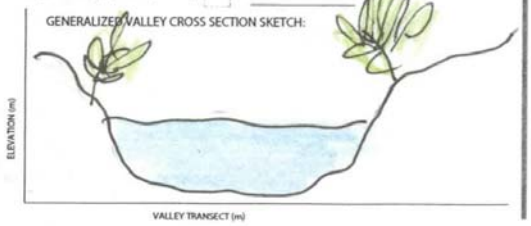
River/Stream: French Creek Reach ID: FR - 03

Date/Time: June 28 20 · 2003 - 8:50am Location: Lower watershed Map by: Erika Gallo



Map Scale (if applicable): 1 [ ] = _____

GENERALIZED VALLEY CROSS SECTION SKETCH:



SYMBOL LEGEND:

Geomorphic Unit Boundary

Flow Direction

UTM Coordinate Location: RS-1

Fish Sampling Location & ID: F1

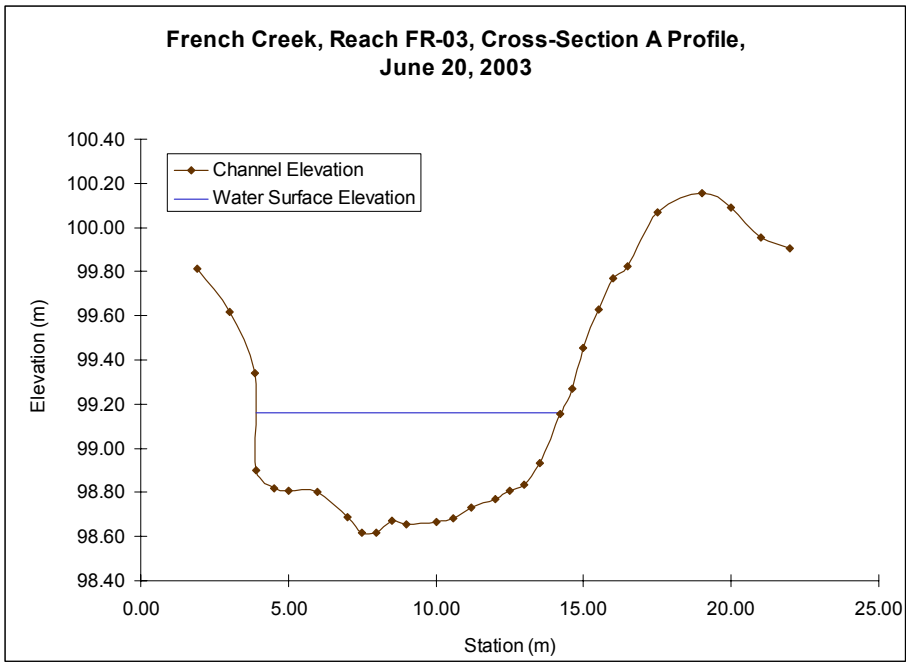
Invertebrate Sampling Location & ID: I1

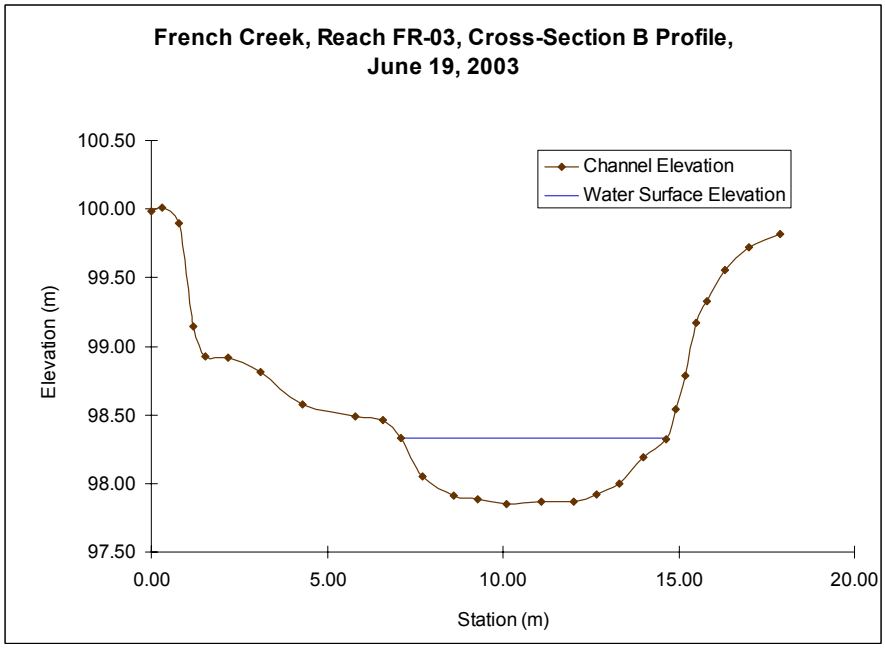
Cross-section Location:

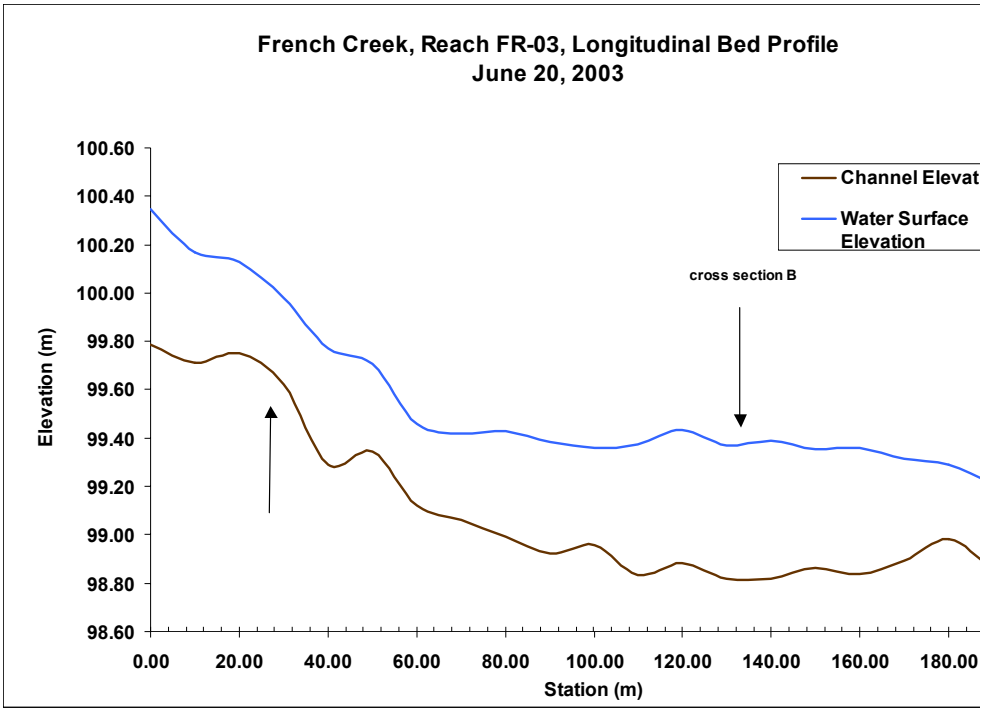
HYDRAULIC UNIT KEY:

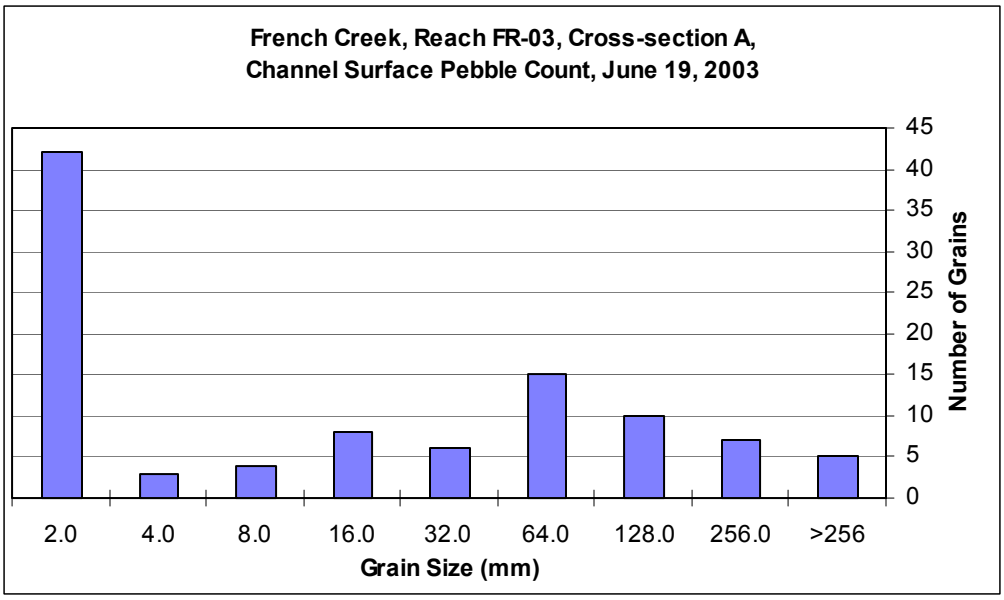
Flow Types:		Substrate Categories:	
H9	Free Fall	S1	Silt
H8	Chute	S2	Sand
H7	Broken standing waves	S3	Gravel
H6	Unbroken standing waves	S4	Cobble Sm.
H5	Rippled	S5	Cobble Lg.
H4	Upwelling	S6	Boulder Sm.
H3	Smooth surface flow	S7	Boulder Lg.
H2	Scarcely perceptible flow	S8	Bimodal
H1	Standing water/pool		

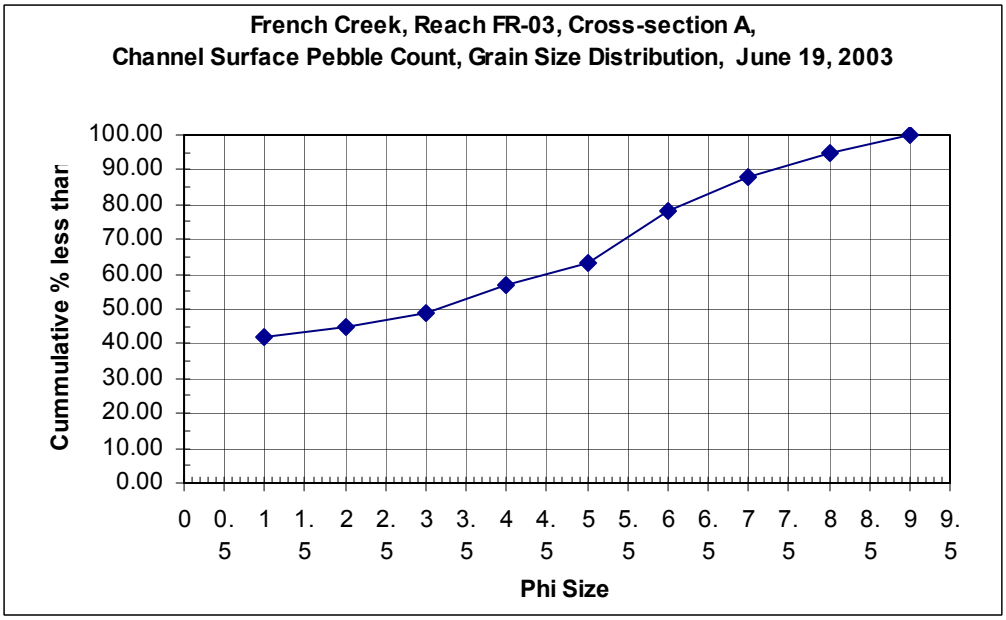
Form # C - _____

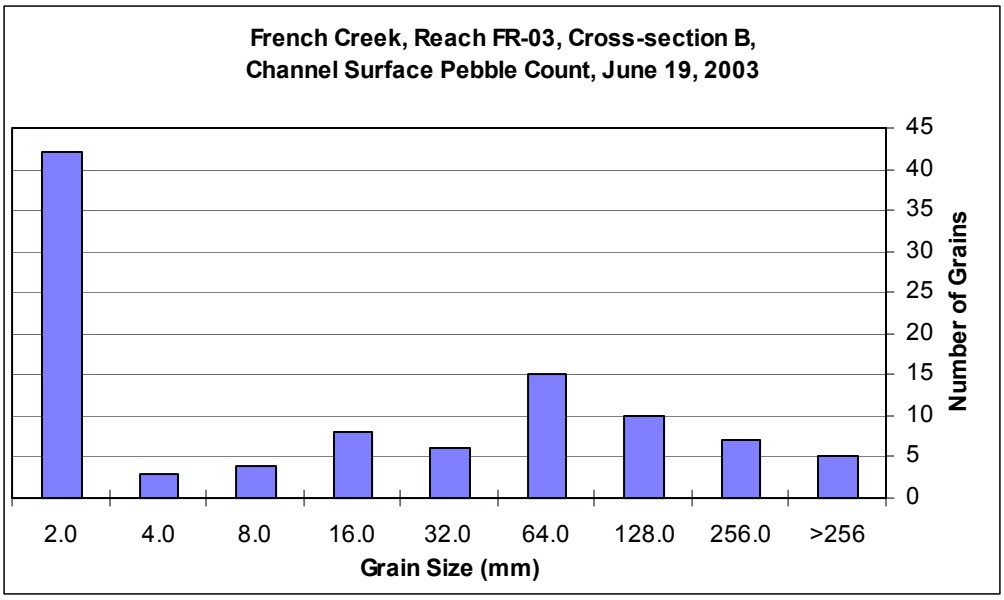

French Creek, Reach FR-03, Cross-Section A Profile,
June 20, 2003
Channel Elevation
Water Surface Elevation
Elevation (m)
100.40
100.20
100.00
99.80
99.60
99.40
99.20
99.00
98.80
98.60
98.40
0.00
5.00
10.00
15.00
20.00
25.00
Station (m)

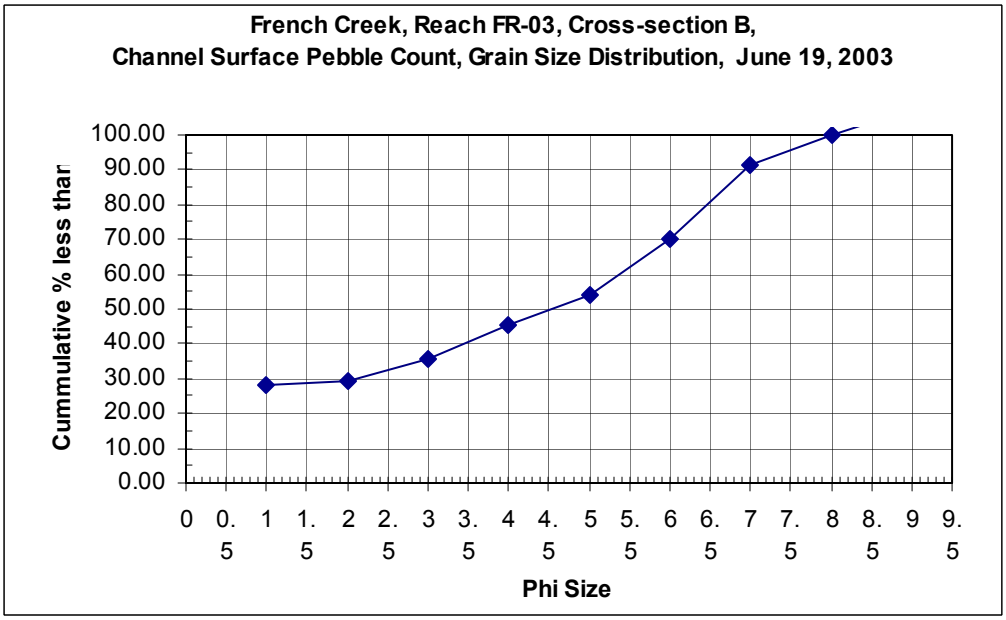

French Creek, Reach FR-03, Cross-Section B Profile,
June 19, 2003
Channel Elevation
Water Surface Elevation
Elevation (m)
100.50
100.00
99.50
99.00
98.50
98.00
97.50
0.00
5.00
10.00
15.00
20.00
Station (m)


French Creek, Reach FR-03, Longitudinal Bed Profile
June 20, 2003
Channel Elevat
Water Surface Elevation
cross section B
Elevation (m)
100.60
100.40
100.20
100.00
99.80
99.60
99.40
99.20
99.00
98.80
98.60
0.00
20.00
40.00
60.00
80.00
100.00
120.00
140.00
160.00
180.00
Station (m)


French Creek, Reach FR-03, Cross-section A,
Channel Surface Pebble Count, June 19, 2003
45
40
35
30
25
20
15
10
5
0
Number of Grains
2.0
4.0
8.0
16.0
32.0
64.0
128.0
256.0
>256
Grain Size (mm)


French Creek, Reach FR-03, Cross-section A,
Channel Surface Pebble Count, Grain Size Distribution, June 19, 2003
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Cummulative % less thar
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
5.5
6
6.5
7
7.5
8
8.5
9
9.5
Phi Size


French Creek, Reach FR-03, Cross-section B,
Channel Surface Pebble Count, June 19, 2003
45
40
35
30
25
20
15
10
5
0
Number of Grains
2.0
4.0
8.0
16.0
32.0
64.0
128.0
256.0
>256
Grain Size (mm)


French Creek, Reach FR-03, Cross-section B,
Channel Surface Pebble Count, Grain Size Distribution, June 19, 2003
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Cummulative % less thar
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
5.5
6
6.5
7
7.5
8
8.5
9
9.5
Phi Size

REACH CHARACTERIZATION FIELD DATA SHEET

STREAM NAME French Creek	LOCATION Scott Valley, Calif. (Van de Waters property)	
REACH ID # FR04	RIVER BASIN Scott	
UTM (us end) N n/a E	TOPOS	
UTM (ds end) N n/a E	STREAM ORDER ELEVATION	
INVESTIGATORS Erika, Mike, Preston, and Raffi		
FORM COMPLETED BY Mike	DATE 6/24/2003 TIME 2:00 PM	ASSOCIATED SITE ID #s

WEATHER CONDITIONS

Now		Past 24 hours
☐	storm (heavy rain)	☐
☐	rain (steady rain)	☐
☐	showers (intermittent)	☐
___% ☐	% cloud cover	☐ ___%
☑	clear/sunny	☑

Has there been a heavy rain in the last 7 days? ☐ Yes ☑ No

Air Temperature 24 °C

Other_____

STREAM MORPHOLOGY

Stream Subsystem: ☑ Perennial ☐ Intermittent ☐ Tidal

Stream Origin: ☐ Glacial ☐ Spring-fed; ☐ Non-glacial montane ☑ Mixture of origins; ☐ Swamp and bog ☐ Other_____

Reach Type: ☐ Riffle-Pool ☑ Cascade; ☐ Plane-Bed ☐ Bedrock w/alluvial veneer; ☑ Step-Pool ☐ Bedrock

Rosgen Type_____

WATERSHED FEATURES

Predominant Surrounding Landuse: ☑ Forest/Natural ☑ Residential; ☐ Field/Pasture ☑ Commercial/Industrial; ☐ Agricultural ☐ Other_____

Local Hydrologic Alterations: ☑ No Evidence ☐ Augmentation; ☐ Dam/Retention ☐ Channelization; ☐ Diversion ☐ Other_____

SEDIMENT SOURCES

MANAGEMENT ACTIVITIES (include short description)

Timber Harvesting: ☑ Yes ☐ No upstream and adjuent to stream

Mining (Hardrock / Placer): ☐ Yes ☑ No

Grazing and/or Agriculture: ☐ Yes ☑ No

Evidence of Fire: ☐ Yes ☑ No

EROSIONAL FEATURES

Local Hillslopes: ☐ No Evidence ☐ Major gullying/rilling; ☑ Minor gullying/rilling ☐ Mass wasting (slides,debris); ☐ Moderate gullying/rilling ☐ Other_____

Does sediment reach channel directly? ☐ Yes ☑ No

Roads and related features: ☐ No Evidence ☐ Culvert/Bridge; ☑ Unpaved ☐ Ditch/Roadcut; ☐ Paved ☐ Other_____

Does sediment reach channel directly? ☑ Yes ☐ No

Channel Stability: ☐ Stable ☐ Aggrading; ☑ Moderately stable ☐ Downcutting; ☐ Unstable ☐ Widening

Is the channel armored? ☐ Yes ☑ No Evidence of bank undercutting? ☑ Yes ☐ No

Percent of streambank with deep binding root mass: ☐ >85% ☑ 85-65% ☐ 65-35% ☐ <35%

DEPOSITIONAL FEATURES

☐ Pool In-filling ☐ Floodplain; ☐ Lee (DS) deposits ☑ Terraces; ☐ Channel bars ☐ Other_____

Degree of instream sedimentation: ☐ None ☐ Low ☑ Medium ☐ High

CHANNEL FEATURES

Estimated Reach Length 80 m

Average Stream Width 7 m

Average Stream Depth 0.3 m

Sampling Reach Area 560 m²

Estimated Manning's n _____

Canopy Cover: ☐ Open ☐ Partly shaded ☑ Shaded

Proportion of Reach Represented by Stream Morphology Types

Riffle 45 % Run 0 %

Pool 45 %

Form # D - _____

REACH CHARACTERIZATION FIELD DATA SHEET

STREAM NAME French Creek	LOCATION Scott Valley, Calif. (Van de Waters property)

RIPARIAN VEGETATION

Indicate the dominant type and record the dominant species present

☑ Trees ☐ Shrubs ☐ Grasses ☐ Herbaceous

dominant species present conifers and some alders

Extent of Riparian Buffer Zone	Width of Riparian Buffer Zone	Riparian Vegetation Age
☐ None	☐ < 1 Channel width	☐ Immature (< 5yrs)
☐ Fragmentary	☐ 1-5 Channel widths	☐ Established (5-30 yrs)
☑ Continuous	☑ > 5 Channel widths	☑ Mature/Old Growth (>30 yrs)

Extent of vegetation encroachment into stream channel

☐ None ☑ Minimal ☐ Moderate ☐ Heavy ☐ Extreme

LARGE WOODY DEBRIS

☐ Not Present ☐ Present in Cutbank ☐ Present in Channel

Density of LWD 25% m^2/km^2 (area of LWD/ reach area)

AQUATIC VEGETATION

Indicate the dominant type

☑ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating

☐ Floating Algae ☐ Attached Algae

Portion of the reach with aquatic vegetation 7 %

WATER QUALITY

Temperature 10.5 °C

Specific Conductance 31uS

Dissolved Oxygen N/A

pH 6.31

Turbidity 15

Water Odors

☑ Normal/None ☐ Sewage ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other

Water Surface Oils

☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☑ None ☐ Other

Turbidity (visual)

☑ Clear ☐ Slightly turbid ☐ Turbid ☐ Opaque ☐ Stained ☐ Other

DISCHARGE

Velocity-Area Method

Distance from water's edge (m)	Depth (m)	Velocity (m/s)	Discharge (cms)	Notes
4.1	0.455	0.1	0.02	
4.55	0.525	0.2	0.05	
4.9	0.64	0.1	0.022	
5.45	0.525	0.1	0.0289	
5.9	0.255	0.1	0.010	
6.2	0.345	0.05	0.005	
6.55	0.32	0.05	0.0056	

Total Discharge (cms) 0.192

Float Method

	Width (m)	Avg Depth (m)	Float Distance (m)	Time (s)	Discharge (cms)
XS 1	3.0	0.3	2	4.495	
XS 2					

Estimated Discharge (cms) 0.34

Form # D2 - _____

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS

STREAM NAME French Creek	LOCATION Scott Valley, Calif. (Van de Waters property)	
SITE ID # FR04 REACH ID _____	STREAM CLASS Cascade and step pool	
UTM N n/a UTM E n/a	RIVER BASIN Scott	
STORET #	AGENCY	
INVESTIGATORS Erika, Mike, Preston, and Raffi		
FORM COMPLETED BY Mike and Raffi	DATE 6/24/02 TIME 2:30 PM	REASON FOR SURVEY

Parameters to be evaluated in sampling reach

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
1. Epifaunal Substrate/ Available Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are not new fall and not transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.
SCORE 19	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
2. Embeddedness	Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space.	Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.
SCORE 13	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
3. Velocity/Depth Regime	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.)	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).	Dominated by 1 velocity/ depth regime (usually slow-deep).
SCORE 16	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.
SCORE 16	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.
SCORE 18	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0

Form # EH - _____

HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS

Parameters to be evaluated broader than sampling reach

Habitat Parameter	Condition Category			
	Optimal	Suboptimal	Marginal	Poor
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.
SCORE 20	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
7. Frequency of Riffles (or bends)	Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.	Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.	Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.	Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.
SCORE 17	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0
8. Bank Stability (score each bank) Note: determine left or right side by facing downstream.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.
SCORE 5 LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE 5 RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
9. Vegetative Protection (score each bank)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.
SCORE 8 LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE 9 RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0
10. Riparian Vegetative Zone Width (score each bank riparian zone)	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.
SCORE 7 LB)	Left Bank 10 9	8 7 6	5 4 3	2 1 0
SCORE 7 RB)	Right Bank 10 9	8 7 6	5 4 3	2 1 0

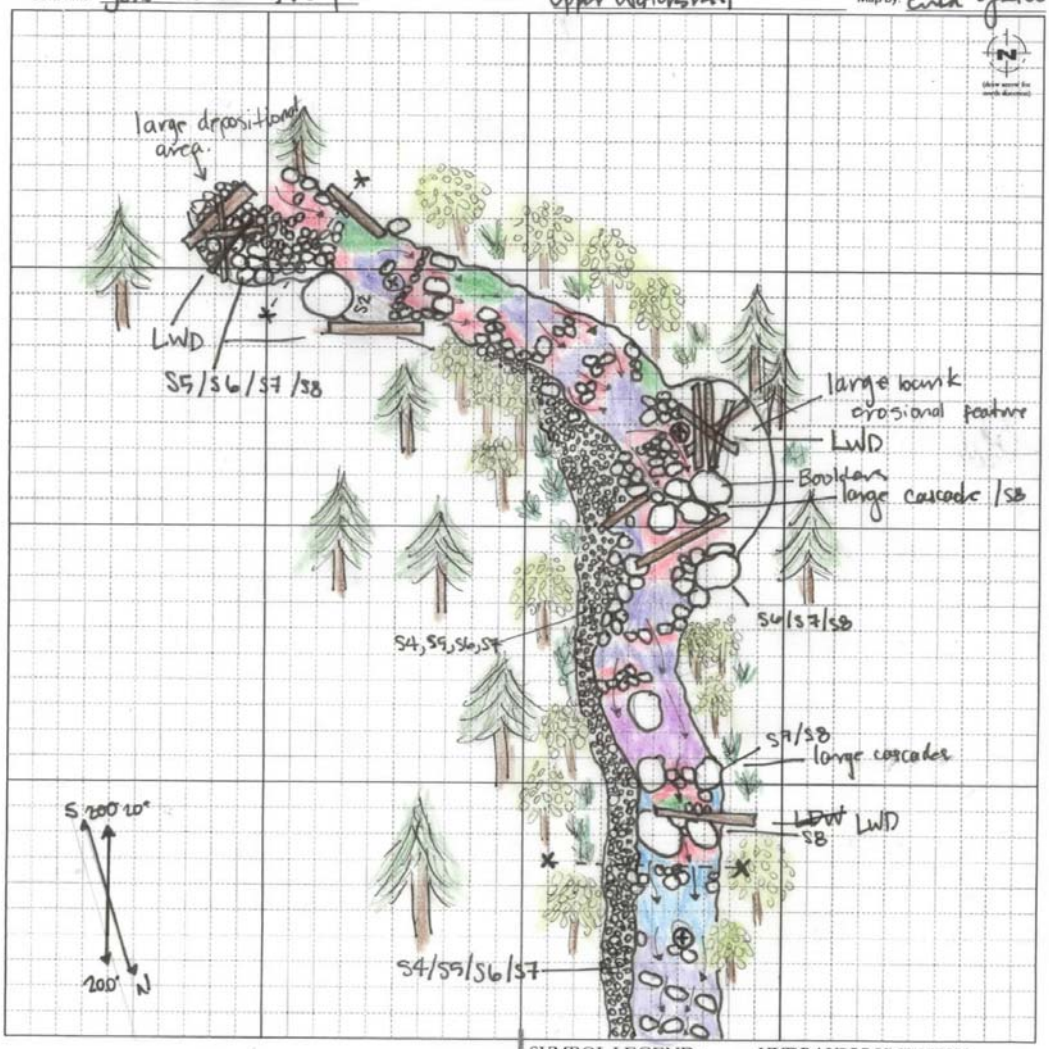
Total Score 160

Form # EH2 -

Stream Assessment Field Sketch Form

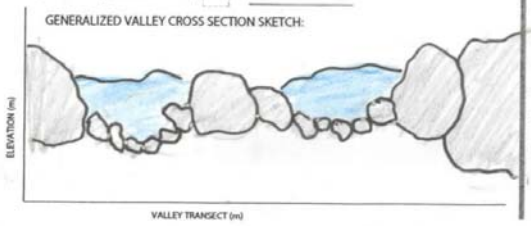
River/Stream: French Creek Reach ID: FR. 04

Date/Time: June 24. 2003, 1:00 pm Location: Upper Watershed Map by: Erika Gillo



Map Scale (if applicable): 1 ☐ = _____

GENERALIZED VALLEY CROSS SECTION SKETCH:



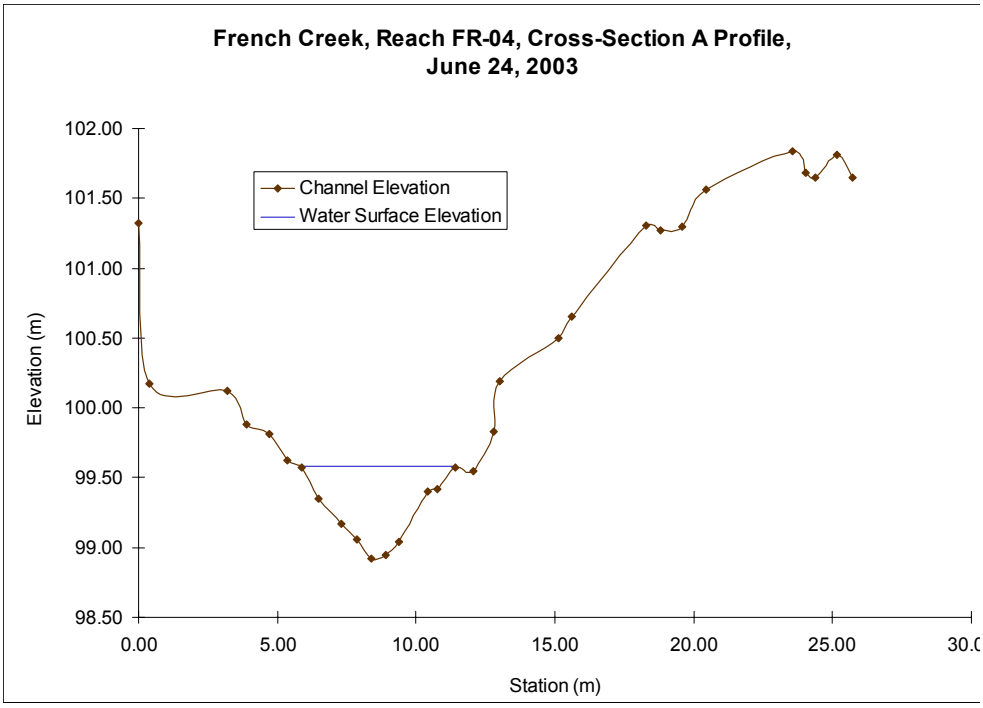
SYMBOL LEGEND:

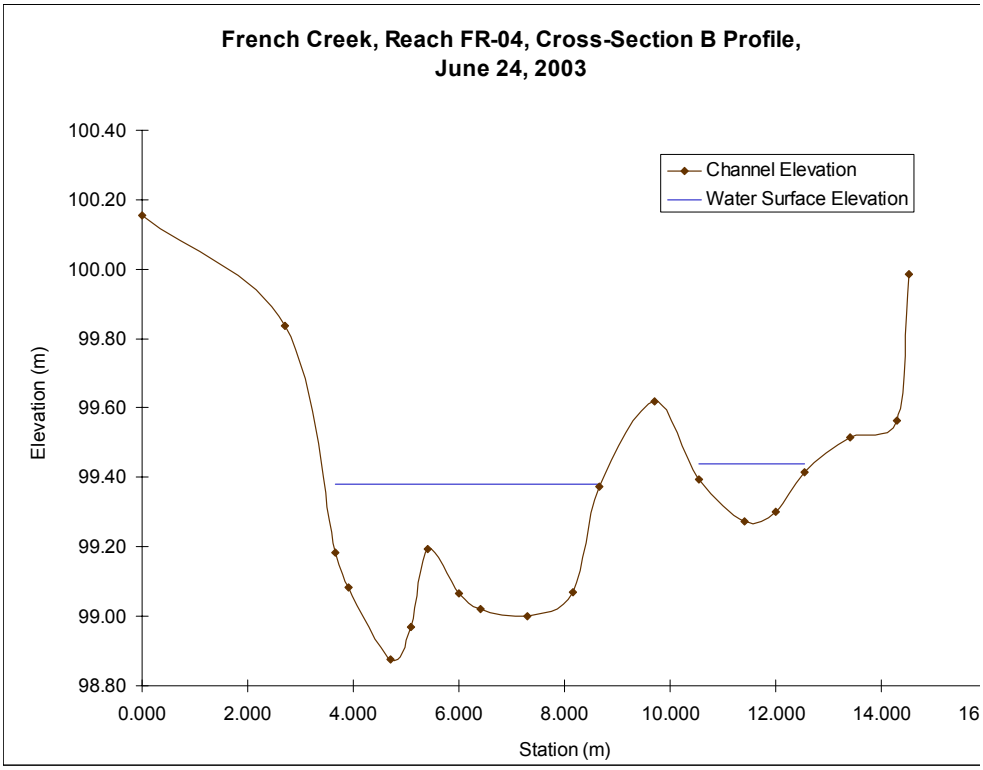
- Geomorphic Unit Boundary
- Flow Direction
- UTM Coordinate Location: RS-1
- Fish Sampling Location & ID: F1
- Invertebrate Sampling Location & ID: I1
- Cross-section Location:

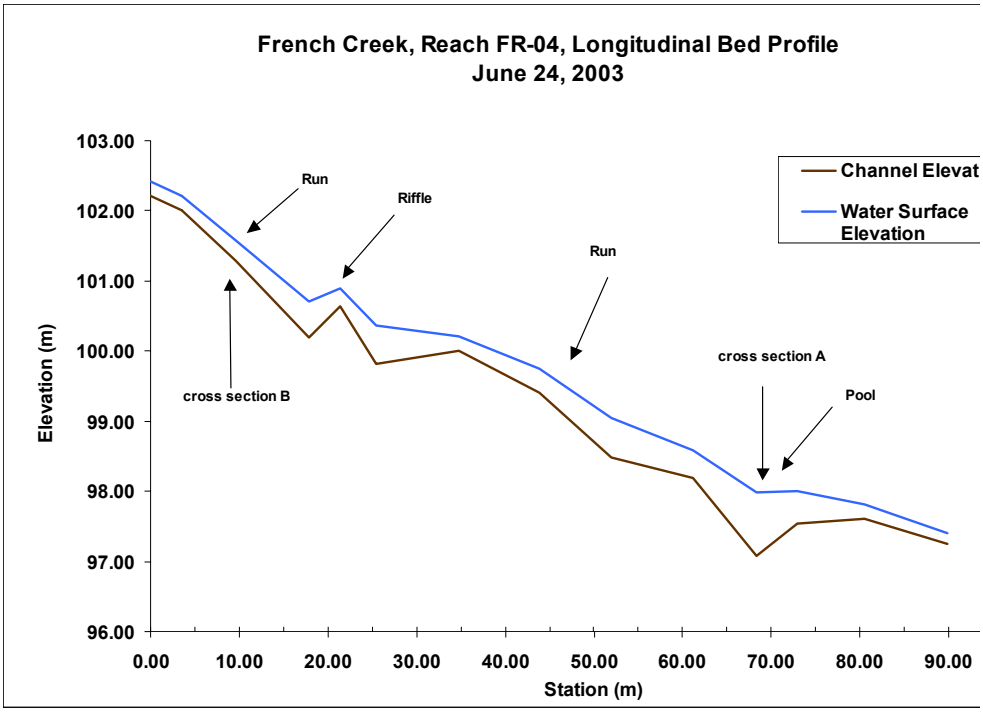
HYDRAULIC UNIT KEY:

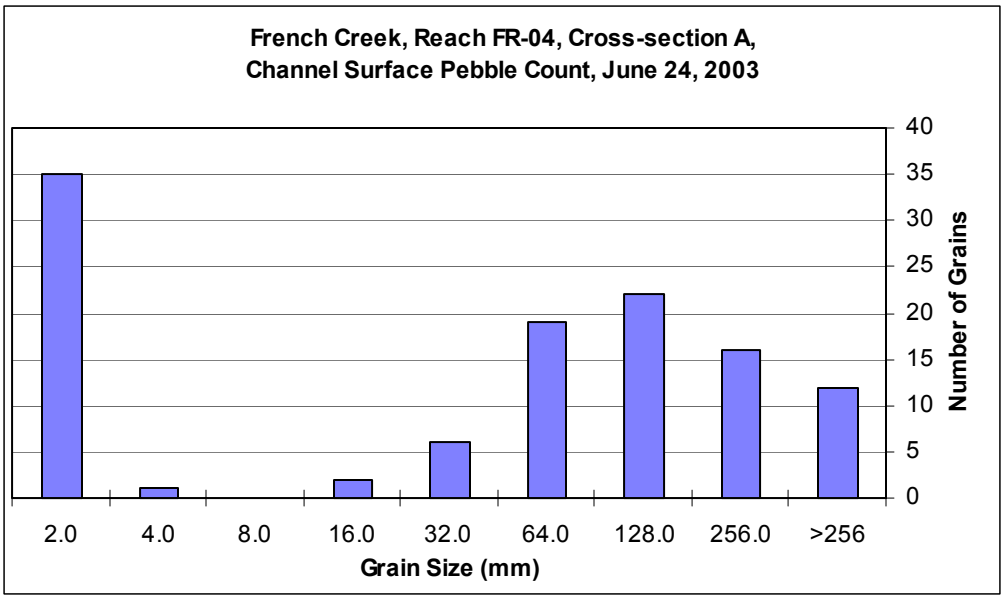
Flow Types:		Substrate Categories:	
☐ H9	Free Fall	☐ S1	Silt
☐ H8	Chute	☐ S2	Sand
☐ H7	Broken standing waves	☐ S3	Gravel
☐ H6	Unbroken standing waves	☐ S4	Cobble Sm.
☐ H5	Rippled	☐ S5	Cobble Lg.
☐ H4	Upwelling	☐ S6	Boulder Sm.
☐ H3	Smooth surface flow	☐ S7	Boulder Lg.
☐ H2	Scarcely perceptible flow	☐ S8	Bimodal
☐ H1	Standing water / pool		

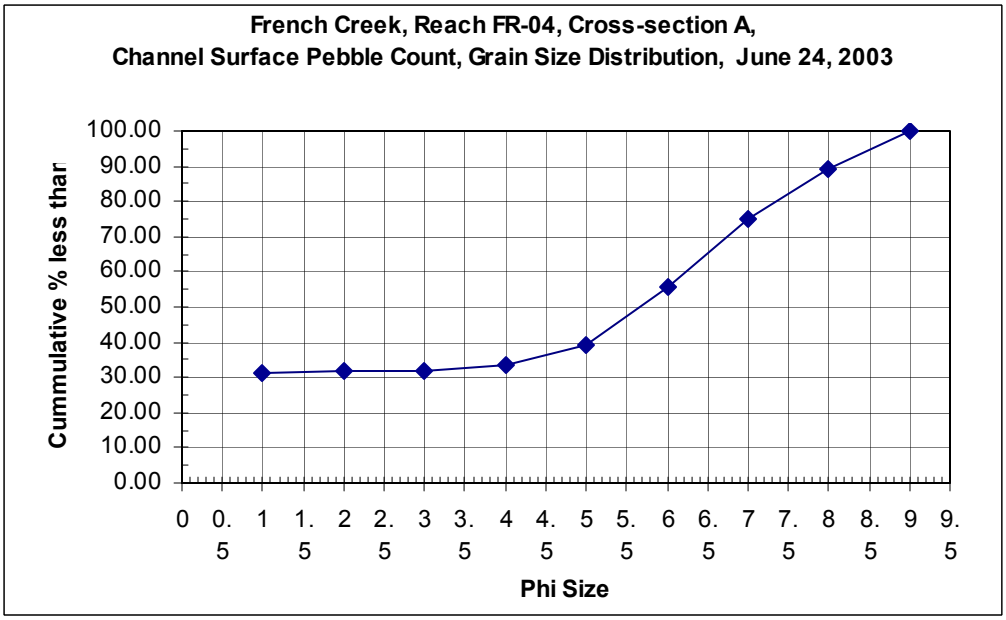
Form # C - _____

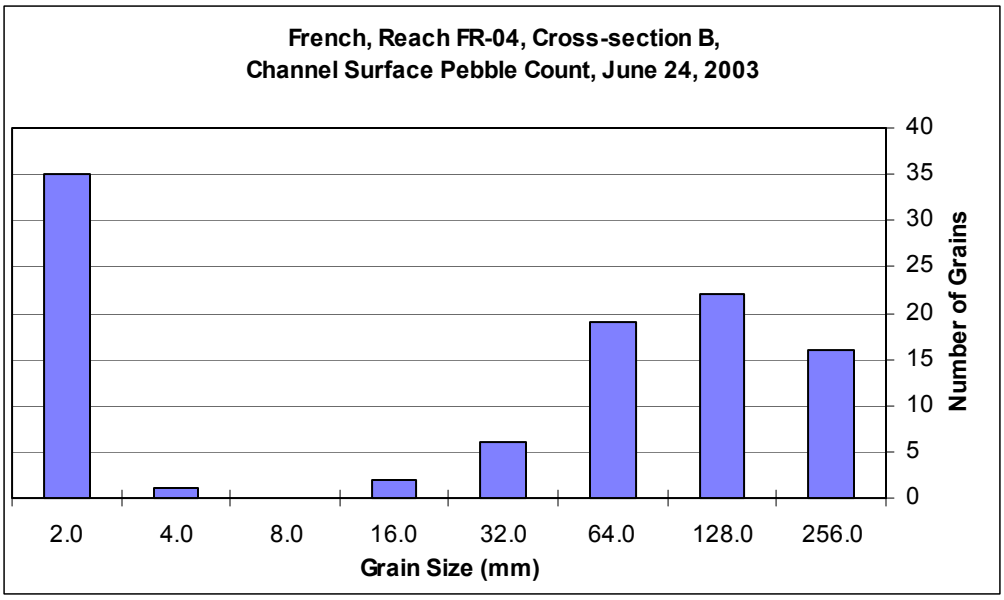

French Creek, Reach FR-04, Cross-Section A Profile,
June 24, 2003
Channel Elevation
Water Surface Elevation
Elevation (m)
Station (m)
102.00
101.50
101.00
100.50
100.00
99.50
99.00
98.50
0.00
5.00
10.00
15.00
20.00
25.00

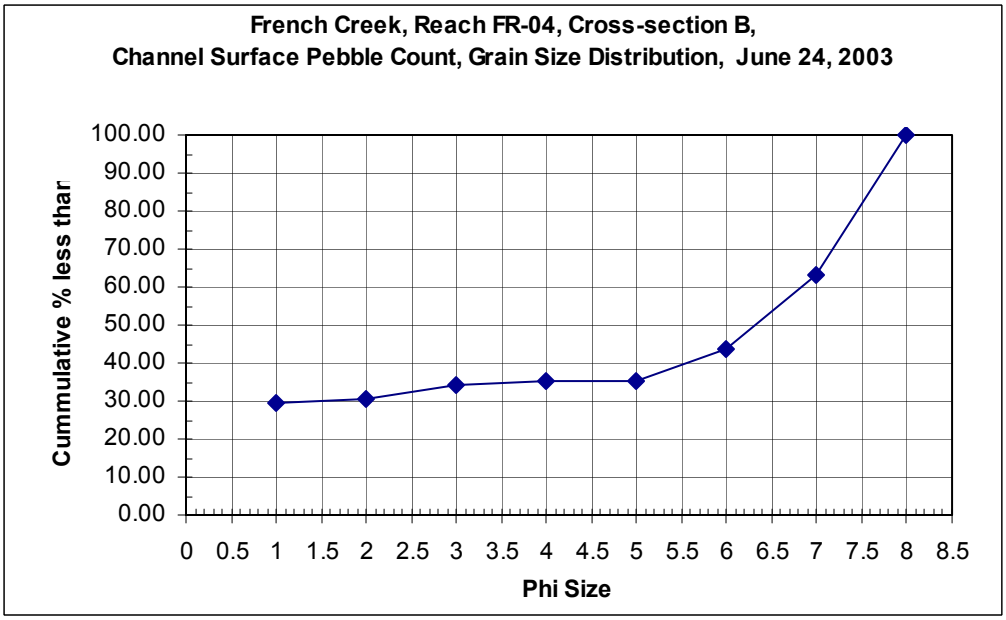

French Creek, Reach FR-04, Cross-Section B Profile,
June 24, 2003
Channel Elevation
Water Surface Elevation
Elevation (m)
Station (m)
100.40
100.20
100.00
99.80
99.60
99.40
99.20
99.00
98.80
0.000
2.000
4.000
6.000
8.000
10.000
12.000
14.000


French Creek, Reach FR-04, Longitudinal Bed Profile
June 24, 2003
Channel Elevat
Water Surface Elevation
Run
Riffle
Run
cross section A
Pool
cross section B
Elevation (m)
103.00
102.00
101.00
100.00
99.00
98.00
97.00
96.00
0.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
80.00
90.00
Station (m)


French Creek, Reach FR-04, Cross-section A,
Channel Surface Pebble Count, June 24, 2003
40
35
30
25
20
15
10
5
0
Number of Grains
2.0
4.0
8.0
16.0
32.0
64.0
128.0
256.0
>256
Grain Size (mm)


French Creek, Reach FR-04, Cross-section A,
Channel Surface Pebble Count, Grain Size Distribution, June 24, 2003
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Cummulative % less thar
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
5.5
6
6.5
7
7.5
8
8.5
9
9.5
Phi Size


French, Reach FR-04, Cross-section B,
Channel Surface Pebble Count, June 24, 2003
40
35
30
25
20
15
10
5
0
Number of Grains
2.0
4.0
8.0
16.0
32.0
64.0
128.0
256.0
Grain Size (mm)


French Creek, Reach FR-04, Cross-section B,
Channel Surface Pebble Count, Grain Size Distribution, June 24, 2003
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Cummulative % less thar
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
5.5
6
6.5
7
7.5
8
8.5
Phi Size

REACH CHARACTERIZATION FIELD DATA SHEET

STREAM NAME N. Fork French Creek	LOCATION Scott Valley, Calif.	
REACH ID # FR05p	RIVER BASIN Scott (upper French Creek)	
UTM (us end) N n/a E	TOPOS	
UTM (ds end) N n/a E	STREAM ORDER ELEVATION	
INVESTIGATORS Erika, Mike, Preston, and Raffi		
FORM COMPLETED BY Preston	DATE 6/25/03 TIME 10:00 AM	ASSOCIATED SITE ID #s

WEATHER CONDITIONS

Now		Past 24 hours
☐	storm (heavy rain)	☐
☐	rain (steady rain)	☐
☐	showers (intermittent)	☐
___% ☐	% cloud cover	☐ ___%
☑	clear/sunny	☑

Has there been a heavy rain in the last 7 days? ☐ Yes ☑ No

Air Temperature 24 °C

Other_____

STREAM MORPHOLOGY

Stream Subsystem: ☑ Perennial ☐ Intermittent ☐ Tidal

Stream Origin: ☐ Glacial ☐ Spring-fed ☐ Non-glacial montane ☐ Mixture of origins ☐ Swamp and bog ☐ Other_____

Reach Type: ☐ Riffle-Pool ☑ Cascade ☐ Plane-Bed ☐ Bedrock w/alluvial veneer ☑ Step-Pool ☐ Bedrock

Rosgen Type_____

WATERSHED FEATURES

Predominant Surrounding Landuse: ☑ Forest/Natural ☐ Residential ☑ Field/Pasture ☐ Commercial/Industrial ☐ Agricultural ☐ Other_____

Local Hydrologic Alterations: ☑ No Evidence ☐ Augmentation ☐ Dam/Retention ☐ Channelization ☐ Diversion ☑ Other culvert

SEDIMENT SOURCES

MANAGEMENT ACTIVITIES (include short description)

Timber Harvesting: ☑ Yes ☐ No Timber sales and lots of trees cut down

Mining (Hardrock / Placer): ☐ Yes ☑ No

Grazing and/or Agriculture: ☐ Yes ☑ No

Evidence of Fire: ☐ Yes ☑ No

EROSIONAL FEATURES

Local Hillslopes: ☐ No Evidence ☐ Major gullying/rilling ☐ Minor gullying/rilling ☑ Mass wasting (slides,debris) ☐ Moderate gullying/rilling ☐ Other_____

Does sediment reach channel directly? ☑ Yes ☐ No

Roads and related features: ☐ No Evidence ☑ Culvert/Bridge ☑ Unpaved ☐ Ditch/Roadcut ☐ Paved ☐ Other_____

Does sediment reach channel directly? ☑ Yes ☐ No

Channel Stability: ☐ Stable ☐ Aggrading ☑ Moderately stable ☐ Downcutting ☐ Unstable ☐ Widening

Is the channel armored? ☐ Yes ☑ No Evidence of bank undercutting? ☑ Yes ☐ No

Percent of streambank with deep binding root mass: ☐ >85% ☐ 85-65% ☑ 65-35% ☐ <35%

DEPOSITIONAL FEATURES

☑ Pool In-filling ☐ Floodplain ☑ Lee (DS) deposits ☑ Terraces ☐ Channel bars ☐ Other_____

Degree of instream sedimentation: ☐ None ☐ Low ☐ Medium ☑ High

CHANNEL FEATURES

Estimated Reach Length 60 m

Average Stream Width 3.0 m

Average Stream Depth 0.25 m

Sampling Reach Area 180 m^2

Estimated Manning's n _____

Canopy Cover: ☐ Open ☑ Partly shaded ☐ Shaded

Proportion of Reach Represented by Stream Morphology Types

Riffle 40 % Run 45 %

Pool 10 %

Form # D - _____

REACH CHARACTERIZATION FIELD DATA SHEET

STREAM NAME N. Fork French Creek	LOCATION Scott Valley, Calif.

RIPARIAN VEGETATION

Indicate the dominant type and record the dominant species present

☑ Trees ☐ Shrubs ☑ Grasses ☐ Herbaceous

dominant species present pine trees

Extent of Riparian Buffer Zone	Width of Riparian Buffer Zone	Riparian Vegetation Age
☐ None	☐ < 1 Channel width	☐ Immature (< 5yrs)
☐ Fragmentary	☑ 1-5 Channel widths	☑ Established (5-30 yrs)
☑ Continuous	☐ > 5 Channel widths	☐ Mature/Old Growth (>30 yrs)

Extent of vegetation encroachment into stream channel

☐ None ☑ Minimal ☐ Moderate ☐ Heavy ☐ Extreme

LARGE WOODY DEBRIS

☐ Not Present ☑ Present in Cutbank ☑ Present in Channel

Density of LWD 10% m^2/km^2 (area of LWD/ reach area)

AQUATIC VEGETATION

Indicate the dominant type

☐ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating

☐ Floating Algae ☑ Attached Algae

Portion of the reach with aquatic vegetation 30 %

WATER QUALITY

Temperature 9.0 ^{0}C

Specific Conductance 24uS

Dissolved Oxygen N/A

pH 6.31

Turbidity 11ppm

Water Odors

☑ Normal/None ☐ Sewage

☐ Petroleum ☐ Chemical

☐ Fishy ☐ Other

Water Surface Oils

☐ Slick ☐ Sheen ☐ Globs ☐ Flecks

☑ None ☐ Other

Turbidity (visual)

☑ Clear ☐ Slightly turbid ☐ Turbid

☐ Opaque ☐ Stained ☐ Other

DISCHARGE

Velocity-Area Method

Distance from water's edge (m)	Depth (m)	Velocity (m/s)	Discharge (cms)	Notes

Total Discharge (cms) 1.24

Float Method

	Width (m)	Avg Depth (m)	Float Distance (m)	Time (s)	Discharge (cms)
XS 1	0.5	0.3	2.0	2.29	1.23
XS 2					

Estimated Discharge (cms) 1.23

REACH CHARACTERIZATION FIELD DATA SHEET

STREAM NAME Duck Lake Creek	LOCATION Scott Valley, Calif.	
REACH ID # FR06p	RIVER BASIN Scott (upper French Creek)	
UTM (us end) N n/a E	TOPOS	
UTM (ds end) N n/a E	STREAM ORDER ELEVATION	
INVESTIGATORS Erika, Mike, Preston, and Raffi		
FORM COMPLETED BY Preston	DATE 6/25/03 TIME 12:45 PM	ASSOCIATED SITE ID #s

WEATHER CONDITIONS

Now		Past 24 hours
☐	storm (heavy rain)	☐
☐	rain (steady rain)	☐
☐	showers (intermittent)	☐
___% ☐	% cloud cover	☐ ___%
☑	clear/sunny	☑

Has there been a heavy rain in the last 7 days? ☐ Yes ☑ No

Air Temperature 24 °C

Other_____

STREAM MORPHOLOGY

Stream Subsystem: ☑ Perennial ☐ Intermittent ☐ Tidal

Stream Origin: ☐ Glacial ☐ Spring-fed ☐ Non-glacial montane ☑ Mixture of origins ☐ Swamp and bog ☐ Other_____

Reach Type: ☐ Riffle-Pool ☑ Cascade ☐ Plane-Bed ☐ Bedrock w/alluvial veneer ☐ Step-Pool ☐ Bedrock

Rosgen Type_____

WATERSHED FEATURES

Predominant Surrounding Landuse: ☑ Forest/Natural ☐ Residential ☐ Field/Pasture ☐ Commercial/Industrial ☐ Agricultural ☐ Other_____

Local Hydrologic Alterations: ☐ No Evidence ☐ Augmentation ☐ Dam/Retention ☑ Channelization ☐ Diversion ☑ Other underbridge

SEDIMENT SOURCES

MANAGEMENT ACTIVITIES (include short description)

Timber Harvesting: ☑ Yes ☐ No Timber sales, lots of trees cut down. and dusty roads

Mining (Hardrock / Placer): ☐ Yes ☑ No

Grazing and/or Agriculture: ☐ Yes ☑ No

Evidence of Fire: ☐ Yes ☑ No

EROSIONAL FEATURES

Local Hillslopes: ☐ No Evidence ☐ Minor gullying/rilling ☐ Moderate gullying/rilling ☐ Major gullying/rilling ☑ Mass wasting (slides,debris) ☐ Other_____

Does sediment reach channel directly? ☑ Yes ☐ No

Roads and related features: ☐ No Evidence ☑ Unpaved ☐ Paved ☑ Culvert/Bridge ☐ Ditch/Roadcut ☐ Other_____

Does sediment reach channel directly? ☑ Yes ☐ No

Channel Stability: ☐ Stable ☑ Moderately stable ☐ Unstable ☐ Aggrading ☐ Downcutting ☐ Widening

Is the channel armored? ☐ Yes ☑ No

Evidence of bank undercutting? ☐ Yes ☑ No

Percent of streambank with deep binding root mass: ☐ >85% ☐ 85-65% ☑ 65-35% ☐ <35%

DEPOSITIONAL FEATURES

☑ Pool In-filling ☐ Lee (DS) deposits ☐ Channel bars ☐ Floodplain ☑ Terraces ☐ Other_____

Degree of instream sedimentation: ☐ None ☐ Low ☐ Medium ☑ High

CHANNEL FEATURES

Estimated Reach Length 60 m

Average Stream Width 4 m

Average Stream Depth 0.2 m

Sampling Reach Area 240 m²

Estimated Manning's n _____

Canopy Cover: ☐ Open ☑ Partly shaded ☐ Shaded

Proportion of Reach Represented by Stream Morphology Types

Riffle 10 % Run 70 %

Pool 20 %

Form # D - _____

REACH CHARACTERIZATION FIELD DATA SHEET

STREAM NAME Duck Lake Creek	LOCATION Scott Valley, Calif.

RIPARIAN VEGETATION

Indicate the dominant type and record the dominant species present

☑ Trees ☐ Shrubs ☐ Grasses ☐ Herbaceous

dominant species present maple, alders, firs

Extent of Riparian Buffer Zone	Width of Riparian Buffer Zone	Riparian Vegetation Age
☐ None	☐ < 1 Channel width	☐ Immature (< 5yrs)
☐ Fragmentary	☑ 1-5 Channel widths	☑ Established (5-30 yrs)
☑ Continuous	☐ > 5 Channel widths	☐ Mature/Old Growth (>30 yrs)

Extent of vegetation encroachment into stream channel

☐ None ☐ Minimal ☑ Moderate ☐ Heavy ☐ Extreme

LARGE WOODY DEBRIS

☐ Not Present ☐ Present in Cutbank ☑ Present in Channel

Density of LWD 20% m^2/km^2 (area of LWD/ reach area)

AQUATIC VEGETATION

Indicate the dominant type

☐ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating

☐ Floating Algae ☑ Attached Algae

Portion of the reach with aquatic vegetation 5 %

WATER QUALITY

Temperature 10.2 ^{0}C

Specific Conductance 18uS

Dissolved Oxygen N/A

pH 6.31

Turbidity 9ppm

Water Odors

☑ Normal/None ☐ Sewage

☐ Petroleum ☐ Chemical

☐ Fishy ☐ Other

Water Surface Oils

☐ Slick ☐ Sheen ☐ Globs ☐ Flecks

☑ None ☐ Other

Turbidity (visual)

☑ Clear ☐ Slightly turbid ☐ Turbid

☐ Opaque ☐ Stained ☐ Other

DISCHARGE

Velocity-Area Method

Distance from water's edge (m)	Depth (m)	Velocity (m/s)	Discharge (cms)	Notes

Total Discharge (cms) _____

Float Method

	Width (m)	Avg Depth (m)	Float Distance (m)	Time (s)	Discharge (cms)
XS 1	2.0	0.6	3.5	5.832	0.61
XS 2					

Estimated Discharge (cms) 0.61

REACH CHARACTERIZATION FIELD DATA SHEET

STREAM NAME Paynes Creek	LOCATION Scott Valley, Calif.	
REACH ID # FR07p	RIVER BASIN Scott (upper French Creek)	
UTM (us end) N n/a E	TOPOS	
UTM (ds end) N n/a E	STREAM ORDER	ELEVATION
INVESTIGATORS Erika, Mike, Preston, and Raffi		
FORM COMPLETED BY Preston	DATE 6/25/03 TIME 11:20 AM	ASSOCIATED SITE ID #s

WEATHER CONDITIONS

Now		Past 24 hours
☐	storm (heavy rain)	☐
☐	rain (steady rain)	☐
☐	showers (intermittent)	☐
___% ☐	% cloud cover	☐ ___%
☑	clear/sunny	☑

Has there been a heavy rain in the last 7 days? ☐ Yes ☑ No

Air Temperature 24 °C

Other_____

STREAM MORPHOLOGY

Stream Subsystem: ☑ Perennial ☐ Intermittent ☐ Tidal

Stream Origin: ☐ Glacial ☐ Spring-fed ☐ Non-glacial montane ☑ Mixture of origins ☐ Swamp and bog ☐ Other_____

Reach Type: ☐ Riffle-Pool ☑ Cascade ☐ Plane-Bed ☐ Bedrock w/alluvial veneer ☑ Step-Pool ☐ Bedrock

Rosgen Type_____

WATERSHED FEATURES

Predominant Surrounding Landuse: ☑ Forest/Natural ☐ Residential ☐ Field/Pasture ☐ Commercial/Industrial ☐ Agricultural ☐ Other_____

Local Hydrologic Alterations: ☐ No Evidence ☐ Augmentation ☐ Dam/Retention ☐ Channelization ☐ Diversion ☑ Other culvert

SEDIMENT SOURCES

MANAGEMENT ACTIVITIES (include short description)

Timber Harvesting: ☑ Yes ☐ No Timber sales, lots of trees cut down. and dusty roads

Mining (Hardrock / Placer): ☐ Yes ☑ No

Grazing and/or Agriculture: ☐ Yes ☑ No

Evidence of Fire: ☐ Yes ☑ No

EROSIONAL FEATURES

Local Hillslopes: ☐ No Evidence ☐ Minor gullying/rilling ☐ Moderate gullying/rilling ☐ Major gullying/rilling ☑ Mass wasting (slides,debris) ☐ Other_____

Does sediment reach channel directly? ☑ Yes ☐ No

Roads and related features: ☐ No Evidence ☑ Unpaved ☐ Paved ☑ Culvert/Bridge ☐ Ditch/Roadcut ☐ Other_____

Does sediment reach channel directly? ☑ Yes ☐ No

Channel Stability: ☐ Stable ☑ Moderately stable ☐ Unstable ☐ Aggrading ☐ Downcutting ☐ Widening

Is the channel armored? ☐ Yes ☑ No Evidence of bank undercutting? ☑ Yes ☐ No

Percent of streambank with deep binding root mass: ☐ >85% ☐ 85-65% ☑ 65-35% ☐ <35%

DEPOSITIONAL FEATURES

☑ Pool In-filling ☐ Lee (DS) deposits ☐ Channel bars ☐ Floodplain ☑ Terraces ☐ Other_____

Degree of instream sedimentation: ☐ None ☐ Low ☐ Medium ☑ High

CHANNEL FEATURES

Estimated Reach Length 40 m

Average Stream Width 1.5 m

Average Stream Depth 0.25 m

Sampling Reach Area 60 m²

Estimated Manning's n _____

Canopy Cover: ☐ Open ☑ Partly shaded ☐ Shaded

Proportion of Reach Represented by Stream Morphology Types

Riffle 60 % Run 30 %

Pool 10 %

Form # D - _____

REACH CHARACTERIZATION FIELD DATA SHEET

STREAM NAME Paynes Creek	LOCATION Scott Valley, Calif.

RIPARIAN VEGETATION

Indicate the dominant type and record the dominant species present

☑ Trees ☐ Shrubs ☑ Grasses ☐ Herbaceous

dominant species present pine trees

Extent of Riparian Buffer Zone	Width of Riparian Buffer Zone	Riparian Vegetation Age
☐ None	☐ < 1 Channel width	☐ Immature (< 5yrs)
☐ Fragmentary	☑ 1-5 Channel widths	☑ Established (5-30 yrs)
☑ Continuous	☐ > 5 Channel widths	☐ Mature/Old Growth (>30 yrs)

Extent of vegetation encroachment into stream channel

☐ None ☐ Minimal ☑ Moderate ☐ Heavy ☐ Extreme

LARGE WOODY DEBRIS

☐ Not Present ☐ Present in Cutbank ☑ Present in Channel

Density of LWD 10% m^2/km^2 (area of LWD/ reach area)

AQUATIC VEGETATION

Indicate the dominant type

☑ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating

☐ Floating Algae ☐ Attached Algae

Portion of the reach with aquatic vegetation 20 %

WATER QUALITY

Temperature 11.1 °C

Specific Conductance 16uS

Dissolved Oxygen N/A

pH 6.31

Turbidity 8ppm

Water Odors

☑ Normal/None ☐ Sewage

☐ Petroleum ☐ Chemical

☐ Fishy ☐ Other

Water Surface Oils

☐ Slick ☐ Sheen ☐ Globs ☐ Flecks

☑ None ☐ Other

Turbidity (visual)

☑ Clear ☐ Slightly turbid ☐ Turbid

☐ Opaque ☐ Stained ☐ Other

DISCHARGE

Velocity-Area Method

Distance from water's edge (m)	Depth (m)	Velocity (m/s)	Discharge (cms)	Notes

Total Discharge (cms) _____

Float Method

	Width (m)	Avg Depth (m)	Float Distance (m)	Time (s)	Discharge (cms)
XS 1	1.5	0.25	2	1	0.638
XS 2					

Estimated Discharge (cms) 0.638

REACH CHARACTERIZATION FIELD DATA SHEET

STREAM NAME Horse Range Creek	LOCATION Scott Valley, Calif.
REACH ID # FR08p	RIVER BASIN Scott (upper French Creek)
UTM (us end) N n/a E	TOPOS
UTM (ds end) N n/a E	STREAM ORDER ELEVATION
INVESTIGATORS Erika, Mike, Preston, and Raffi	
FORM COMPLETED BY Preston	DATE 6/25/03 TIME 11:40 AM — ASSOCIATED SITE ID #s

WEATHER CONDITIONS

Now		Past 24 hours
☐	storm (heavy rain)	☐
☐	rain (steady rain)	☐
☐	showers (intermittent)	☐
___% ☐	% cloud cover	☐ ___%
☑	clear/sunny	☑

Has there been a heavy rain in the last 7 days? ☐ Yes ☑ No

Air Temperature 24 °C

Other_____

STREAM MORPHOLOGY

Stream Subsystem: ☑ Perennial ☐ Intermittent ☐ Tidal

Stream Origin: ☐ Glacial ☐ Spring-fed ☐ Non-glacial montane ☑ Mixture of origins ☐ Swamp and bog ☐ Other_____

Reach Type: ☐ Riffle-Pool ☑ Cascade ☐ Plane-Bed ☐ Bedrock w/alluvial veneer ☐ Step-Pool ☐ Bedrock

Rosgen Type_____

WATERSHED FEATURES

Predominant Surrounding Landuse: ☑ Forest/Natural ☐ Residential ☐ Field/Pasture ☐ Commercial/Industrial ☐ Agricultural ☐ Other_____

Local Hydrologic Alterations: ☐ No Evidence ☐ Augmentation ☐ Dam/Retention ☑ Channelization ☐ Diversion ☑ Other underbridge

SEDIMENT SOURCES

MANAGEMENT ACTIVITIES (include short description)

Timber Harvesting: ☑ Yes ☐ No Timber sales, lots of trees cut down. and dusty roads

Mining (Hardrock / Placer): ☐ Yes ☑ No

Grazing and/or Agriculture: ☐ Yes ☑ No

Evidence of Fire: ☐ Yes ☑ No

EROSIONAL FEATURES

Local Hillslopes: ☐ No Evidence ☐ Minor gullying/rilling ☐ Moderate gullying/rilling ☐ Major gullying/rilling ☑ Mass wasting (slides,debris) ☐ Other_____

Does sediment reach channel directly? ☑ Yes ☐ No

Roads and related features: ☐ No Evidence ☑ Unpaved ☐ Paved ☑ Culvert/Bridge ☐ Ditch/Roadcut ☐ Other_____

Does sediment reach channel directly? ☑ Yes ☐ No

Channel Stability: ☑ Stable ☐ Moderately stable ☐ Unstable ☐ Aggrading ☐ Downcutting ☐ Widening

Is the channel armored? ☐ Yes ☑ No

Evidence of bank undercutting? ☐ Yes ☑ No

Percent of streambank with deep binding root mass: ☐ >85% ☐ 85-65% ☑ 65-35% ☐ <35%

DEPOSITIONAL FEATURES

☑ Pool In-filling ☑ Lee (DS) deposits ☐ Channel bars ☐ Floodplain ☑ Terraces ☐ Other_____

Degree of instream sedimentation: ☐ None ☐ Low ☐ Medium ☑ High

CHANNEL FEATURES

Estimated Reach Length 50 m

Average Stream Width 4 m

Average Stream Depth 0.3 m

Sampling Reach Area 200 m²

Estimated Manning's n _____

Canopy Cover: ☐ Open ☑ Partly shaded ☐ Shaded

Proportion of Reach Represented by Stream Morphology Types

Riffle 90 % Run 0 %

Pool 10 %

Form # D - _____

REACH CHARACTERIZATION FIELD DATA SHEET

STREAM NAME Horse Range Creek	LOCATION Scott Valley, Calif.

RIPARIAN VEGETATION

Indicate the dominant type and record the dominant species present

☑ Trees ☐ Shrubs ☑ Grasses ☐ Herbaceous

dominant species present alders

Extent of Riparian Buffer Zone	Width of Riparian Buffer Zone	Riparian Vegetation Age
☐ None	☐ < 1 Channel width	☐ Immature (< 5yrs)
☑ Fragmentary	☑ 1-5 Channel widths	☑ Established (5-30 yrs)
☐ Continuous	☐ > 5 Channel widths	☐ Mature/Old Growth (>30 yrs)

Extent of vegetation encroachment into stream channel

☐ None ☐ Minimal ☐ Moderate ☑ Heavy ☐ Extreme

LARGE WOODY DEBRIS

☐ Not Present ☑ Present in Cutbank ☑ Present in Channel

Density of LWD 15% m^2/km^2 (area of LWD/ reach area)

AQUATIC VEGETATION

Indicate the dominant type

☐ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating

☐ Floating Algae ☑ Attached Algae

Portion of the reach with aquatic vegetation 25 %

WATER QUALITY

Temperature 9.8 ^{0}C

Specific Conductance 13uS

Dissolved Oxygen N/A

pH 6.31

Turbidity 6ppm

Water Odors

☑ Normal/None ☐ Sewage

☐ Petroleum ☐ Chemical

☐ Fishy ☐ Other

Water Surface Oils

☐ Slick ☐ Sheen ☐ Globs ☐ Flecks

☑ None ☐ Other

Turbidity (visual)

☑ Clear ☐ Slightly turbid ☐ Turbid

☐ Opaque ☐ Stained ☐ Other

DISCHARGE

Velocity-Area Method

Distance from water's edge (m)	Depth (m)	Velocity (m/s)	Discharge (cms)	Notes

Total Discharge (cms) _____

Float Method

	Width (m)	Avg Depth (m)	Float Distance (m)	Time (s)	Discharge (cms)
XS 1	0.03	0.1	6	1.945	0.01
XS 2					

Estimated Discharge (cms) 0.01

Form # D2 - _____