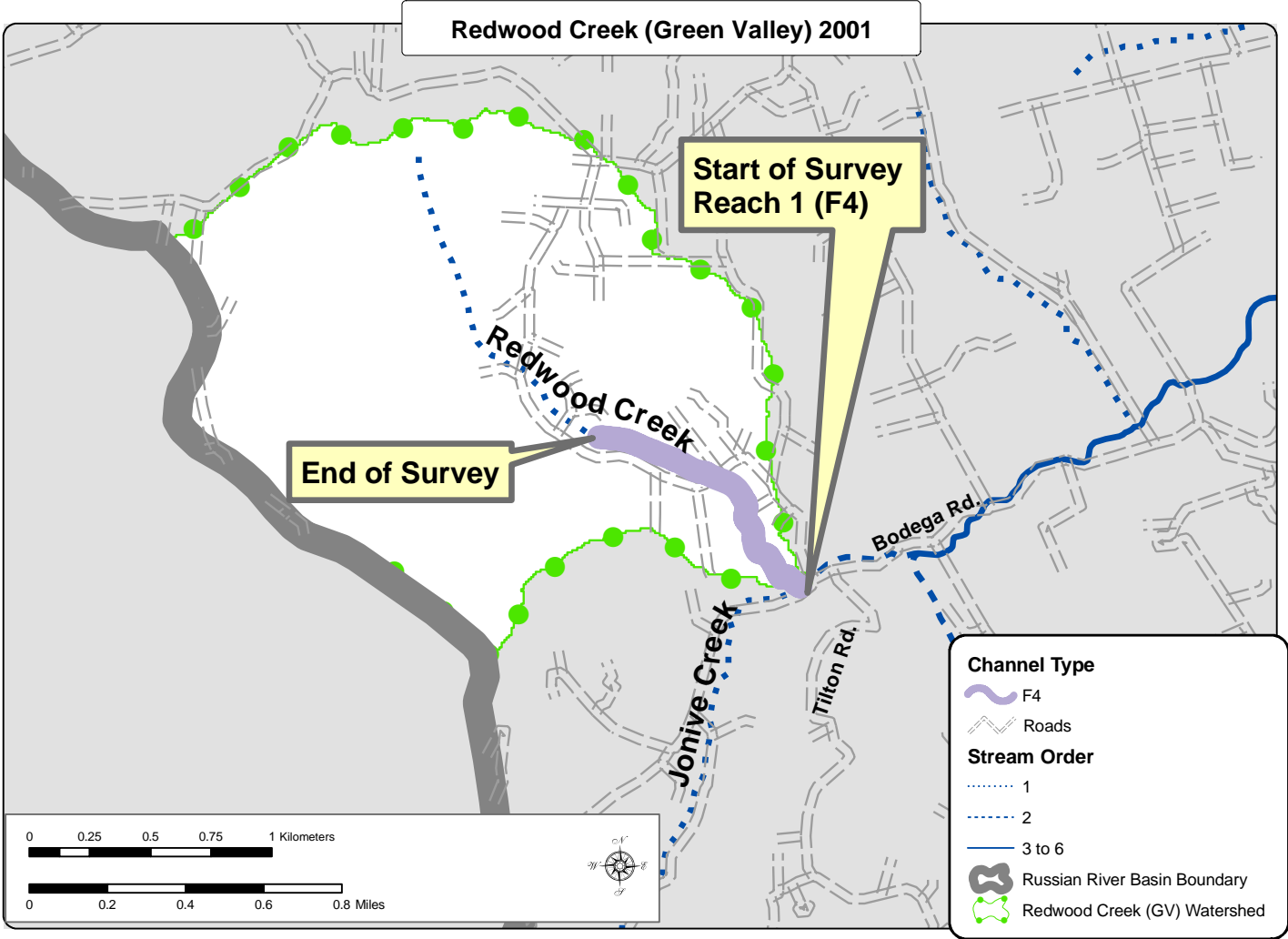


APPENDIX A: MAP



L:\mondo3\data\stream-maps\RedwoodCreekGV2001.mxd

Prepared by: Celeste Dodge and Colin Brooks, April 4, 2005

## APPENDIX B: TABLES

**Table 1 - Summary of Riffle, Flatwater, and Pool Habitat Types**

Stream Name: Redwood Creek

LLID:

1228847383898

Drainage:

Russian River - Lower

Survey Dates: 7/10/2001 to 7/11/2001

Confluence Location:

Quad: CAMP MEEKER

Legal Description:

T000R000S00

Latitude: 38:23:23.0N

Longitude: 122:53:05.0W

Habitat Units	Units Fully Measured	Habitat Type	Habitat Occurrence (%)	Mean Length (ft.)	Total Length (ft.)	Total Length (%)	Mean Width (ft.)	Mean Depth (ft.)	Mean Max Depth (ft.)	Mean Area (sq.ft.)	Estimated Total Area (sq.ft.)	Mean Volume (cu.ft.)	Estimated Total Volume (cu.ft.)	Mean Residual Pool Vol (cu.ft.)	Mean Shelter Rating
3	0	DRY	3.8	17	51	0.6									
28	7	FLATWATER	35.4	150	4206	53.5	7.2	0.5	0.9	433	12113	216	6050		18
3	0	NOSURVEY	3.8	472	1417	18.0									
30	30	POOL	38.0	35	1042	13.2	14.7	1.4	3.2	522	15660	787	22034	724	44
15	3	RIFFLE	19.0	77	1151	14.6	4.5	0.2	0.5	209	3140	42	628		10
<b>Total Units</b>	<b>Total Units Fully Measured</b>			<b>Total Length (ft.)</b>						<b>Total Area (sq.ft.)</b>			<b>Total Volume (cu.ft.)</b>		
79	40			7867						30913			28712		

**Table 2 - Summary of Habitat Types and Measured Parameters**

Stream Name:

1228847383898

Redwood Creek

LLID:

Drainage:

Russian River - Lower

Survey Dates: 7/10/2001 to 7/11/2001

Confluence Location:

Quad: CAMP MEEKER

Legal Description:

T000R000S00

Latitude: 38:23:23.0N

Longitude: 122:53:05.0W

Habitat Units	Units Fully Measured	Habitat Type	Habitat Occurrence (%)	Mean Length (ft.)	Total Length (ft.)	Total Length (%)	Mean Width (ft.)	Mean Depth (ft.)	Max Depth (ft.)	Mean Area (sq.ft.)	Estimated Total Area (sq.ft.)	Mean Volume (cu.ft.)	Estimated Total Volume (cu.ft.)	Mean Residual Pool Vol (cu.ft.)	Mean Shelter Rating	Mean Canopy (%)
10	2	LGR	12.7	57	568	7.2	4	0.2	0.4	148	1477	30	295		10	88
5	1	BRS	6.3	117	583	7.4	5	0.2	0.8	333	1663	67	333			90
7	3	GLD	8.9	41	290	3.7	11	0.5	0.9	341	2385	187	1308		40	94
21	4	RUN	26.6	186	3916	49.8	5	0.4	1.2	502	10532	238	4999		10	94
18	18	MCP	22.8	30	546	6.9	18	1.5	24.9	543	9765	771	12330	707	37	92
1	1	CCP	1.3	13	13	0.2	10	0.9	1.2	130	130	130	130	117		95
2	2	CRP	2.5	14	27	0.3	10	1.2	2.5	130	260	185	369	172	20	93
8	8	LSR	10.1	40	319	4.1	9	1.2	3.7	380	3039	534	4273	477	67	97
1	1	DPL	1.3	137	137	1.7	18	1.9	3.3	2466	2466	4932	4932	4685	20	95
3	0	DRY	3.8	17	51	0.6										
3	0	NS	3.8	472	1417	18.0										
<b>Total Units</b>	<b>Total Units Fully Measured</b>				<b>Total Length (ft.)</b>					<b>Total Area (sq.ft.)</b>			<b>Total Volume (cu.ft.)</b>			
79	40				7867					31717			28969			

**Table 3 - Summary of Pool Types**

Stream Name: Redwood Creek  
 LLID: 1228847383898  
 Drainage: Russian River - Lower  
 Survey Dates: 7/10/2001 to 7/11/2001  
 Confluence Location: Quad: CAMP MEEKER Legal Description: T000R000S00 Latitude: 38:23:23.0N Longitude: 122:53:05.0W

Habitat Units	Units Fully Measured	Habitat Type	Habitat Occurrence (%)	Mean Length (ft.)	Total Length (ft.)	Total Length (%)	Mean Width (ft.)	Mean Residual Depth (ft.)	Mean Area (sq.ft.)	Estimated Total Area (sq.ft.)	Mean Residual Pool Vol (cu.ft.)	Estimated Total Resid.Vol. (cu.ft.)	Mean Shelter Rating
19	19	MAIN	63	29	559	54	17.4	1.5	521	9895	673	11435	37
10	10	SCOUR	33	35	346	33	9.4	1.2	330	3299	416	4158	61
1	1	BACKWATER	3	137	137	13	18.0	1.9	2466	2466	4685	4685	20
Total Units	Total Units Fully Measured				Total Length (ft.)					Total Area (sq.ft.)		Total Volume (cu.ft.)	
30	30				1042					15660		20278	

**Table 4 - Summary of Maximum Residual Pool Depths By Pool Habitat Types**

Stream Name: Redwood Creek

LLID:

1228847383898

Drainage: Russian River - Lower

Survey Dates: 7/10/2001 to 7/11/2001

Confluence Location:

Quad: CAMP MEEKER

Legal Description:

T000R000S00

Latitude: 38:23:23.0N

Longitude: 122:53:05.0W

Habitat Units	Habitat Type	Habitat Occurrence (%)	< 1 Foot Maximum Residual Depth	< 1 Foot Percent Occurrence	1 < 2 Feet Maximum Residual Depth	1 < 2 Feet Percent Occurrence	2 < 3 Feet Maximum Residual Depth	2 < 3 Feet Percent Occurrence	3 < 4 Feet Maximum Residual Depth	3 < 4 Feet Percent Occurrence	>= 4 Feet Maximum Residual Depth	>= 4 Feet Percent Occurrence
18	MCP	60	1	6	6	33	4	22	4	22	3	17
1	CCP	3	0	0	1	100	0	0	0	0	0	0
2	CRP	7	0	0	1	50	1	50	0	0	0	0
8	LSR	27	0	0	2	25	4	50	2	25	0	0
1	DPL	3	0	0	0	0	0	0	1	100	0	0

Total Units

	Total < 1 Foot Max Resid. Depth	Total < 1 Foot % Occurrence	Total 1 < 2 Foot Max Resid. Depth	Total 1 < 2 Foot % Occurrence	Total 2 < 3 Foot Max Resid. Depth	Total 2 < 3 Foot % Occurrence	Total 3 < 4 Foot Max Resid. Depth	Total 3 < 4 Foot % Occurrence	Total >= 4 Foot Max Resid. Depth	Total >= 4 Foot % Occurrence
30	1	3	10	33	9	30	7	23	3	10
Mean Maximum Residual Pool Depth (ft.):	3.2									

**Table 5 - Summary of Mean Percent Cover By Habitat Type**

Stream Name: Redwood Creek LLID: 1228847383898 Drainage: Russian River - Lower  
 Survey Dates: 7/10/2001 to 7/11/2001 Dry Units: 3  
 Confluence Location: Quad: CAMP MEEKER Legal Description: T000R000S00 Latitude: 38:23:23.0N Longitude: 122:53:05.0W

Habitat Units	Units Fully Measured	Habitat Type	Mean % Undercut Banks	Mean % SWD	Mean % LWD	Mean % Root Mass	Mean % Terr. Vegetation	Mean % Aquatic Vegetation	Mean % White Water	Mean % Boulders	Mean % Bedrock Ledges
10	1	LGR	0	0	0	0	100	0	0	0	0
5	0	BRS									
15	1	TOTAL RIFFLE	0	0	0	0	100	0	0	0	0
7	1	GLD	5	0	0	0	0	95	0	0	0
21	3	RUN	42	0	0	42	17	0	0	0	0
28	4	TOTAL FLAT	33	0	0	31	13	24	0	0	0
18	16	MCP	58	3	6	1	9	0	3	8	14
1	0	CCP									
2	1	CRP	80	0	0	0	20	0	0	0	0
8	7	LSR	63	11	11	0	7	7	0	0	0
1	1	DPL	80	0	0	0	20	0	0	0	0
30	25	TOTAL POOL	61	5	7	0	9	2	2	5	9
3	0	NS									
79	30	TOTAL	55	4	6	5	13	5	2	4	7

**Table 6 – Summary of Dominant Substrates By Habitat Type**

Stream Name: Redwood Creek LLID: 1228847383898 Drainage: Russian River - Lower  
 Survey Dates: 7/10/2001 to 7/11/2001 Dry Units: 3  
 Confluence Location: Quad: CAMP MEEKER Legal Description: T000R000S00 Latitude: 38:23:23.0N Longitude: 122:53:05.0W

Habitat Units	Units Fully Measured	Habitat Type	% Total Silt/Clay Dominant	% Total Sand Dominant	% Total Gravel Dominant	% Total Small Cobble Dominant	% Total Large Cobble Dominant	% Total Boulder Dominant	% Total Bedrock Dominant
10	2	LGR	0	0	100	0	0	0	0
5	1	BRS	0	0	0	0	0	0	100
7	3	GLD	33	0	67	0	0	0	0
21	5	RUN	20	20	40	0	20	0	0
18	1	MCP	0	0	100	0	0	0	0
1	1	CCP	0	100	0	0	0	0	0
2	1	CRP	0	0	0	100	0	0	0
8	3	LSR	0	100	0	0	0	0	0
1	1	DPL	0	100	0	0	0	0	0

**Table 7 - Summary of Mean Percent Canopy for Entire Stream**

Stream Name: Redwood Creek  
 LLID: 1228847383898  
 Drainage: Russian River - Lower  
 Survey Dates: 7/10/2001 to 7/11/2001  
 Confluence Location: Quad: CAMP MEEKER  
 Legal Description: T000R000S00  
 Latitude: 38:23:23.0N  
 Longitude: 122:53:05.0W

Mean Percent Canopy	Mean Percent Conifer	Mean Percent Hardwood	Mean Percent Open Units	Mean Right Bank % Cover	Mean Left Bank % Cover
93	65	35	0	77	70

Note: Mean percent conifer and hardwood for the entire reach are means of canopy components from units with canopy values greater than zero.

Open units represent habitat units with zero canopy cover.

**Table 9 - Mean Percentage of Dominant Substrate and Vegetation**

Stream Name: Redwood Creek  
 LLID: 1228847383898  
 Drainage: Russian River - Lower  
 Survey Dates: 7/10/2001 to 7/11/2001  
 Confluence Location: Quad: CAMP MEEKER  
 Legal Description: T000R000S00  
 Latitude: 38:23:23.0N  
 Longitude: 122:53:05.0W

**Mean Percentage of Dominant Stream Bank Substrate**

Dominant Class of Substrate	Number of Units Right Bank	Number of Units Left Bank	Total Mean Percent (%)
Bedrock	0	0	0.0
Boulder	0	0	0.0
Cobble / Gravel	0	0	0.0
Sand / Silt / Clay	16	16	100.0

**Mean Percentage of Dominant Stream Bank Vegetation**

Dominant Class of Vegetation	Number of Units Right Bank	Number of Units Left Bank	Total Mean Percent (%)
Grass	0	1	3.1
Brush	5	9	43.8
Hardwood Trees	5	2	21.9
Coniferous Trees	6	4	31.3
No Vegetation	0	0	0.0

**Total Stream Cobble Embeddedness Values:** 1

**Table 10 - Mean Percent of Shelter Cover Types For Entire Stream**

StreamName: Redwood Creek LLID: 1228847383898 Drainage: Russian River - Lower  
 Survey Dates: 7/10/2001 to 7/11/2001  
 Confluence Location: Quad: CAMP MEEKER Legal Description: T000R000S00 Latitude: 38:23:23.0N Longitude: 122:53:05.0W

	Riffles	Flatwater	Pools
UNDERCUT BANKS (%)	0	33	61
SMALL WOODY DEBRIS (%)	0	0	5
LARGE WOODY DEBRIS (%)	0	0	7
ROOT MASS (%)	0	31	0
TERRESTRIAL VEGETATION (%)	100	13	9
AQUATIC VEGETATION (%)	0	24	2
WHITEWATER (%)	0	0	2
BOULDERS (%)	0	0	5
BEDROCK LEDGES (%)	0	0	9

APPENDIX C

**Table 8 - Fish Habitat Inventory Data Summary**

Stream Name: Redwood Creek LLID: 1228847383898 Drainage: Russian River - Lower  
 Survey Dates: 7/10/2001 to 7/11/2001 Survey Length (ft.): 7867 Main Channel (ft.): 7867 Side Channel (ft.): 0  
 Confluence Location: Quad: CAMP MEEKER Legal Description: T000R000S00 Latitude: 38:23:23.0N Longitude: 122:53:05.0W

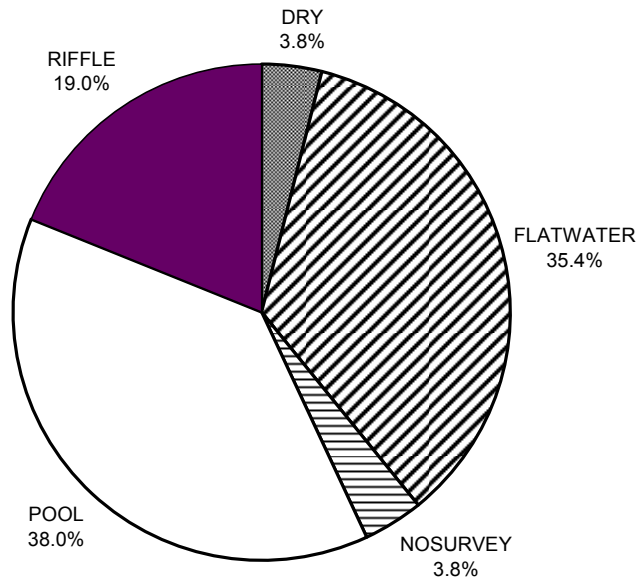
**Summary of Fish Habitat Elements By Stream Reach**

**STREAM REACH: 1**

Channel Type:	F4	Canopy Density (%):	92.7	Pools by Stream Length (%):	13.2
Reach Length (ft.):	7867	Coniferous Component (%):	65.0	Pool Frequency (%):	38.0
Riffle/Flatwater Mean Width	6.4	Hardwood Component (%):	35.0	Residual Pool Depth (%):	
BFW:		Dominant Bank Vegetation:	Brush	< 2 Feet Deep:	37
Range (ft.):	to	Vegetative Cover (%):	73.4	2 to 2.9 Feet Deep:	30
Mean (ft.):		Dominant Shelter:	Undercut Banks	3 to 3.9 Feet Deep:	23
Std. Dev.:		Dominant Bank Substrate Type:		>= 4 Feet Deep:	10
Base Flow (cfs.):	0.0	Occurrence of LWD (%):	5	Mean Max Residual Pool Depth (ft.):	3.2
Water (F):	55 - 59	Air (F):	55 - 62	LWD per 100 ft.:	Mean Pool Shelter Rating: 44
Dry Channel (ft):	51	Riffles:			
		Pools:			
		Flat:			
Pool Tail Substrate (%):	Silt/Clay	Sand:	Gravel:	Sm Cobble:	Lg Cobble:
					Boulder:
					Bedrock:
Embeddedness Values (%):	1.				
		74.1	2.	14.8	3.
			3.7	4.	7.4
				5.	0.0

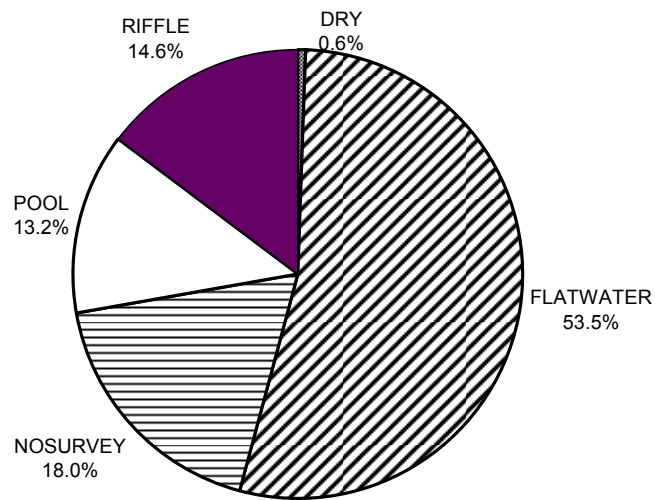
APPENDIX D: GRAPHS

**Redwood Creek 2001  
HABITAT TYPES BY PERCENT OCCURRENCE**



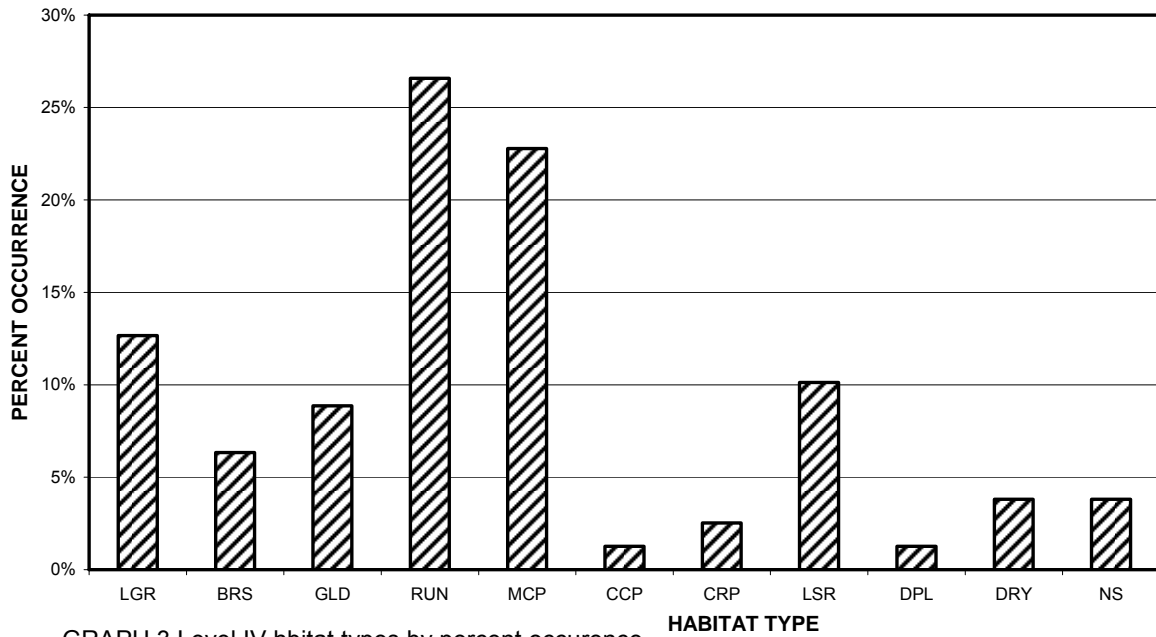
GRAPH 1 Level II habitat types by percent occurrence

**Redwood Creek 2001  
HABITAT TYPES BY PERCENT TOTAL LENGTH**



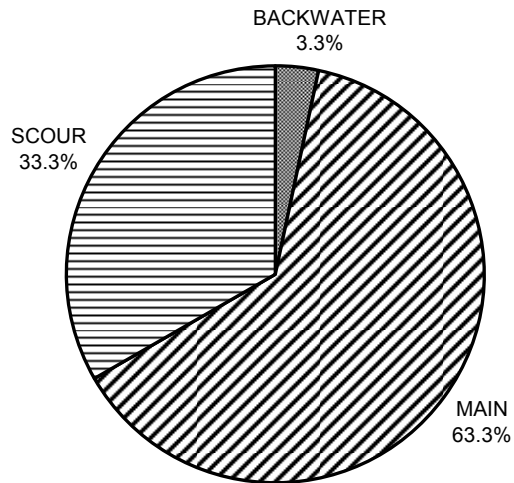
GRAPH 2 Level II habitat types by percent total length

**Redwood Creek 2001  
HABITAT TYPES BY PERCENT OCCURRENCE**



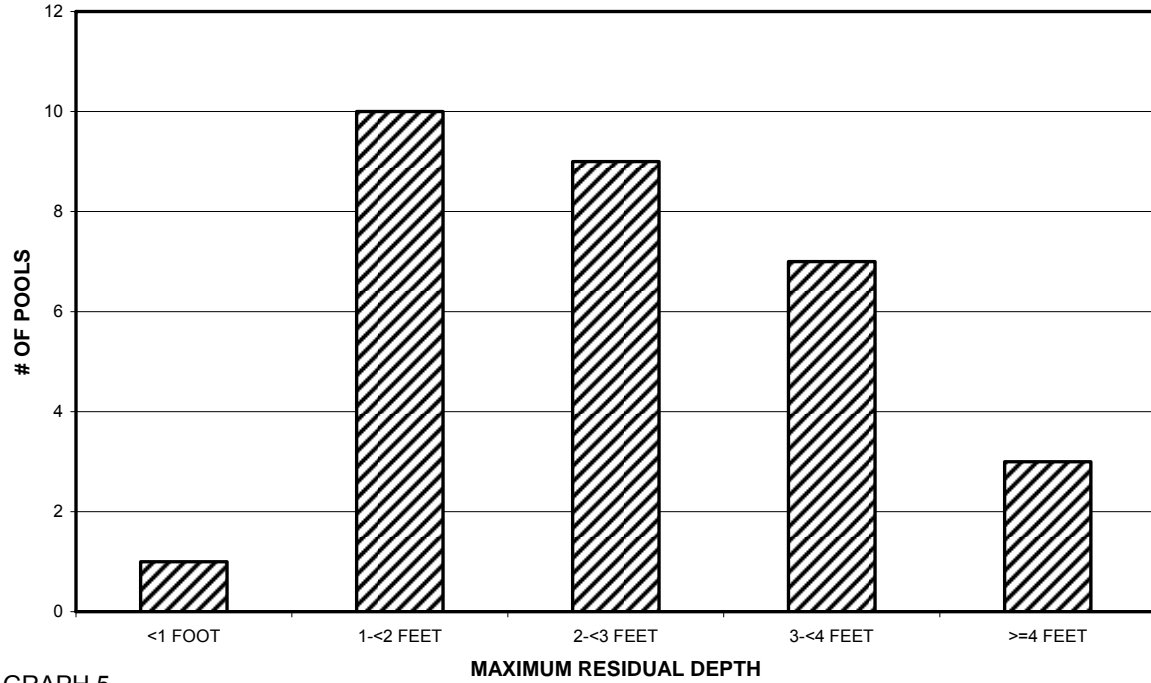
GRAPH 3 Level IV habitat types by percent occurrence

**Redwood Creek 2001  
POOL TYPES BY PERCENT OCCURRENCE**



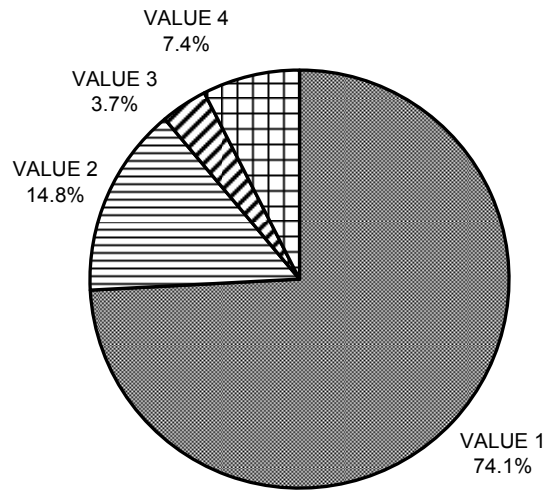
GRAPH 4 Level I pool types by percent occurrence

**Redwood Creek 2001  
MAXIMUM DEPTH IN POOLS**



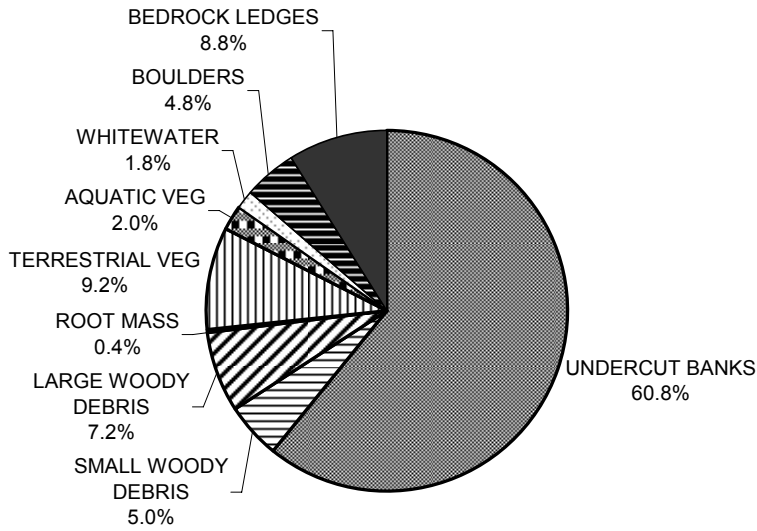
GRAPH 5

**Redwood Creek 2001  
PERCENT EMBEDDEDNESS**



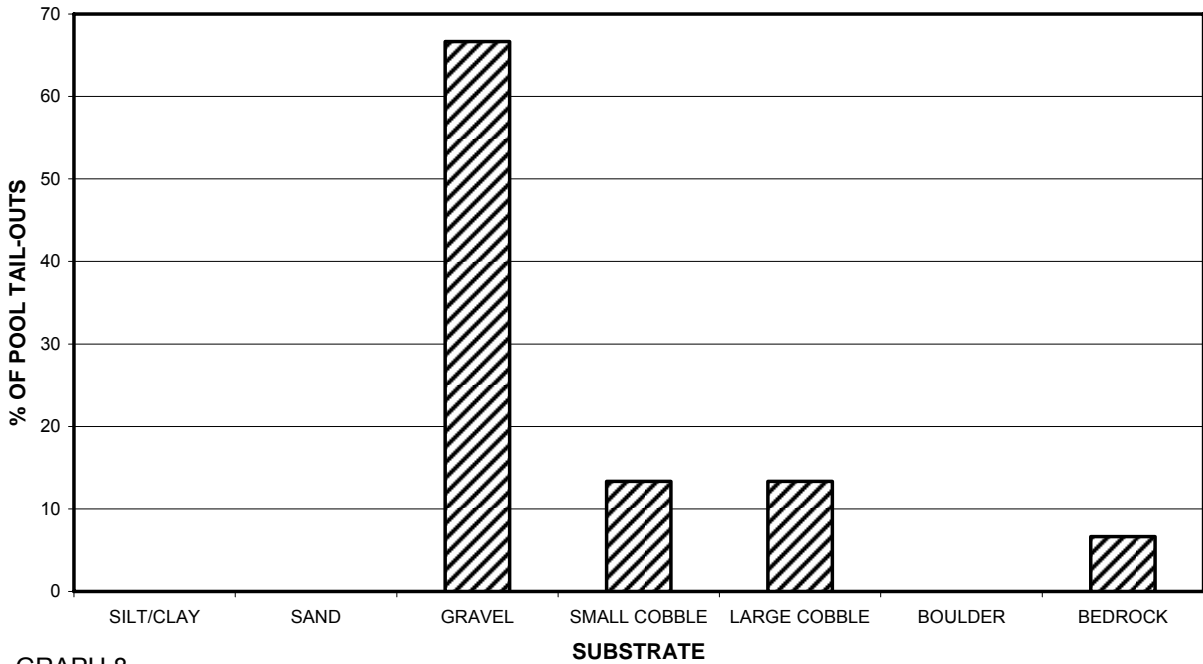
GRAPH 6

**Redwood Creek 2001  
MEAN PERCENT COVER TYPES IN POOLS**



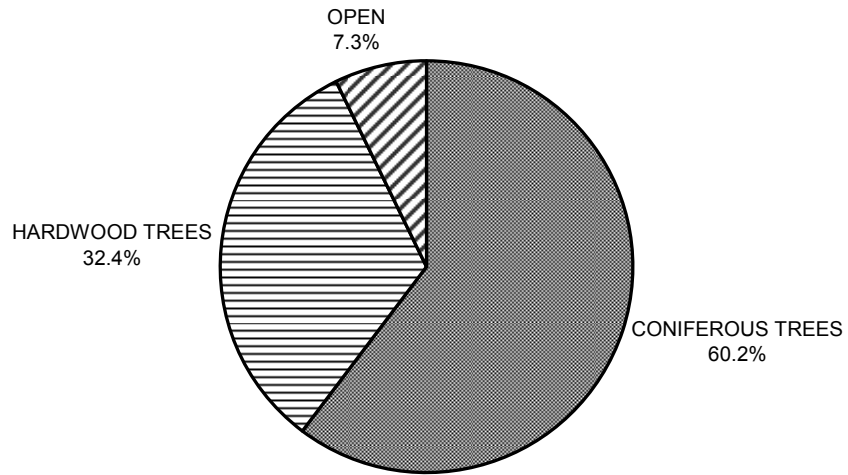
GRAPH 7

**Redwood Creek 2001  
SUBSTRATE COMPOSITION IN POOL TAIL-OUTS**



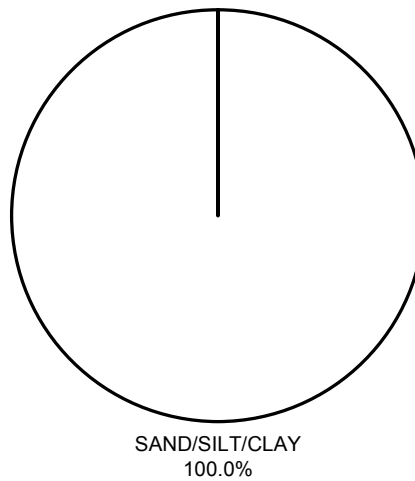
GRAPH 8

**Redwood Creek 2001  
MEAN PERCENT CANOPY**



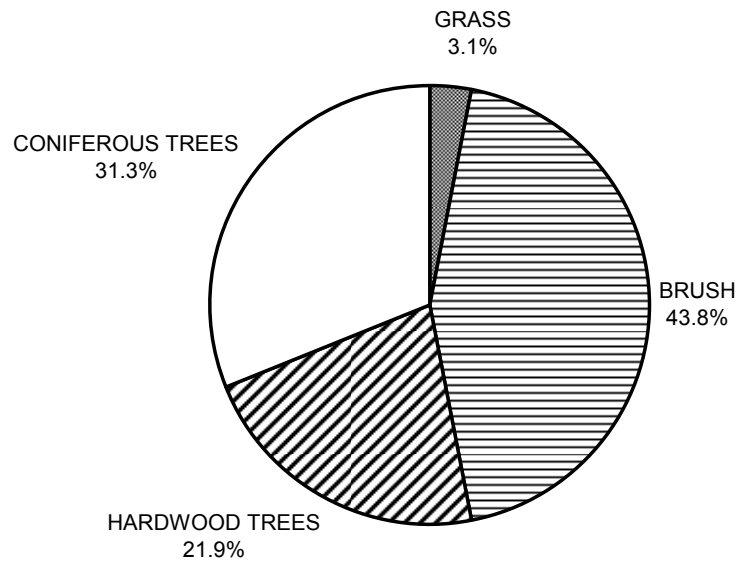
GRAPH 9

**Redwood Creek 2001  
DOMINANT BANK COMPOSITION**



GRAPH 10

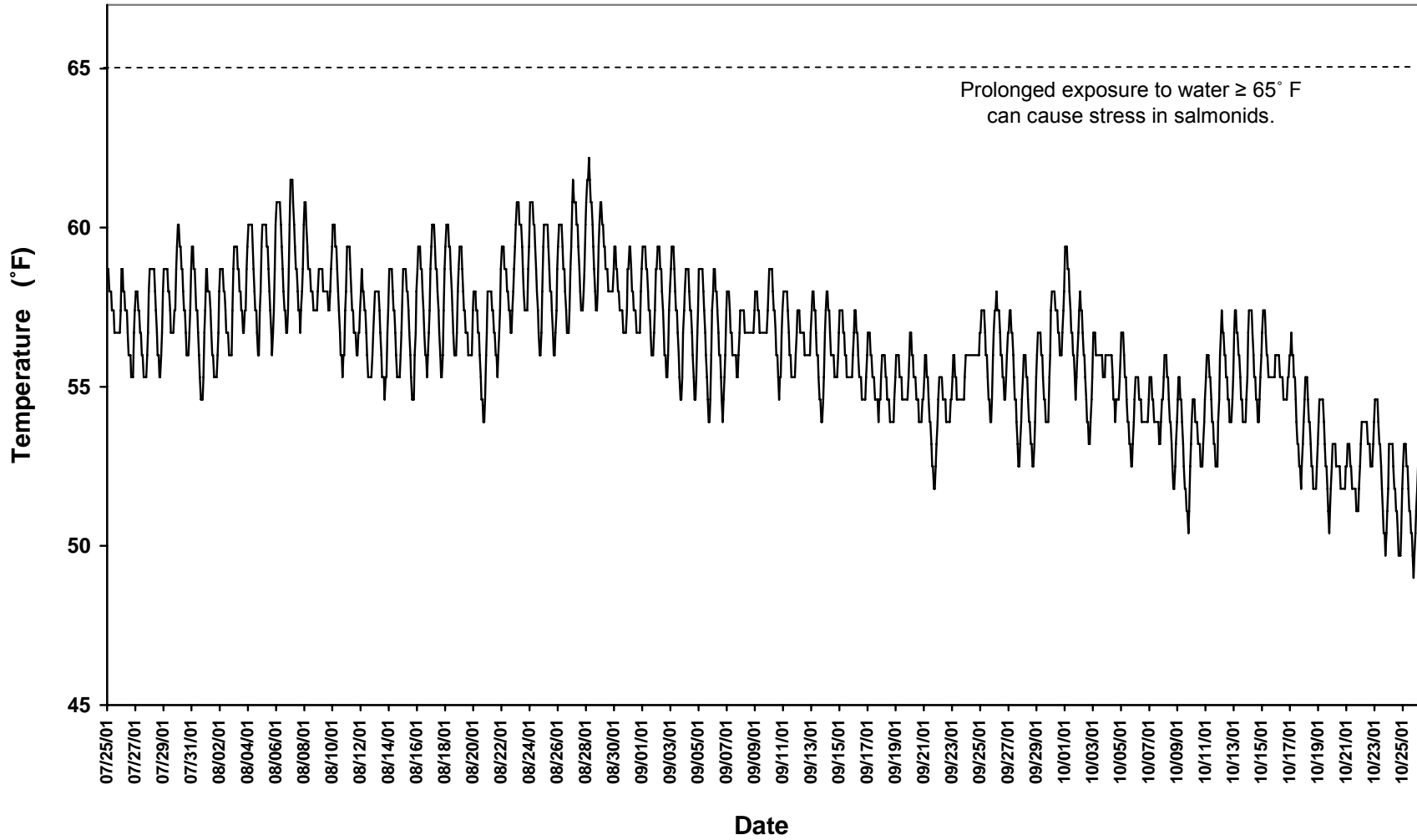
**Redwood Creek 2001  
DOMINANT BANK VEGETATION**



GRAPH 11

APPENDIX E

Redwood Creek Water Temperatures



**Hydrologic Sub-Areas covered by the watershed:**

**Tributary to** Atascadero Creek

**Name:** **LLId: (1:24k)**  
 Redwood Creek (Green Valley) 1228847383898

**County:**  
 Sonoma

**Tributary to** Green Valley Creek

**Tributary to** Russian River

**Location:** **T:** 08N **R:** 10W **S:** 19 **Latitude:** 38.52700982877 **Longitude** 122.999696026996

Hydrologic Boundary Delineation: Watershed boundaries were delineated using the Watershed Point tool in ArcHydro, running under ArcMap 8.3 (ArcInfo version). A 1:24k stream network was "burned" into the underlying DEM to enforce hydrologic routing.

Aerial Photos (Source): For Mendocino County watersheds, 1993 USGS DOQQs are available in the Teale Albers, NAD27 projection. For Sonoma County watersheds, 2000 County-created orthophotos in the State Plane, NAD83 projection are also available.

<b>Stream Order:</b> <u>1</u>	<b>Total Length:</b> 1.62 Miles	Note: Length is for the USGS blue-line 1:24,000 stream.
Note: Stream order is by Strahler method, recorded in CDF-NCWAP "nhydro1" 1:24k streams layer.	2.61 Km	

<b>Drainage Area:</b>	377 Hectares
	931 Acres
	1.45 sq. mi.

<b>Elevations:</b>	Mouth: <u>164</u> feet
	Headwaters: <u>738</u> feet
	Note: Headwaters elevation is the highest elevation found in the watershed.

**Lakes in Watershed:** Number: 0 Surface area: 0 sq. mi.

Note: Source for lakes data is the USGS-DFG 1:100k lakes layer "lakes.shp"

**Fish Species (as indicated by historical salmonid streams layer created by Bob Coey):** None

**Ownership, for the watershed, in acres (and % of total watershed):**

Federal:	State:	Local:	Private:
0.0 acres	0.0	0.0	930.9
0.00 %	0.00 %	0.00 %	100.00 %

Note: Source for ownership data is 2002 DFG-CCR "ccr\_public\_lands.shp" GIS layer.

**Major Land Uses in the Watershed, in acres (and % of total watershed)**

<b>Mixed hardwood/conifer:</b>	<b>Hardwood:</b>	<b>Conifer:</b>	<b>Agriculture:</b>	<b>Urban:</b>
143.32 acres	38.14	448.80	237.52	0.00
15.4 %	4.1 %	48.2 %	25.5 %	0.0 %

<b>Shrub:</b>	<b>Herbaceous:</b>	<b>Barren/rock:</b>	<b>Water:</b>
0.00	62.54	0.00	0.00
0.0 %	6.7 %	0.0 %	0.0 %

Note: Land use areas were calculated using the 1994 CDF-USFS "Calveg" GIS layer.

## USGS 7.5' Topographic Quads completely or partially in the watershed:

Quad Name	USGS Code
CAMP MEEKER	38122D8

## Endangered/Threatened/Sensitive Species: (California Natural Diversity Database, May 5, 2003 version )

Scientific Name	Common Name
Emys (=Clemmys) marmorata marmorat	northwestern pond turtle
Syncaris pacifica	California freshwater shrimp
Alopecurus aequalis var. sonomensis	Sonoma alopecurus
Erigeron angustatus	narrow-leaved daisy

## Hydrologic Sub-Areas covered by the watershed

Hydrologic Sub-Area Name:	ID code (RBUAS)	Hydrologic Area Name	% of watershed in this HSA
Salmon Creek	111510	Salmon Creek	0.10
Guerneville	111411	Lower Russian River	99.90