

STREAM INVENTORY REPORT

Unnamed Tributary to Rose Creek

WATERSHED OVERVIEW

Refer to the map of Rose Creek for the unnamed tributary to Rose Creek.

The unnamed tributary drains to Rose Creek, tributary to South Branch North Fork Navarro River, tributary to North Fork Navarro River, tributary to the Navarro River, which drains to the Pacific Ocean. It is located in Mendocino County, California (Map 1). The unnamed tributary's legal description at the confluence with Rose Creek is T15N R14W S26. Its location is 39.1359 degrees north latitude and 123.3674 degrees west longitude, LLID number 1233662391359. The unnamed tributary is a first order stream and has approximately 0.4 miles of blue line stream according to the USGS Orrs Springs 7.5 minute quadrangle. The unnamed tributary drains a watershed of approximately 0.6 square miles. Elevations range from about 1,075 feet at the mouth of the creek to 1,600 feet in the headwater areas. Mixed conifer forest dominates the watershed. The watershed is entirely privately owned and is managed for timber production. Vehicle access exists via Rose Creek Road, a private logging road accessed from Masonite Industrial Road.

HABITAT INVENTORY RESULTS AND DISCUSSION

The habitat inventory of May 8, 2012 was conducted by M. Groff and I. Mikus (CDFW). The total length of the stream surveyed was 761 feet.

Stream flow was measured near the bottom of the survey reach with a Marsh-McBirney Model 2000 flowmeter at 0.19 cfs on May 16, 2012

The unnamed tributary is an A4 channel type for 761 feet of the stream surveyed. A4 channels are steep, narrow, cascading, step-pool, high energy debris transporting channels associated with depositional soils, and gravel-dominant substrates.

The suitability of A4 channel types are generally not suitable for fish habitat improvement structures.

The water temperature recorded on the survey day May 8, 2012 was 53 degrees Fahrenheit. Air temperatures ranged from 62 to 70 degrees Fahrenheit. This is a good water temperature range for salmonids. To make any conclusions, temperatures need to be monitored throughout the warm summer months, and more extensive biological sampling needs to be conducted.

Based on the total length of this survey, flatwater habitat types comprised 24%, riffles 63%, and pools 12%. Three of the nine (33%) pools had a maximum residual depth greater than 2 feet.

Six of the nine pool tail-outs measured had embeddedness ratings of 1 or 2. Three of the pool tail-outs had embeddedness ratings of 3 or 4. Cobble embeddedness of 25% or less, a rating of 1, is considered best for the needs of salmon and steelhead.

Eight of the 9 pool tail-outs measured had gravel or small cobble as the dominant substrate. This is generally considered good for spawning salmonids.

The mean shelter rating for pools is 3. The shelter rating in the flatwater habitats is 0. A pool shelter rating of approximately 100 is desirable. The amount of cover that now exists is being provided primarily by large woody debris. Large woody debris is the dominant cover type in pools followed by small woody debris.

The mean percent canopy density for the stream was 94%. The percentage of right and left bank covered with vegetation was 93% and 98%, respectively.

RECOMMENDATIONS

- 1) Unnamed tributary to Rose Creek should be managed as an anadromous, natural production stream.
- 2) The limited water temperature available suggests that the maximum temperatures are within the acceptable range for juvenile salmonids. To establish more complete and meaningful temperature regime information, 24-hour monitoring during the July and August temperature extreme period should be performed for 3 to 5 years.

PROBLEM SITES AND LANDMARKS

The following landmarks and possible problem sites were noted. All distances are approximate and taken from the beginning of the survey reach.

Position (ft):	Habitat unit #:	Comments:
0	0001.00	Start of survey at the confluence with Rose Creek. The channel is an A4 for the entire length of the survey. Log debris accumulation (LDA) #01 contains one piece of large woody debris (LWD) perched on top of a high gradient riffle and lying perpendicularly to the mouth. It measures 6' high x 12' wide x 3.5' long. Water is running over the surface of the log, but most is flowing through the retained sediment upstream of the log. The retained sediment ranges from silt to large cobble and measures 6' wide x 40' long x 2.5' deep. The unnamed tributary to Rose Creek is not currently accessible to salmonids due to LDA #01.

- 115 0007.00 There is a 1.5' high plunge over log.
- 122 0008.00 There is a 1' high plunge over log.
- 252 0014.00 LDA #02 contains four pieces of LWD and measures 5' high x 12' wide x 2.5' long. Water flows through the LDA and there are no visible gaps in it. Retained sediment ranges from silt to large cobble and measures 18' wide x 20' long x 3' deep. There is a 3' high plunge over the LDA.
- 262 0015.00 LDA #03 contains 12 pieces of LWD and measures 6' high x 29' wide x 9' long. Water flows through the LDA and there are no visible gaps in it. Retained sediment ranges from silt to gravel and measures 15' wide x 50' long x 4' deep. There is a 6' high plunge over the LDA with no jump pool below.
- 342 0020.00 LDA #04 contains five pieces of LWD and measures 7' high x 3' wide x 6' long. Water flows through the LDA and there are no visible gaps in it. Retained sediment ranges from silt to boulders and measures 11' wide x 40' long x 4' deep. There is a 6' high plunge over the LDA.
- 353 0021.00 Tributary #01 enters on the left bank. It contributes approximately 55% to unnamed tributary's flow. The water temperature of the tributary was 54 degrees Fahrenheit; the water temperature downstream and upstream of the tributary was 53 degrees Fahrenheit. The slope of the tributary is approximately 8%. The first 250' of the tributary are accessible to fish. At 250', there is an LDA.
- 424 0024.00 LDA #05 contains four pieces of LWD and measures 5' high x 11' wide x 10' long. Water flows through the LDA and there are no visible gaps in it. Retained sediment ranges from silt to cobble and measures 17' wide x 40' long x 2' deep. The LDA consists of two plunges: the first plunge is 2.5' high and the second plunge is 2' high.
- 536 0027.00 LDA #06 contains 14 pieces of LWD and measures 14' high x 33' wide x 50' long. Water does not flow through the LDA; the flow is subsurface for 15' in the middle of the LDA. Retained sediment ranges from silt to large cobble and measures 30' wide x 60' long x 10' deep. The LDA consists of three plunges: the first is 3.5' high, the second is 1.5' high, and the third is 6' high.
- 682 0035.00 LDA #07 contains three pieces of LWD and measures 10' high x 25' wide x 40' long. Water flows through the LDA and there are no visible gaps in it. Retained sediment ranges from silt to large cobble and

measures 12' wide x 35' long x 3' deep. The LDA consists of two plunges: the first plunge is 3.5' high and the second plunge is 5' high.

- 703 0036.00 Right bank erosion site measures 12' long x 8' high and it is contributing silt, sand, and gravel to the channel.
- 752 0039.00 End of survey due to the series of six plunges through LDA 06, LDA 07, and the 3.5' high plunge at the end of survey point. There is a 3.5' high plunge over bedrock and small woody debris. There are no jump pools below the LDAs. Slope was measured to be 18.2% from the bottom of LDA 06 to the end of survey point. No fish were observed during the entire length of the survey.

REFERENCES

Flosi, G., Downie, S., Hopelain, J., Bird, M., Coey, R., and Collins, B. 1998. *California Salmonid Stream Habitat Restoration Manual*, 3rd edition. California Department of Fish and Game, Sacramento, California.

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

Stream Name: 1233662391359

LLID: 1233662391359

Drainage: Navarro River

Survey Dates: 5/8/2012 to 5/8/2012

Confluence Location: Quad: ORRS SPRINGS

Legal Description: T15NR14WS26

Latitude: 39:08:09.0N

Longitude: 123:21:58.0

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
1	0	DRY	2.6	15	15	2.0									
11	3	FLATWATER	28.2	16	180	23.7	6.2	0.4	0.7	106	1169	41	449		0
9	9	POOL	23.1	10	89	11.7	7.6	0.7	1.6	69	618	60	537	49	3
18	4	RIFFLE	46.2	26	477	62.7	4.5	0.2	0.5	45	818	9	160		0
Total Units	Total Units Fully Measured				Total Length (ft.)					Total Area (sq.ft.)			Total Volume (cu.ft.)		
39	16				761					2604			1145		

Table 2 - Summary of Habitat Types and Measured Parameters

Stream Name: 1233662391359

LLID: 1233662391359

Drainage: Navarro River

Survey Dates: 5/8/2012 to 5/8/2012

Confluence Location: Quad: ORRS SPRINGS

Legal Description: T15NR14WS26

Latitude: 39:08:09.0N

Longitude: 123:21:58.0W

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 (%)
3	1	LGR	7.7	18	55	7.2	6	0.1	0.3	49	148	5	15		0	100
15	3	HGR	38.5	28	422	55.5	4	0.2	0.8	44	662	10	153		0	96
8	2	RUN	20.5	12	99	13.0	5	0.4	0.9	57	454	20	162		0	99
3	1	SRN	7.7	27	81	10.6	9	0.4	0.8	205	616	82	246		0	100
4	4	MCP	10.3	8	33	4.3	7	0.7	1.5	54	216	39	157	32	1	95
5	5	PLP	12.8	11	56	7.4	8	0.8	2.4	80	402	76	380	63	5	85
1	0	DRY	2.6	15	15	2.0										

Total Units
39

Total Units Fully Measured
16

Total Length (ft.)
761

Total Area (sq.ft.)
2497

Total Volume (cu.ft.)
1112

Table 3 - Summary of Pool Types

Stream Name: 1233662391359

LLID: 1233662391359

Drainage: Navarro River

Survey Dates: 5/8/2012 to 5/8/2012

Confluence Location: Quad: ORRS SPRINGS

Legal Description: T15NR14WS26

Latitude: 39:08:09.0N

Longitude: 123:21:58.0W

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
4	4	MAIN	44	8	33	37	7.3	0.7	54	216	31	126	1
5	5	SCOUR	56	11	56	63	7.8	0.8	80	402	63	315	5

Total Units	Total Units Fully Measured	Total Length (ft.)	Total Area (sq.ft.)	Total Volume (cu.ft.)
9	9	89	618	441

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

Stream Name: 1233662391359 LLID: 1233662391359 Drainage: Navarro River
 Survey Dates: 5/8/2012 to 5/8/2012
 Confluence Location: Quad: ORRS SPRINGS Legal Description: T15NR14WS26 Latitude: 39:08:09.0N Longitude: 123:21:58.0W

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
4	MCP	44	1	25	3	75	0	0	0	0	0	0
5	PLP	56	0	0	2	40	3	60	0	0	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
9	1	11	5	56	3	33	0	0	0	0

Mean Maximum Residual Pool Depth (ft.): 1.6

Table 5 - Summary of Mean Percent Cover By Habitat Type

Stream Name: 1233662391359

LLID: 1233662391359

Drainage: Navarro River

Survey Dates: 5/8/2012 to 5/8/2012

Dry Units: 1

Confluence Location: Quad: ORRS SPRINGS

Legal Description: T15NR14WS26

Latitude: 39:08:09.0N

Longitude: 123:21:58.0W

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
3	1	LGR	0	0	0	0	0	0	0	0	0
15	3	HGR	0	0	0	0	0	0	0	0	0
18	4	TOTAL RIFFLE	0	0	0	0	0	0	0	0	0
8	2	RUN	0	0	0	0	0	0	0	0	0
3	1	SRN	0	0	0	0	0	0	0	0	0
11	3	TOTAL FLAT	0	0	0	0	0	0	0	0	0
4	4	MCP	85	10	0	5	0	0	0	0	0
5	5	PLP	0	30	50	0	0	0	20	0	0
9	9	TOTAL POOL	17	26	40	1	0	0	16	0	0
39	16	TOTAL	17	26	40	1	0	0	16	0	0

Table 6 - Summary of Dominant Substrates By Habitat Type

Stream Name: 1233662391359 LLID: 1233662391359 Drainage: Navarro River
 Survey Dates: 5/8/2012 to 5/8/2012 Dry Units: 1
 Confluence Location: Quad: ORRS SPRINGS Legal Description: T15NR14WS26 Latitude: 39:08:09.0N Longitude: 123:21:58.0W

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
3	1	LGR	0	0	100	0	0	0	0
15	3	HGR	0	0	67	33	0	0	0
8	2	RUN	0	0	100	0	0	0	0
3	1	SRN	0	0	100	0	0	0	0
4	4	MCP	0	0	75	0	25	0	0
5	5	PLP	0	0	100	0	0	0	0

Table 7 - Summary of Mean Percent Canopy for Entire Stream

Stream Name: 1233662391359

LLID: 1233662391359

Drainage: Navarro River

Survey Dates: 5/8/2012 to 5/8/2012

Confluence Location: Quad: ORRS SPRINGS

Legal Description: T15NR14WS26

Latitude: 39:08:09.0N

Longitude: 123:21:58.0W

Mean Percent Canopy	Mean Percent Conifer	Mean Percent Hardwood	Mean Percent Open Units	Mean Right Bank % Cover	Mean Left Bank % Cover
94	84	16	0	93	98

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 8 - Fish Habitat Inventory Data Summary

Stream Name: 1233662391359 LLID: 1233662391359 Drainage: Navarro River
 Survey Dates: 5/8/2012 to 5/8/2012 Survey Length (ft.): 761 Main Channel (ft.): 761 Side Channel (ft.): 0
 Confluence Location: Quad: ORRS SPRINGS Legal Description: T15NR14WS26 Latitude: 39:08:09.0N Longitude: 123:21:58.0W

Summary of Fish Habitat Elements By Stream Reach

STREAM REACH: 1

Channel Type: A4	Canopy Density (%): 94.2	Pools by Stream Length (%): 11.7
Reach Length (ft.): 761	Coniferous Component (%): 83.7	Pool Frequency (%): 23.1
Riffle/Flatwater Mean Width (ft.): 5.2	Hardwood Component (%): 16.3	Residual Pool Depth (%):
BFW:	Dominant Bank Vegetation: Coniferous Trees	< 2 Feet Deep: 67
Range (ft.): 12 to 25	Vegetative Cover (%): 95.8	2 to 2.9 Feet Deep: 33
Mean (ft.): 18	Dominant Shelter: Large Woody Debris	3 to 3.9 Feet Deep: 0
Std. Dev.: 5	Dominant Bank Substrate Type: Sand/Silt/Clay	>= 4 Feet Deep: 0
Base Flow (cfs.): 0.2	Occurrence of LWD (%): 13	Mean Max Residual Pool Depth (ft.): 1.6
Water (F): 53 - 53 Air (F): 62 - 70	LWD per 100 ft.:	Mean Pool Shelter Rating: 3
Dry Channel (ft): 15	Riffles: 14	
	Pools: 20	
	Flat: 20	
Pool Tail Substrate (%): Silt/Clay: 0 Sand: 0 Gravel: 78 Sm Cobble: 11 Lg Cobble: 11 Boulder: 0 Bedrock: 0		
Embeddedness Values (%): 1. 22.2 2. 44.4 3. 33.3 4. 0.0 5. 0.0		

Table 9 - Mean Percentage of Dominant Substrate and Vegetation

Stream Name: 1233662391359

LLID: 1233662391359

Drainage: Navarro River

Survey Dates: 5/8/2012 to 5/8/2012

Confluence Location: Quad: ORRS SPRINGS

Legal Description: T15NR14WS26

Latitude: 39:08:09.0N

Longitude: 123:21:58.0W

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	1	3.1
Boulder	0	0	0.0
Cobble / Gravel	3	9	37.5
Sand / Silt / Clay	13	6	59.4

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	1	2	9.4
Brush	4	7	34.4
Hardwood Trees	0	1	3.1
Coniferous Trees	11	5	50.0
No Vegetation	0	1	3.1

Total Stream Cobble Embeddedness Values: 2

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

StreamName: 1233662391359

LLID: 1233662391359

Drainage: Navarro River

Survey Dates: 5/8/2012 to 5/8/2012

Confluence Location: Quad: ORRS SPRINGS

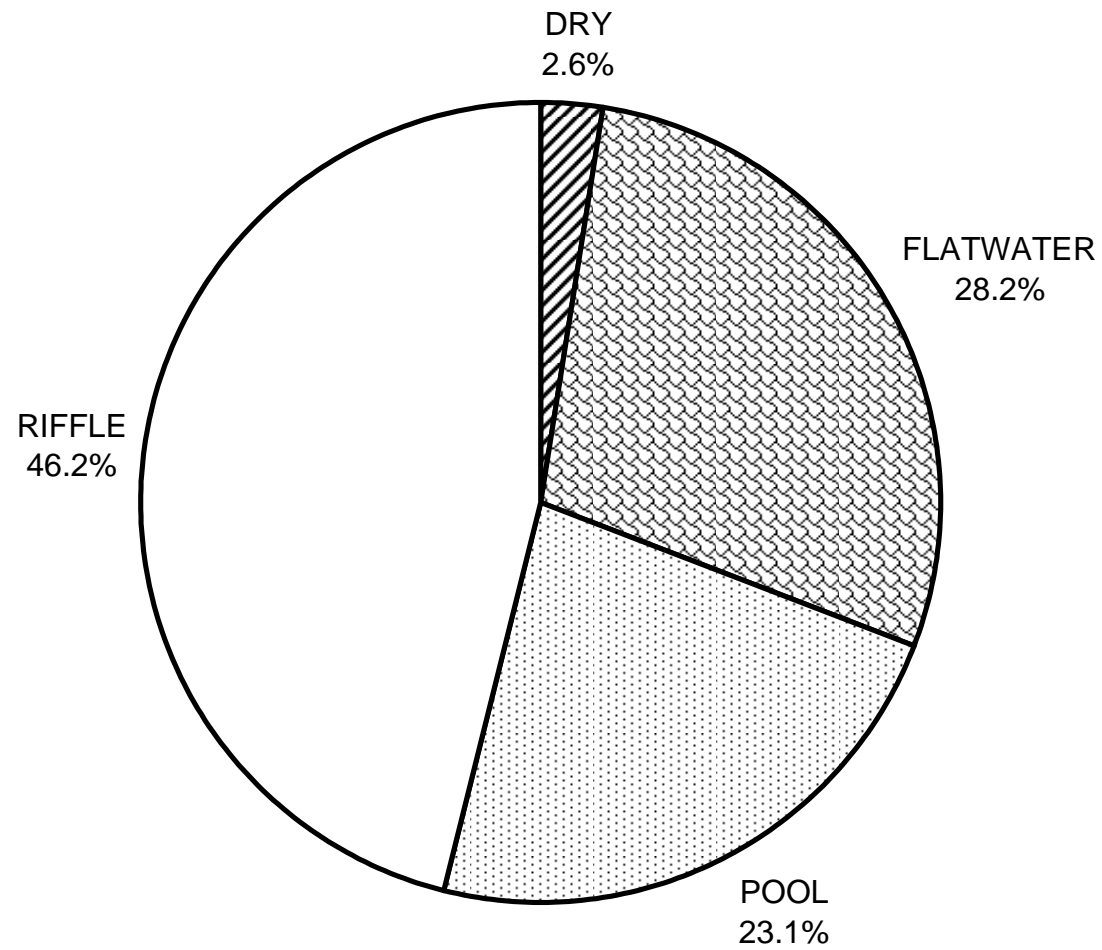
Legal Description: T15NR14WS26

Latitude: 39:08:09.0N

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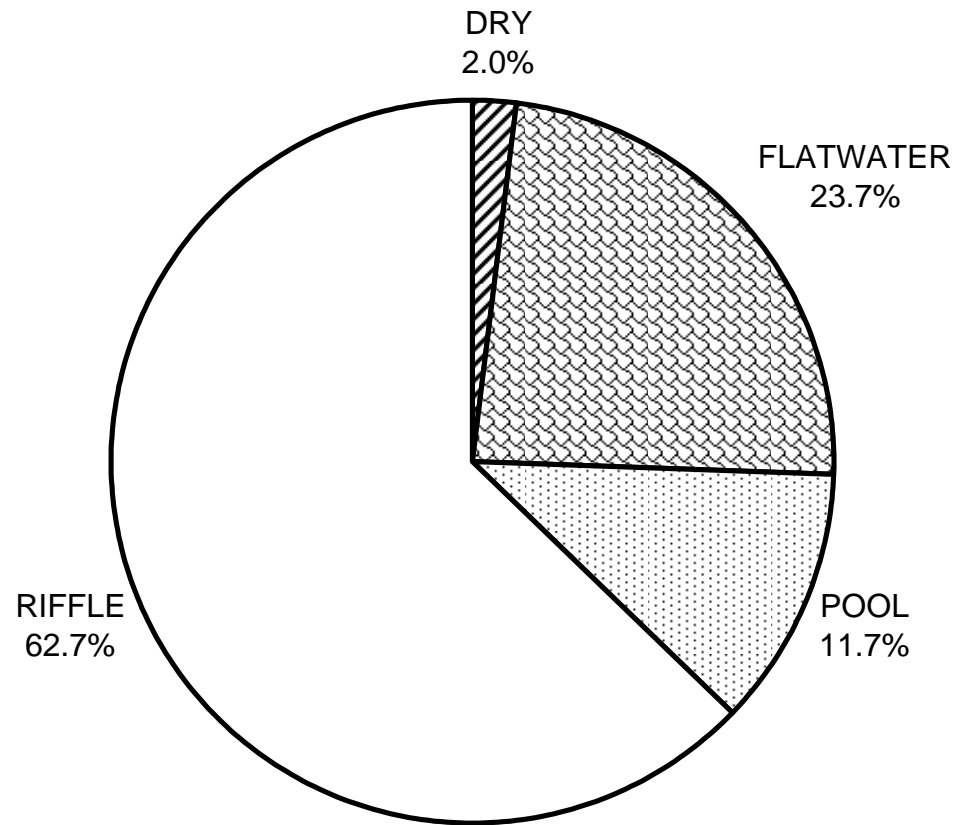
	Riffles	Flatwater	Pools
UNDERCUT BANKS (%)	0	0	9
SMALL WOODY DEBRIS (%)	0	0	14
LARGE WOODY DEBRIS (%)	0	0	22
ROOT MASS (%)	0	0	1
TERRESTRIAL VEGETATION (%)	0	0	0
AQUATIC VEGETATION (%)	0	0	0
WHITEWATER (%)	0	0	9
BOULDERS (%)	0	0	0
BEDROCK LEDGES (%)	0	0	0

UNNAMED TRIBUTARY TO ROSE CREEK 2012 HABITAT TYPES BY PERCENT OCCURRENCE



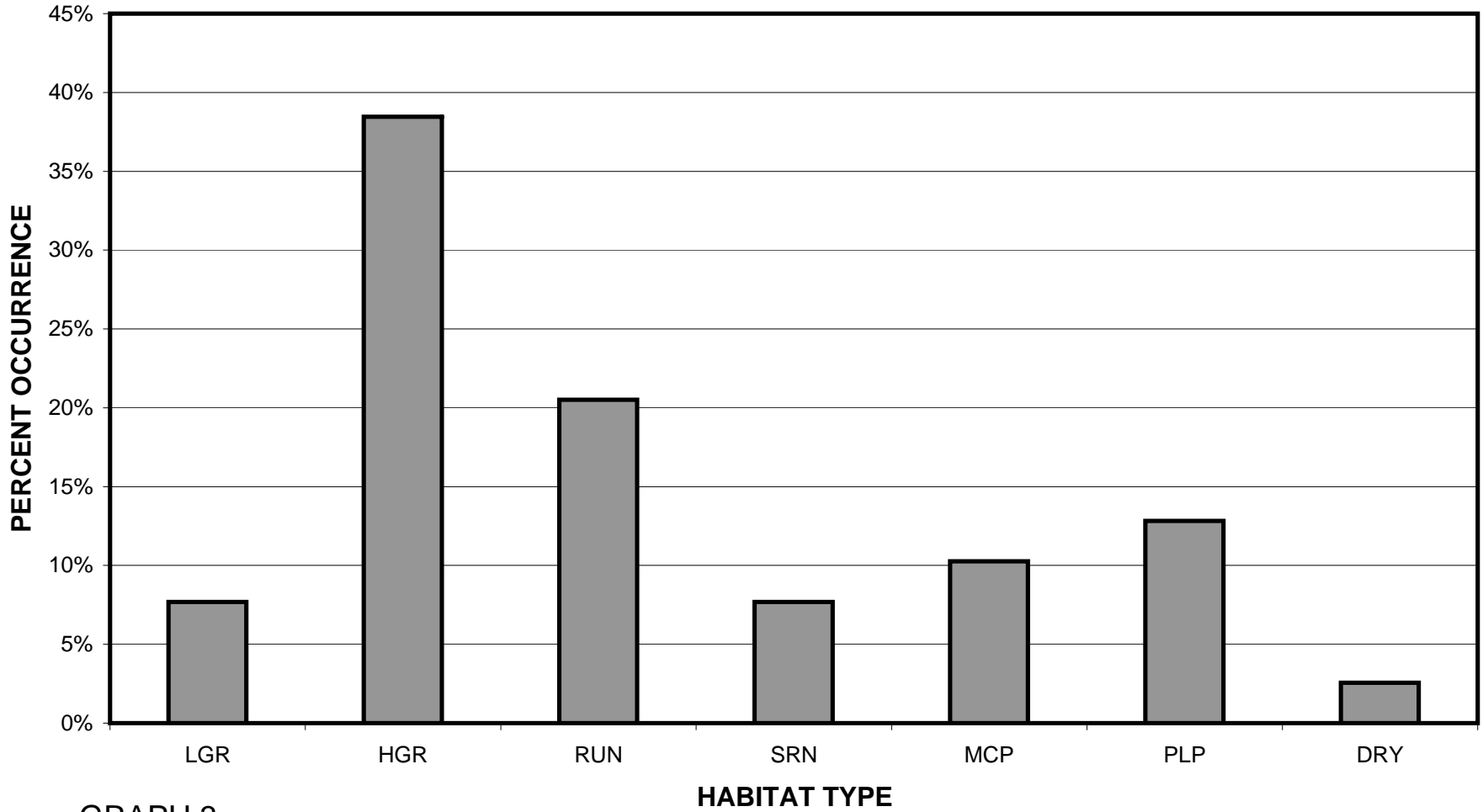
GRAPH 1

UNNAMED TRIBUTARY TO ROSE CREEK 2012 HABITAT TYPES BY PERCENT TOTAL LENGTH



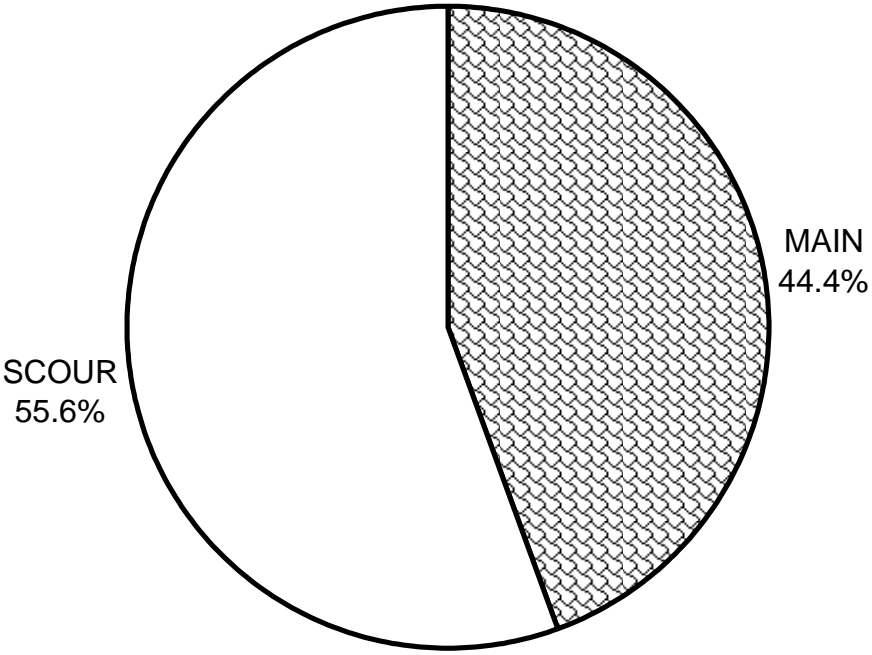
GRAPH 2

UNNAMED TRIBUTARY TO ROSE CREEK 2012 HABITAT TYPES BY PERCENT OCCURRENCE



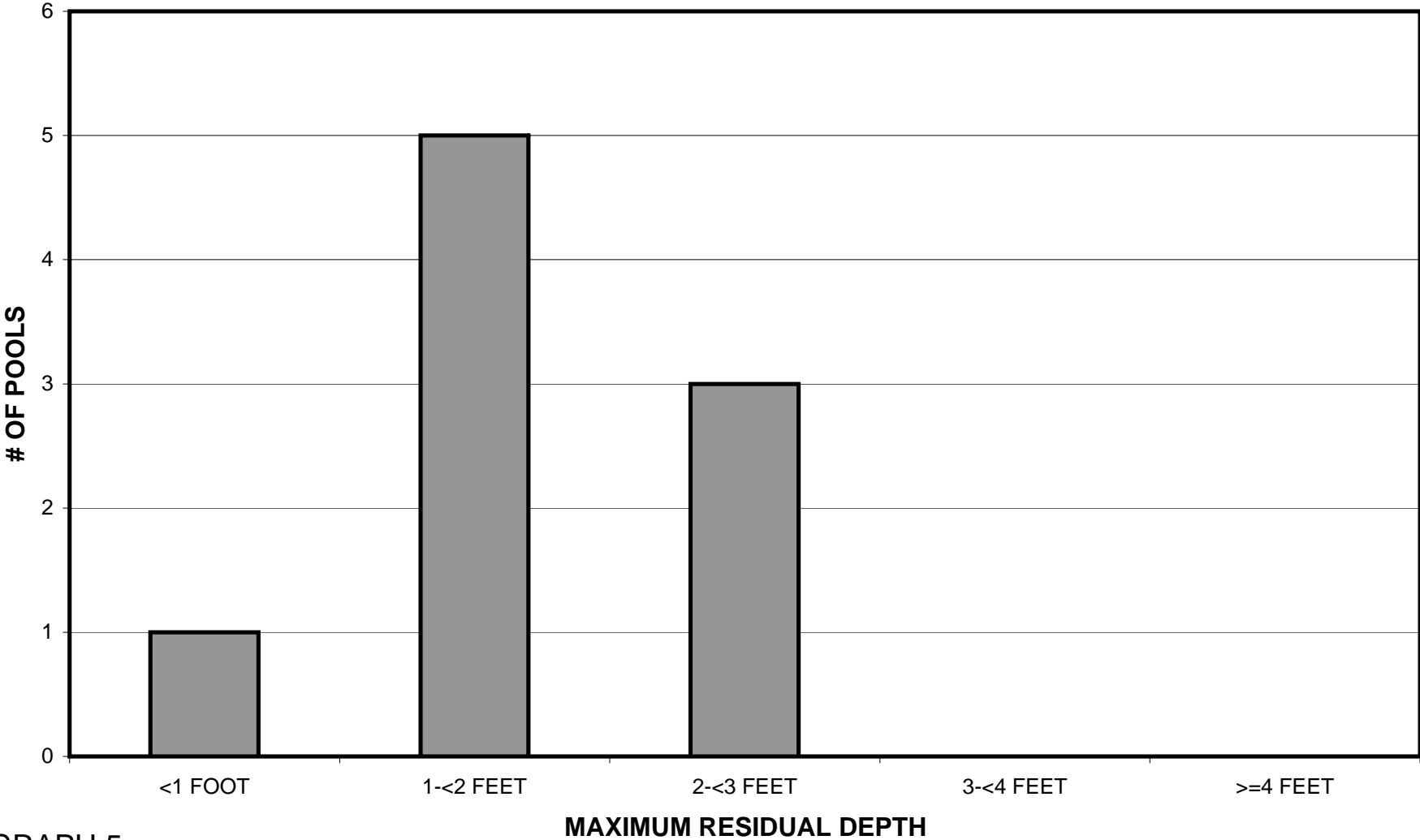
GRAPH 3

**UNNAMED TRIBUTARY TO ROSE CREEK 2012
POOL TYPES BY PERCENT OCCURRENCE**



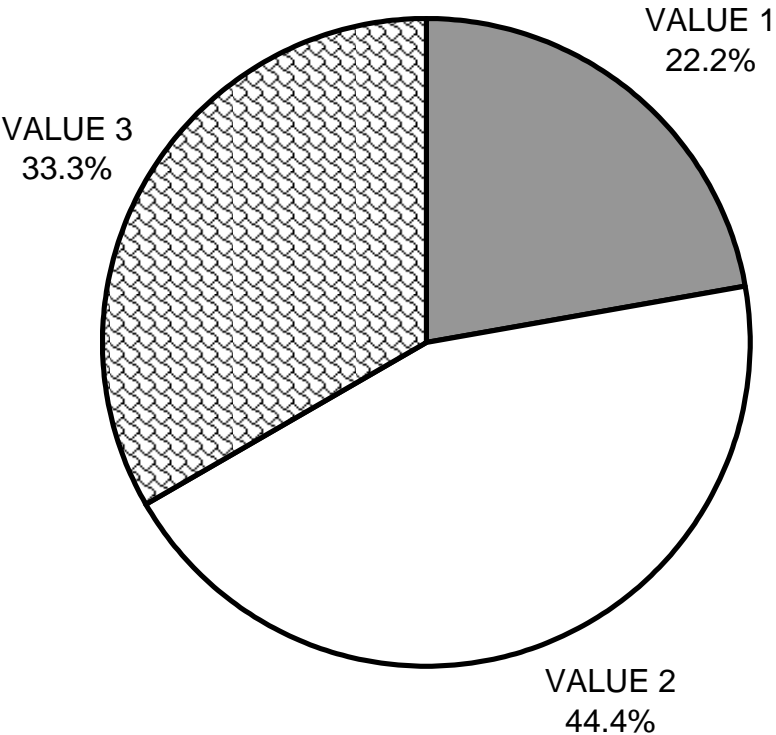
GRAPH 4

**UNNAMED TRIBUTARY TO ROSE CREEK 2012
MAXIMUM DEPTH IN POOLS**



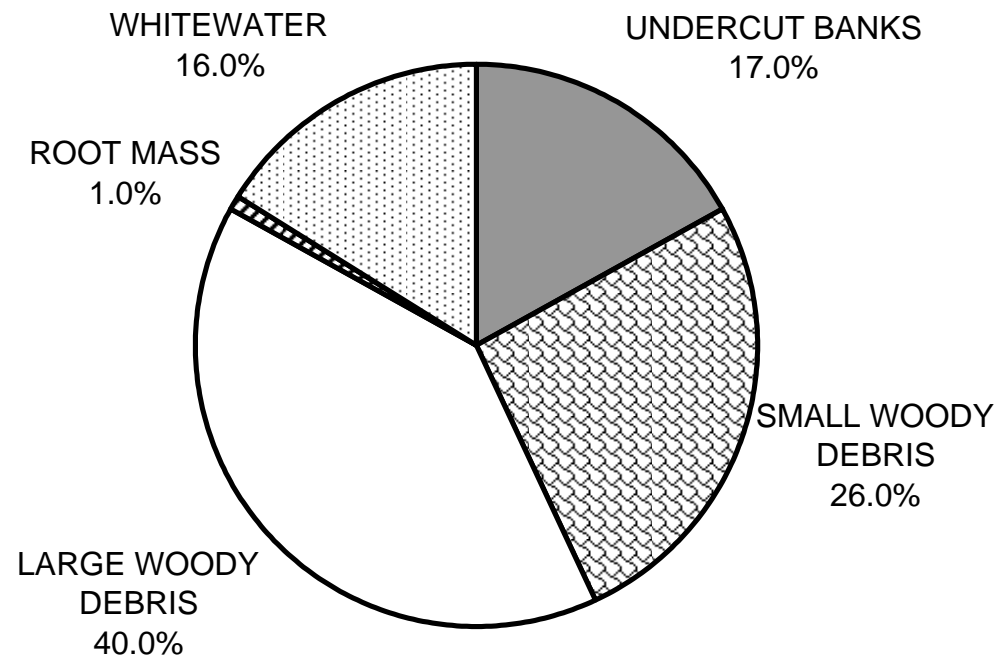
GRAPH 5

**UNNAMED TRIBUTARY TO ROSE CREEK 2012
PERCENT EMBEDDEDNESS**



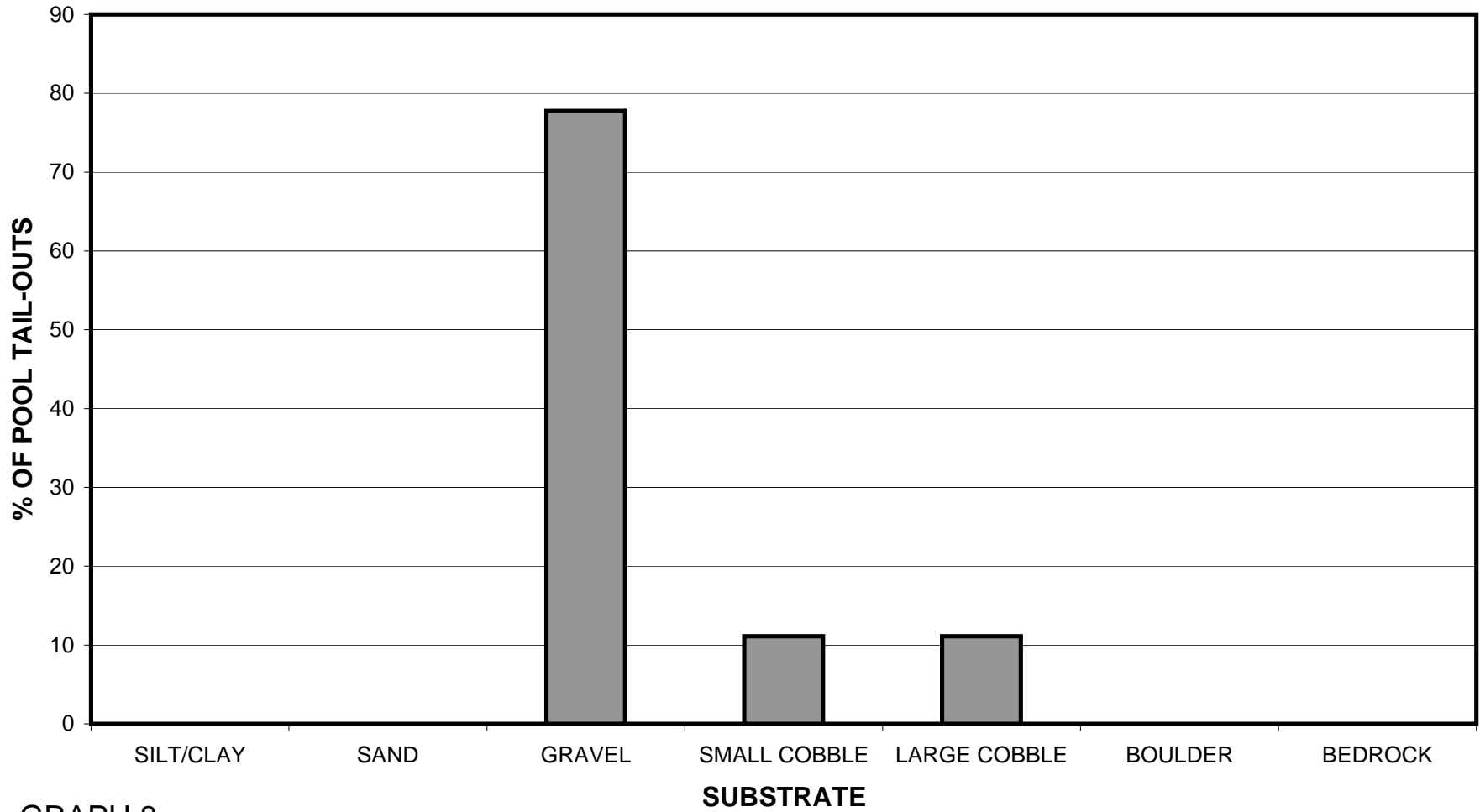
GRAPH 6

UNNAMED TRIBUTARY TO ROSE CREEK 2012 MEAN PERCENT COVER TYPES IN POOLS



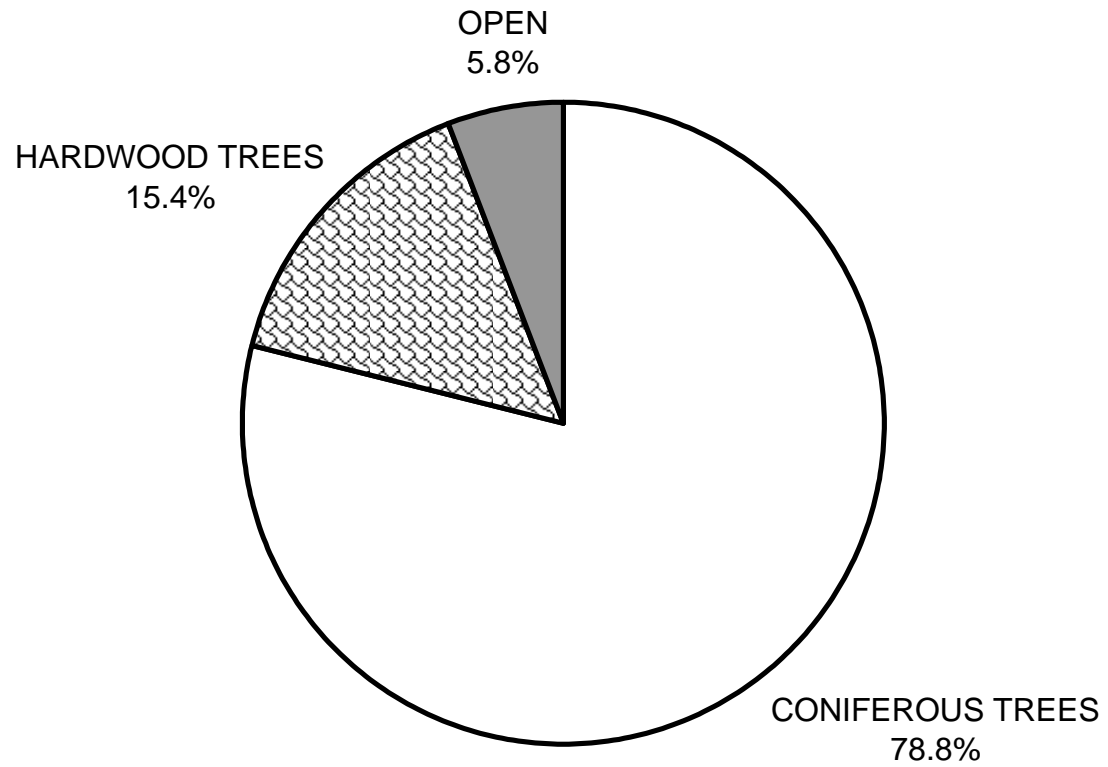
GRAPH 7

UNNAMED TRIBUTARY TO ROSE CREEK 2012 SUBSTRATE COMPOSITION IN POOL TAIL-OUTS



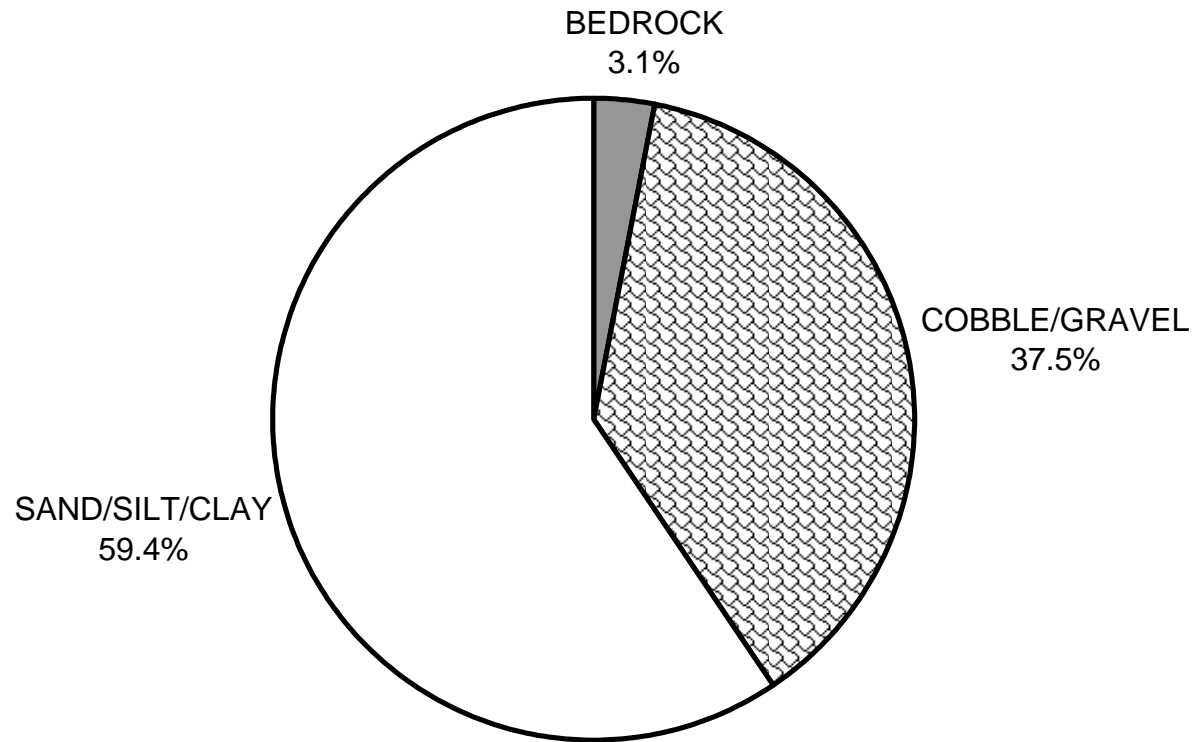
GRAPH 8

UNNAMED TRIBUTARY TO ROSE CREEK 2012 MEAN PERCENT CANOPY



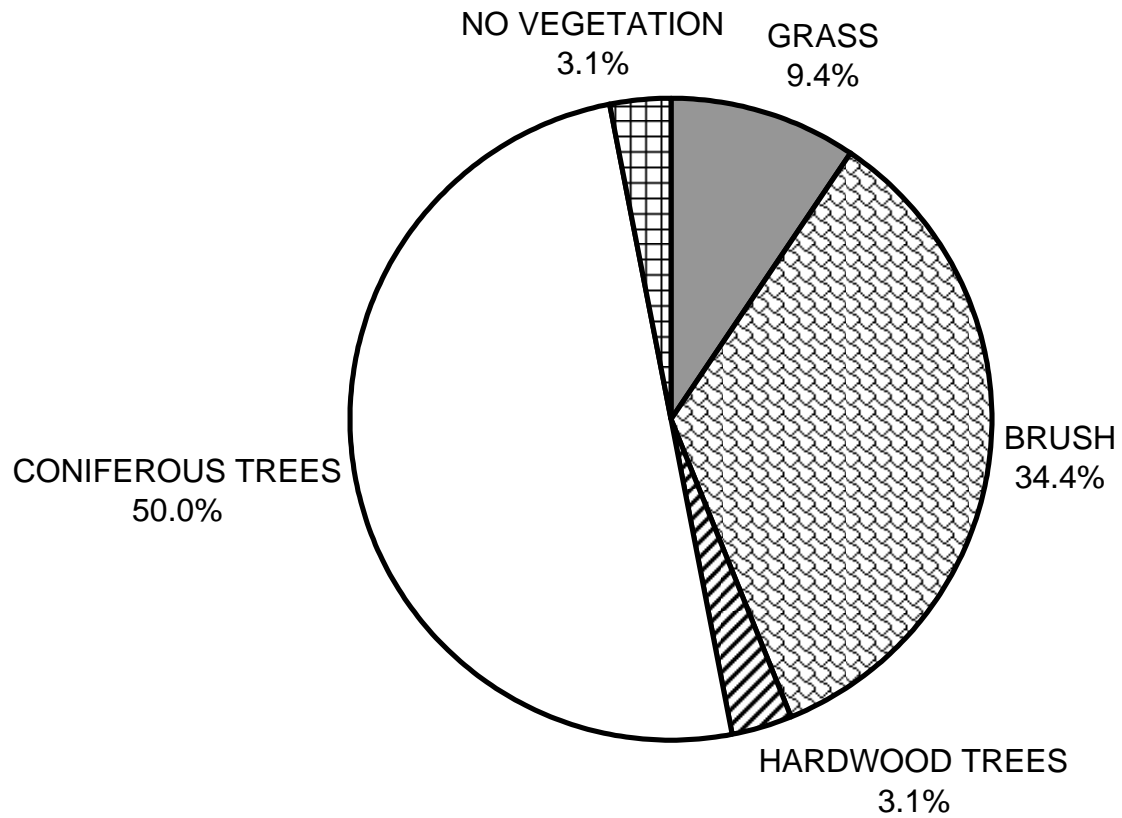
GRAPH 9

**UNNAMED TRIBUTARY TO ROSE CREEK 2012
DOMINANT BANK COMPOSITION IN SURVEY REACH**



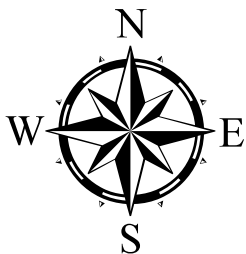
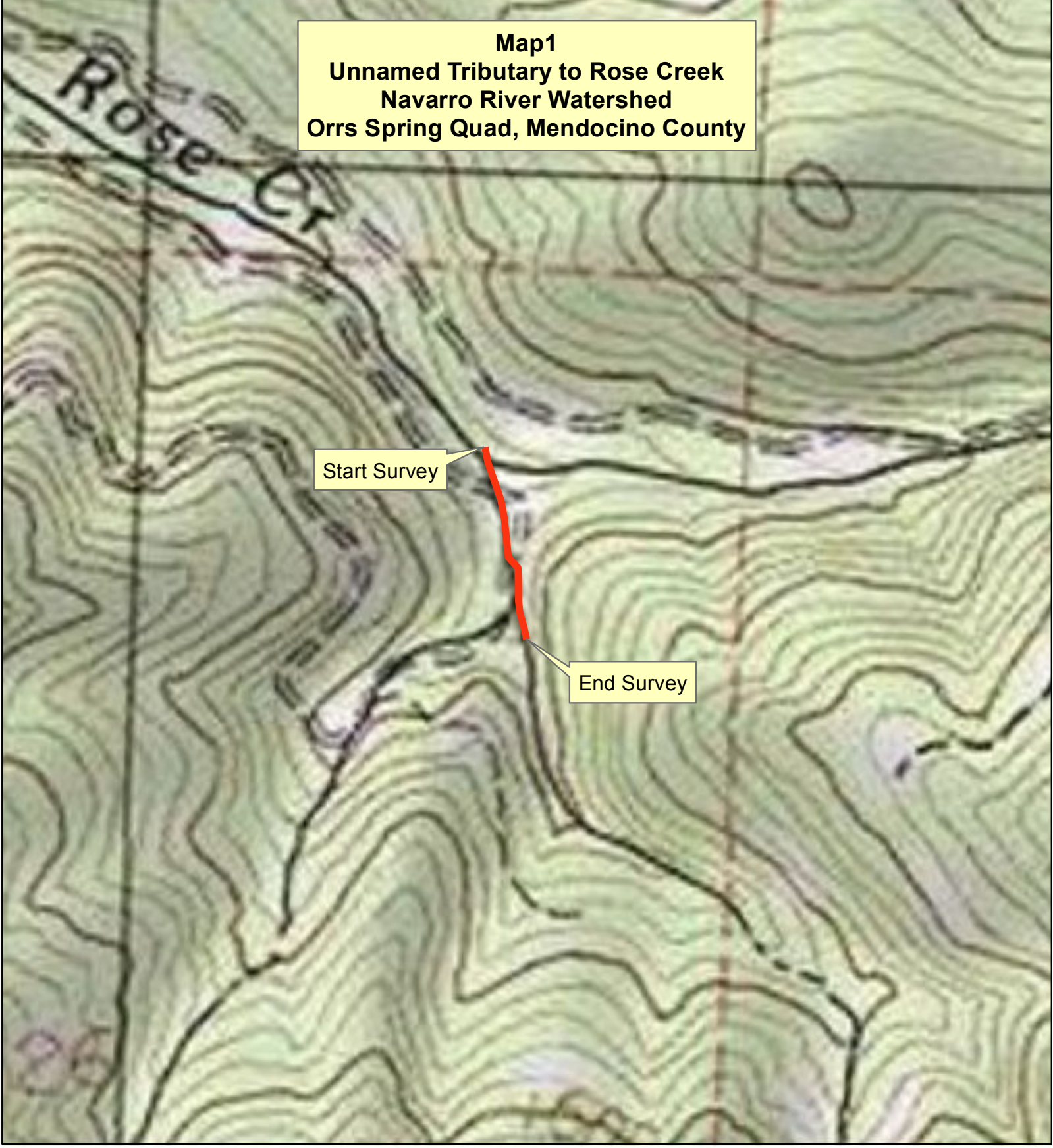
GRAPH 10


UNNAMED TRIBUTARY TO ROSE CREEK 2012 DOMINANT BANK VEGETATION IN SURVEY REACH



GRAPH 11

Map1
Unnamed Tributary to Rose Creek
Navarro River Watershed
Orrs Spring Quad, Mendocino County



 Channel Type A4

