

STREAM INVENTORY REPORT  
Unnamed Tributary #3 to Martin Slough  
2006

WATERSHED OVERVIEW

Unnamed Tributary #3 appears as the first blue line tributary on Martin Slough upstream of Swain Slough. Refer to the map of Martin Slough for the location of Unnamed Tributary #3.

Unnamed Tributary #3 is a tributary to Martin Slough, tributary to Swain Slough, tributary to Elk River, tributary to the Humboldt Bay, tributary to the Pacific Ocean, located in Humboldt County, California. Unnamed Tributary #3's legal description at the confluence with Martin Slough is T04N R01W S03. Its location is 40°45'24" north latitude and 124°10'15" west longitude, LLID number 1241709407568. Unnamed Tributary #3 is the first ephemeral stream according to the USGS Eureka 7.5 minute quadrangle entering Martin Slough from the left bank. Unnamed Tributary #3 drains a watershed of approximately 0.76 square miles. Summer base runoff was estimated at less than 0.25 cfs (no flows were recorded). Elevations range from about 5 feet at the mouth of the creek to 200 feet in the headwater areas. Mixed conifer forest dominates the watershed. The watershed is entirely privately owned and is managed for development. Vehicle access exists via Fairway Drive, Eureka.

HABITAT INVENTORY RESULTS AND DISCUSSION

The habitat inventory of August 17, 2006 was conducted by A. Shows and S. McSmith (WSP). The total length of the stream surveyed was 1,539 feet.

Stream flow was not measured on Unnamed Tributary #3.

Unnamed Tributary #3 is an E6 channel type for the entire 1,539 feet of the stream surveyed (Reach 1). The suitability of E6 channel types for fish habitat improvement structures is described in the main body of this report.

The water temperatures recorded on the survey day August 17, 2006 ranged from 58 to 62 degrees Fahrenheit. Air temperature was 62 degrees Fahrenheit. For a more complete and accurate water temperature profile, please refer to Appendix B – Thermograph Report at the end of this document.

Based on the total length of this survey, Level II habitat units consisted of 27% flatwater units and 2% pool units. In addition, the total length of this survey consisted of 55% no-survey units (marsh), 13% no-survey units (access) and, 4% culvert units. The pools are relatively shallow, with neither of the 2 pools having a maximum residual depth greater than 2 feet.

Neither of the 2 pool tail-outs measured had embeddedness ratings of 1 or 2. One of the pool tail-outs had an embeddedness rating of 4, while one pool tail-out had a value of 5, or unsuitable for spawning. Cobble embeddedness of 25% or less, a rating of 1, is considered best for the needs of salmon and steelhead. In Unnamed Tributary #3, sediment sources should be mapped and rated according to their potential sediment yields, and control measures should be taken.

The mean shelter rating for pools was 10. The shelter rating in the flatwater habitats was 35. A pool shelter rating of approximately 100 is desirable.

No low gradient riffles were recorded during the Unnamed Tributary #3 survey.

The mean percent canopy density for the stream was 32%. In general, revegetation projects are considered when canopy density is less than 80. The percentage of right and left bank covered with vegetation was 97% and 86%, respectively. In areas where bank vegetation is not at acceptable levels, planting endemic species of coniferous and hardwood trees, is recommended.

#### BIOLOGICAL INVENTORY RESULTS

One site was electrofished on October 26, 2006, in Unnamed Tributary #3. The units were sampled by A. Shows, B. Rahn (WSP) and S. Monday (DFG). Additionally, one site downstream was sampling using a 30 foot seine net by M. Gilroy and M. Wallace (DFG) on February 9, 2006.

The electrofishing site sampled included habitat units 012 - 017, a series of pools and runs 760 feet from the confluence with Martin Slough. This site had an approximate length of 580 feet. The site yielded 33 stickleback and one salamander species.

The seining site sampled included habitat unit 004. The site is 175 feet long and occurs 50 feet from the confluence with Martin Slough. This site yielded five young of the year coho salmon and numerous sticklebacks.

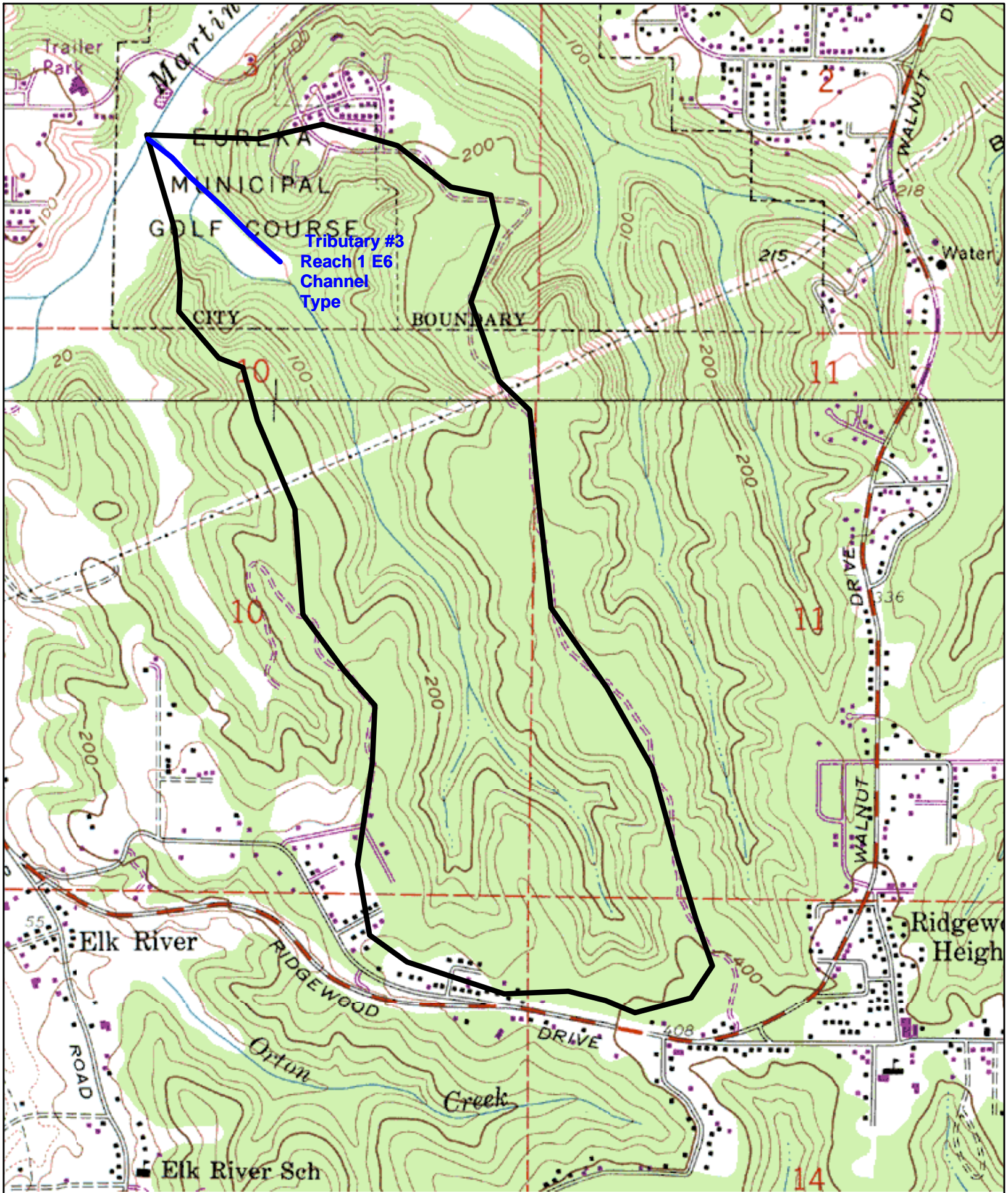
#### RECOMMENDATIONS

- 1) Unnamed tributary 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.
- 3) Increase woody cover in the pools and flatwater habitat units. Most of the existing cover is from boulders. Adding high quality complexity with woody cover is desirable and in some areas the material is at hand.
- 4) Increase the canopy on unnamed tributary by planting willow, alder, redwood, and Douglas fir along the stream where shade canopy is not at acceptable levels.

#### 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	Began survey at confluence with Martin Slough Two otters were seen in Martin Slough at the confluence of Unnamed Tributary #3.
31	0003.00	Culvert #1, 1.3' diameter, concrete culvert in good condition, no weirs or baffles, plunge height of 1.2'.
49	0004.00	Channel straightened, extensive aquatic and terrestrial vegetation (grasses and reeds), deepens at top of unit.
224	0005.00	Culvert #2, 1.5' diameter, concrete culvert in good condition, no baffles or weirs; plunge height is 0.6', stream not flowing during survey
230	0006.00	First 27' of channel is straight, uniform channel 8' wide, then widens to a pond that is completely choked with grasses and reeds. Pond is 58' wide and 121' long, and has willows growing from center. At top of unit, 141' of reed choked channel, 4' wide.
519	0007.00	Culvert #3, 1.5' diameter, concrete culvert, good condition, no baffles or weirs
525	0008.00	Tributary #1, dry, entering from left bank. No fish observed up to 150'. Most of channel is overgrown with reeds and grasses, and is severely aggraded. The map shows the channel following this "tributary."
604	0009.00	Culvert #4, 1.5' diameter, concrete culvert, no baffles or weirs, good condition
610	0010.00	Straightened/channelized.
743	0011.00	Culvert #5, 2' diameter, concrete culvert, good condition, no plunge height, baffles or weirs
761	0012.00	Riparian vegetation begins including willows
837	0013.00	Drainage enters from left bank. Bank failure on left bank before bridge; 9' high x 11' long Electrofishing site. Bridge #1, wooden foot bridge, 8' wide x 25' long. Height from surface of water is 6'. Bridge is in good condition.
1007	0014.00	Channel shallow and overgrown with terrestrial vegetation. Channel is straightened/channelized.
1094	0015.00	Electro-fishing site.
1220	0016.00	Electro-fishing site.
1238	0017.00	Some small gravel in main channel. Dry right bank tributary Electro-fishing site.
1339	0017.00	End of survey except for visual observation
1440	0018.00	Not surveyed due to thick vegetation, distance found using MapTech and GPS coordinates. Channel is aggraded, at high flows water would flood out into a large marsh area. Large amount (~10) of windfall, 2 – 3' diameter.



Tributary #3  
Reach 1 E6  
Channel  
Type

Name: FIELDS LANDING  
Date: 12/12/2006  
Scale: 1 inch equals 1111 feet

Location: 040° 44' 41.37" N 124° 09' 32.8" W  
Caption: Martin Slough Tributary #3 Watershed Boundary and Reach  
Information

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

Stream Name: 1241709407568

LLID: 1241709407568

Drainage: Eureka Plain

Survey Dates: 8/17/2006 to 8/17/2006

Confluence Location: Quad: EUREKA

Legal Description: T04NR01WS03

Latitude: 40:45:24.0N

Longitude: 124:10:15.0W

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
5	0	CULVERT	27.8	11	54	3.5									
4	2	FLATWATER	22.2	105	420	27.3	5.0	0.6	1.5	702	2808	485	1939		35
1	0	NOSURVEY	5.6	200	200	13.0									
6	2	NOSURVEY_	33.3	140	839	54.5	5.2	0.9	1.9	718	4308	872	5230		93
2	2	POOL	11.1	13	26	1.7	5.5	0.6	1.1	74	147	52	103	44	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>		
18	6				1539					7263			7272		

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

Stream Name: 1241709407568

LLID: 1241709407568

Drainage: Eureka Plain

Survey Dates: 8/17/2006 to 8/17/2006

Confluence Location: Quad: EUREKA

Legal Description: T04NR01WS03

Latitude: 40:45:24.0N

Longitude: 124:10:15.0W

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 (%)
2	1	GLD	11.1	148	296	19.2	6	0.8	2.1	1020	2040	816	1632		60	27
2	1	SRN	11.1	62	124	8.1	4	0.4	0.8	384	768	154	307		10	100
1	1	MCP	5.6	18	18	1.2	6	0.6	0.9	108	108	76	76	65	15	100
1	1	PLP	5.6	8	8	0.5	5	0.6	1.3	39	39	27	27	24	5	0
5	0	CUL	27.8	11	54	3.5										
1	0	NS	5.6	200	200	13.0										
6	2	MAR	33.3	140	839	54.5	5	0.9	2.3	718	4308	872	5230		93	0

Total Units  
18

Total Units Fully Measured  
6

Total Length (ft.)  
1539

Total Area (sq.ft.)  
7263

Total Volume (cu.ft.)  
7272



**Table 3 - Summary of Pool Types**

Stream Name: 1241709407568

LLID: 1241709407568

Drainage: Eureka Plain

Survey Dates: 8/17/2006 to 8/17/2006

Confluence Location: Quad: EUREKA

Legal Description: T04NR01WS03

Latitude: 40:45:24.0N

Longitude: 124:10:15.0W

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
1	1	MAIN	50	18	18	69	6.0	0.6	108	108	65	65	15
1	1	SCOUR	50	8	8	31	5.0	0.6	39	39	24	24	5

Total Units	Total Units Fully Measured	Total Length (ft.)	Total Area (sq.ft.)	Total Volume (cu.ft.)
2	2	26	147	88

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

Stream Name: 1241709407568

LLID: 1241709407568

Drainage: Eureka Plain

Survey Dates: 8/17/2006 to 8/17/2006

Confluence Location: Quad: EUREKA

Legal Description: T04NR01WS03

Latitude: 40:45:24.0N

Longitude: 124:10:15.0W

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
1	MCP	50	1	100	0	0	0	0	0	0	0	0
1	PLP	50	0	0	1	100	0	0	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
2	1	50	1	50	0	0	0	0	0	0

Mean Maximum Residual Pool Depth (ft.): 1.1



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

Stream Name: 1241709407568

LLID: 1241709407568

Drainage: Eureka Plain

Survey Dates: 8/17/2006 to 8/17/2006

Dry Units: 0

Confluence Location: Quad: EUREKA

Legal Description: T04NR01WS03

Latitude: 40:45:24.0N

Longitude: 124:10:15.0W

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
0	0	TOTAL RIFFLE									
2	1	GLD	40	30	0	0	30	0	0	0	0
2	1	SRN	90	0	0	0	10	0	0	0	0
4	2	TOTAL FLAT	65	15	0	0	20	0	0	0	0
1	1	MCP	100	0	0	0	0	0	0	0	0
1	1	PLP	0	0	0	0	0	0	100	0	0
2	2	TOTAL POOL	50	0	0	0	0	0	50	0	0
5	0	CUL									
1	0	NS									
6	2	MAR	0	0	0	0	25	75	0	0	0
18	6	TOTAL	38	5	0	0	15	25	17	0	0

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

Stream Name: 1241709407568

LLID: 1241709407568

Drainage: Eureka Plain

Survey Dates: 8/17/2006 to 8/17/2006

Dry Units: 0

Confluence Location: Quad: EUREKA

Legal Description: T04NR01WS03

Latitude: 40:45:24.0N

Longitude: 124:10:15.0W

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
2	1	GLD	100	0	0	0	0	0	0
2	1	SRN	100	0	0	0	0	0	0
1	1	MCP	100	0	0	0	0	0	0
1	1	PLP	100	0	0	0	0	0	0

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

Stream Name: 1241709407568

LLID: 1241709407568

Drainage: Eureka Plain

Survey Dates: 8/17/2006 to 8/17/2006

Confluence Location: Quad: EUREKA

Legal Description: T04NR01WS03

Latitude: 40:45:24.0N

Longitude: 124:10:15.0W

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Mean Percent Canopy	Mean Percent Conifer	Mean Percent Hardwood	Mean Percent Open Units	Mean Right Bank % Cover	Mean Left Bank % Cover
32	70	30	57	97	86

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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: 1241709407568

LLID: 1241709407568

Drainage: Eureka Plain

Survey Dates: 8/17/2006 to 8/17/2006

Survey Length (ft.): 1539

Main Channel (ft.): 1539

Side Channel (ft.): 0

Confluence Location: Quad: EUREKA

Legal Description: T04NR01WS03 Latitude: 40:45:24.0N

Longitude: 124:10:15.0W

**Summary of Fish Habitat Elements By Stream Reach****STREAM REACH: 1**

Channel Type: E6

Canopy Density (%): 32.4

Pools by Stream Length (%): 1.7

Reach Length (ft.): 1539

Coniferous Component (%): 70.0

Pool Frequency (%): 11.1

Riffle/Flatwater Mean Width (ft.): 5.0

Hardwood Component (%): 30.0

Residual Pool Depth (%):

BFW:

Dominant Bank Vegetation: Grass

&lt; 2 Feet Deep: 100

Range (ft.): 7 to 7

Vegetative Cover (%): 91.3

2 to 2.9 Feet Deep: 0

Mean (ft.): 7

Dominant Shelter: Undercut Banks

3 to 3.9 Feet Deep: 0

Std. Dev.: 0

Dominant Bank Substrate Type: Sand/Silt/Clay

&gt;= 4 Feet Deep: 0

Base Flow (cfs.): 0.0

Occurrence of LWD (%): 0

Mean Max Residual Pool Depth (ft.): 1.1

Water (F): 58 - 62 Air (F): 62 - 62

LWD per 100 ft.:

Mean Pool Shelter Rating: 10

Dry Channel (ft): 0

Riffles:

Pools: 0

Flat: 0

Pool Tail Substrate (%): Silt/Clay: 50 Sand: 0 Gravel: 50 Sm Cobble: 0 Lg Cobble: 0 Boulder: 0 Bedrock: 0

Embeddedness Values (%): 1. 0.0 2. 0.0 3. 0.0 4. 50.0 5. 50.0

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

Stream Name: 1241709407568

LLID: 1241709407568

Drainage: Eureka Plain

Survey Dates: 8/17/2006 to 8/17/2006

Confluence Location: Quad: EUREKA

Legal Description: T04NR01WS03

Latitude: 40:45:24.0N

Longitude: 124:10:15.0W

**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	6	6	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	3	4	58.3
Brush	0	0	0.0
Hardwood Trees	0	2	16.7
Coniferous Trees	3	0	25.0
No Vegetation	0	0	0.0

**Total Stream Cobble Embeddedness Values:** 5

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

StreamName: 1241709407568

LLID: 1241709407568

Drainage: Eureka Plain

Survey Dates: 8/17/2006 to 8/17/2006

Confluence Location: Quad: EUREKA

Legal Description: T04NR01WS03

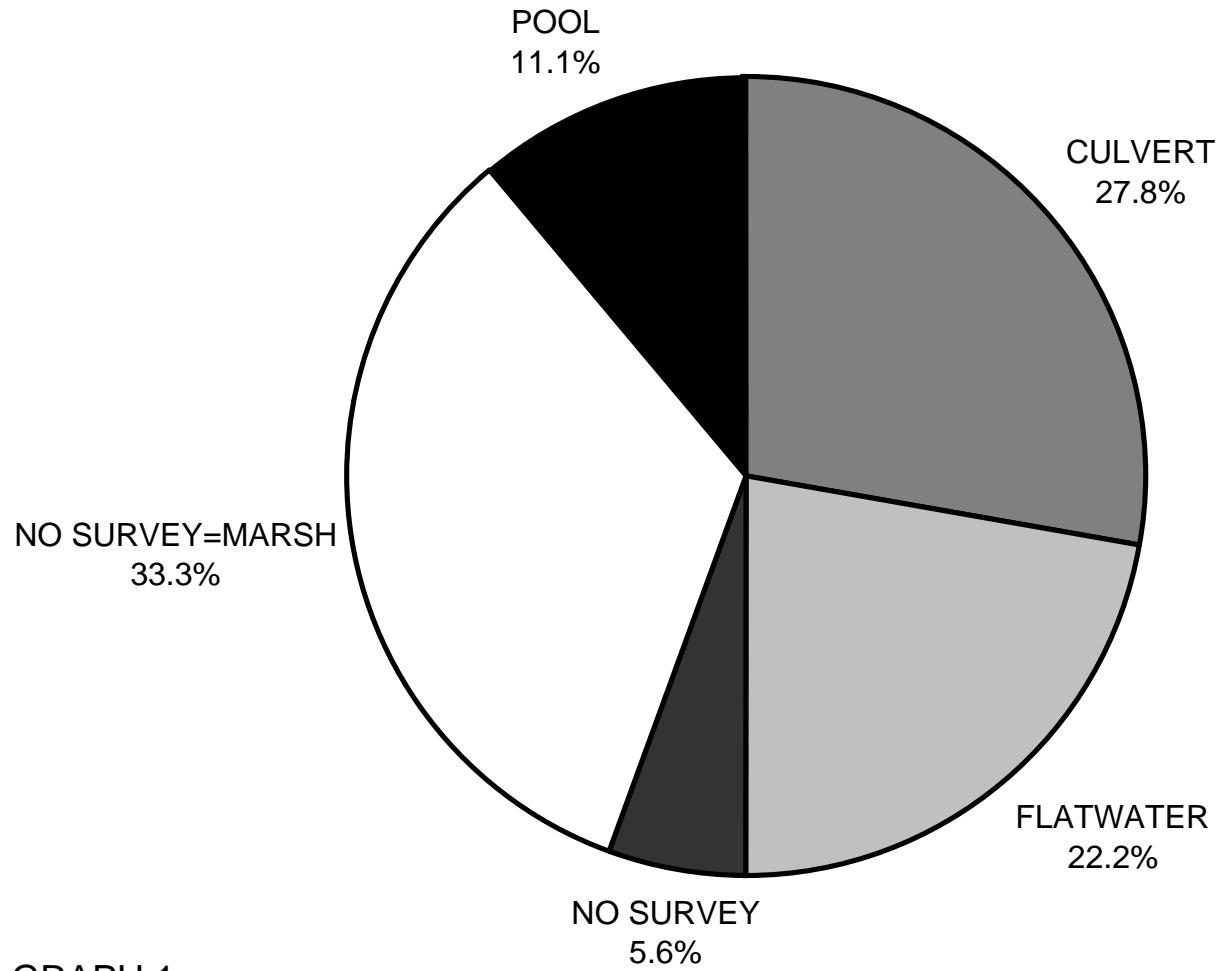
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Longitude: 124:10:15.0W

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	<b>Riffles</b>	<b>Flatwater</b>	<b>Pools</b>
UNDERCUT BANKS (%)		65	50
SMALL WOODY DEBRIS (%)		15	0
LARGE WOODY DEBRIS (%)		0	0
ROOT MASS (%)		0	0
TERRESTRIAL VEGETATION (%)		20	0
AQUATIC VEGETATION (%)		0	0
WHITEWATER (%)		0	50
BOULDERS (%)		0	0
BEDROCK LEDGES (%)		0	0

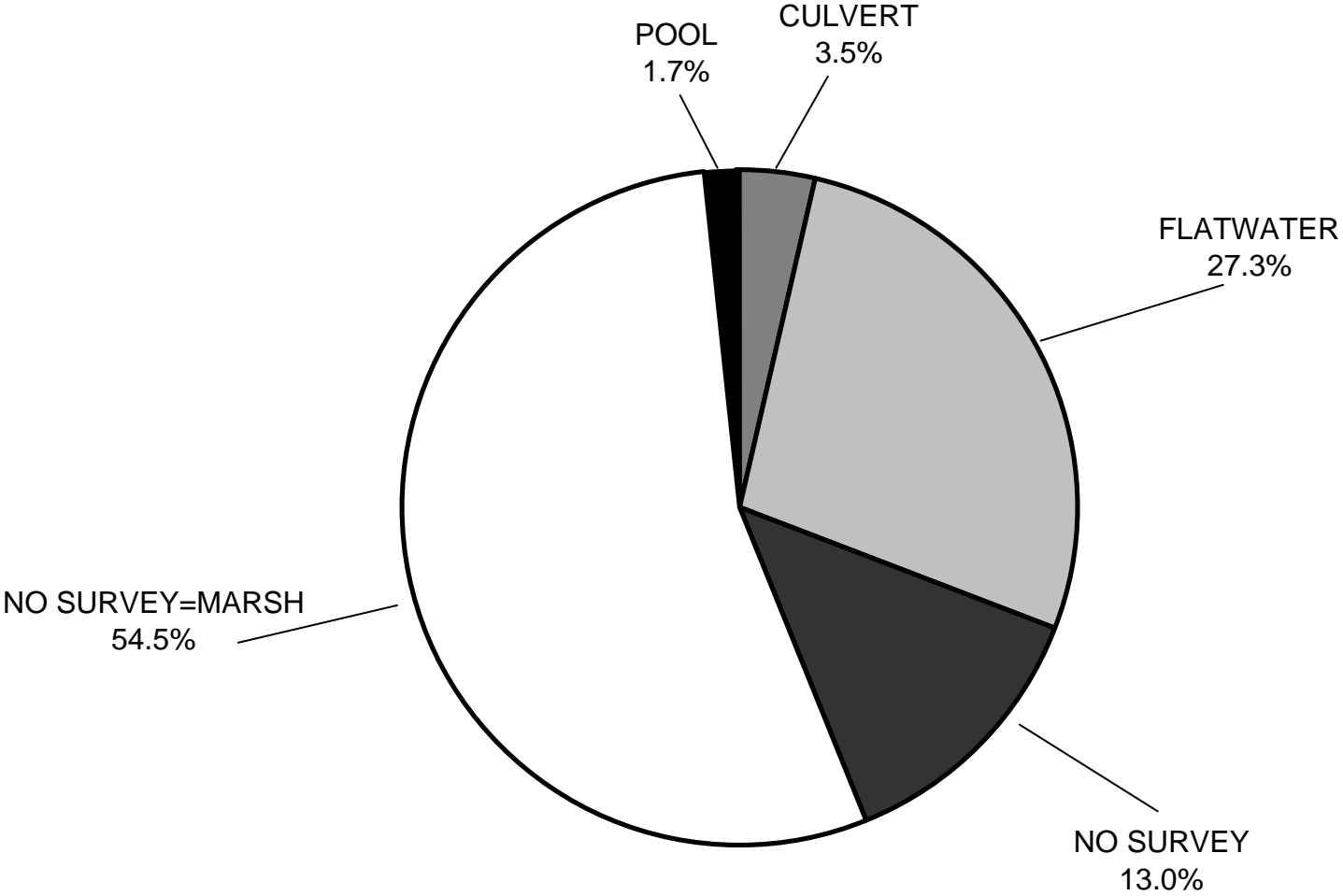
**1241709407568 2006**  
**HABITAT TYPES BY PERCENT OCCURRENCE**



GRAPH 1

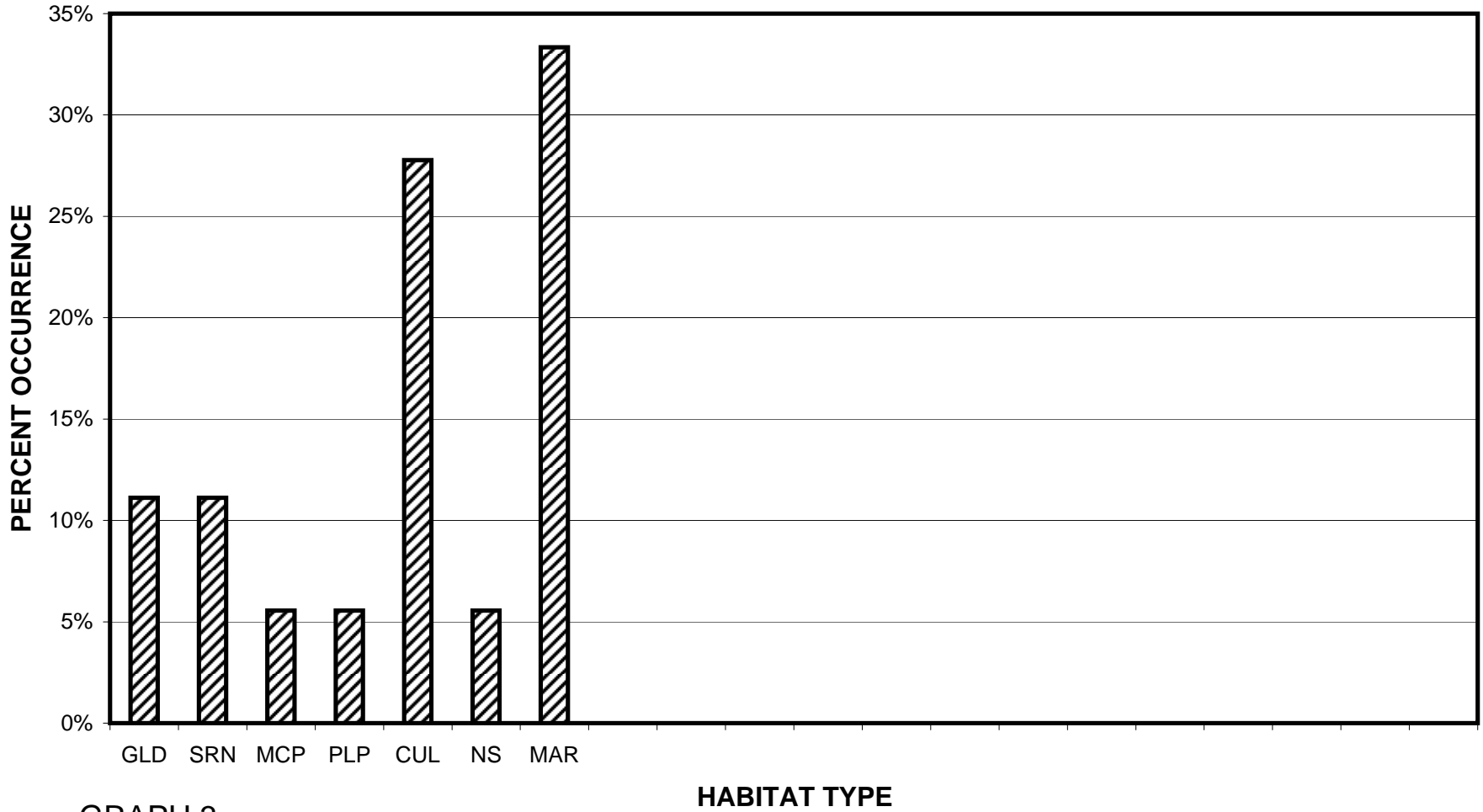


**1241709407568 2006**  
**HABITAT TYPES BY PERCENT TOTAL LENGTH**



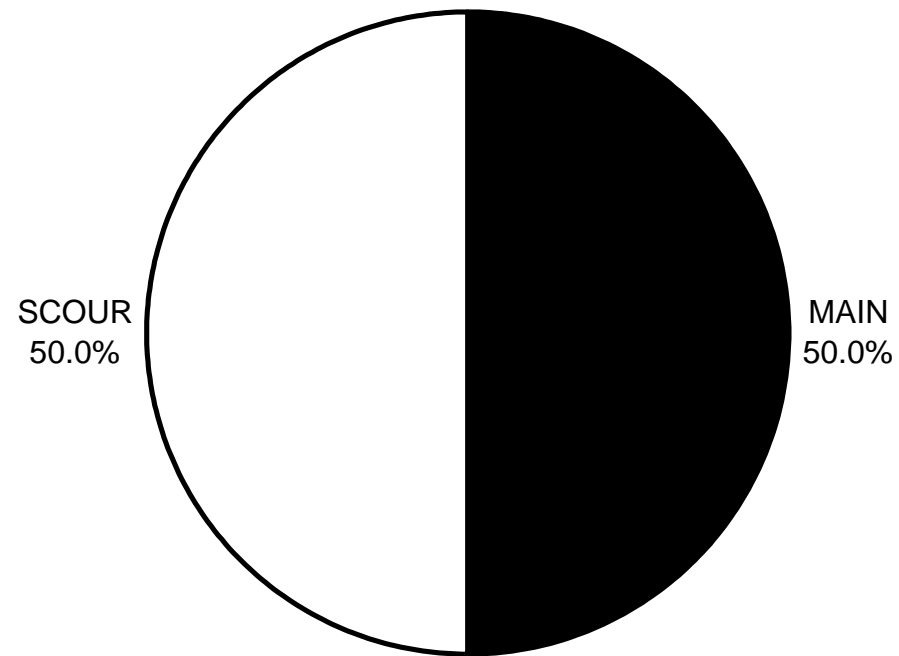
GRAPH 2

**1241709407568 2006**  
**HABITAT TYPES BY PERCENT OCCURRENCE**



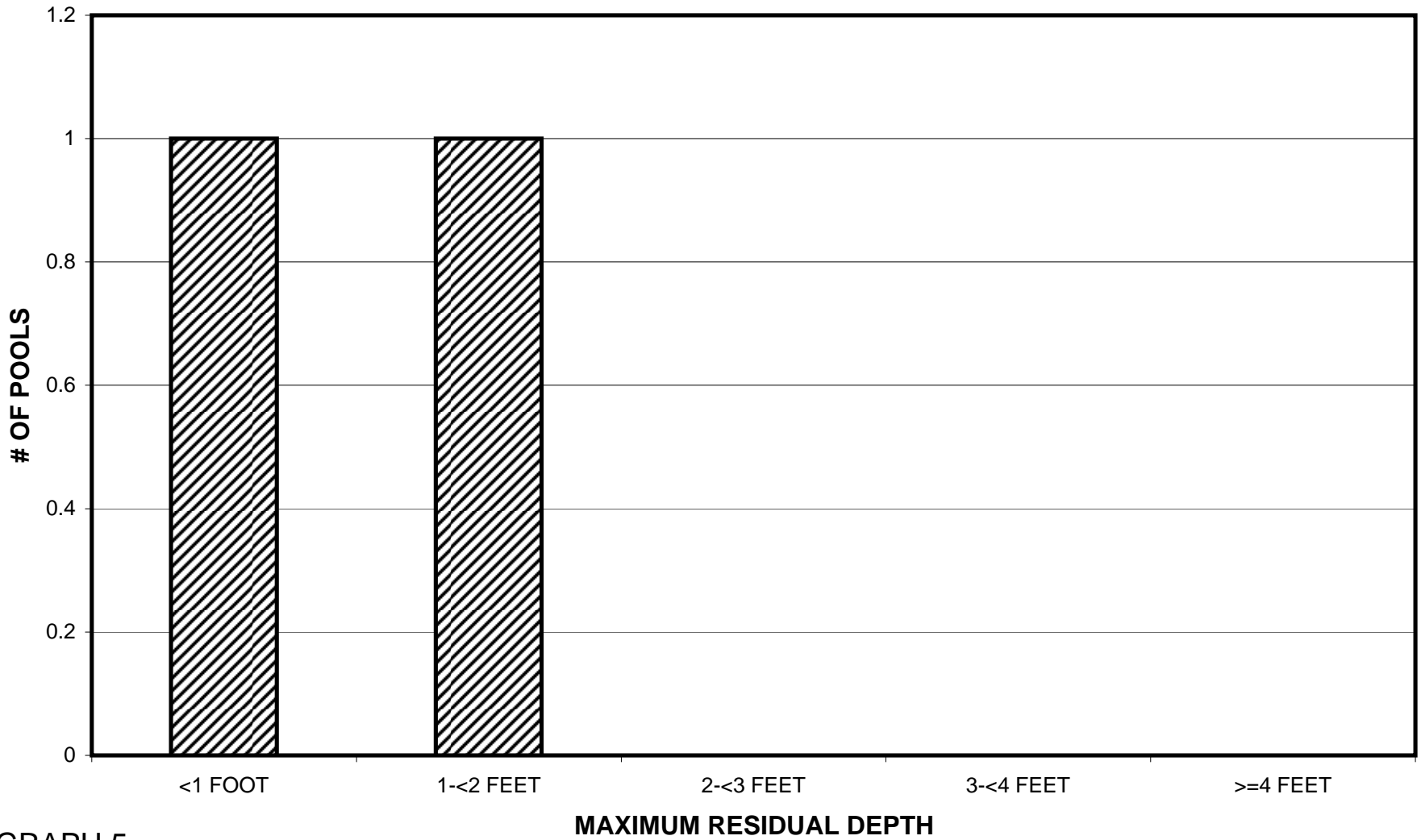
GRAPH 3

**1241709407568 2006**  
**POOL TYPES BY PERCENT OCCURRENCE**



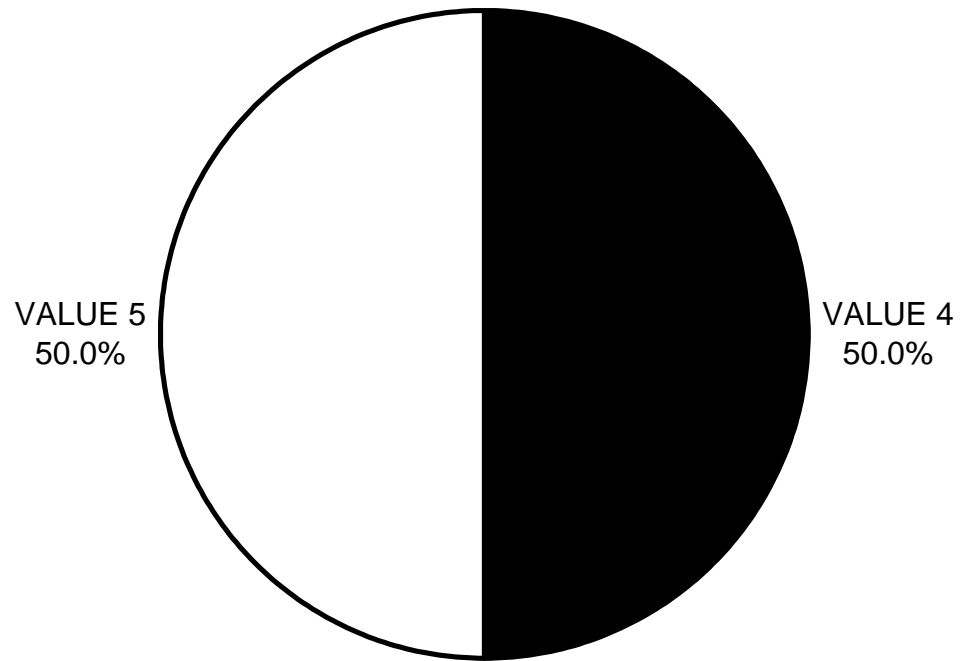
GRAPH 4

**1241709407568 2006**  
**MAXIMUM DEPTH IN POOLS**



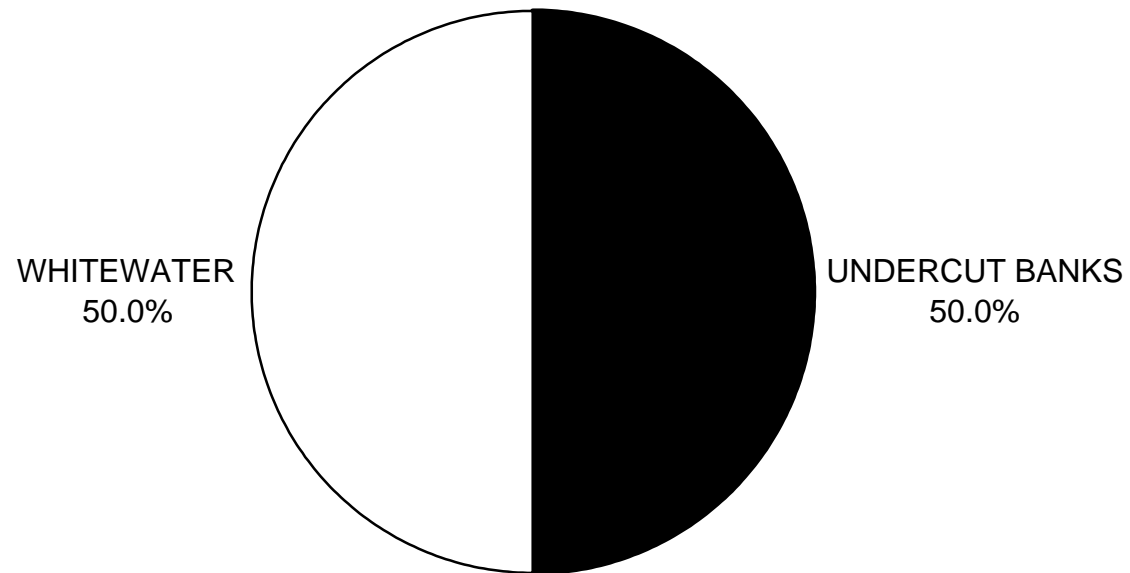
GRAPH 5

**1241709407568 2006**  
**PERCENT EMBEDDEDNESS**



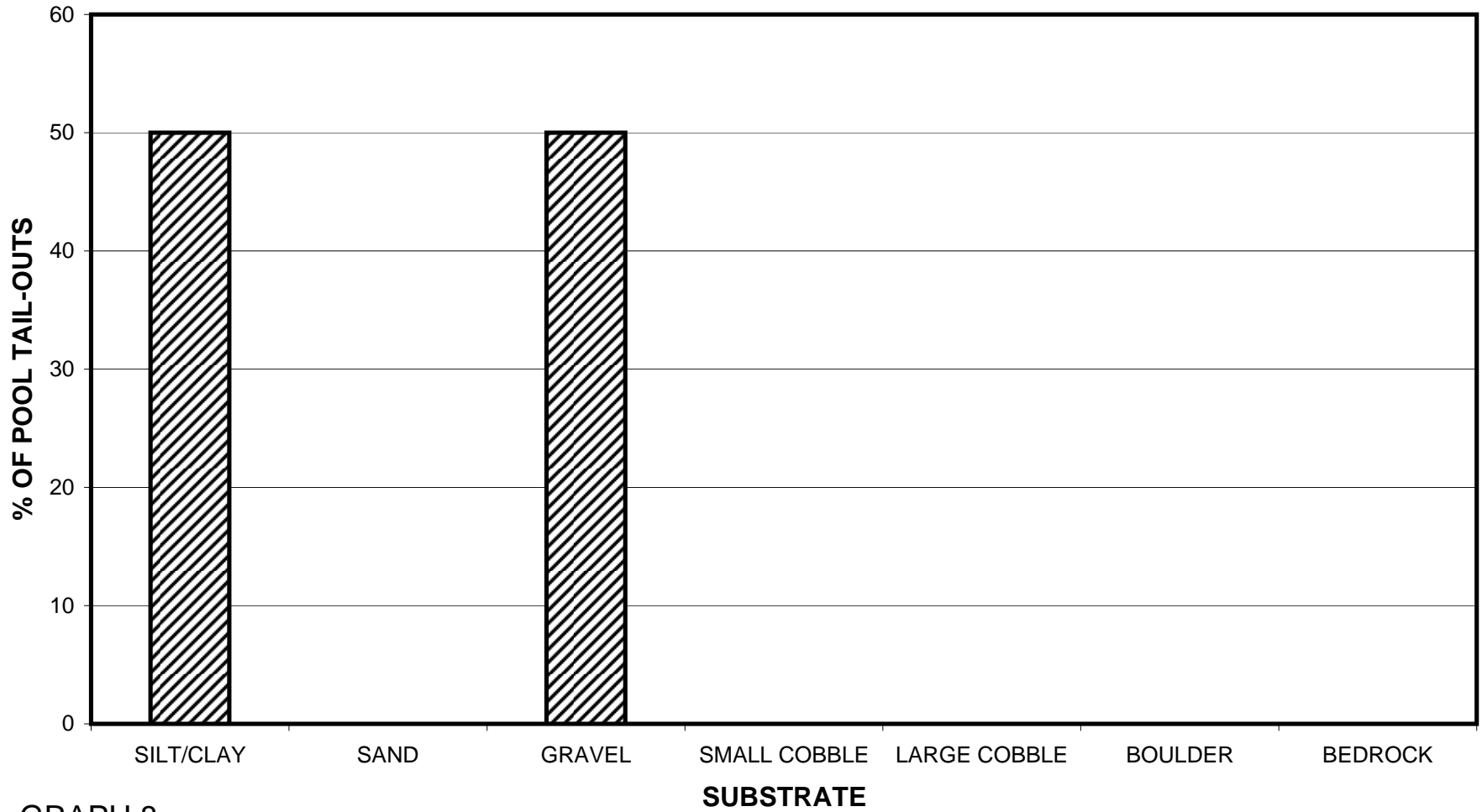
GRAPH 6

**1241709407568 2006**  
**MEAN PERCENT COVER TYPES IN POOLS**



GRAPH 7

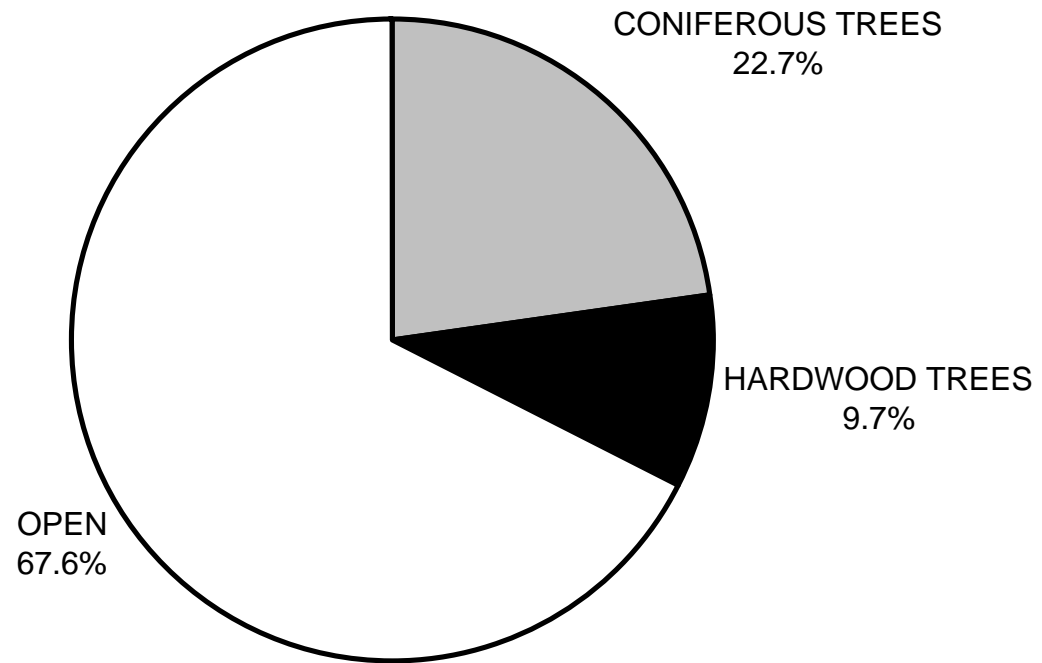
**1241709407568 2006**  
**SUBSTRATE COMPOSITION IN POOL TAIL-OUTS**



GRAPH 8

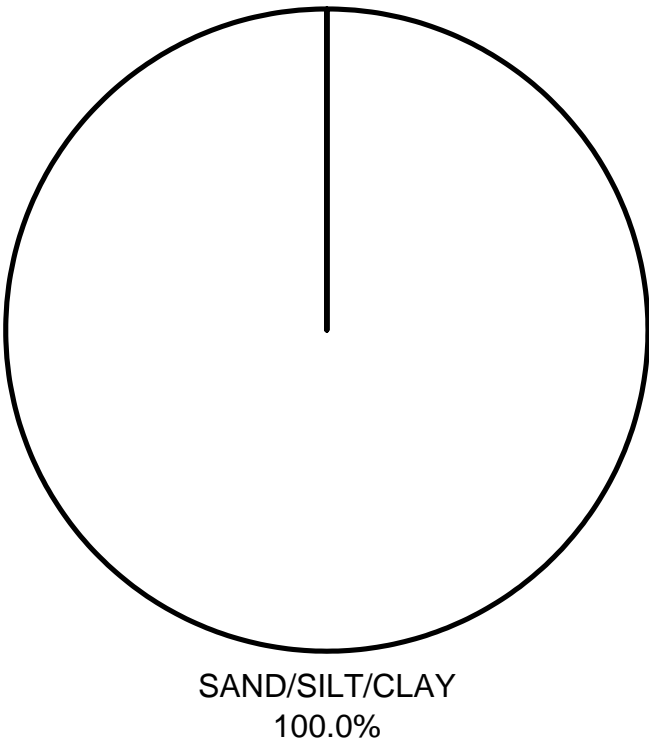


**1241709407568 2006  
MEAN PERCENT CANOPY**



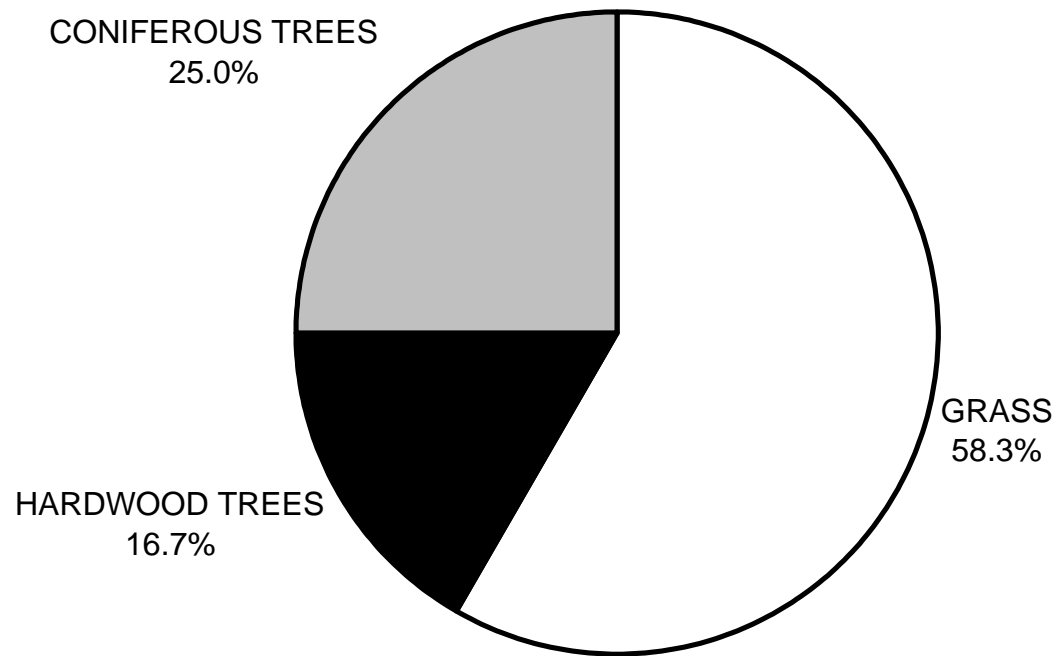
GRAPH 9

**1241709407568 2006**  
**DOMINANT BANK COMPOSITION IN SURVEY REACH**



GRAPH 10

**1241709407568 2006**  
**DOMINANT BANK VEGETATION IN SURVEY REACH**



GRAPH 11