STREAM INVENTORY REPORT

"Frykman Gulch"

INTRODUCTION

A stream inventory was conducted April 7, 2003 on an unnamed tributary to East Branch North Fork Big River commonly know as and hereinafter referred to as Frykman Gulch. The survey began at the confluence with East Branch North Fork Big River and extended upstream 2,874 feet.

The Frykman Gulch inventory was conducted in two parts: habitat inventory and biological inventory. The objective of the habitat inventory was to document the habitat available to anadromous salmonids in Frykman Gulch. The objective of the biological inventory was to document the presence and distribution of juvenile salmonid species.

The objective of this report is to document the current habitat conditions and recommend options for the potential enhancement of habitat for coho salmon and steelhead trout. Recommendations for habitat improvement activities are based upon target habitat values suitable for salmonids in California's north coast streams.

WATERSHED OVERVIEW

Frykman Gulch is a tributary to the East Branch North Fork Big River, tributary to North Fork Big River, tributary to Big River, which drains to the Pacific Ocean, located in Mendocino, California (Map 1). Frykman Gulch's legal description at the confluence with East Branch North Fork Big River is T17N R15W S23. Its location is 39°19′27″ north latitude and 123°30′37″ west longitude. Frykman Gulch is a first order stream and has approximately 598 feet of solid blue line stream and 5,201 feet of dashed blue line stream according to the USGS Comptche 7.5 minute quadrangle. Frykman Gulch drains a watershed of approximately 0.59 square miles. Elevations range from about 600 feet at the mouth of the creek to 1000 feet in the headwater areas. Mixed conifer forests dominate the watershed. The watershed is entirely privately owned by Mendocino Redwood Company (MRC) and is managed for timber production. Vehicle access exists via MRC logging roads from Highway 20, 17 miles east of Fort Bragg.

METHODS

The habitat inventory conducted in Frykman Gulch follows the methodology presented in the *California Salmonid Stream Habitat Restoration Manual* (Flosi et al., 1998). The field crew that conducted the inventory was trained in standardized habitat inventory methods by the California Department of Fish and Game (DFG). This inventory was conducted by a two-person team.

Frykman Gulch

SAMPLING STRATEGY

The inventory uses a method that samples approximately 10% of the habitat units within the survey reach. All habitat units included in the survey are classified according to habitat type and their lengths are measured. All pool units are measured for maximum depth, depth of pool tail crest (measured in the thalweg), dominant substrate composing the pool tail crest, and embeddedness. Habitat unit types encountered for the first time are measured for all the parameters and characteristics on the field form. Additionally, from the ten habitat units on each field form page, one is randomly selected for complete measurement.

HABITAT INVENTORY COMPONENTS

A standardized habitat inventory form has been developed for use in California stream surveys and can be found in the *California Salmonid Stream Habitat Restoration Manual*. This form was used in Frykman Gulch to record measurements and observations. There are nine components to the inventory form.

1. Flow:

Flow is measured in cubic feet per second (cfs) at the bottom of the stream survey reach using a Marsh-McBirney Model 2000 flow meter.

2. Channel Type:

Channel typing is conducted according to the classification system developed and revised by David Rosgen (1985 rev. 1994). This methodology is described in the *California Salmonid Stream Habitat Restoration Manual*. Channel typing is conducted simultaneously with habitat typing and follows a standard form to record measurements and observations. There are five measured parameters used to determine channel type: 1) water slope gradient, 2) entrenchment, 3) width/depth ratio, 4) substrate composition, and 5) sinuosity. Channel characteristics are measured using a clinometer, hand level, hip chain, tape measure, and a stadia rod.

3. Temperatures:

Both water and air temperatures are measured and recorded at every tenth habitat unit. The time of the measurement is also recorded. Both temperatures are taken in degrees Fahrenheit at the bottom of the habitat unit and within one foot of the water surface.

4. Habitat Type:

Habitat typing uses the 24 habitat classification types defined by McCain and others (1988). Habitat units are numbered sequentially and assigned a type identification number selected from a standard list of 24 habitat types. Dewatered units are labeled “dry". Frykman Gulch habitat typing used standard basin level measurement criteria. These parameters require that the minimum length of a described habitat unit must be equal to or greater than the stream's mean wetted width. All measurements are in feet to the nearest tenth. Habitat characteristics are

measured using a clinometer, hip chain, and stadia rod.

5. Embeddedness:

The depth of embeddedness of the cobbles in pool tail-out areas is measured by the percent of the cobble that is surrounded or buried by fine sediment. In Frykman Gulch, embeddedness was ocularly estimated. The values were recorded using the following ranges: 0 - 25% (value 1), 26 - 50% (value 2), 51 - 75% (value 3) and 76 - 100% (value 4). Additionally, a value of 5 was assigned to tail-outs deemed unsuited for spawning due to inappropriate substrate particle size, bedrock, or other considerations.

6. Shelter Rating:

Instream shelter is composed of those elements within a stream channel that provide salmonids protection from predation, reduce water velocities so fish can rest and conserve energy, and allow separation of territorial units to reduce density related competition. The shelter rating is calculated for each fully-described habitat unit by multiplying shelter value and percent cover. Using an overhead view, a quantitative estimate of the percentage of the habitat unit covered is made. All cover is then classified according to a list of nine cover types. In Frykman Gulch, a standard qualitative shelter value of 0 (none), 1 (low), 2 (medium), or 3 (high) was assigned according to the complexity of the cover. Thus, shelter ratings can range from 0-300 and are expressed as mean values by habitat types within a stream.

7. Substrate Composition:

Substrate composition ranges from silt/clay sized particles to boulders and bedrock elements. In all fully-described habitat units, dominant and sub-dominant substrate elements were ocularly estimated using a list of seven size classes and recorded as a one and two, respectively. In addition, the dominant substrate composing the pool tail-outs is recorded for each pool.

8. Canopy:
Stream canopy density was estimated using modified handheld spherical densiometers as described in the *California Salmonid Stream Habitat Restoration Manual*. Canopy density relates to the amount of stream shaded from the sun. In Frykman Gulch, an estimate of the percentage of the habitat unit covered by canopy was made from the top of approximately every third unit in addition to every fully-described unit, giving an approximate 30% sub-sample. In addition, the area of canopy was estimated ocularly into percentages of evergreen or deciduous trees.

9. Bank Composition and Vegetation:

Bank composition elements range from bedrock to bare soil. However, the stream banks are usually covered with grass, brush, or trees. These factors influence the ability of stream banks to withstand winter flows. In Frykman Gulch, the dominant composition type and the dominant vegetation type of both the right and left banks for each fully-described unit were selected from the habitat inventory form. Additionally, the percent of each bank covered by vegetation (including downed trees, logs, and rootwads) was estimated and recorded.

BIOLOGICAL INVENTORY

Biological sampling during the stream inventory is used to determine fish species and their distribution in the stream. Fish presence was observed from the stream banks in Frykman Gulch. In addition**,** one site was electrofished by Mendocino Redwood Company. These sampling techniques are discussed in the *California Salmonid Stream Habitat Restoration Manual*.

DATA ANALYSIS

Data from the habitat inventory form are entered into Habitat 8.4, a dBASE 4.2 data entry program developed by Tim Curtis, Inland Fisheries Division, California Department of Fish and Game. This program processes and summarizes the data, and produces the following six tables:

- Riffle, flatwater, and pool habitat types
- Habitat types and measured parameters
- Pool types
- Maximum pool depths by habitat types
- Dominant substrates by habitat types
- Mean percent shelter by habitat types

Graphics are produced from the tables using Microsoft Excel. Graphics developed for Frykman Gulch include:

- Riffle, flatwater, pool habitats by percent occurrence
- Riffle, flatwater, pool habitats by total length
- Total habitat types by percent occurrence
- Pool types by percent occurrence
- Total pools by maximum depths
- Embeddedness
- Pool cover by cover type
- Dominant substrate in pool tail outs
- Mean percent canopy
- Bank composition by composition type
- Bank vegetation by vegetation type

HABITAT INVENTORY RESULTS

* ALL TABLES AND GRAPHS ARE LOCATED AT THE END OF THE REPORT *

The habitat inventory of April 7, 2003, was conducted by S. Monday (DFG) and B. Budnick (CCC). The total length of the stream surveyed was 2,874 feet.

Stream flow was not measured on Frykman Gulch.

Frykman Gulch is a B4 channel type for the entire 2,874 feet of the stream surveyed. B4

channels are moderately entrenched, moderate gradient, riffle-dominated channels with infrequently spaced pools; very stable plan and profile with stable banks and gravel-dominant substrates.

Water temperatures taken during the survey period ranged from 46 to 49 degrees Fahrenheit. Air temperatures ranged from 48 to 60 degrees Fahrenheit.

Table 1 summarizes the Level II riffle, flatwater, and pool habitat types. Based on frequency of occurrence there were 42% riffle units, 37% pool units, 19% flatwater units, and 2% culvert units (Graph 1). Based on total length of Level II habitat types there were 56% riffle units, 30% flatwater units, 12% pool units, and 2% culvert units (Graph 2).

Twelve Level IV habitat types were identified (Table 2). The most frequent habitat types by percent occurrence were low-gradient riffle units, 34%; mid-channel pool units, 23%; and step run units, 16% (Graph 3). Based on percent total length, low-gradient riffle units made up 49%, step run units 25%, and mid-channel pool units 7%.

A total of 23 pools were identified (Table 3). Main-channel pools were the most frequently encountered, at 65%, and comprised 70% of the total length of all pools (Graph 4).

Table 4 is a summary of maximum pool depths by pool habitat types. Pool quality for salmonids increases with depth. Five of the 22 measured pools (23%) had a depth of two feet or greater (Graph 5).

The depth of cobble embeddedness was estimated at pool tail-outs. Of the 22 pool tail-outs measured, 3 had a value of 1 (14%); 8 had a value of 2 (36%); 4 had a value of 3 (18%); 1 had a value of 4 (5%); and 6 had a value of 5 (27%) (Graph 6). On this scale, a value of 1 indicates the highest quality of spawning substrate. Additionally, a value of 5 was assigned to tail-outs deemed unsuited for spawning due to inappropriate substrate such as bedrock, log sills, boulders, or other considerations.

A shelter rating was calculated for each habitat unit and expressed as a mean value for each habitat type within the survey using a scale of 0-300. Pool habitats had a mean shelter rating of 20, riffle habitat types had a mean shelter rating of 14, and flatwater habitat types had a mean shelter rating of 3 (Table 1). Of the pool types, the main-channel pools had the highest mean shelter rating at 21. Scour pools had a mean shelter rating of 19 (Table 3).

Table 5 summarizes mean percent cover by habitat type. Undercut banks are the dominant cover types in Frykman Gulch. Graph 7 describes the pool cover in Frykman Gulch. Undercut banks are the dominant pool cover types followed by whitewater.

Table 6 summarizes the dominant substrate by habitat type. Graph 8 depicts the dominant substrate observed in pool tail-outs. Gravel was the dominant substrate observed in 86% of the pool tail-outs. Small cobble was the next most frequently observed dominant substrate type and occurred in 5% of the pool tail-outs.

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The mean percent canopy density for the surveyed length of Frykman Gulch was 90%. Of the canopy present, the mean percentages of evergreen and deciduous trees were 90% and 1%, respectively. Graph 9 describes the mean percent canopy in Frykman Gulch.

For the stream reach surveyed, the mean percent right bank vegetated was 54%. The mean percent left bank vegetated was 51%. The dominant elements composing the structure of the stream banks consisted of 96% sand/silt/clay and 4% bedrock (Graph 10). Evergreen trees were the dominant vegetation type observed in 100% of the units surveyed (Graph 11).

BIOLOGICAL INVENTORY RESULTS

Backpack electrofisher surveys were conducted at one location within Frykman Gulch by Mendocino Redwood Company, aquatic biologists, in the summer of 2002. All aquatic species were identified and lengths were taken of salmonids. Steelhead rainbow trout were the only salmonid species observed. No other aquatic species were identified.

Site 75-12 produced one steelhead trout between 70-130 mm in length.

2002 Frykman Gulch electrofishing observations.

Date	Site	Species	<70 mm	70-130 mm	>130 mm	Other species
9/4/2002	75-12	SH	0	1	0	none

DISCUSSION

Frykman Gulch is a B4 channel type for the entire 2,874 feet of stream surveyed. The suitability of B4 channel types for fish habitat improvement structures is as follows: B4 channels are excellent for plunge weirs, boulder clusters, bank placed boulders, single and opposing wing deflectors and log cover.

The water temperatures recorded on April 7, 2003, were within a suitable range for salmonids. To make any further conclusions, temperatures would need to be monitored throughout the warm summer months, and more extensive biological sampling would need to be conducted.

Riffle habitat types comprised 56% of the total length of this survey, flatwater 30%, pools 12%, and culverts 2%. The pools are relatively shallow, with only 5 of the 22 (23%) measured pools having a maximum depth greater than 2 feet. In general, pool enhancement projects are considered when primary pools comprise less than 40% of the length of total stream habitat. In first and second order streams, a primary pool is defined to have a maximum depth of at least two feet, occupy at least half the width of the low flow channel, and be as long as the low flow channel width. Installing structures that will increase or deepen pool habitat is recommended for locations where their installation will not be threatened by high stream energy.

Eleven of the 22 pool tail-outs measured had embeddedness ratings of 1 or 2. Five of the pool tail-outs had embeddedness ratings of 3 or 4. Six of the pool tail-outs had a rating of 5, which is

considered unsuitable for spawning. Cobble embeddedness measured to be 25% or less, a rating of 1, is considered to indicate good quality spawning substrate for salmon and steelhead.

Twenty of the 22 pool tail-outs measured had gravel or small cobble as the dominant substrate. This is generally considered good for spawning salmonids.

The shelter rating in the flatwater habitats was 3. The mean shelter rating for pools was 20. A pool shelter rating of approximately 100 is desirable. The amount of cover that now exists is being provided primarily by undercut banks in all habitat types. Additionally, small woody debris contributes a small amount. Log and root wad cover structures in the pool and flatwater habitats would enhance both summer and winter salmonid habitat. Log cover structure provides rearing fry with protection from predation, rest from water velocity, and also divides territorial units to reduce density related competition.

The mean percent canopy density for the stream was 90%. In general, revegetation projects are considered when canopy density is less than 80%.

The percentage of right and left bank covered with vegetation was moderate at 54% and 51%, respectively. In areas of stream bank erosion or where bank vegetation is not at acceptable levels, planting endemic trees species, in conjunction with bank stabilization, is recommended.

RECOMMENDATIONS

1) Frykman Gulch should be managed as an anadromous, natural production stream.

2) The limited water temperature data available suggest that 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) Where feasible, design and engineer pool enhancement structures to increase the number of pools. This must be done where the banks are stable or in conjunction with stream bank armor to prevent erosion.

4) Increase woody cover in the pools and flatwater habitat units. Most of the existing cover is from undercut banks. Adding high quality complexity with log and root wad cover is desirable.

5) Inventory and map sources of stream bank erosion and prioritize them according to present and potential sediment yield. Identified sites should then be treated to reduce the amount of fine sediments entering the stream.

6) Active and potential sediment sources need to be identified, mapped, and treated according to their potential for sediment yield to the stream and its tributaries.

7) There are several log debris accumulations present on Frykman Gulch that are retaining large quantities of fine sediment. The modification of these debris accumulations is desirable, but must be done carefully, over time, to avoid excessive sediment loading in downstream reaches.

8) Due to the perched culvert near the mouth of Frykman Gulch, access for migrating salmonids is an ongoing potential problem. Good water temperature and flow regimes exist in the stream and it offers good conditions for rearing fish. Fish passage should be monitored and improved where possible.

COMMENTS AND LANDMARKS

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

0'	Begin survey at confluence with East Branch North Fork Big River. Channel type is not taken between confluence and first culvert.
22'	Pool is within EBNF Big River influence.
34'	First fully measured unit out of influence.
89'	Thirty-six inch circular culvert at top of pool perched 36 inches from the surface of water. Water is flowing.
109'	Culvert top surface is slumping about midway through culvert under road fill material.
159'	Active bank erosion at 30 feet.
224'	One salamander.
267'	One piece of Large woody debris (LWD).
427'	One sculpin seen in this section about 3 inches.
622'	Road is on right bank in this unit. Five foot plunge from upper unit created by LWD and root mass retaining sediment. Potential anadromy barrier.
654'	Channel type taken in this unit. It is a B4 channel.
805'	Right bank slide from road down to stream, approximately 25 feet wide and 50 feet high at start of unit.
920'	Two logs running parallel, within stream.

Frykman Gulch

935' Left bank dry tributary at 98 feet.

1033' Three foot plunge over bedrock at top of unit.

1144' Five foot vertical drop down cascade.

1190' Four pieces of LWD within channel retaining sediment.

1206' Two foot plunge from upper unit.

1223' Two foot plunge from upper unit.

1348' Two pieces of LWD combined with small wood, retaining sediment above unit.

1497' Steele Cable at 62 in channel.

1564' Large slide on right bank bringing sediment into stream. Slide is not active.

1640' Three foot plunge from upper unit. Area above pool is marshy and open.

1658' This unit runs along the right side of the marsh in a uniform channel.

2008' There is a decommissioned road on the left bank and a historic logging road on the right bank.

2074' Open marsh area ends at 37 feet.

2228' Dry tributary enters at top of unit on left bank. This is the tributary seen on the USGS Mendocino 24k quadrangle map. We followed the main channel.

2246' Decommissioned bridge crossing at beginning of unit. Three large logs are parallel within channel, covering the channel bed. Water is flowing over the logs. Both banks are lacking vegetation.

2379' Two foot plunge from upper unit.

2615' Five pieces of LWD an root mass retaining fine sediment above unit.

2651' Dry left bank tributary at 81 feet.

2732' Left bank tributary flowing over active slide/slump. No trees established only small ferns and grasses. Slide is 10 feet long by 50 feet high, possibly from decommissioned road above.

2790' Two large root masses and five pieces of LWD within stream.

2854' Two pieces of LWD retaining sediment. Stream gradient is becoming steep.

2860' End of survey due to high gradient and congested stream. There are multiple pieces of LWD within stream retaining sediment 10 feet high in this last unit.

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.

Frykman Gulch

LEVEL III and LEVEL IV HABITAT TYPES

RIFFLE			
Low Gradient Riffle	(LGR)	[1.1]	{ 1}
High Gradient Riffle	(HGR)	[1.2]	{ 2}
CASCADE			
Cascade	(CAS)	[2.1]	{ 3}
Bedrock Sheet	(BRS)	[2.2]	{24}
FLATWATER			
Pocket Water	(POW)	[3.1]	{21}
Glide	(GLD)	[3.2]	{14}
Run	(RUN)	[3.3]	{15}
Step Run	(SRN)	[3.4]	{16}
Edgewater	(EDW)	[3.5]	{18}
MAIN CHANNEL POOLS			
Trench Pool	(TRP)	[4.1]	{ 8}
Mid-Channel Pool	(MCP)	[4.2]	{17}
Channel Confluence Pool	(CCP)	[4.3]	{19}
Step Pool	(STP)	[4.4]	{23}
SCOUR POOLS			
Corner Pool	(CRP)	[5.1]	{22}
Lateral Scour Pool - Log Enhanced	(LSL)	[5.2]	{10}
Lateral Scour Pool - Root Wad Enhanced	(LSR)	[5.3]	{11}
Lateral Scour Pool - Bedrock Formed	(LSBk)	[5.4]	{12}
Lateral Scour Pool - Boulder Formed	(LSBo)	[5.5]	{20}
Plunge Pool	(PLP)	[5.6]	{ 9}
BACKWATER POOLS			
Secondary Channel Pool	(SCP)	[6.1]	{ 4}
Backwater Pool - Boulder Formed	(BPB)	[6.2]	{ 5}
Backwater Pool - Root Wad Formed	(BPR)	[6.3]	{ 6}
Backwater Pool - Log Formed	(BPL)	[6.4]	{ 7}
Dammed Pool	(DPL)	[6.5]	{13}
ADDITIONAL UNIT DESIGNATIONS			
Dry	(DRY)	[7.0]	
Culvert	(CUL)	[8.0]	
Not Surveyed	(NS)	[9.0]	
Not Surveyed due to a marsh	(MAR)	[9.1]	

Frykman Gulch

TABLES AND GRAPHS

TABLE 8. FISH HABITAT INVENTORY DATA SUMMARY

STREAM NAME: Frykman Gulch
SAMPLE DATES:
STREAM LENGTH: 2874 ft.
LOCATION OF STREAM MOUTH:
USGS Quad Map: Comptche — Latitude: 39°19'27"
Legal Description: T17NR15WS23 — Longitude: 123°30'37"

SUMMARY OF FISH HABITAT ELEMENTS BY STREAM REACH

STREAM REACH 1

Channel Type: B4	Canopy Density: 90%
Channel Length: 2874 ft.	Coniferous Component: 99%
Riffle/flatwater Mean Width: 6 ft.	Deciduous Component: 1%
Total Pool Mean Depth: 1.1 ft.	Pools by Stream Length: 12%
Base Flow: 0.0 cfs	Pools >=3 ft.deep: 9%
Water: 046- 049°F Air: 048-060°F	Mean Pool Shelter Rtn: 20
Dom. Bank Veg.: Coniferous Trees	Dom. Shelter: Undercut Banks
Vegetative Cover: 53%	Occurrence of LOD: 17%
Dom. Bank Substrate: Silt/Clay/Sand	Dry Channel: 0 ft.

Embeddness Value: 1. 14% 2.36% 3. 18% 4. 5% 5. 27%

Frykman Gulch — Drainage: East Branch North Fork Big River

Table 1 - SUMMARY OF RIFFLE, FLATWATER, AND POOL HABITAT TYPES — Survey Dates: 04/07/03

Confluence Location: QUAD: Comptche LEGAL DESCRIPTION: T17NR15WS23 LATITUDE:39°19'27" LONGITUDE:123°30'37"

HABITAT UNITS	UNITS FULLY MEASURED	HABITAT TYPE	HABITAT PERCENT OCCURRENCE	MEAN LENGTH (ft.)	TOTAL LENGTH (ft.)	PERCENT TOTAL LENGTH	MEAN WIDTH (ft.)	MEAN 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
26	4	RIFFLE	42	62	1618	56	6.1	0.4	149	3862	66	1706	0	14
12	3	FLATWATER	19	72	869	30	5.0	0.3	219	2630	75	900	0	3
23	22	POOL	37	15	337	12	7.0	1.1	107	2471	132	3033	91	20
1	1	CULVERT	2	50	50	2	1.6	0.2	80	80	16	16	0	0

TOTAL UNITS	TOTAL UNITS	TOTAL LENGTH (ft.)	TOTAL AREA (sq. ft.)	TOTAL VOL. (cu. ft.)
62	30	2874	9042	5655

Frykman Gulch

Frykman Gulch — Drainage: East Branch North Fork Big River

Table 2 - SUMMARY OF HABITAT TYPES AND MEASURED PARAMETERS — Survey Dates: 04/07/03

Confluence Location: QUAD: Comptche LEGAL DESCRIPTION: T17NR15WS23 LATITUDE:39°19'27" LONGITUDE:123°30'37"

HABITAT UNITS #	UNITS FULLY MEASURED	HABITAT TYPE	HABITAT OCCURRENCE %	MEAN LENGTH ft.	TOTAL LENGTH ft.	TOTAL LENGTH %	MEAN WIDTH ft.	MEAN DEPTH ft.	MAXIMUM DEPTH ft.	MEAN AREA sq.ft.	TOTAL AREA EST. sq.ft.	MEAN VOLUME cu.ft.	TOTAL VOLUME EST. cu.ft.	MEAN RESIDUAL POOL VOL cu.ft.	MEAN SHELTER RATING	MEAN CANOPY %
21	2	LGR	34	68	1425	50	7	0.4	0.7	137	2874	55	1150	0	20	94
3	1	HGR	5	60	179	6	6	0.5	1.8	302	907	151	454	0	15	93
2	1	BRS	3	7	14	0	5	0.1	0.4	18	36	2	4	0	0	92
2	1	RUN	3	71	142	5	4	0.4	0.8	220	439	88	176	0	0	78
10	2	SRN	16	73	727	25	6	0.3	0.7	219	2190	69	686	0	5	86
14	13	MCP	23	15	208	7	7	1.1	3.1	97	1360	115	1611	77	20	89
1	1	STP	2	29	29	1	11	1.4	2.2	319	319	447	447	351	40	0
1	1	CRP	2	8	8	0	6	1.0	1.8	48	48	48	48	24	20	78
1	1	LSL	2	9	9	0	5	0.6	1.4	39	39	23	23	8	30	88
1	1	LSBk	2	12	12	0	5	0.6	1.3	51	51	31	31	15	20	95
5	5	PLP	8	14	71	2	9	1.3	2.8	129	644	171	857	123	17	97
1	1	CUL	2	50	50	2	2	0.2	0.2	80	80	16	16	0	0	0

TOTAL UNITS	TOTAL UNITS	LENGTH (ft.)	AREA (sq.ft)	TOTAL VOL. (cu.ft)
62	30	2874	8986	5500

Frykman Gulch — Drainage: East Branch North Fork Big River

Table 3 - SUMMARY OF POOL TYPES — Survey Dates: 04/07/03

Confluence Location: QUAD: Comptche LEGAL DESCRIPTION: T17NR15WS23 LATITUDE:39°19'27" LONGITUDE:123°30'37"

HABITAT UNITS	UNITS FULLY MEASURED	HABITAT TYPE	HABITAT PERCENT OCCURRENCE	MEAN LENGTH (ft.)	TOTAL LENGTH (ft.)	PERCENT TOTAL LENGTH	MEAN WIDTH (ft.)	MEAN DEPTH (ft.)	MEAN AREA (sq.ft.)	TOTAL AREA EST. (sq.ft.)	MEAN VOLUME (cu.ft.)	TOTAL VOLUME EST. (cu.ft.)	MEAN RESIDUAL POOL VOL. (cu.ft.)	MEAN SHELTER RATING
15	14	MAIN	65	16	237	70	6.8	1.1	113	1695	139	2081	96	21
8	8	SCOUR	35	13	100	30	7.3	1.1	98	782	120	959	82	19

TOTAL UNITS	TOTAL UNITS	TOTAL LENGTH (ft.)	TOTAL AREA (sq.ft.)	TOTAL VOL. (cu.ft.)
23	22	337	2476	3040

Frykman Gulch

Frykman Gulch — Drainage: East Branch North Fork Big River

Table 4 - SUMMARY OF MAXIMUM POOL DEPTHS BY POOL HABITAT TYPES — Survey Dates: 04/07/03

Confluence Location: QUAD: Comptche LEGAL DESCRIPTION: T17NR15WS23 LATITUDE:39°19'27" LONGITUDE:123°30'37"

UNITS MEASURED	HABITAT TYPE	HABITAT PERCENT OCCURRENCE	<1 FOOT MAXIMUM DEPTH	<1 FOOT PERCENT OCCURRENCE	1-<2 FT. MAXIMUM DEPTH	1-<2 FOOT PERCENT OCCURRENCE	2-<3 FT. MAXIMUM DEPTH	2-<3 FOOT PERCENT OCCURRENCE	3-<4 FT. MAXIMUM DEPTH	3-<4 FOOT PERCENT OCCURRENCE	>=4 FEET MAXIMUM DEPTH	>=4 FEET PERCENT OCCURRENCE
14	MCP	61	1	7	10	71	1	7	2	14	0	0
1	STP	4	0	0	0	0	1	100	0	0	0	0
1	CRP	4	0	0	1	100	0	0	0	0	0	0
1	LSL	4	0	0	1	100	0	0	0	0	0	0
1	LSBk	4	0	0	1	100	0	0	0	0	0	0
5	PLP	22	0	0	3	60	2	40	0	0	0	0

TOTAL UNITS
23

Frykman Gulch — Drainage: East Branch North Fork Big River

Table 5 - SUMMARY OF MEAN PERCENT COVER BY HABITAT TYPE — Survey Dates: 04/07/03

Confluence Location: QUAD: Comptche LEGAL DESCRIPTION: T17NR15WS23 LATITUDE:39°19'27" LONGITUDE:123°30'37"

UNITS MEASURED	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
21	2	LGR	5	65	10	0	10	5	0	5	0
3	1	HGR	0	0	0	0	0	0	20	80	0
2	0	BRS	0	0	0	0	0	0	0	0	0
2	0	RUN	0	0	0	0	0	0	0	0	0
10	1	SPN	10	30	0	0	60	0	0	0	0
14	13	MCP	32	14	15	0	3	0	23	0	12
1	1	STP	0	10	20	0	0	0	20	0	50
1	1	CRP	80	10	0	0	0	0	5	0	5
1	1	LSL	30	20	20	20	10	0	0	0	0
1	1	LSBk	90	10	0	0	0	0	0	0	0
5	5	PLP	19	12	37	0	0	0	26	0	6
1	0	CUL	0	0	0	0	0	0	0	0	0

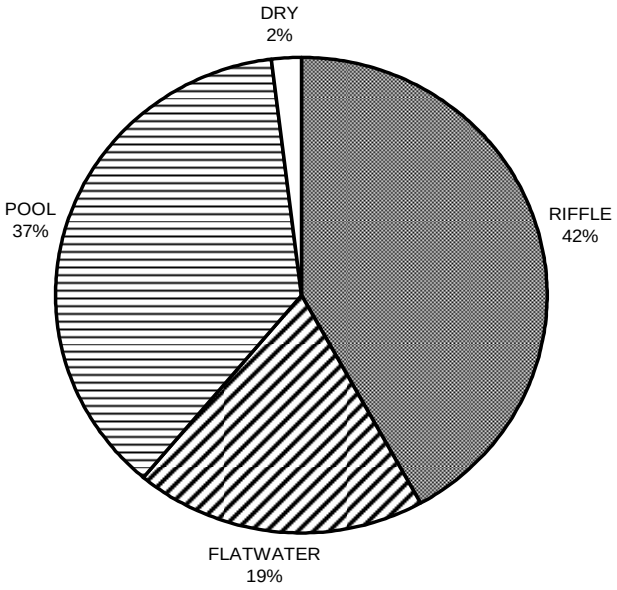
Frykman Gulch — Drainage: East Branch North Fork Big River

Table 6 - SUMMARY OF DOMINANT SUBSTRATES BY HABITAT TYPE — Survey Dates: 04/07/03

Confluence Location: QUAD: Comptche LEGAL DESCRIPTION: T17NR15WS23 LATITUDE:39°19'27" LONGITUDE:123°30'37"

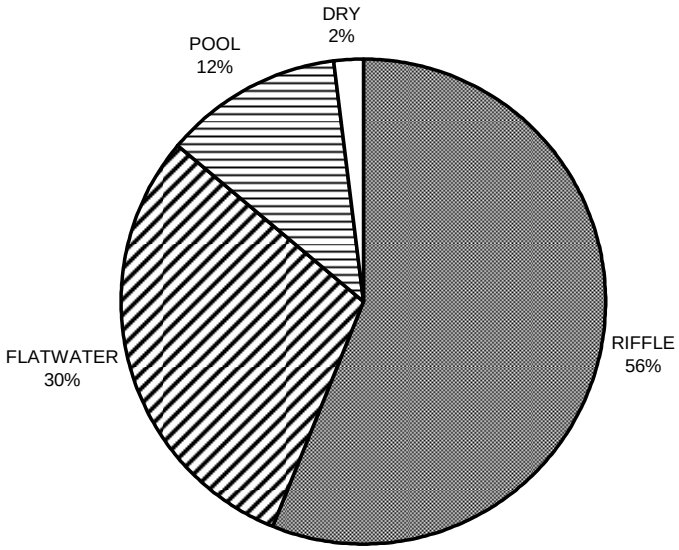
TOTAL HABITAT UNITS	UNITS FULLY MEASURED	HABITAT TYPE	% TOTAL SILT/CLAY DOMINANT	% TOTAL SAND DOMINANT	% TOTAL GRAVEL DOMINANT	% TOTAL SM COBBLE DOMINANT	% TOTAL LG COBBLE DOMINANT	% TOTAL BOULDER DOMINANT	% TOTAL BEDROCK DOMINANT
21	2	LGR	0	0	100	0	0	0	0
3	1	HGR	0	0	0	0	0	100	0
2	1	BRS	0	0	0	0	0	0	100
2	1	RUN	0	0	100	0	0	0	0
10	2	SRN	0	0	100	0	0	0	0
14	2	MCP	0	0	100	0	0	0	0
1	0	STP	0	0	0	0	0	0	0
1	1	CRF	0	0	100	0	0	0	0
1	1	LSL	0	0	100	0	0	0	0
1	1	LSBk	0	0	100	0	0	0	0
5	1	PLP	0	0	100	0	0	0	0
1	0	CUL	0	0	0	0	0	0	0

FRYKMAN GULCH
HABITAT TYPES BY PERCENT OCCURENCE



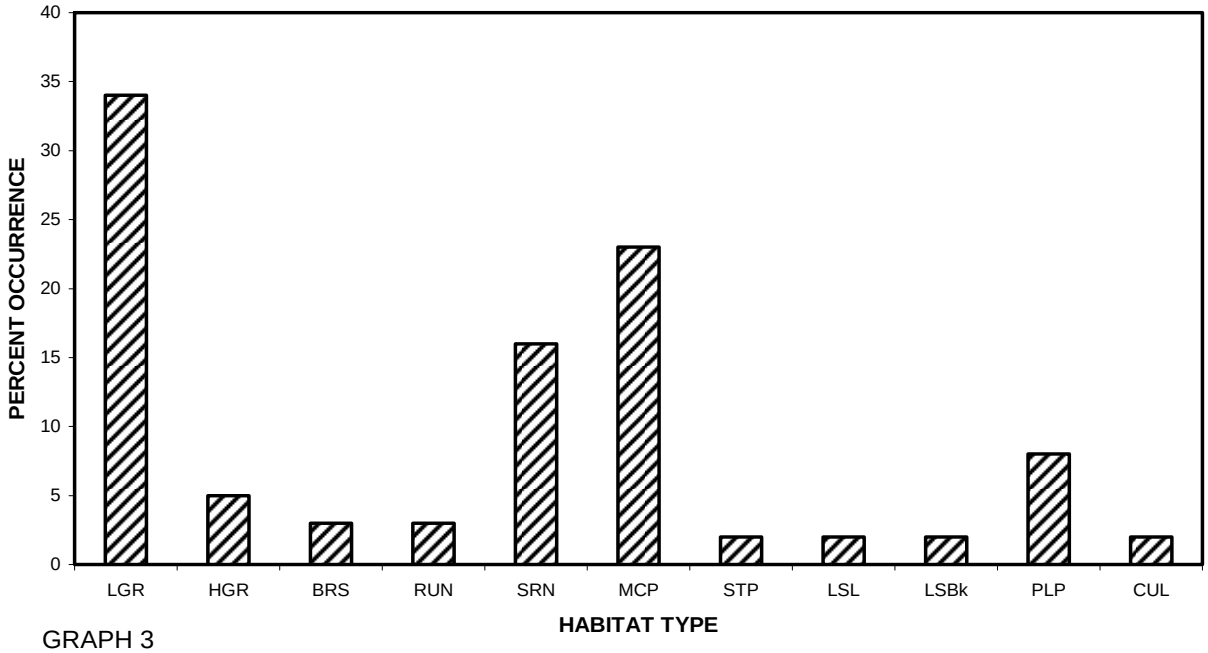
GRAPH 1

FRYKMAN GULCH
HABITAT TYPES BY PERCENT TOTAL LENGTH



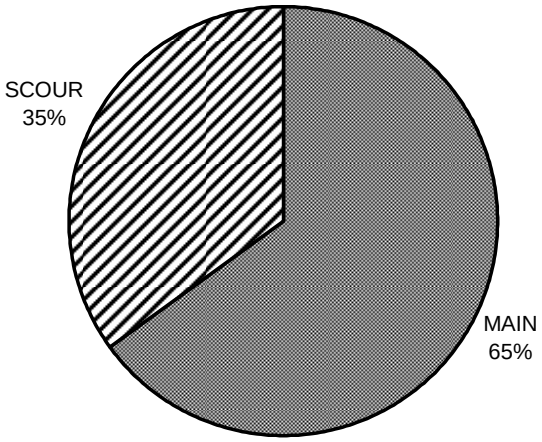
GRAPH 2

FRYKMAN GULCH
HABITAT TYPES BY PERCENT OCCURRENCE



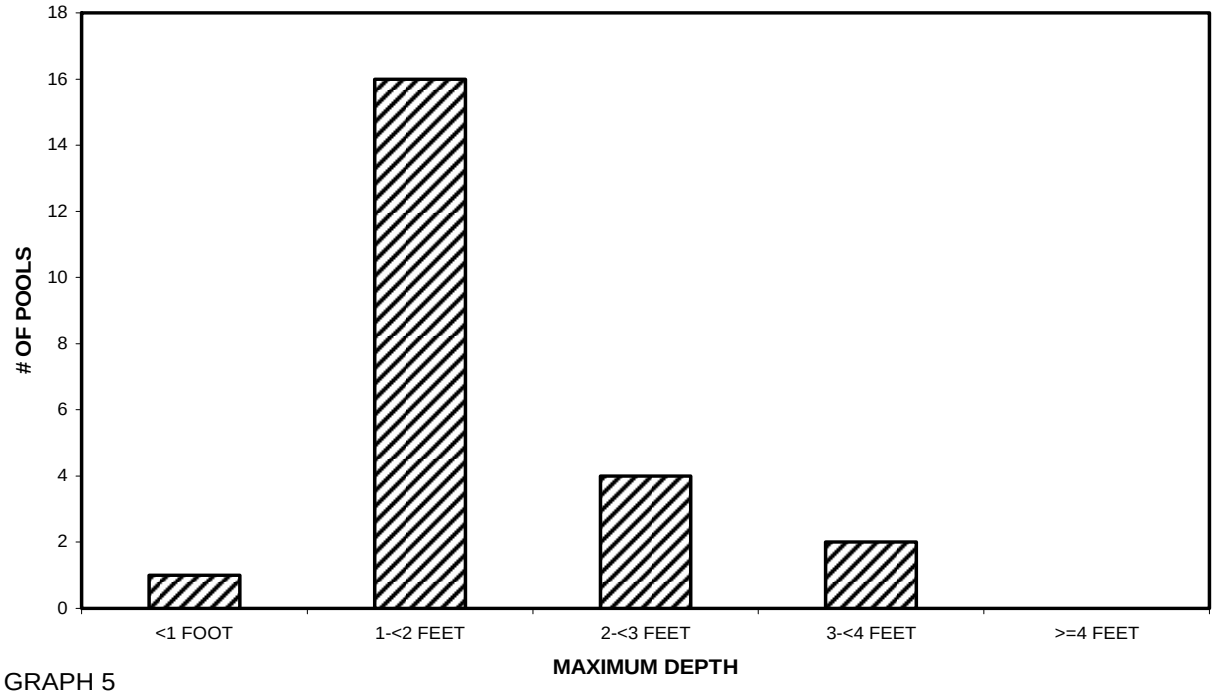
GRAPH 3

FRYKMAN GULCH
POOL HABITAT TYPES BY PERCENT OCCURRENCE



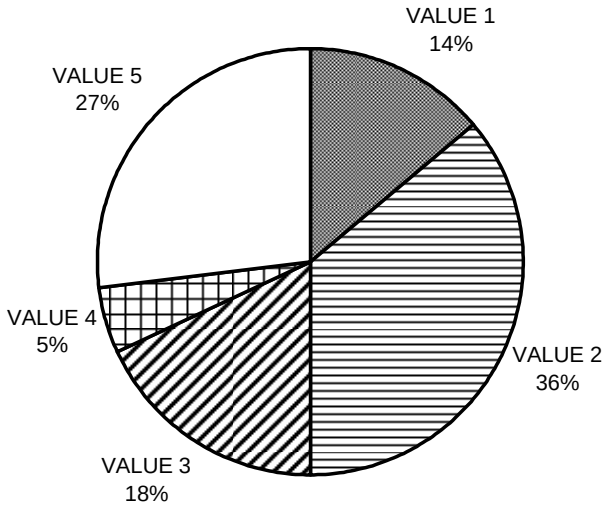
GRAPH 4

FRYKMAN GULCH
MAXIMUM DEPTH IN POOLS



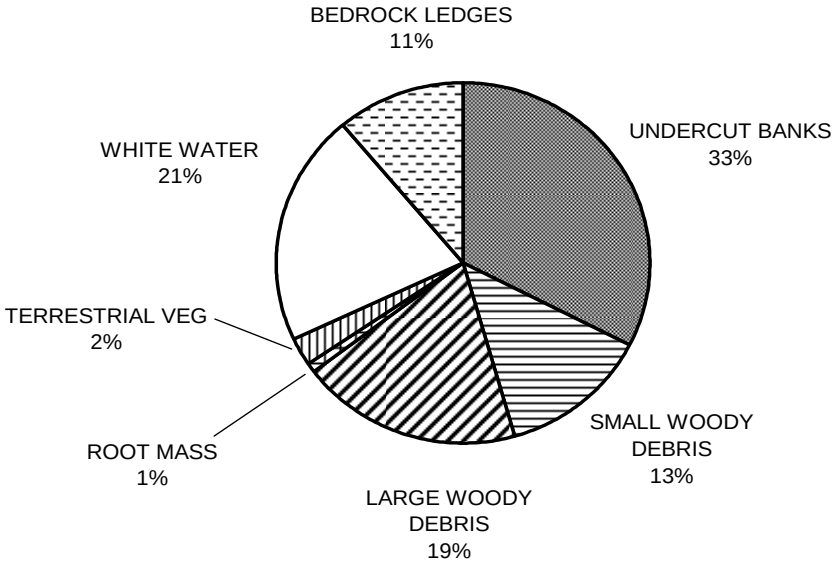
GRAPH 5

FRYKMAN GULCH
PERCENT EMBEDDEDNESS



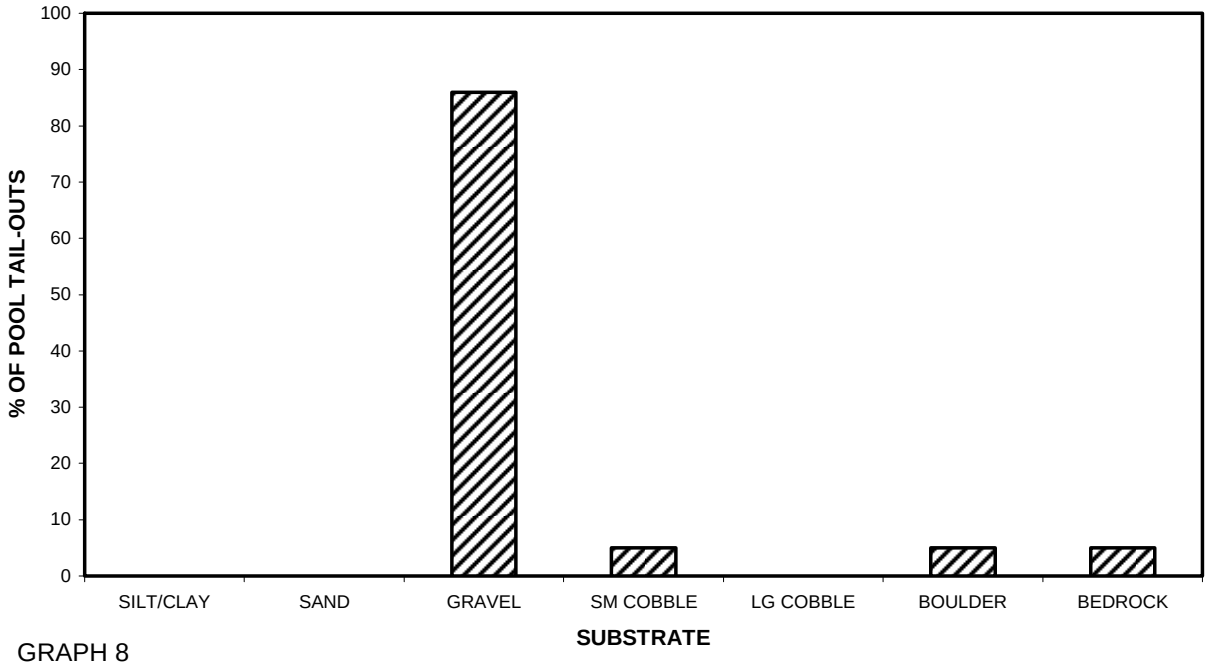
GRAPH 6

FRYKMAN GULCH
MEAN PERCENT COVER TYPES IN POOLS



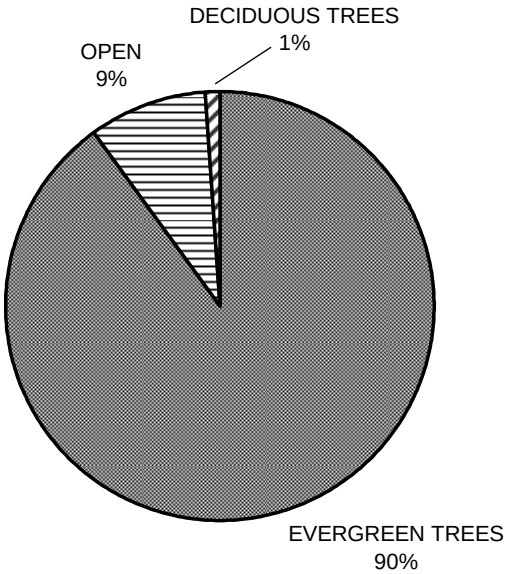
GRAPH 7

FRYKMAN GULCH
SUBSTRATE COMPOSITION IN POOL TAIL-OUTS



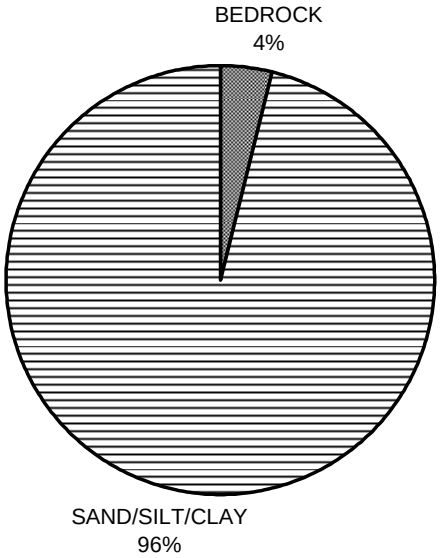
GRAPH 8

FRYKMAN GULCH
MEAN PERCENT CANOPY



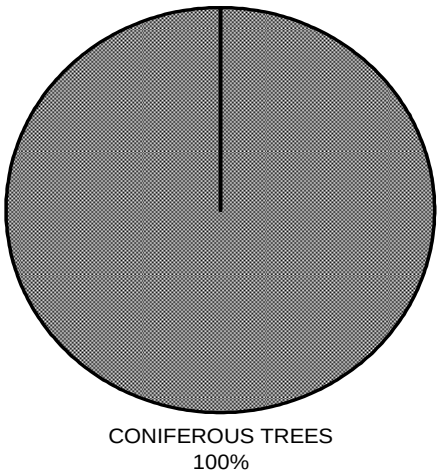
GRAPH 9

FRYKMAN GULCH
DOMINANT BANK COMPOSITION IN SURVEY REACH

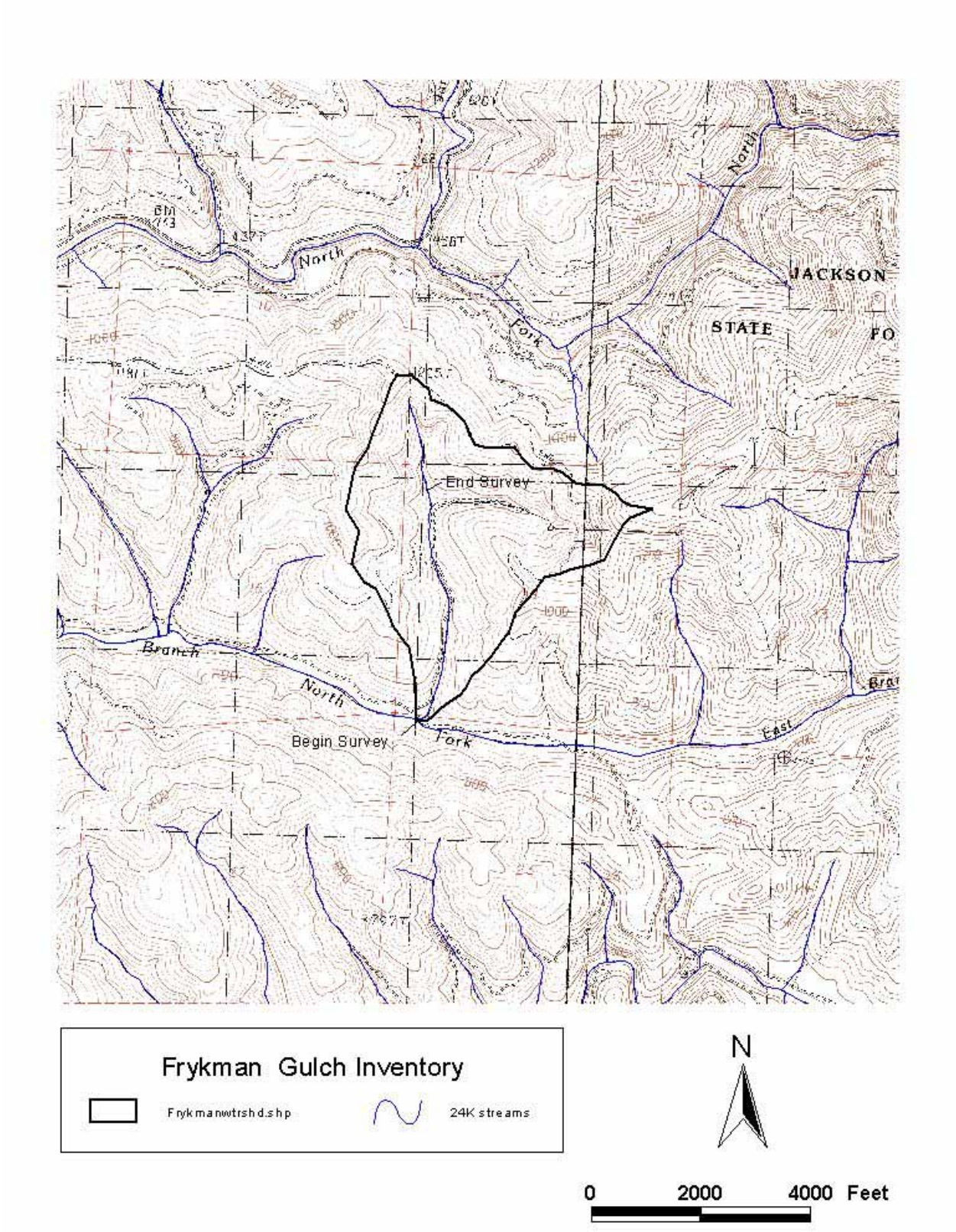


GRAPH 10

FRYKMAN GULCH
DOMINANT BANK VEGETATION IN SURVEY REACH



GRAPH 11



MAP 1. Map of Frykman Gulch showing the stream habitat inventory reach and watershed boundary.