STREAM INVENTORY REPORT

North Fork James Creek

INTRODUCTION

A stream inventory was conducted during the summer of 1997 on North Fork James Creek . The 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 North Fork James Creek. 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

North Fork James Creek is tributary to the James Creek, tributary to the North Fork Big River, tributary to Big River, tributary to the Pacific Ocean, located in Mendocino County, California (Map 1). North Fork James Creek's legal description at the confluence with James Creek is T18N R15W S35. Its location is 39°22′33″ north latitude and 123°29′50″ west longitude. North Fork James Creek is a first order stream and has approximately 3.1 miles of blue line stream according to the USGS Burbeck 7.5 minute quadrangle. North Fork James Creek drains a watershed of approximately 3.0 square miles. Elevations range from about 700 feet at the mouth of the creek to 1900 feet in the headwater areas. Mixed conifer forest dominates the watershed. The watershed is primarily within the Jackson Demonstration State Forest and is managed for timber production. Vehicle access exists via State Route 20.

METHODS

The habitat inventory conducted in North Fork James Creek follows the methodology presented in the *California Salmonid Stream Habitat Restoration Manual* (Flosi and Reynolds, 1991 rev. 1994). The California Conservation Corps (CCC) Technical Advisors and Watershed Stewards Project/AmeriCorps (WSP/AmeriCorps) Members that conducted the inventory were trained in standardized habitat inventory methods by the California Department of Fish and Game (DFG). This inventory was conducted by a two-person team.

SAMPLING STRATEGY

The inventory uses a method that samples approximately 10% of the habitat units within the survey reach (Hopelain, 1994). 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, dominant substrate composing the pool tail crest, and embeddedness. Habitat unit types encountered for the first time are further 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 Gulch Sixteen 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 standard flow measuring equipment, if available. In some cases flows are estimated.

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.

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 middle 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". North Fork James Creek 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. Channel dimensions were measured using hip chains, range finders, tape measures, and stadia rods. All units were measured for mean length; additionally, the first occurrence of each unit type and a randomly selected 10% subset of all units were sampled for all features on the sampling form. Pool tail crest depth at each pool unit was measured in the thalweg. All measurements were in feet to the nearest tenth.

5. Embeddedness:

The depth of embeddedness of the cobbles in pool tail-out reaches is measured by the percent of the cobble that is surrounded or buried by fine sediment. In North Fork James Creek, 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, having a bedrock tail-out, 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 Gulch Sixteen, 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 North Fork James Creek, an estimate of the percentage of the habitat unit covered by canopy was made from the center 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 coniferous 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 North Fork James Creek, 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 was estimated and recorded.

BIOLOGICAL INVENTORY

Biological sampling during stream inventory is used to determine fish species and their distribution in the stream. In North Fork James Creek fish presence was observed from the stream banks, and one site was electrofished using a Smith-Root Model 12 electrofisher. 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, 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 Quattro Pro. Graphics developed for North Fork James Creek 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
- 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 July 22 through August 7, 1997, was conducted by Bethany Reisburger (AmeriCorps/WSP), and Craig Mesman and Tara Cooper (CCC). The total length of the stream was 14,208 feet, although 1,304 feet was unsurveyed due to a marsh and an additional 97 feet of stream was side channel.

Flow was measured at the bottom of the survey reach with a Marsh-McBirney Model 2000 flowmeter at 0.36 cfs on August 8, 1995.

North Fork James Creek is an F4 channel type for the 12,904 feet of stream reach surveyed. F4 channels are entrenched, meandering, riffle/pool channels on low gradients with high width/depth ratios and gravel-dominant substrates.

Water temperatures taken during the survey period ranged from 53 to 67 degrees Fahrenheit. Air temperatures ranged from 60 to 85 degrees Fahrenheit.

Table 1 summarizes the Level II riffle, flatwater, and pool habitat types. Based on frequency of **occurrence** there were 24% riffle units, 35% flatwater units, and 40% pool units (Graph 1). Based on total **length** of Level II habitat types there were 11% riffle units, 55% flatwater units, and 33% pool units (Graph 2).

Nineteen Level IV habitat types were identified (Table 2). The most frequent habitat types by percent **occurrence** were mid-channel pools, 21%; step runs, 20%; and low gradient riffles, 18% (Graph 3). Based on percent total **length**, step runs made up 35%, mid-channel pools 16%, and runs 13%.

A total of 160 pools were identified (Table 3). Main channel pools were most frequently encountered at 59% and comprised 64% 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. Fifty of the 160 pools (31%) had a depth of two feet or greater (Graph 5).

The depth of cobble embeddedness was estimated at pool tail-outs. Of the 160 pool tail-outs measured, 17 had a value of 1 (10.6%); 54 had a value of 2 (33.7%); 41 had a value of 3 (25.6%); 7 had a value of 4 (4.3%) and 41 had a value of 5 (25.6%) (Graph 6). On this scale, a value of 1 indicates the highest quality of spawning substrate and a value of 5 indicates the tail-out is not suitable for spawning. In North Fork James Creek, 8 of the 41 pool tail-outs which were valued at 5 had silt/sand/clay or gravel too small to be suitable for spawning as a substrate. The other tail-outs were unsuitable for spawning due to the tail-outs being comprised of large

cobble, boulder, bedrock or wood.

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. Riffle habitat types had a mean shelter rating of 6, flatwater habitat types had a mean shelter rating of 16, and pool habitats had a mean shelter rating of 50 (Table 1). Of the pool types, the main channel pools had the highest mean shelter rating at 58. Backwater pools had a mean shelter rating of 45 (Table 3).

Table 5 summarizes mean percent cover by habitat type. Small woody debris and boulders are the dominant cover type in North Fork James Creek. Large woody debris are lacking in nearly all habitat types. Graph 7 describes the pool cover in North Fork James Creek.

Table 6 summarizes the dominant substrate by habitat type. Of the eight low gradient riffles fully measured seven had small cobble as the dominant substrate. Gravel was the dominant substrate observed in 100% pool tail-outs measured. Small cobble was the next most frequently observed dominant substrate type and occurred in 21% of the pool tail-outs measured (Graph 8).

The mean percent canopy density for the stream reach surveyed was 78%. The mean percentages of deciduous and coniferous trees were 16% and 84%, respectively. Graph 9 describes the canopy in North Fork James Creek.

For the stream reach surveyed, the mean percent right bank vegetated was 87.2%. The mean percent left bank vegetated was 82.7%. The dominant elements composing the structure of the stream banks consisted of 7.76% bedrock, 2.59% boulder, 43.97% cobble/gravel, and 45.69% sand/silt/clay (Graph 10). Coniferous trees were the dominant vegetation type observed in 58.6% of the units surveyed. Additionally, 14.7% of the units surveyed had deciduous trees as the dominant vegetation type, including down trees, logs, and root wads (Graph 11).

BIOLOGICAL INVENTORY RESULTS

One site was electrofished on September 17, 1995, in North Fork James Creek. The site was sampled by Tara Cooper and Craig Mesman (CCC).

The site sampled was habitat unit 285, a marsh-like area approximately 9,585 feet from the confluence with James Creek. The site yielded seven steelhead and three sculpin.

DISCUSSION

North Fork James Creek is a F4 channel type for the 12,904 feet of stream surveyed. The suitability of F4 channel types for fish habitat improvement structures is as follows: good for bank placed boulders; fair for weirs, single and opposing wing deflectors, channel constrictors, and log cover; and poor for boulder clusters.

The water temperatures recorded on the survey days July 22 through August 07, 1997, ranged from 53 to 67 degrees Fahrenheit. Air temperatures ranged from 60 to 85 degrees Fahrenheit. This is a is near the threshold stress level 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.

Flatwater habitat types comprised 55% of the total **length** of this survey, riffles 11%, and pools 33%. The pools are relatively shallow, with only 50 of the 160 (31%) 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.

Seventeen of the 160 pool tail-outs measured had an embeddedness rating of 1. Forty-eight of the pool tail-outs had a rating of 3 or 4. Forty-one of the pool tail-outs had a rating of five or were considered unsuitable for spawning. Nearly 26% of the 160 pool tail-outs were unsuitable for spawning due to the dominant substrate being silt/sand/clay or gravel being too small to be suitable. Cobble embeddedness measured to be 20% or less, a rating of 1, is considered to indicate good quality spawning substrate for salmon and steelhead. In North Fork James Creek, 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 50. The shelter rating in the flatwater habitats was lower at 16. A pool shelter rating of approximately 100 is desirable. The relatively small amount of cover that now exists is being provided primarily by small woody debris and boulders in all habitat types. Log and root wad cover structures in the pool and flatwater habitats are needed to improve 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.

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

The mean percent canopy density for the stream was 78%. This is a good percentage of canopy. In general, revegetation projects are considered when canopy density is less than 80%.

The percentage of right and left bank covered with vegetation was 87.2% and 82.7%, respectively. In areas of stream bank erosion or where bank vegetation is not at acceptable levels, planting endemic species of coniferous and deciduous trees, in conjunction with bank stabilization, is recommended.

RECOMMENDATIONS

1) North Fork James Creek should be managed as an anadromous, natural production stream.

2) The limited water temperature data available suggest that maximum temperatures are near the threshold stress level 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. Adding high quality complexity with woody cover is desirable.

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

5) Where feasible, design and engineer pool enhancement structures to increase the number of pools or the depth of the existing pools. This must be done where the banks are stable or in conjunction with stream bank armor to prevent erosion.

COMMENTS AND LANDMARKS

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

0'	Begin survey at confluence with James Creek. Channel type is an F4. Culvert, corrugated metal pipe (CMP), 12' high X 12' wide X 47' long with a flat concrete apron, 9' long X 15' wide, with baffles present, average depth of 0.1 feet, and a small pool at the base. At 10:50, 07/22/97, water temperature was 59°F, air temperature was 62°F.
56'	Left bank road.
435'	At 12:35, 07/22/97, water temperature was 62°F, air temperature was 72°F.
849'	Dry right bank tributary, steep.
876'	At 13:10, 07/22/97, water temperature was 67°F, air temperature was 83°F.
1,365'	At 15:26, 07/22/97, water temperature was 65°F, air temperature was 82°F.
1,526'	At 14:36, 07/22/97, water temperature was 62°F, air temperature was 78°F.
1,720'	At 15:08, 07/22/97, water temperature was 65°F, air temperature was 81°F.

2,080' At 15:34, 07/22/97, water temperature was 64°F, air temperature was 78°F.

2,171' At 16:00, 07/22/97, water temperature was 64°F, air temperature was 74°F.
2,511' At 16:35, 07/23/97, water temperature was 63°F, air temperature was 73°F.

2,712' Dry right bank tributary, deeply entrenched, with a large cobble/boulder dominant substrate.

2,862' Log debris accumulation (LDA) 26' long X 30' wide X 8' high, channel flows under LDA, not a barrier to fish.

2,908' At 09:24, 07/23/97, water temperature was 58°F, air temperature was 60°F.

3,422' At 11:08, 07/23/97, water temperature was 59°F, air temperature was 65°F.

3,620' Right bank erosion, 27' long X 20' high, contributing cobble and large woody debris.

3,624' At 11:51, 07/23/97, water temperature was 59°F, air temperature was 73°F.

3,757' Right bank tributary, large cobble/boulder dominated substrate, flow of approximately 0.3 cubic feet per second (cfs) estimated, no fish observed, 75' upstream channel flows underground.

3,771' Right bank erosion, 40' high X 31' long.

3,980' At 13:25, 07/23/97, water temperature was 62°F, air temperature was 71°F.

4,026' LDA, 15' long X 12' high X 25' wide, channel flows under a 3 foot jump.

4,349' LDA, 10' high X 30' wide X 27' long, retaining 3' of sediment, 3' jump, possible barrier.

4,356' At 14:21, 07/23/97, water temperature was 63°F, air temperature was 76°F.

4,434' Dry left bank tributary, 30' bedrock waterfall approximately 50' upstream.

4,643' Left bank erosion, 55' long X 25' high.

4,791' At 10:18, 07/24/97, water temperature was 53°F, air temperature was 63°F.

5,261' LDA, 5' high X 20' wide X 20' long, retaining no sediment, not a barrier.

5,325' Right bank tributary, flow approximately 1.0 cfs, no fish observed, gravel/cobble dominant substrate, potentially anadromous, 2-4% slope. Observed 200' upstream and

was over grown with brush, clogged with large woody debris, slope increased but still good flow.

5,397' At 11:07, 07/24/97, water temperature was 58°F, air temperature was 65°F.

5,662' LDA, 40' wide X 10' high X 34' long, channel flows under, no sediment retention.

5,737' At 11:07, 07/24/97, water temperature was 58°F, air temperature was 65°F.

5,979' At 12:04, 07/24/97, water temperature was 56°F, air temperature was 68°F.

6,184' At 11:12, 08/06/97, water temperature was 56°F, air temperature was 73°F.

6,347' At 11:31, 07/06/97, water temperature was 57°F, air temperature was 79°F.

6,571' At 12:30, 08/06/97, water temperature was 58°F, air temperature was 75°F.

6,827' At 13:02, 08/06/97, water temperature was 58°F, air temperature was 83°F.

6,849' Left bank tributary, dry, 3' wide, gravel/cobble dominant substrate.

7,138' Right bank tributary, dry, cobble/gravel dominant substrate, gradual slope.

7,186' At 13:50, 07/06/97, water temperature was 57°F, air temperature was 78°F.

7,520' At 14:00, 08/06/97, water temperature was 57°F, air temperature was 85°F.

7,524' Marsh unit, overgrown with horsetails and poison oak.

8,323' Right bank tributary, trickle from marsh on other side of the road.

8,328' At 15:00, 008/06/97, water temperature was 59°F, air temperature was 79°F.

8,526' Right bank tributary, < 0.1 cfs, no fish observed.

8,584' At 15:24, 07/17/97, water temperature was 59°F, air temperature was 79°F.

8,654' Culvert, 4' X 4' with a six foot jump.

8,804' At 16:00, 08/06/97, water temperature was 60°F, air temperature was 80°F.

8,959' At 16:16, 08/06/97, water temperature was 60°F, air temperature was 77°F.

9,213' Left bank tributary, dry, cobble dominated substrate, gentle slope.

9,291' At 08:56, 08/07/97, water temperature was 57°F, air temperature was 61°F.

9,557' At 09:23, 08/07/97, water temperature was 57°F, air temperature was 67°F.

9,910' Left bank tributary, dry with cobble dominated substrate. Tributary is dry with a cobble dominated channel and a gentle slope.

10,764' Corrugated metal pipe (CMP) half buried with a silty bottom 3.5' high and 8' wide, good condition under. Culvert 30' long. Marsh characteristics.

10,781' Left bank tributary, good water flow, 2' X 2' culvert 50 feet long, 60 feet high. Tributary above culvert is full of debris and silt with an LDA forming a possible barrier.

10,824' Electrofishing site.

11,050' At 10:32, 08/07/97, water temperature was 58°F, air temperature was 65°F.

11,131' Right bank tributary with water trickling. About 100' up the tributary is a culvert with an 8' jump, dominated by silt/clay, no fish observed.

11,634' At 11:23, 08/07/97, water temperature was 57°F, air temperature was 68°F.

11,705' Right bank erosion, 6' high X 10' long.

11,895' At 11:43, 08/07/97, water temperature was 58°F, air temperature was 70°F.

12,096' Left bank tributary, slight trickle underground. Silty bottom, channel dry.

12,262' LDA, 5' high X 7' wide X 38' long, not a barrier.

12,390' At 12:52, 08/07/97, water temperature was 59°F, air temperature was 76°F.

12,638' LDA, 4' high X 11' long X 15' wide, not a barrier.

12,645' LDA, 6' high X 20' long X 9' wide, not a barrier.

12,683' LDA, 4' high X 15' wide X 14' long.

12,699' At 13:17, 08/07/97, water temperature was 59°F, air temperature was 79°F.

12,918' Left bank erosion, 70' high adding trees and sediment to the stream.

12,957 At 13:47, 08/07/97, water temperature was 59°F, air temperature was 76°F.

13,072' Right bank tributary, dry, cobble dominated substrate.

13,194' Left bank erosion, 10' high X 24' long, with a 9' vertical jump, possible barrier.

13,197' At 14:12, 08/07/97, water temperature was 60°F, air temperature was 82°F.

13,443' At 15:49, 08/07/97, water temperature was 60°F, air temperature was 85°F.

13,466' LDA, 4' high X 9' long X 6' wide, not a barrier.

13,789' At 16:08, 08/07/97, water temperature was 81°F, air temperature was 60°F.

14,012' Left bank tributary, dry, gradual slope.
14,015' LDA, 4' high X 10' wide X 13' long.

14,073' Left bank erosion, 20' high X 50' wide X 36' long.

14,125' At 16:29, 08/07/97, water temperature was 58°F, air temperature was 79°F.

14,207' Left bank dry tributary with a gradual slope.

14,208' End of survey. No fish observed since the LDA at 13,194'. Above this tributary there is minimal flow and the substrate is dominated by fines.

REFERENCES

Flosi, G., and F. Reynolds. 1994. California salmonid stream habitat restoration manual, 2nd edition. California Department of Fish and Game, Sacramento, California.

Hopelain, J. 1995. Sampling levels for fish habitat inventory, unpublished manuscript. California Department of Fish and Game, Inland Fisheries Division, Sacramento, California.

LEVEL III and LEVEL IV HABITAT TYPE KEY

HABITAT TYPE	LETTER	NUMBER
RIFFLE		
Low Gradient Riffle	[LGR]	1.1
High Gradient Riffle	[HGR]	1.2
CASCADE		
Cascade	[CAS]	2.1
Bedrock Sheet	[BRS]	2.2
FLATWATER		
Pocket Water	[POW]	3.1
Glide	[GLD]	3.2
Run	[RUN]	3.3
Step Run	[SRN]	3.4
Edgewater	[EDW]	3.5
MAIN CHANNEL POOLS		
Trench Pool	[TRP]	4.1
Mid-Channel Pool	[MCP]	4.2
Channel Confluence Pool	[CCP]	4.3
Step Pool	[STP]	4.4
SCOUR POOLS		
Corner Pool	[CRP]	5.1
Lateral Scour Pool - Log Enhanced	[LSL]	5.2
Lateral Scour Pool - Root Wad Enhanced	[LSR]	5.3
Lateral Scour Pool - Bedrock Formed	[LSBk]	5.4
Lateral Scour Pool - Boulder Formed	[LSBo]	5.5
Plunge Pool	[PLP]	5.6
BACKWATER POOLS		
Secondary Channel Pool	[SCP]	6.1
Backwater Pool - Boulder Formed	[BPB]	6.2
Backwater Pool - Root Wad Formed	[BPR]	6.3
Backwater Pool - Log Formed	[BPL]	6.4
Dammed Pool	[DPL]	6.5