STREAM INVENTORY REPORT

Soda Creek

INTRODUCTION

A stream inventory was conducted during May, 2002, on Soda Creek. The survey began at the confluence with Daugherty Creek and extended upstream 1.7 miles.

The Soda Creek 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 Soda 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

Soda Creek is a tributary to Daugherty Creek, a tributary to the South Fork Big River, located in Mendocino County, California (Map 1). Soda Creek's legal description at the confluence with Daugherty Creek is T16N R14W S29. Its location is 39°12′49" north latitude and 123°26′29″ west longitude. Soda Creek is a first order stream and has approximately 1.8 miles of solid blue line stream according to the USGS Bailey Ridge 7.5 minute quadrangle. Soda Creek drains a watershed of approximately 1.8 square miles. Elevations range from about 550 feet at the mouth of the creek to 1,400 feet in the headwater areas. Mixed conifer forest dominates the watershed. The watershed is privately owned and managed for timber production. Vehicle access exists via private road.

METHODS

The habitat inventory conducted in Soda Creek follows the methodology presented in the *California Salmonid Stream Habitat Restoration Manual* (Flosi et al, 1998). The California 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. 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 Soda Creek 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 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". Soda 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. 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 Soda 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, 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 Soda Creek, 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 Soda 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 Soda 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 (including downed trees, logs, and rootwads) was estimated and recorded.

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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 Soda Creek. In addition, eleven sites were 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 Soda 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 low gradient riffles
- 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 May 20-23, 28-30, 2002, was conducted by Janelle Breton and Toni Russell (WSP). The total length of the stream surveyed was 8,921 feet.

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Stream flow was measured at the bottom of the survey reach with a Marsh-McBirney Model 2000 flowmeter at 0.23 cfs on May 21, 2002.

Soda Creek is a B4 channel type for the first 3,058 feet of the stream surveyed (reach 1), an F4 channel type for the next 672 feet (reach 2), a B4 channel type for the next 3,183 feet (reach 3) and a G4 channel type for the last 1,995 feet (reach 4) surveyed. B4 channels are moderately entrenched, moderate gradient, riffle dominated channel with infrequently spaced pools, with stable banks and gravel channel. F4 channels are entrenched, meandering riffle/pool channel on low gradients with high width/depth ratios and gravel channel. G4 channels are entrenched 'gully-like', step-pools, and low width/depth ratios on moderate gradient with gravel-dominated substrate.

Water temperatures taken during the survey period ranged from 50° to 61° Fahrenheit. Air temperatures ranged from 52° to 74° Fahrenheit.

Table 1 summarizes the Level II riffle, flatwater, and pool habitat types. Based on frequency of **occurrence** there were 42% riffle units, 34% flatwater units, and 24% pool units (Graph 1). Based on total **length** of Level II habitat types there were 42% riffle units, 43% flatwater units, and 15% pool units (Graph 2).

Twelve Level IV habitat types were identified (Table 2). The most frequent habitat types by percent **occurrence** were low gradient riffles, 39%; runs, 33%; and mid-channel pools, 21% (Graph 3). Based on percent total **length**, runs made up 40%, low gradient riffles 38%, and mid-channel pools 13%.

A total of 73 pools were identified (Table 3). Main channel pools were the most frequently encountered, at 90%, and comprised 91% 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. Twenty-three of the 73 pools (31.5%) had a depth of two feet or greater (Graph 5).

The depth of cobble embeddedness was estimated at pool tail-outs. Of the 73 pool tail-outs measured, 54 had a value of 1 (74%); 14 had a value of 2 (19%); 0 had a value of 3 (0%); 0 had a value of 4 (0%); and 5 had a value of 5 (7%) (Graph 6). On this scale, a value of 1 indicates the highest quality of spawning substrate.

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 7, flatwater habitat types had a mean shelter rating of 11, and pool habitats had a mean shelter rating of 27 (Table 1). Of the pool types, the scour pools had the highest mean shelter rating at 33. Main channel pools had a mean shelter rating of 25 (Table 3).

Table 5 summarizes mean percent cover by habitat type. Large wood is the dominant cover type in Soda Creek. Graph 7 describes the pool cover in Soda Creek. Large wood is the dominant pool cover type followed by undercut banks.

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Table 6 summarizes the dominant substrate by habitat type. Graph 8 depicts the dominant substrate observed in pool tail-outs. Small cobble was the dominant substrate observed in 70% of pool tail-outs while large cobble was the next most frequently observed substrate type, at 25%.

The mean percent canopy density for the surveyed length of Soda Creek was 83%. The mean percentages of deciduous and coniferous trees were 27% and 73%, respectively. Graph 9 describes the mean percent canopy in Soda Creek.

For the stream reach surveyed, the mean percent right bank vegetated was 83.2%. The mean percent left bank vegetated was 88.8%. The dominant elements composing the structure of the stream banks consisted of 19% bedrock, 6% boulder, 12% cobble/gravel, and 63% sand/silt/clay (Graph 10). Coniferous trees were the dominant vegetation type observed in 76% of the units surveyed. Additionally, 10% of the units surveyed had deciduous trees as the dominant vegetation type, 9% had grass as the dominant vegetation, and 5% had brush as the dominant vegetation (Graph 11).

BIOLOGICAL INVENTORY RESULTS

Eleven sites were electrofished for species composition and distribution in Soda Creek on July 22 and 23, 2002. Water temperatures taken during the July 22nd electrofishing period of 1 p.m. to 3:00 p.m. ranged from 64° to 75° Fahrenheit. Air temperatures ranged from 68° to 77° Fahrenheit. The sites were sampled by Paul Divine (CDFG) and Ryan Wells (WSP/AmeriCorps).
The first site sampled included habitat unit 0006, a mid channel pool approximately 119 feet from the confluence with Daugherty Creek. The site yielded three young-of-the-year coho, and one sculpin.

The second site included habitat unit 0011, a mid channel pool located approximately 330 feet above the creek mouth. The site yielded one salamander.

The third site included habitat unit 0025, a mid channel pool approximately 619 feet above the creek mouth. The site yielded no fish.

The fourth site included habitat unit 0037, a mid channel pool located approximately 1,189 feet above the creek mouth. The site yielded one young-of-the-year steelhead and one salamander.

The fifth site included habitat unit 0044, a mid channel pool located approximately 1,412 feet above the creek mouth. The site yielded one age two-plus steelhead and one salamander.

Water temperatures taken during the July 23rd first electrofishing period of 9:20 a.m. to 10:45 a.m. ranged from 60° to 61° Fahrenheit. Air temperatures were not recorded. The sites were sampled by Paul Divine (CDFG) and Ryan Wells (WSP/AmeriCorps).

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The sixth site sampled included habitat unit 0102, a mid channel pool located approximately 3,098 feet above the creek mouth. The site yielded one young-of-the-year steelhead, one two-plus age steelhead and one rough-skinned newt.

The seventh site included habitat unit 108, a mid channel pool approximately 3,297 feet above the creek mouth. The site yielded two young-of-the-year steelhead, and one two-plus steelhead.

The eight site included habitat unit 110, a run located approximately 3,342 feet above the creek mouth. The site yielded four young-of-the-year steelhead, and one Pacific giant salamander.

The ninth site included habitat unit 0121, a run located approximately 3,695 feet above the creek mouth. The site yielded one young-of-the-year steelhead .

Water temperatures taken during the July 23rd second electrofishing period of 10:45 a.m. to 2:45 p.m. ranged from 60° to 64° Fahrenheit. Air temperatures were not recorded. The sites were sampled by Paul Divine (CDFG) and Ryan Wells (WSP/AmeriCorps).

The tenth site sampled included habitat unit 0132, a mid channel located approximately 3,896 feet above the creek mouth. The site yielded one two-plus steelhead.

The eleventh site sampled included habitat unit 0140, a bedrock formed scour pool located approximately 4,086 feet above the creek mouth. The site yielded no fish.

Additionally, ocular observation detected five young of the year steelhead, and two one-plus age class steelhead along the remaining 2,262 feet of this reach.

Reach four, a G4 channel type, was not electrofished. Although water clarity was greater than four feet, no fish were observed along the entire 1,195 foot length of this reach. Water temperatures ranged from 64° to 75° Fahrenheit during this survey which took place from 1 p.m. to 3 p.m. on July 23, 2002. Air temperatures ranged from 68° to 77° Fahrenheit.

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The following chart displays the information yielded from these sites:

Date	Approx. Dist. from mouth (ft.)	Hab. Unit #	Hab. Type	Reach #	Channel type	Coho	Steelhead		
						0+	0+	1+	2+
07/22/02	119	0006	4.2	1	B4	3	0	0	0
07/22/02	330	0011	4.2	1	B4	0	0	0	0
07/22/02	619	0025	4.2	1	B4	0	0	0	0
07/22/02	1,189	0037	4.2	1	B4	0	1	0	0
07/22/02	1,412	0044	4.2	1	B4	0	0	0	1
07/23/02	3,098	0102	4.2	2	F4	0	1	0	1
07/23/02	3,297	0108	4.2	2	F4	0	2	0	1
07/23/02	3,342	0110	3.3	2	F4	0	4	0	0
07/23/02	3,695	0121	3.3	2	F4	0	0	1	0
07/23/02	3,896	0132	4.2	3	B4	0	0	0	1
07/23/02	4,086	0140	5.4	3	B4	0	0	0	0

DISCUSSION

Soda Creek is a B4 channel type for the first 3,058 feet of stream surveyed, an F4 channel type for 672 feet, a B4 channel type for 3,183 feet, and a G4 channel type for the remaining 1,995 feet. The suitability of B4 channel types for fish habitat improvement structures is as follows: excellent for low-stage plunge weirs, boulder clusters, bank-placed boulders, single and opposing wing-deflectors, and log cover. The suitability of F4 channel types for fish habitat improvement structures is as follows: good for bank-placed boulders; fair for plunge weirs, single and opposing wing deflectors, channel constrictors and log cover; poor for boulder clusters. The suitability of G4 channel types for fish habitat improvement structures is as follows: good for bank-placed boulders; fair for plunge-weirs, opposing wing-deflectors and log cover; poor for boulder clusters and single wing-deflectors.

The water temperatures recorded on the survey days of May 20-23, 28-30, 2002, ranged from 50° to 61° Fahrenheit. Air temperatures ranged from 52° to 74° Fahrenheit. This is a good water temperature 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 34% of the total **length** of this survey, riffles 42%, and pools 24%. The pools are relatively shallow, with only 23 of the 73 (31.5%) 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.

Sixty-eight of the 73 pool tail-outs measured had embeddedness ratings of 1 or 2. None of the pool tail-outs had embeddedness ratings of 3 or 4. Five 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.

Fifty-one of the 73 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 was 7. The shelter rating in the flatwater habitats was 11. A pool shelter rating of approximately 100 is desirable. The amount of cover that now exists is being provided primarily by large woody debris in all habitat types. Additionally, undercut banks contribute a nearly equal 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 83%. Reach 1 had a canopy density of 81% while Reaches 2, 3, and 4 had canopy densities of 70%, 83%, and 92%, respectively. In general, revegetation projects are considered when canopy density is less than 80%.

The percentage of right and left bank covered with vegetation was 83.2% and 88.8%, 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) Soda Creek 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 large woody debris. Adding high quality complexity with woody cover is desirable.

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.

Position (ft):	Comments:
0'	Begin survey at confluence with Daugherty Creek. Channel type is B4.
119'	Electrofishing site # 1.
219'	Daugherty Road bridge, 30' W x 35' L x 12' height from thalweg to bottom of bridge. Failing log bridge with railroad car steel bridge. Some logs are falling into creek, contributing sediment.
330'	Electrofishing site # 2.
619'	Electrofishing site # 3.
926'	Small spring enters on right bank.
1,189'	Electrofishing site # 4. Location of B4 channel type cross-section.
1,412'	Electrofishing site # 5. Steelhead, 2+ age class present.
1,584'	CCC structure retaining sediment.
1,741'	Spring, right bank.
2,167'	Spring, left bank.
2,976'	Log debris accumulation (LDA) of 7 pieces: 7' high x 25' wide x 12' long. Not retaining sediment. LDA does not span the entire channel width.
3,058'	Channel type changes from B4 to F4.
3,098'	Electrofishing site # 6.
3,118'	Juvenile salmonids observed.
3,297'	Electrofishing site # 7.

3,342'	Electrofishing site # 8.
3,682'	Electrofishing site # 9.
3,730'	Channel type changes from F4 to B4.
3,870'	Erosion on left bank: 50' high x 70' wide, 40% vegetated with grass.
3,895'	Electrofishing site # 10.
4,086'	Electrofishing site # 11.
4,807'	Railroad car bridge, 12' wide x 70' long x 10' high from thalweg to bottom of bridge.
5,041'	Spring entering from right bank.
5,574'	Log debris accumulation of 7 pieces: 5' high x 25' wide x 12' long. No stored sediment.
6,140'	Juvenile salmonids observed.
6,492'	Log debris accumulation of 5 pieces: 5' high x 12' wide x 7' long. No stored sediment. Not a barrier to juvenile and adult salmonids. Flag reading “SG10 LDA”.
6,683'	Flag “CCC Hab. #209, 8/10/93.”
6913'	Channel type changes from B4 to G4.
7,480'	Right bank erosion contributing sediment; 10 ‘high x 20' long.
7,740'	Right bank tributary. Temperature was 52° Fahrenheit. Accessible to fish, however flow goes subsurface at ten feet.
8,250'	Log debris accumulation of 2 pieces: 4' high x 10' wide x 10' long. No stored sediment. Lots of small woody debris.
8,287'	Log debris accumulation of 5 pieces: 8' high x 12' wide x 10' long. Stored sediment 10' wide x 6' long 4' deep. Possible barrier to juvenile and adult salmonids.
8,553'	Log debris accumulation, 3' high x 8' wide x 3' long. Stored sediment 6' wide x 2' long x 3' deep. Possible barrier to juvenile and adult salmonids. At top of small cascade.

8,813' Log debris accumulation of 3 pieces: 4' high x 20' wide x 6' long. Stored sediment 8' wide x 8' long x 3' deep. Possible barrier to juvenile and adult salmonids.

8,839' Log debris accumulation of 7 pieces: 9' high x 20' wide x 17' long. Stored sediment 8' wide x 8' long x 5' deep. Possible barrier to juvenile and adult salmonids.

8,908' End of Survey due to log debris accumulation of 15 pieces: 9' high x 35' wide x 40' long. Stored sediment 10' wide x 10' long x 7' deep. Probable barrier to juvenile and adult salmonids.

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.

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]	