## OVERVIEW FISH AND FISH HABITAT INVENTORY

## HALFWAY-GRAHAM RIVER WATERSHEDS

March 2002

Prepared for: B.C. Ministry of Sustainable Resource Management PO Box 9426 Stn Prov Gov't Victoria, B.C. V8W 9V1

> Prepared by: Diversified Environmental Services Box 6263 Fort St. John, B.C. V1J 4H7

#### **PROJECT REFERENCE INFORMATION**

FDIS Project Number	4100
MELP Region	07
MELP District	Fort St. John
FW Management Units	7-36, 7-43, 7-57
Forest Region	Prince George
Forest District	Fort St. John
First Nations Claim Area	Treaty 8

#### WATERSHED INFORMATION

Watershed Group	Lower Halfway and Upper Halfway	
Watershed Name	Halfway River	
Watershed Code	Code 235-00000	
NTS Maps	94B/6, 10, 11, 13-15,	
-	94G/3	
BEC Zone	BWBS, ESSF, AT	
Access	Helicopter	

#### **CONTRACTOR INFORMATION**

Project Manager:	T. Euchner, Diversified Environmental	
	Services	
	Box 6263, Fort St. John, B.C.	
	(250) 787-9101	
Field crew:	B. Culling, T. Euchner	
Report prepared by:	B. Culling, K. Newsholme, T. Euchner	
Report edited by:	D. Culling	
Maps prepared by: Diversified Environmental Services		
	Box 6263, Fort St. John, B.C.	
	(250) 787-9101	
Aging sample	North-South Consultants	
analysis by:	Diversified Environmental Services	

#### TABLE OF CONTENTS

PROJECT REFERENCE INFORMATION			
1.0 INTRODUCTION 1			
2.0 PROJECT AREA 1			
3.0 METHODS			
4.0 RESULTS.44.1 Logistics44.2 Habitat and Fish Distribution44.2.1 Graham River104.2.2 Chowade River114.2.3 Cypress Creek124.2.4 upper Halfway River124.3 Fish Age and Growth144.3.1 Rainbow Trout144.3.2 Mountain Whitefish154.3.3 Bull Trout164.4 Significant Features and Fisheries Observations174.5 Future Research Recommendations18			
REFERENCES			
APPENDICES			

#### LIST OF FIGURES

Figure 1	Location of the Halfway-Graham Overview Fish and Fish Habitat Inventory Project Area; 1:600,0002
Figure 2	Length-frequency relationship of bull trout captured in the Halfway-Graham Overview Inventory project area between August 20 and September 5, 2001

#### LIST OF TABLES

Table 1	List of field equipment used during the Halfway-Graham Overview Inventory
Table 2	Summary of barriers to fish movement within the Halfway-Graham Overview Inventory project area
Table 3	Summary of fish sampling results from 41stream sample sites in the Halfway-Graham Overview Inventory project area9
Table 4	Age-length relationship of rainbow trout captured in the Halfway-Graham Overview Inventory project area between August 20 and September 5, 2001
Table 5	Age-length relationship of mountain whitefish captured in the Halfway-Graham Overview Inventory project area between August 20 and September 5, 2001
Table 6	Age-length relationship of bull trout captured in the Halfway-Graham Overview Inventory project area between August 20 and September 6, 2001

#### LIST OF PLATES

Plate 1	Christina Falls- lower impassable barrier on the Graham River mainstem; aerial view upstream	10
Plate 2	Lower impassable barrier on the Halfway River mainstem; aerial view upstream	.13

#### LIST OF APPENDICES

Appendix I	Graham River - sample site 1; site data card, fish collection form and site photographs	21
Appendix II	Unnamed tributary to Graham River - sample site 2; site data card, fish collection form and site photographs	26
Appendix III	Needham Creek - sample site 3; site data card, fish collection form and site photographs	30
Appendix IV	Needham Creek - sample site 4; site data card, fish collection form and site photographs	34

Appendix V	Unnamed tributary to Graham River - sample site 5; site data card, fish collection form and site photographs	38
Appendix VI	Justice Creek - sample site 6; site data card, fish collection form and site photographs	42
Appendix VII	Unnamed tributary to Justice Creek - sample site 7; site data card, fish collection form and site photographs	46
Appendix VIII	Unnamed tributary to Justice Creek - sample site 8; site data card, fish collection form and site photographs	50
Appendix IX	Unnamed tributary to Graham River - sample site 9; site data card, fish collection form and site photographs	54
Appendix X	Chowade River - sample site 10; site data card, fish collection form and site photographs	58
Appendix XI	Chowade River - sample site 11; site data card, fish collection form and site photographs	62
Appendix XII	Unnamed tributary to Chowade River - sample site 12; site data card, fish collection form and site photographs	66
Appendix XIII	Unnamed tributary to Chowade River - sample site 13; site data card, fish collection form and site photographs	71
Appendix XIV	Unnamed tributary to Chowade River - sample site 14; site data card, fish collection form and site photographs	75
Appendix XV	Unnamed tributary to Chowade River - sample site 15; site data card, fish collection form and site photographs	79
Appendix XVI	Tributary to unnamed Chowade River tributary - Sample site 16; site data card, fish collection form and site photographs	83
Appendix XVII	Unnamed tributary to Chowade River - sample site 17; site data card, fish collection form and site photographs	87
Appendix XVIII	Tributary to unnamed Chowade River tributary - sample site 18; site data card, fish collection form and site photographs	91

Appendix XIX	Unnamed tributary to Chowade River - sample site 19; site data card, fish collection form and site photographs	95
Appendix XX	Cypress Creek - sample site 20; site data card, fish collection form and site photographs	99
Appendix XXI	Cypress Creek - sample site 21; site data card, fish collection form and site photographs 1	103
Appendix XXII	Geesdale Creek - sample site 22; site data card, fish collection form and site photographs 1	107
Appendix XXIII	Unnamed tributary to Geesdale Creek - sample site 23; site data card, fish collection form and site photographs	111
Appendix XXIV	Unnamed tributary to Geesdale Creek - sample site 24; site data card, fish collection form and site photographs	115
Appendix XXV	Unnamed tributary to Cypress Creek - sample site 25; site data card, fish collection form and site photographs	119
Appendix XXVI	Unnamed tributary to Cypress Creek - sample site 26; site data card, fish collection form and site photographs	123
Appendix XXVII	Unnamed tributary to Cypress Creek - sample site 27; site data card, fish collection form and site photographs	127
Appendix XXVIII	Unnamed tributary to Cypress Creek - sample site 28; site data card, fish collection form and site photographs	131
Appendix XXIX	Unnamed tributary to Cypress Creek - sample site 29; site data card, fish collection form and site photographs	135
Appendix XXX	Halfway River - sample site 30; site data card, fish collection form and site photographs	139
Appendix XXXI	Halfway River - sample site 31; site data card, fish collection form and site photographs 1	144
Appendix XXXII	Headstone Creek - sample site 32; site data card, fish collection form and site photographs 1	148

Appendix XXXIII	Unnamed tributary to Halfway River - sample site 33; site data card, fish collection form and site photographs	152
Appendix XXXIV	Unnamed tributary to Halfway River - sample site 34; site data card, fish collection form and site photographs	156
Appendix XXXV	Turnoff Creek - sample site 35; site data card, fish collection form and site photographs	160
Appendix XXXVI	Fiddes Creek - sample site 36; site data card, fish collection form and site photographs	164
Appendix XXXVII	Unnamed tributary to Halfway River - sample site 37; site data card, fish collection form and site photographs	169
Appendix XXXVIII	Unnamed tributary to Halfway River - sample site 38; site data card, fish collection form and site photographs	173
Appendix XXXIX	Unnamed tributary to Halfway River - sample site 39; site data card, fish collection form and site photographs	177
Appendix XL	Calnan Creek - sample site 40; site data card, fish collection form and site photographs	181
Appendix XLI	Calnan Creek - sample site 41; site data card, fish collection form and site photographs	185
Appendix XLII	Photodocumentation index	189
Appendix XLIII	1:80,000 Interpretive Maps	196

#### ACKNOWLEDGEMENTS

This project was funded by the BC Ministry of Sustainable Resource Management (MSRM), as part of the upper Halfway/Graham River watershed pre-tenure planning process. The authors wish to thank Deborah Johnson, Pre-tenure Biologist (MSRM), Graeme McLaren, Manager of Mining, Oil & Gas, (MSRM), and Jeff Burrows, Fisheries Inventory Specialist (MSRM) for their cooperation and support. Special thanks to Allan Moore of Bailey Helicopters for his anti-gravitational talents and free cockpit entertainment.

#### 1.0 INTRODUCTION

As a result of consensus reached at the Fort St. John Land and Resource Management planning table, the Muskwa-Kechika Management Area (M-KMA) was formally designated through the M-KMA Act. This legislation requires that the management and development of Crown lands and natural resources within the M-KMA be carried out in accordance with the Muskwa-Kechika Management Plan. The Muskwa-Kechika Management Plan calls for the completion of pre-tenure plans as a prerequisite to the allocation or authorization of any oil and gas development within the M-KMA.

A pre-tenure planning process is currently under way within the upper portions of the Halfway River watershed and several of its tributaries, including the Graham River, Chowade River and Cypress Creek (hereafter referred to as the Halfway-Graham). Existing fish distribution and habitat data within the Halfway-Graham study area was limited and largely restricted to the mainstems of the four major drainages. The paucity of information on aquatic habitats and fluvial fish populations was identified as a major limitation to effective planning of access and oil and gas development.

In August and September 2001, Diversified Environmental Services completed an *Overview Fish and Fish Habitat Inventory* (Overview Inventory) within the Halfway-Graham pre-tenure planning area.

#### 2.0 PROJECT AREA

The project area lies to the west of the Alaska Highway, approximately 150 km northwest of Fort St. John, and includes all portions of the upper Halfway River, Cypress Creek, Chowade River and Graham River watersheds lying within the M-KMA. The study area is bounded by the M-KMA boundary to the east, by Graham-Laurier Provincial Park on the west and south, and by the height-of-land between the Halfway and Sikanni Chief watersheds to the north (Fig. 1). The study area lies within portions the Upper Halfway and Lower Halfway Watershed Groups, as defined by the British Columbia Watershed Atlas.

The Halfway River and its three major tributaries within the study area (the Cypress, Chowade and Graham), originate in the Rocky Mountains and flow eastward through the Muskwa Foothills and Peace Foothills ecosections of the Northern Boreal Mountains ecoprovince. Alpine Tundra (AT), Engelmann Spruce-Subalpine Fir (ESSF), Spruce-Willow-Birch (SWB), and Boreal White and Black Spruce (BWBS) biogeoclimatic zones are present within the project area.

Topography within the western portion of the project area is extremely mountainous, with the terrain becoming less severe to the east, where it is dominated by forested ridges and valleys, subalpine parkland and vegetated alpine tundra. Mainstem and tributary drainage systems are characterized by moderate gradients and low turbidity.



Portions of the four main valleys are accessible by snowmobile and all-terrain-vehicle (ATV) via the Halfway River Trail, Cypress Creek Trail, Chowade River Trail, and Graham River Trail designated routes. The remainder of the project area is accessible only by foot, horseback or aircraft.

Recreation is currently the primary land use. Commercial activities are associated with recreational use by both residents and non-residents, and include guide-outfitting and packing. With the exception of a small amount of past seismic exploration, industrial land use within the project area is limited.

#### 3.0 METHODS

Historical fisheries information, including existing fish sampling data, anecdotal information, and local knowledge, was reviewed prior to the commencement of fieldwork. Existing fisheries data was compiled and reviewed under a previous contract and included a proposed field sampling program consisting of 41 stream sample sites (De Gisi 2001).

Sample site placement outlined in the originally proposed sampling program (DeGisi 2001) was modified during the course of the fieldwork, as migration obstructions and habitat use patterns were identified and flow-dependent seasonal access limitations were noted. Final site selection was also dependent on the availability of suitable helicopter landing sites. Site locations were adjusted in the field to increase the amount of fish habitat and distribution data collected.

All field access was by Bell 206B helicopter. Flight paths were generally low-level along significant stream channels or high-altitude over surrounding terrain, with specific avoidance of the activities of guide-outfitters, resident hunters and wildlife.

A standard Resources Inventory Committee (RIC) Site Card was completed at each stream sample site, in accordance with *Reconnaissance 1:20,000 Fish and Fish Habitat Inventory: Standards and Procedures (RIC 1998, Errata March 1999).* Photographs of representative habitat and channel features were taken at each sample site, including upstream and downstream ground perspectives and aerial views. Representatives of "sport-fish" species were also photographed.

A fish species inventory was undertaken at each sample site using a Coffelt Mark X gasgenerator, backpack electro-fisher. All electro-fishing was conducted using pulse frequency settings of 60 or Coffelt's CPS<sup>™</sup> complex pulse setting. Output voltages of 250 to 300 volts were normally used, with adjustments made for water depth, conductivity, and length of fish being sampled. Juvenile rearing habitat was sampled during single-pass electro-fishing within each site. Angling with spoons, spinners, and roe was conducted in habitat likely to hold adult salmonids, including deep pools associated with bedrock confinement or large woody debris (LWD). Sample sites typically ranged in length from 100 m to 300 m.

To reduce handling stress, fish were anaesthetized in a 40 mg/l clove oil solution (0.3 ml clove oil dissolved in 1.0 ml ethanol, then dissolved in 8 litres of water). All fish were revived before release back into the stream.

Sampling method specifications, species, and fork length for all fish captured were recorded on RIC Fish Collection Forms and Individual Fish Data Forms (RIC 1999). Scale samples were taken from representatives of all age classes of Arctic grayling (*Thymallus arcticus*), mountain whitefish (*Prosopium williamsoni*), rainbow trout (*Oncorhynchus mykiss*), and juvenile bull trout (*Salvelinus confluentus*). Scale samples were placed in scale envelopes and later mounted between glass slides and read on a Micron 780 microfiche reader. A pelvic fin ray was collected from mature bull trout, mounted, and analyzed by North-South Consulting Inc., Winnipeg, Manitoba.

No lakes were sampled, no water samples were collected for analysis from any streams, and no voucher specimens were collected during this inventory.

A list of sampling equipment used during field surveys appears in Table 1.

Equipment	Parameter	Make and Model
Electro-fisher	fish species present	Coffelt Mark X
Abney Level	site gradient	Can-measure 5X
Meter Sticks	channel and wetted width, impasse height, pool depth	2-metre folding
Thermometer	water temperature	Fisher alcohol
Range Finders	channel and wetted width	Ranging 120, Ranging 620
Hip Chain	site length	Chainman II
Camera	photodocumentation	Pentax ME SLR w/50mm Canon SureShot A1 w/32mm
GPS Receiver	Field site-referencing	Garmin GPS II PLUS

Table 1. List of field equipment used during the Halfway-Graham Overview Inventory.

#### 4.0 RESULTS

Field assessments of 41 stream sample sites were completed between August 20 and September 06, 2001.

#### 4.1 Logistics

All site access was by helicopter and all sample site evaluations were conducted by the same two-person field crew. Field operations for the north half of the project area were staged from Mae's Kitchen at Mile Post 147 of the Alaska Highway and from Heyer's Camp, on the Graham River, for the south half of the project area. No logistical problems relating to access, weather, or timing were encountered during the course of the field program.

#### 4.2 Habitat and Fish Distribution

Forty-one stream sample sites were established and evaluated in the field. These sites were distributed uniformly throughout the four major drainages comprising the project area, which included all portions of the upper Halfway, Graham, Chowade and Cypress watersheds lying upstream of the M-KMA boundary, with the exception of those portions of the Graham River watershed occurring within Graham-Laurier Provincial Park.

Fluvial aquatic habitats within the project area are generally characterized by moderate gradient, riffle/pool configurations, with coarse granular substrates. Suspended sediment levels are typically low, with correspondingly high water clarity. Boulder cover and occasional deep pools account for the majority of rearing cover in tributary habitats, with functional large woody debris (LWD) comprising a sub-dominant, but variable, component. On mainstem reaches, side channel habitats and cobble margins provide juvenile rearing habitat, while runs and deep pools associated with LWD and bedrock provide holding and feeding habitat for adult salmonids.

Bull trout, Arctic grayling, mountain whitefish, rainbow trout and slimy sculpin (*Cottus cognatus*) have been previously sampled within the project area. All stream reaches that are seasonally accessible from the Halfway River mainstem and contain suitable seasonal rearing habitat can generally be assumed to support one or more of these species. Bull trout and mountain whitefish appeared to be most abundant, while rainbow trout and Arctic grayling were found to occur at lower densities.

Bull trout exhibit the most "upstream" distribution pattern of the four sport-fish species and juveniles of this species are the most likely to be found in headwater and upper reach tributary habitats.

All four major drainages within the project area contain critical spawning habitat for subpopulations of fluvial migratory bull trout that make annual pre-spawning migrations from the Peace and lower Halfway Rivers. As a result, all four drainages also contain important year-round, rearing habitat for juvenile bull trout.

Migrational barriers occur on all four mainstem drainages within the project area. Portions of the Graham River and Halfway River lying above the lowermost impasses support geographically and genetically isolated bull trout populations, while portions of the Chowade River and Cypress Creek watersheds lying upstream of their respective barriers are non fish-bearing. A summary of all barriers to fish movement documented within the project area appears in Table 2.

Mountain whitefish are present in all four mainstem drainages within the project area but, unlike bull trout, their distribution is restricted to habitats downstream of the lowermost migrational barriers. Mountain whitefish appear to use seasonally accessible portions of the project area for adult summer habitat, spawning and juvenile rearing. Young-of-the-year (YOY) whitefish were captured at both mainstem sample sites on the Halfway River during the current survey, suggesting successful spawning activity. While juveniles are assumed to over-winter in mainstem habitats within the project area, adults typically undertake downstream movements to the lower Halfway mainstem during the late fall (RL&L 1995).

Arctic grayling have been recorded in all four major drainages comprising the project area, although none were sampled during the current survey. Arctic graying distribution appears to be largely associated with summer use by adult fish in mainstem and large tributary habitats. Although several YOY grayling were sampled on the Halfway River mainstem near Headstone Creek in 1995 (DES 1995), there is little other evidence of grayling spawning or juvenile rearing within the project area. Existing regional inventory and radio-telemetry data (MELP 1999a) suggests that most Arctic grayling spawning and juvenile rearing occurs lower in the Halfway system. Arctic grayling do not typically exist as upstream-resident populations above migrational barriers and have been historically

excluded from habitats upstream of the lowermost barriers within the project area. An unofficial transplant, however, appears to have resulted in the establishment of a resident population in Lady Laurier Lake, at the headwaters of Horn Creek (Woods 2001). Woods (2001) found anecdotal evidence of the presence of Arctic grayling at Red Falls on the Graham River. These fish are assumed to originate from the Lady Laurier Lake population.

Rainbow trout are native to all four main drainages within the project area and exhibit a distribution pattern similar to that of mountain whitefish, although at somewhat lower densities.

Slimy sculpin appear to exist as local populations in all accessible portions of mainstem and tributary drainages where suitable over-wintering capability exists. Although this species often occurs in association with isolated, upstream-resident bull trout populations, none have been recorded upstream of the lower barriers on the Graham (Christina Falls) or Halfway Rivers.

Additional non-sport species, including, longnose sucker (*Catostomus catostomus*), lake chub (*Couesius plumbeus*), and longnose dace (*Rhinichthys cataractae*) have been recorded in portions of the Halfway River system downstream of the project area, and may be seasonally present at low densities within lower portions of the project area.

A summary of fish sampling results for the 41 stream sample sites appears in Table 3. Site data cards, individual fish data, and site photographs appear in Appendices I through XLI. A complete index of all photodumentation recorded during the current survey is included in Appendix XLII. Interpretive maps (1:80,000 scale) summarizing sample site location, barriers, historical sampling data and fish distribution are included in Appendix XLII. A brief description of fish distribution and general habitat values for each of the four major drainages sampled is presented below.

Stream Name	Watershed Code	NTS Map	Barrier Type	Height	UTM	Comments
Graham River	235-304300	94B/11	falls	60 m	10.493381.6267044	Christina Falls – lowermost impassable barrier on Graham mainstem; resident bull trout population and introduced Arctic grayling population upstream.
Graham River	235-304300	94B/11	falls	4 m	10.471638.6276696	Second impassable barrier on Graham mainstem; upstream of confluence with Poutang Creek.
Graham River	235-304300	94B/11	falls	9 m	10.471081.6276874	Red Falls - impassable barrier downstream of confluence with Horn Creek; presence or absence of bull trout upstream not confirmed; Arctic grayling introduced upstream (Lady Laurier lake).
Needham Creek	235-304300-51900	94B/6	falls	4 m	10.489016.6261018	Impassable barrier; upper limit of fish distribution on Needham Creek – non fish-bearing upstream.
Trib to Needham Creek	235-304300-51900-18800	94B/6	falls	8 m	10.489420.6261195	Impassable barrier at mouth of largest Needham sub-drainage; non fish-bearing upstream.
Chowade River	235-430800	94B/11	cascade	2 m	10.481289.6284794	Partial barrier on Chowade mainstem – may be passable to mature sport-fish.
Chowade River	235-430800	94B/11	dewatered zone	n/a	10.480135.6284384 to 10.475692.6283817	Extended dewatered section on Chowade mainstem; likely precludes upstream fish movement in conjunction with 2 m partial barrier immediately downstream; fish absence upstream assumed but not confirmed.
Cypress Creek	235-492500	94B/14	falls	5 m	10.485197.6299203	Impassable barrier; upper limit of fish distribution on Cypress Creek – non fish- bearing upstream.
Trib to Cypress Creek	235-492500-74500	94B/14	falls	3 m	10.484861.6300348	Lowermost impassable barrier 1.3 km upstream from mouth; non fish-bearing upstream.
Trib to Cypress Creek	235-492500-74500	94B/14	falls	5 m	10.484472.6300295	Impassable barrier on non fish-bearing reach.
Trib to Cypress Creek	235-492500-74500	94B/14	falls	3 m	10.482077.6301230	Impassable barrier on non fish-bearing reach.
Halfway River	235-000000	94B/14	falls	4 m	10.470926.6313425	Lowermost impassable barrier on Halfway mainstem; resident bull trout population upstream.

-rabic 2. Outfinding of barriers to non-movement within the ranway-oranam overview inventory project and	Table 2. S	Summary of ba	riers to fish moveme	nt within the Halfway	y-Graham Overview	Inventory project are
--	------------	---------------	----------------------	-----------------------	-------------------	-----------------------

Stream Name	Watershed Code	NTS Map	Barrier Type	Height	UTM	Comments
Halfway River	235-000000	94B/14	falls	5 m	10.470397.6313234	Second impassable barrier on Halfway mainstem; resident bull trout population upstream.
Trib to Halfway River	235-879200	94B/14	falls	30 m	10.470556.6314166	Impassable barrier 930 m upstream from mouth; non fish-bearing upstream.
Calnan Creek	235-927700	94B/13	cascade	2 m	10.462480.6303166	Partial barrier on Calnan Creek mainstem; juvenile bull trout sampled upstream.
Calnan Creek	235-927700	94B/13	falls	10 m	10.457057.6301515	Lowermost in series of impassable mainstem barriers; limited habitat upstream assumed non fish-bearing.
Calnan Creek	235-927700	94B/13	falls	8 m	10.457014.6301467	2 <sup>nd</sup> in series of impassable mainstem barriers; limited habitat upstream assumed non fish-bearing.
Calnan Creek	235-927700	94B/13	falls	5 m	10.456961.6301415	3 <sup>rd</sup> in series of impassable mainstem barriers; limited habitat upstream assumed non fish-bearing.

Table 2 Cont. Summary of barriers to fish movement within the Halfway-Graham Overview Inventory project area.

 Table 3.
 Summary of fish sampling results from 41stream sample sites in the Halfway-Graham Overview Inventory project area.

Stream Name	Site #	Fish Species	Comments
Graham River	1	BT	Isolated up-stream resident population
Trib to Graham River	2	BT CCG	
Needham Creek	3	BT RB MW CCG	
Needham Creek	4	NFC	Non fish-bearing; upstream of impassable barrier
Trib to Graham River	5	BT	Isolated up-stream resident population
Justice Creek	6	NFC	BT assumed seasonally present at low densities
Trib to Justice Creek	7	NFC	BT assumed seasonally present at low densities
Justice Creek	8	NFC	BT assumed seasonally present at low densities
Trib to Graham River	9	NFC	BT assumed seasonally present at low densities
Chowade River	10	BT	GR MW RB CCG also assumed present
Chowade River	11	NFC	Upstream of partial barrier, adjacent to de-watered zone
Trib to Chowade River	12	BT RB CCG	
Trib to Chowade River	13	BT RB CCG	
Trib to Chowade River	14	BT CCG	
Trib to Chowade River	15	CCG	Juvenile BT assumed seasonally present at low densities
Trib to Chowade River	16	CCG	Juvenile BT assumed seasonally present at low densities
Trib			
Trib to Chowade River	17	BT RB MW CCG	
Trib to trib to Chowade River	18	NFC	BT CCG MW also assumed seasonally present at low densities
Trib to Chowade River	19	BT	MW CCG also assumed seasonally present at low densities
Cypress Creek	20	BT RB MW CCG	
Cypress Creek	21	NFC	Non fish-bearing; upstream of impassable barrier
Geesdale Creek	22	NFC	BT CCG MW assumed seasonally present at low densities
Trib to Geesdale Creek	23	NFC	BT CCG MW assumed seasonally present at low densities
Trib to Geesdale Creek	24	BT	MW CCG also assumed seasonally present at low densities
Trib to Cypress Creek	25	NFC	BT MW RB CCG assumed seasonally present at low densities
Trib to Cypress Creek	26	NFC	BT CCG MW assumed seasonally present at low densities
Trib to Cypress Creek	27	CCG	BT MW RB also assumed seasonally present at low densities
Trib to Cypress Creek	28	BT	MW RB CCG also assumed seasonally present at low densities
Trib to Cypress Creek	29	NFC	Non fish-bearing; upstream of impassable barrier
Halfway River	30	RB MW CCG	BT GR also assumed seasonally present at low densities
Halfway River	31	MW CCG	BT RB GR also assumed seasonally present at low densities
Headstone Creek	32	BT RB	MW CCG also assumed seasonally present at low densities
Trib to Halfway River	33	NFC	BT MW CCG assumed seasonally present at low densities
Trib to Halfway River	34	NFC	BT GR MW CCG assumed seasonally present at low densities
Turnoff Creek	35	BT	
Fiddes Creek	36	BT	
Trib to Halfway River	37	BT MW	RB CCG also assumed seasonally present at low densities
Trib to Halfway River	38	NFC	Juvenile BT assumed seasonally present at low densities
Trib to Halfway River	39	BT RB MW	
Calnan Creek	40	BT	Upstream resident population above Halfway Falls
Calnan Creek	41	BT	Upstream resident population above Halfway Falls

BT=bull trout MW=mountain whitefish GR=Arctic grayling RB=rainbow trout CCG=slimy sculpin NFC=no fish caught

#### 4.2.1 Graham River

The project area includes a relatively small portion of the Graham River watershed extending from near Christina Falls to the confluence with Poutang Creek. All portions of the Graham River drainage occurring upstream of the mouth of Poutang Creek lie within Graham-Laurier Provincial Park. Christina Falls is the largest and lowermost of three impassable barriers on the Graham River mainstem (Plate 1). Bull trout, mountain whitefish, Arctic grayling and rainbow trout are common downstream of Christina Falls while only bull trout are present upstream. The remaining two barriers are located 600 m apart, approximately 4.5 km upstream of the project area boundary near the mouth of Poutang Creek. There has been no sampling to confirm the presence or absence of resident bull trout upstream of the upper barrier (locally known as Red Falls), however, Woods (2001) found anecdotal evidence of the presence of resident bull trout in Horn Creek and at the confluence of the Graham River and Horn Creek.



Plate 1. Christina Falls – lower impassable barrier on the Graham River mainstem; aerial view upstream.

The southernmost extremity of the Halfway-Graham pre-tenure planning area includes portions of the Needham Creek drainage. Needham Creek is the largest tributary to the Graham River and enters the mainstem immediately downstream of Christian Falls. As a result of an impassable barrier located 8 km upstream of the mouth, only the lower reach of Needham Creek is fish-bearing. Although the lower mainstem itself lies within Graham-Laurier Provincial Park, tributary drainages entering from the south side of the stream lie within the pre-tenure planning area, and have potential to effect downstream fisheries values and water quality. A 4 km segment of the mainstem immediately downstream of the impasse provides critical spawning habitat for a sub-population of fluvial, migratory bull trout that over-winter in the lower Halfway and Peace Rivers.

Needham Creek is one of only four locations where the Peace-Halfway migratory bull trout population is known to spawn (MELP 1999b). A bull trout Wildlife Habitat Area (WHA) was established on the Needham Creek spawning zone in 2001, under the Identified Wildlife Strategy. Needham Creek also supports summer populations of adult mountain whitefish and rainbow trout.

Based on limited sampling, the geographically and genetically isolated bull trout population present upstream of Christina Falls appears to exist at low to moderate densities within the project area. No critical spawning habitat, as evidenced by concentrations of mature fish, redds, or high densities of YOY, were identified. No bull trout were captured in three sites sampled in the Justice Creek drainage, although suitable habitat for rearing juvenile bull trout is present. Seasonal access at the time of the survey was restricted by subsurface flow in the lower reach and bull trout were assumed to be seasonally present at low densities.

#### 4.2.2 Chowade River

The east boundary of the M-KMA crosses the Chowade River mainstem approximately 22 km upstream from its confluence with the Halfway River. All of the Chowade watershed upstream of this point, including the remaining 50 km of mainstem, lies within the Halfway-Graham pre-tenure planning area. All four sport-fish species found within the project area are relatively common in the Chowade River. The Chowade River is believed to be the most important bull trout spawning stream in northeastern British Columbia. Regional inventory data and radio-telemetry (Baxter 1997, MELP 1999b) data suggests that the majority of the Peace-Halfway fluvial, migratory bull trout population spawns along a four kilometre section of the middle Chowade mainstem. As a result, the Chowade mainstem supports high densities of juvenile bull trout including over-wintering YOY and yearlings. In addition, almost all seasonally accessible tributary habitat is assumed to support rearing juvenile bull trout on a seasonal basis. A bull trout WHA was established on the Chowade River spawning zone in 2001, under the Identified Wildlife Strategy.

As in the project area as a whole, mountain whitefish, although not the most widely distributed, appear to be the most abundant sport-fish species in the Chowade River drainage. During an investigation of fish emigration from the Chowade system in the fall of 1994, 8,034 mountain whitefish were counted, compared to 529 rainbow trout, 301 bull trout and 118 Arctic grayling (RL&L 1995). The capture of relatively high densities of YOY mountain whitefish in August 1990 (ARL 1991) also suggests significant spawning activity.

While the Chowade River supports rainbow trout through a wide range of age classes, Arctic grayling use appears restricted to the adult age class, with an absence of rearing juveniles.

Although no impassable vertical barriers occur on the Chowade mainstem, the seasonal movement of fish to the upper drainage appears to be effectively precluded by the combination of a 5 km zone of sub-surface flow and a 2 m cascade, which likely forms a partial barrier immediately downstream. The cascade may limit the movement of juvenile fish during the spring when surface flow could potentially exists on the normally de-watered segment, while discharge is likely entirely sub-surface by the time adult fish large enough to ascend the cascade enter the system for the summer.

Sampling to confirm the absence of fish from headwaters habitat upstream of the dewatered zone has not been conducted.

#### 4.2.3 Cypress Creek

The east boundary of the M-KMA crosses Cypress Creek approximately 18 km upstream from its confluence with the Halfway River. All portions of the Cypress drainage upstream of the M-KMA boundary lie within the Halfway-Graham pre-tenure planning area. This includes the remaining 45 km of mainstem and Geesdale Creek, the largest sub-drainage.

A 5-metre vertical impasse is located on the Cypress Creek mainstem approximately 46 km upstream of the confluence with the Halfway River. This impasse precludes all fish movement into the upper drainage and no upstream-resident fish were found above this barrier during sampling in 1996 (DES 1997). A second sample site was evaluated upstream of the impasse during the current survey to re-confirm non fish-bearing status. Three other migrational barriers occur within the Cypress drainage. All are located on a unnamed tributary entering from the north, immediately downstream of the mainstem barrier. The portion of the tributary drainage upstream of these impasses was found to be non fish-bearing.

Three of the four sport-fish species found within the project area were captured in the Cypress Creek drainage during the current survey, including bull trout, rainbow trout and mountain whitefish. Rainbow trout and mountain whitefish representing a range of age classes, including YOY, have been recorded in the Cypress Creek drainage, although at lower densities than in the Chowade or upper Halfway drainages (DES 1997, ARL 1991). Over-summering adult Arctic grayling appear to use the Cypress Creek drainage in relatively low densities. The only record within the Cypress portion of the project area is of two adult grayling in the Geesdale Creek mainstem in 1996 (DES 1997).

Two critical bull trout spawning locations used by Peace-Halfway fluvial, migratory bull trout have been identified on Cypress Creek. One is located immediately downstream of the confluence with Geesdale Creek and the second is located immediately downstream of the mainstem barrier (MELP 1999b). Bull trout WHA's were established at both sites in 2001, under the Identified Wildlife Strategy.

All seasonally accessible tributary habitats providing suitable rearing habitat can be assumed to support juvenile bull trout on a seasonal basis.

#### 4.2.4 Upper Halfway River

Of the four sub-drainages comprising the Halfway-Graham pre-tenure planning area, the upper Halfway River accounts for the largest proportion. The downstream boundary of the project area (east M-KMA boundary) crosses the Halfway River between the confluences of Headstone Creek and Two Bit Creek, just west of Pink Mountain. The project area includes the upper 67 km of Halfway mainstem, the Headstone Creek, Turnoff Creek, Fiddes Creek and Calnan Creek sub-drainages, and Rob Lake.

Two impassible barriers occur on the Halfway River mainstem. Both are located within a 650-metre section of river, approximately halfway between the east M-KMA boundary

and the headwaters. The lower impasse (4 m) precludes all fish movement into the upper portion of the drainage (Plate 2).



Plate 2. Lower impassable barrier on the Halfway River mainstem; aerial view upstream.

Three of the four sport-fish species know to occur within the Halfway-Graham project area were captured downstream of the mainstem barrier during the current survey: bull trout, rainbow trout and mountain whitefish. Arctic grayling were not captured during the current survey but were recorded in the Halfway mainstem, within the project area, in 1995 (DES 1995). Over-summering, adult Arctic grayling appear more abundant in the Halfway mainstem downstream of the project area boundary. Rainbow trout and mountain whitefish appear to be relatively widespread at moderate densities through seasonally accessible portions of the Halfway mainstem and significant tributaries.

Two critical staging/spawning areas used by Peace-Halfway migratory bull trout, have been identified on the Halfway mainstem within the pre-tenure planning area (MELP 1999b). One is located near the mouth of Fiddes Creek and the other immediately downstream of the lower mainstem impasse. Both sites currently receive some level of protection from bull trout WHA's established in 2001, under the Identified Wildlife Strategy. Radio-telemetry data suggests that a proportion of these migratory fish may spawn in Fiddes Creek and Turnoff Creek. Relatively high densities of juvenile bull trout in both streams, recorded during the current inventory and by Baxter (1996) also suggest spawning activity.

Above the mainstem impasses, the upper watershed diverges into two sub-basins of comparable size: the Halfway River and Calnan Creek. This portion of the watershed supports geographically and genetically isolated bull trout. It is unclear if bull trout

populations in the Halfway River/Calnan Creek and in Robb Lake represent separate fluvial and adfluvial sub-populations. Baxter (1996) and BC Environment (J. Burrows pers. comm.) both sampled YOY bull trout immediately downstream of the outlet of Robb Lake, which suggests an outlet-spawning adfluvial population. During the current survey several bull trout approaching spawning condition were observed in lower Calnan Creek. These large-bodied fish appeared to have morphometric characteristics common to migratory populations. No other fish species have been recorded in fluvial habitats upstream of the mainstem barrier or in Robb Lake.

Only two other barriers potentially effecting fish passage were noted in the upper Halfway drainage. One is located on the lower reach of an unnamed tributary (WSC 235-879200) entering the Halfway mainstem from the north, immediately downstream of the mainstem barriers. Habitat upstream of this 30-metre barrier is assumed to be non fish-bearing due to limited potential to support an upstream-resident population. The second is the lowermost of a series of waterfalls located near the headwaters of Calnan Creek. Habitat upstream of this 10-metre barrier is also assumed to be non fish-bearing due to limited potential to complexity.

#### 4.3 Fish Age and Growth

Fork lengths and aging structures were collected from representatives of sport-fish species captured within the Halfway-Graham Overview Inventory project area between August 20 and September 6, 2001. These included bull trout, rainbow trout and mountain whitefish. Although Arctic grayling are present in the project area, none were captured or sampled in the course of this inventory.

A meaningful analysis of growth is precluded by small sample sizes, absence of representatives from numerous age classes and, in the case of bull trout, variability in the combined sample due to the existence of genetically isolated sub-populations within the project area. Limited information on the life history of each species can be gleaned from general age class distribution within the watershed. A brief discussion of each of the three species follows. Where possible, length-frequency and age-at-length plots are presented, however, the limitations of sample size and sampling bias should be acknowledged.

#### 4.3.1 Rainbow Trout

Nine rainbow trout were captured within the Chowade River, Cypress Creek and Halfway River drainages; aging structures from all nine were analyzed. Sampled fish were distributed sparsely through the 1+ to 5+ age classes. Table 4 depicts the age-length relationship of sampled rainbow trout; the sample size is too limited to allow meaningful analysis.

			A	ssigned Ag	e		
	0+	1+	2+	3+	4+	5+	6+
Mean F.L. (mm)	-	108	120	196	254	350	-
Range (mm)	-	98-118	_	180-216	275-234	-	-
n = 9	-	2	1	3	2	1	_

Table 4. Age-length relationship of rainbow trout captured in the Halfway-GrahamOverview Inventory project area between August 20 and September 5, 2001.

F.L. = fork length

#### 4.3.2 Mountain Whitefish

Thirty-five mountain whitefish were captured within the Chowade River, Cypress Creek and upper Halfway River drainages. Eighty percent of these were young-of-the-year juveniles sampled in the Halfway River mainstem downstream of the mainstem barrier. The remaining seven fish were scattered across the 3+ to 7+ age classes. Table 5 summarizes age-at-length; limited sample size precludes further analysis.

Table 5.	Age-length relationship of mountain whitefish captured in the Halfway-Graham
	Overview Inventory project area between August 20 and September 5, 2001.

				Assign	ed Age			
	0+	1+	2+	3+	4+	5+	6+	7+
Mean F.L. (mm)	45	-	-	171	218	307	304	300
Range (mm)	38-52	-	-	-	-	305-310	295-313	-
N = 35	28	0	0	1	1	2	2	1

F.L. = fork length

#### 4.3.3 Bull Trout

A total of ninety-eight bull trout were captured across all four drainages within the project area; most were in tributary habitats.

Rearing juveniles in the YOY, yearling and 2+ age classes accounted for the majority of the sample (75%). YOY juveniles were sampled in the upper Graham River mainstem below the mouth of Poutang Creek (Site 1), suggesting possible mainstem spawning by the upstream resident population, and in the Needham Creek WHA (Site 3).

The remainder of the sample consisted primarily of age 3+ and 4+ sub-adults, and six additional fish in the 6+ to 9+ age classes. Figure 2 represents the length-frequency relationship of the combined sample, while Table 6 summarizes age-at-length. Aging structures were analyzed for all bull trout except 18 representatives of the yearling length class. These were assigned ages of 1+ based on fork length and physical characteristics and are included in Table 6.



Figure 2. Length-frequency relationship of bull trout captured in the Halfway-Graham Overview Inventory project area between August 20 and September 5, 2001.

					Assigne	ed Age				
	0+	1+	2+	3+	4+	5+	6+	7+	8+	9+
Mean F.L. (mm)	55	96	152	198	236	335	451	440	-	552
Range (mm)	44-63	75-	122-	175-	220-	-	348-	418-	-	-
		126	186	251	261		555	463-		
n=98	6	33	35	13	5	1	2	2	-	1

# Table 6. Age-length relationship of bull trout captured in the Halfway-Graham OverviewInventory project area between August 20 and September 6, 2001.

F.L. = fork length

#### 4.4 Significant Features and Fisheries Observations

Due to their blue-listed (i.e., vulnerable) status in British Columbia and large-scale declines over their North American range, bull trout are of special management concern in the Halfway River watershed. Bull trout are much more specific in their spawning habitat requirements than spring spawning species (e.g. Arctic grayling) or fall broadcast spawners (e.g., mountain whitefish) and often make extended pre-spawning migrations to access segments of stream where conditions allow the successful over-wintering of their incubating eggs.

The Peace and Halfway Rivers support the largest population of large-bodied, fluvial, migratory bull trout so far identified in northeastern British Columbia. Existing regional fisheries data and radio-telemetry data collected by BC Environment between 1996 and 1998 suggest that these fish typically over-winter in the Peace River, between Hudson's Hope and the BC-Alberta border, and make summer movements up the Halfway River and its tributaries to one of four critical spawning grounds. All four of these critical spawning areas lie within the Halfway-Graham pre-tenure planning area. The Chowade River appears to support the largest spawning run, followed by the upper Halfway River, lower Needham Creek and Cypress Creek. Important core spawning zones within the project area are currently defined by bull trout WHA's, however, industrial disturbances outside WHA boundaries resulting in sediment transport or disruptions to ground water flow have high potential to negatively affect bull trout spawning habitat. In addition, improved human access in the vicinity of critical spawning and staging areas, where concentrations of large fish are at increased vulnerability, can have dramatic effects on spawning populations despite restrictive regulations.

Although there is little evidence of Arctic grayling spawning or juvenile rearing within the project area, existing data suggests mainstem and larger tributary habitats may provide post-spawning, summer refuge for adult grayling from the broader Halfway River watershed. Mature Arctic grayling (5+ to 8+ age class) are sensitive to over-harvest and can be significantly affected by increased human access to key summer holding/feeding habitats.

Mountain whitefish are widely distributed throughout the project area and appear to be the most abundant fish species present. This species is generally less affected by human development due to less stringent spawning habitat requirements, a general preference for larger streams, and a lower appeal to anglers. Relatively few migrational barriers effect the fish-bearing status of significant portions of the project area. These include a 5-metre falls on the Cypress Creek mainstem which precludes fish use of the upper Cypress watershed, and the upper Chowade de-watered zone which is assumed to limited fish distribution in the upper Chowade drainage. Both the Graham River and upper Halfway River watersheds support upstream resident bull trout population above their respective impassable barriers.

#### 4.5 Future Research Recommendations

Data on fluvial, migratory bull trout has been documented within the project area by radio-telemetry data collected by BC Environment (MELP 1999b). Although adequate information on migration timing and spawning habitat use is available for the Needham Creek, Cypress Creek and Chowade River sub-populations, further information may be required on the upper Halfway spawning run to allow for effective development planning. Specifically, the use of upper Halfway mainstem spawning zones by migratory bull trout should be further defined (below the mainstem barrier). As well, the suspected importance of Turnoff Creek and Fiddes Creek as critical spawning and rearing areas for migratory bull trout should also be investigated.

Further work is needed to define the reproductive characteristics of possible fluvial and adfluvial bull trout populations isolated above the Halfway mainstem barrier (i.e., possible critical spawning zone in Calnan Creek and the outlet of Robb Lake).

Baseline estimates of the Chowade River bull trout spawning run, derived from data collected by BC Environment between 1995-1998, should be periodically replicated as an index into long term population trends for the Peace-Halfway fluvial, migratory population.

#### PERSONAL COMMUNICATIONS

Burrows, Jeff. Fisheries Inventory Specialist, BC Ministry of Sustainable Resource Management. Fort St. John, B.C.

#### **REFERENCES CITED**

- ARL (Aquatic Resources Limited). 1991. Peace River Site C development: fisheries habitat and tributary surveys – 1990 studies. Prepared for B.C. Hydro, Vancouver, B.C. FISS ref # 701-123.
- Baxter, J. S. 1996. Upper Halfway overview fisheries inventory; mainstem and tributary assessment. Dept of Zoology, University of British Columbia, Vancouver, B.C.
- Baxter, J. S. 1997. Aspects of the reproductive ecology of bull trout (*Salvelinus confluentus*) in the Chowade River, British Columbia. M.Sc. Thesis, University of British Columbia, Vancouver, B.C.
- De Gisi, J. S. 2001. Overview fish and fish habitat inventory plan Muskwa-Kechika Pre-Tenure Plan Area 1. Prepared for Ministry of Energy and Mines, Fort St. John, B.C.
- DES (Diversified Environmental Services). 1995. Numac Energy Inc North Cypress access development fisheries habitat assessment – August 1995. Prepared for Kaizen Environmental Sampling Ltd, Grande Prairie, Ab. FISS ref # 701-269
- DES (Diversified Environmental Services). 1997. Canfor-Fort St. John Reconnaissance Level Stream Inventory 1996 – Halfway River-West Tributaries. Prepared for Canadian Forest Products Ltd., Fort St. John, B.C.
- MELP (Ministry of Environment, Lands and Parks). 1999a. Halfway River watershed Arctic grayling telemetry project, unpublished data, Fisheries Section, Fort St. John, BC.
- MELP (Ministry of Environment, Lands and Parks). 1999b. Halfway River watershed bull trout telemetry project, unpublished data, Fisheries Section, Fort St. John, BC.
- RIC (Resources Inventory Committee). 1998. Reconnaissance 1:20K Fish and Fish Habitat Inventory - Stream Inventory Standards and Procedures, Version 1.1 (April 1998, Errata March 1999). B.C. Ministry of Environment, Lands and Parks, Fisheries Branch, Victoria, BC.
- RIC (Resources Inventory Committee). 1999. Overview fish and fish habitat inventory methodology. B.C. Ministry of Environment, Lands and Parks, Fisheries Branch, Victoria, BC.

- RL & L (R.L. & L. Environmental Services Ltd). 1995. Salmonid fish migrations in the Chowade River, B.C. Fall 1994. Prepared for Ministry of Environment, Lands & Parks – Fish & Wildlife Branch, Fort St. John, B.C. FISS ref # 701-240
- Woods, A. 2001. Historical fisheries information from the Muskwa-Kechika Management Area. Prepared for Ministry of Environment, Lands & Parks -Fisheries Branch, Fort St. John, B.C.

# **APPENDIX I**

# **GRAHAM RIVER**

(235-304300)

# Sample Site 1

Site Data Card, Fish Collection Form and Site Photographs

												SI	TE (	CAR	D											
STE	REA	M N/	AME	Gra	ham	River												FIEI	D	COORDINA	TES	56°	37.7	6' 123'	° 23.2	0'
LOO	CAT	ION																								
	5 M/	AP #	94	3/11			<u>اں</u>	_	WAT	FERSH	ED C		23	5-304	1300	-										<u> </u>
RE/		#	2001/0	0/06		SHE	#	1	SILE		10	476	281 287	6	27618. montol	1	SHEL	ENG		300 MI		RF	ACC	ESS		1
DA			2001/0	HE         WATERSHED CODE         235-304300           SITE #         1         SITE UTM         10         476281         6276187         SITE L           (09/06         TIME         0742         AGENCY         Diversified Environmental Services           meth         avg         GRAD           RF         28.50         29.00         35.00         30.00         30.50         31.00         meth           RF         28.50         28.20         35.00         18.20         21.00         19.50         25.07         1.0           H         MS         0.70         0.80         0.85         1.20         1.50         0.75         0.97         1.0           S         0.70         0.80         STAGE         Moderate         No Vis Chan         DryInt           Image: Control         Moderate         No Vis Chan         DryInt           T         T         D         N         N         N           P         <															:VV	BC/TE	FIS				IN	-
		INNE	L (m)	11/09/06       TIME       0742       AGENCY       Diversified Environmental Services         0       meth       avg       GRADII         1H       RF       28.50       29.00       35.00       30.00       33.50       31.00       meth         H       RF       28.50       28.20       35.00       18.20       21.00       19.50       25.07       1.0         TH       MS       0.70       0.80       0.85       1.20       1.50       0.75       0.97       1.0         B       0.70       0.80       STAGE       Moderate       No Vis Chan       DryInt         R       Total       Moderate (5-20%)       Dewater       Tribs       Tribs         LWD       B       U       DP       OV       IV       CROWN CLOSURE       Tribs         T       T       D       N       N       N       None       Strigge gradies       Strigge gr															%	EMS					~	NA.
				meth         avg         GRADE           TH         RF         28.50         29.00         35.00         30.00         33.50         31.00         meth         A           H         RF         28.50         28.20         35.00         18.20         21.00         19.50         25.07         1.0           OTH         MS         0.70         0.80         STAGE         Moderate         No Vis Chan         DryInt           ER         Total         Moderate (5-20%)         Dewater         Tribs         Tribs           LWD         B         U         DP         OV         IV         CROWN CLOSURE         Tribs           LWD         B         U         DP         OV         IV         CROWN CLOSURE         Tribs           LWD         B         U         DP         <														AL		TEIMP (°C)		).5			Ŷ	Ē
			L (m)         meth         avg         GRADIU           WIDTH         RF         28.50         29.00         35.00         30.00         33.50         31.00         meth           VIDTH         RF         28.50         28.20         35.00         18.20         21.00         19.50         25.07         1.0           DEPTH         MS         0.70         0.80         0.85         1.20         1.50         0.75         0.97         1.0           0.85         0.70         0.80         STAGE         Moderate         No Vis Chan         Dry/Int           COVER         Total         Moderate (5-20%)         Dewater         Tribs         Tribs           WD         LWD         B         U         DP         OV         IV         CROWN CLOSURE         Tribs           YD         LWD         B         U         DP         OV         IV         CROWN CLOSURE         Tribs           YD         P														<u> </u>				1 2				20	
Wb		PTH	0.85	0	70	0.70			0.0	Moder	20 ate	1.50 N	o Vis	Char	0.9/ 1	'	Drv/Int	<u> </u>	1	BED MATE	RIAI	1.5	III - F			
		C	OVER	Tota	al	0.04	N N	Nodera	ate (5	5-20%)		D	ewate	er			Tribs	<u> </u>	•	Dominant	Gra	avel (	2-64	mm)		
	type	SV	VD L	٧D	E	В	U	D	ΡÌ	ÓV	ľ	V C	ROW	/N CI	OSU	RE	1			Subdom.	Col	bble	(64-2	56 mm	)	~
	amt		r i	Т	-	Т	Т	C	)	Ν	1	N								D95 (cm)	19		D (c	<b>m)</b> 23	,	10F
К	loc	F	>	Р	F	P	Р	F	>	Р	I	Ρ	%0	40%	20%	90%	%(			Morph. Riff	fle-po	ool				RPF
OVE		LW	D FNC	Few	/		DI	ST		Clumpe	d	700	7-7	21-	41	71-	)6<			DISTURBA	NCE	IND	ICAT	FORS		ρĽ
ö	LB SHAPE       Vertical       RB SHAPE       Vertical       0       1       2       3       4       5       1         TEXTURE       Fines       TEXTURE       Fines       INSTREAM       None         RIP. VEG.       Coniferous       RIP. VEG.       Coniferous       VEGETATION       VEGETATION         STAGE       Mature Forest       STAGE       Mature Forest       STAGE       Mature Forest																O1 B1 B2	В3	D1	D2	D3 C1	C2	OG			
	LWD FNC       Few       DIST       Clumped       Solution       Feature       <																C3 C4 C5	S1	S2	S3	S4		$\prec$			
		LB SHAPE       Vertical       RB SHAPE       Vertical       0       1       2       3       4       5         TEXTURE       Fines       TEXTURE       Fines       INSTREAM       None         RIP. VEG.       Coniferous       RIP. VEG.       Coniferous       VEG.       Coniferous       VEGETATION         STAGE       Mature Forest       STAGE       Mature Forest       STAGE       Mature Forest       COMME         C       NID MAP #       NID #       TYPE       HT/LG (m)       mthd       PHOTO       COMME																PATTERN	Irre	gula	rWa	ndering				
		TEXTURE       Fines       TEXTURE       Fines       INSTREAM       None         RIP. VEG.       Coniferous       RIP. VEG.       Coniferous       VEGETATION       VEGETATION         STAGE       Mature Forest       STAGE       Mature Forest       Mature Forest       Coniferous       VEGETATION         C       NID MAP #       NID #       TYPE       HT/LG (m)       mthd       PHOTO       COMME																	ISLANDS	Nor	ne	<del></del>				
		InexTORE       Fines       INSTREAM       None         RIP. VEG.       Coniferous       RIP. VEG.       Coniferous       VEGETATION         STAGE       Mature Forest       STAGE       Mature Forest       Mature Forest         C       NID MAP #       NID #       TYPE       HT/LG (m)       mthd       PHOTO       COMME																	BARS	Sid	e/Mic	d-stre	eam			
		RIP. VEG.       Coniferous       RIP. VEG.       Coniferous       VEGETATION         STAGE       Mature Forest       STAGE       Mature Forest       Mature Forest         NID MAP #       NID #       TYPE       HT/LG (m)       mthd       PHOTO       COMME         Image: Stage for the s																COUPLING	Par	tially	Cou	pled	1			
	C	C NID MAP # NID # TYPE HT/LG (m) mthd PHOTO COMMI															C	CONFINED	Fie	quer	iliy C	UTIM				
JRE	C	NID MAP #       NID #       TYPE       HT/LG (m)       mthd       PHOTO       COMM         Image: Second sec																3			-	, I				
ATL																			-							
FE,																										
	R  F   DISTURBANCE INDICATOR LEGEND																									
01	Image: Converse of the converse																									
B1	Aba	ndone	d Channel		D1	Small	Woody I	Debris	(	C1 Exte	nsive	Riffles		C4	Multiple	e Cł	hannel	5	S2	Sediment Finge	ers		S5	Extensiv	e Scour	s
B2	Erod	ling Ba	ank		D2	Large \	Woody I	Debris	(	C2 Limit	ted Po	ools		C5	Disturb	ed I	Lines	Ş	S3	Sediment Wed	ges					
٩T	≿	Moc	lerate po	otentia	al fo	r rearii	ng adu	ult spo	rtfish	i (BT, M	W, (	GR).														
BIT/	ALI'	Lim	ited side	char	nnel	and be	oulder	cover	for ju	uvenile I	BT re	earing.		<u></u>			• · · · · · • • • •									
HAF	QU,	LOW	to mode	erate	pote	ential to	ormai	Instem	spa	whing to	DI BI	- sanc	I-IIKE	nnes	abund	an	t in inter	stices	in (	gravel substr	ates.	·				
F	57																									
-7	R	) DLL	FRAME	FO	CAL	LN C	IREC	TION									COM	MENT	S							
<u>lo</u>	G	C2	18		wd		u		view	u/s fron	n bot	ttom of	site													
ГАТ	G	C2	19		wd		u	1	view	u/s fron	n cer	ntre of	site													
EN	G	C2	20		wd		d		view	d/s from	n top	of site														
NN	G	C2	21		wd		u		aeria	al view u	pstre	eam														
OC	1	[1	12		50		obje	ect	fema	ale bull t	rout	- 552 n	nm													
Ō	1	1	13		50		obje	ect	fema	ale bull t	rout	- 552 n	nm													
OTO																										
PH(																										
111	G	ROL	IP			WI		E OB	SER		IS			G	ROUF	2			١٨		SEL	<u></u> 	ΓΙΟΝ	S		
Ë	<u> </u>									with of	••												non	0		
LDI																										
$\geq$																										
		С												•												
	С	X1	Electro-	fishir	ng ef	ffort: 5	25 se	conds	@ 2	50 volts	. Bul	l trout	vere	captu	ired.											
NTS	(	C1	Occasio	onal b	bedro	ock ou	it-crop	pings	in de	ep pool	s an	d LWD	jams	i.												
MEN	С	X2	Site loca	ated ı	u/s c	of Chri	stina I	Falls. l	Jpsti	ream res	sider	nt bull t	rout p	opula	ation p	res	ent; no o	other s	spe	cies recorded	l exc	ept C	3R pi	resent		
NMO			upstrea	m in l	Lady	/ Lauri	er Lak	ke.																		
ö																										

									F	ISH	I COLI	ECTIC	N FOR	M								
STF	REAN	M NA	١ME	C	Grał	nam	River						_				LAKE	X	STREA	М	W	ETLAND
LOC		ON									0.45	// /	WATE	RSHE	ED CO	DE	235-3	304300	TTAOUE			<u> </u>
			JY IL	) 		0	0		NISM	AP	94B	/11 NIL	0 NO	4	511				2001 022		XY	N
		III ان	່		vay-	Gran	to 2		REACE	1# ~~	Divorai	SII fied Envir		1 Sonia				# 30	2001-032			
DA	E		20	JU 1/U	9/00	0	10 2	001/09/06	AGEN	۲ ر	Diversi	neu Envir	ornental	Servio					BC/TE		KE-SA	MPLE
Q	S	ITE	#	NID	MAI	Р#	NID #	SITE	UTM		METH	IOD/NO.	STREA						COMM	1ENTS	3	
ГHO		1	_			_		10 47628	1 62761	87	EE	1	1 EIMP	00		JKB C						
ME		1						10.47628	1.62761	87	VO	1	5.5		-	<u>с</u>						
E / I		-														-						
SIT																						
	SIT	Έ#	MT	D/NO	D I	H/P	SPECI	ES STAGE	AGE	TO	TAL NO	D MIN L	N (mm)	MAX	(LN (n	nm)	FISH	I ACT		COM	MENT	S
RΥ	1	1	E	$\frac{EF}{1}$		1	BT			-	9	Ę	57		552		Re	aring		100		
IMA	Image: Normal Stress of the second stresecond stress of the second stress of the second stress of							3						Re	aring	approx 4	ini uui	n in				
SUN	1       10.474         Image: state						-															
H S	$ \begin{array}{c c c c c c c c c c c c c c c c c c c $						-															
비	$\begin{array}{c c c c c c c c c c c c c c c c c c c $																					
	$\begin{array}{c c c c c c c c c c c c c c c c c c c $																					
SO	SITE #     MTD/NO     H/P     SPECIES     ST/       1     EF/1     1     BT     10.47       1     VO/1     1     BT     10.47       1     VO/1     1     BT     10.47       1     VO/1     1     BT     10.47       2     I     I     IIII     IIIIIII       1     IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII												NE	ET / 1	RAP	SPEC	IFICATIO	NS				
SPE	$\begin{array}{c c c c c c c c c c c c c c c c c c c $					IN TIME	IN DA	TE (	DUT TUC	IME OUT	NET TY	/PE	LENG	TH	DE	PTH	MESH S	SIZE	SET	HAB		
AR :	Image: Site #       MD/NO       H/P       DATE IN       TII         Image: Site #       MD/NO       H/P       DATE IN       TII         Image: Site #       MD/NO       H/P       TIME IN       TIME         Image: Site #       MD/NO       H/P       TIME IN       TIME         Image: Site #       MD/NO       H/P       TIME IN       TIME         Image: Site #       MD/NO       H/P       SPECIES       LENGT																					
GE,	C       SITE #       MD/NO       H/P       DATE IN       TII         Image:																					
	C         SITE #         MD/NO         H/P         TIME IN         TIMI           1         EF/1         1         0747         0           C						EL	ECTF	ROFISH	ER SPE		ONS										
	C         SITE #         MD/NO         H/P         TIME IN         TIM           1         EF/1         1         0747         0           C				IN TIME C	DUTE	F SE	EC L	.ENGTH	WIDT	Ή	ENCL	VC	DLT	FREQ	PLSE	MA	<b>AKE</b>	MDL			
		1	1	EF/	1	1	0747	081	5	575	5	300	25.07	7	0	30	00	60	Fixed	Cc	offelt	Mk X
lS	С																					
EN																						
MM	C       SITE # MD/NO H/P       DATE IN       TII         C       SITE # MD/NO       H/P       TIME IN       TIM         I       I       I       I       I       I         C       SITE # MD/NO       H/P       TIME IN       TIM         I       EF/1       1       0747       C         C       SITE # MD/NO       H/P       SPECIES       LENGT (mm)         I       EF/1       1       BT       94         I       EF/1       1       BT       94         I       EF/1       1       BT       96         I       EF/1       1       BT       103         I       EF/1       1       BT       102         I       EF/1       1       BT       102         I       EF/1       1       BT       102         I       EF/1       1       BT       63																					
S																						
										IND	IVIDU	AL FIS	H DAT	4								
C	сіт	E #				20		LENGTH	WEIG	HT	0EV	MATI	Б		AG	E			C		NTO	
C	311	⊏#	ND		1/17	35	ECIES	(mm)	(gm	s)	3EA	IVIATO	ST ST	rr (	Sampi	LE #	AG	Ξ	C		1113	
	1	1	EF	/1	1		BT	94														
	1	1	EF	/1	1		ВІ	96														
	1	ı 1	FF	/1	1		BT	100										-				
	1	1	EF	/1			BT	102										+				
	1	1	EF	/1	1		BT	63				1										
	1	1	EF	/1	1		BT	57														
	1	1	EF	/1	1		BT	59														
	1	1	EF	/1	1		ВГ	59						revi	20	1	<u> </u>					
	1	1		)/1	1		BT	552 400						тау	33-	I	9+	anr	roximate	lenath	1	
			10	., .	•		5.												. SAILIG	longu		
					+												1					
					_																	
					-																	
					-																	
											1											



Graham River Site 1: View upstream from bottom of site (Roll GC2 - Exp 18; CD 1 - Im 1)



Graham River Site 1: View upstream from centre of site (Roll GC2 - Exp 19; CD 1 - Im 2)



Graham River Site 1: Aerial view upstream (Roll GC2 - Exp 21; CD 1 - Im 4)



552 mm female bull trout Site 1: Graham River (Roll T1 - Exp 12; CD 1 - Im 5)

# **APPENDIX II**

### UNNAMED TRIBUTARY TO GRAHAM RIVER

(235-304300-50700)

### Sample Site 2

Site Data Card, Fish Collection Form and Site Photographs

												SIT	ΕC	AR	D												
STF	REA	M NA	AME		Unnai	med tr	ibutar	y to Gra	ham	River									FIE	LD	COORDINA	TES	56°	30.6	8' 123°	, 03.9	9'
LOC	CAT	ION																									
NTS	S MA	\P #		94B	/11				WA		ED (		235	5-304	1300-	507	00			<b>.</b>	000			100			
RE/		#	2004	1/00	106			2	SII		10	49604	43 1 Em	62	26295 monte	21 21 S	SII		ENG					ACC	ESS		<u>н</u>
DA			200	1/09/	/00			1040	AG	ENCT	D	Iversinec		/11011	menta	a 30				0/		FIG				IN	<
					DE	າ   າ	80	2.60	2	10 1	80	2.80	2	20	av	'g 13	GR	kADI h		%			5		ידוחופג דוחופג	<b>v</b>	NA_
СП/ WF		ע בם W ח:	י שויי דחוי		RF	2	.80 80	2.00	2.	90 1	00 70	2.60	2	20	2.4	+3 17	2	5	AL		Ph	-	0.0		Clear	1	Ē
RE	S PC			гн <sup>-</sup>	MS	0	30	0.33	0	13 0	15	0.60	0	51	0.3	34	3	5				GNS	0.3	m - F			~
Wb	DEI	PTH	0.3	0	0.30	) 0	.35	STAGE	0.	Moder	ate	No	Vis	Char	1 0.0	7	Dry/	'Int			BED MATE	RIA	0.0				
		С	OVE	R	Total			Abunc	lant	(>20%)		Dev	vate	r			Trib	s			Dominant	Co	ble	(64-2	56 mm	)	
	type	S٧	VD	LW	D	В	ι	JC	P	OV	ľ	V CR	OW	N CI	LOSU	IRE					Subdom.	Gra	avel (	2-64	mm)		2
	amt	٦	Γ	Т		Т	S	6	D	Ν	I	N		%	~	%					D95 (cm)	25		D (c	<mark>m)</mark> 50		ЧО ПО
К	loc	T     T     T     S     D     N     N       P     P     P     P     P     P     P     P       LWD FNC     Few     DIST     Even     2       LB SHAPE     Vertical     RB SHAPE     Vertical     C       TEXTURE     Fines     TEXTURE     Fines     IN       RIP. VEG.     Coniferous     RIP. VEG.     Coniferous     VI       STAGE     Mature Forest     STAGE     Mature Forest     Porest												40%	-70	-00	%0				Morph. Rit	fle-p	ool				ЯРН
DVE		e     SWD     LWD     B     U     DP     OV     IV     CROWN CLOSE       tt     T     T     T     S     D     N     N     %     %     %       t     T     T     T     S     D     N     N     %     %     %       c     P     P     P     P     P     P     P     P     %     %       LWD FNC     Few     DIST     Even     %     %     %     %     %     %       LB SHAPE     Vertical     RB SHAPE     Vertical     0     1     2     3       TEXTURE     Fines     TEXTURE     Fines     INSTREAM       RIP. VEG.     Coniferous     RIP. VEG.     Coniferous     VEGETATION       STAGE     Mature Forest     STAGE     Mature Forest												7	6^			1	DISTURBA	NCE	IND	ICA	ORS				
ŏ		LWD FNC       Few       DIST       Even       80       7																O1 B1 B2	B3	D1	D2	D3 C1	C2	OG,			
		TEX	Image: Shape vertical vert															C3 C4 C5	5 S1	S2	S3	S4		~			
		RIP	. VEC	Э.	Conife	erous	<u> </u>	RIP. VE	G.	Conifere	ous -	VE	GET	ATIC	NC						PATTERN	Sin	uous	i			-
		STA	\GE		Matur	e Fore	st	STAGE		Mature	-ore	st									ISLANDS	N0 Sid		d atra			-
																					COUDUN	Siu Dar					-
																					CONFINE	Fai	auen	tly C	onfined		
ň	С	NIC	) MA	> #	NID	# T\	/PF	HT/I G	(m)	mthd		PHOTO					CC	OMA	/ENT	S			quei	luy O	JTM		_
JRE	Ŭ		, 1 <b>1</b> 17 (1					111/20	(11)		R						00	510110		0		1					
ATI											R	F		-													
Щ											R	F															
		Ver Dam B3 Avulsion D3 Recent I WD iam C3 Elevated Bar																									
01	Beav	er Da	B3         Avulsion         D3         Recent LWD jam         C3         Elevated Bar           red Channel         D1         Small Woody Debris         C1         Extensive Riffles         C4         Multiple Channel																	S1	Homogenous	Bed		S4	Extensive	e Bars	
B1	Abar	andoned Channel D1 Small Woody Debris C1 Extensive Riffles													Multip	ole C	hanne			S2	Sediment Fing	ers		S5	Extensive	e Scour	rs
B2	Adatabate         D1         Small Woody Debris         C1         Extensive Rimes           Eroding Bank         D2         Large Woody Debris         C2         Limited Pools													C5	Distur	bed	Lines			S3	Sediment Wee	lges					
		Mod	lorato	to	nood r	otonti	alfor	e02e002	l roc	ring of B	Тіл	onilos															_
ГАТ	Σ	Abu	ndan	t dee		ols and	lunde	ercut co	ver		i ju	vermes.															
ABI⁻	JAL																										
H/	g																										
FS	δZ																										
N	R	DLL	FRA	ME	FOC	AL LN	DIR	ECTION									CC	DMN	ЛЕNT	S							
TIC	G	C4	14	A	W	vd		u	aeri	ial view u	pstre	eam from	Gra	aham	n Rive	er cc	onflue	ence	•								
٩T٨	G	C4	15	A ^	W	va		<u>u</u>	view	v u/s fron		ttom of s	ite														
ИEI	G	C4 C4	10	Δ	V1 V1	vd		u d	viev	v u/s iioi v d/s fron	n tor	ofsite	le														
cul	0	07				10		u	VICV																		
DO																											
TO																											
ЮH																											
Ъ																											
Η	G	ROL	JP			. V	VILDI	_IFE OE	SEF	RVATION	1S			G	ROU	Ρ				N	/ILDLIFE O	BSEF	RVAT	ΓΙΟΝ	S		
DLI		MAM Moose tracks																									
WIL														—													
	(	C														I											
	C	X1	Elect	tro-fi	shing	effort	279	seconds	s @ :	300 volts	.Bull	trout an	d sliı	my s	culpir	ו we	ere ca	aptu	red.								
ITS	C	21	Char	nnel	appea	ars ver	y stał	ole with	no ev	vidence c	of dis	turbance	<b>)</b> .					-									
IEN																											
NMC																											
80																											

								F	ISH	COLL	ECTIO	N FOR	M						
STR	REAN	/I NAM	E	Unn	ame	ed tributa	ry to Graham	River							LA	KE X	STREAM	W	ETLAND
LOO	CATI	NC										WATE	RSHE	D CODE	235	5-304300	-50700		_
WA	TER	BODY	ID					NTS M	AP	94B/	11 NIC			SITE/I	LAKE	CARD A	TTACHE	<b>X</b> Y	N
PR	OJEC	CT ID	Halt	fway-	-Gra	ham Ove	erview	REACH	1#		SIT	E#	2	FISH	PERM	AIT # SC	2001-032		
DA.	TE		2001/	/09/0	6	to 2	001/09/06	AGENC	Y	Diversif	ied Envir	onmental	Servic	es C	REW		BC/TE	RE-SA	MPLE
0	S	TE #	NIE	) MA	P#	NID #	SITE	υтм		МЕТН	OD/NO.	STREA	M CO	NDITION	1		COMM	ENTS	
ЮН												TEMP	CON	TURE	3				
ET		2					10.49604	3.62629	51	EF	1	5.5		C					
/ N			_																
Ë																			
S																			
	SIT	E#N	NTD/N	10	H/P	SPECI	ES STAGE	AGE	TO	TAL NO	MIN L	N (mm)	MAX	LN (mm	) FI	SH ACT	C	OMMENT	S
≿	2		EF/1	1	1	BT			1	4	6	3		141	F	Rearing			
MAF	2         EF/1         1         CCG					3			1	9	2		92	F	Rearing				
IML	SITE #       MTD/NO       H/P       SPECIES       ST/         2       EF/1       1       BT       1         2       EF/1       1       CCG       1         2       EF/1       1       CCG       1         3       -       -       -       1         4       -       -       -       -         5       -       -       -       -         6       SITE #       MD/NO       H/P       DATE IN       T         6       -       -       -       -       -         7       -       -       -       -       -         7       -       -       -       -       -         6       -       -       -       -       -       -         7       -       -       -       -       -       -       -         7       -       -       -       -       -       -       -       -         8       -       -       -       -       -       -       -       -       -       -       -       -       -       -       -       - <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>																		
H SI	SITE #       MTD/NO       H/P       SPECIES       ST/         2       EF/1       1       BT       1         2       EF/1       1       CCG       1         2       EF/1       1       1       1         2       EF/1       1       1       1         3       -       -       1       1         4       -       -       1       1       1         4       -       -       -       1       1         5       -       -       -       -       1       1         2       EF/1       1       1550       1       1       1       1         2       EF/1       1       1550       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>																		
-ISF	SITE #       MTD/NO       H/P       SPECIES       ST.         2       EF/1       1       BT       1         2       EF/1       1       CCG       1         2       EF/1       1       1       CCG         3       -       -       1       1         2       EF/1       1       1       1         2       EF/1       1       1       1         3       -       -       1       1       1         2       EF/1       1       1       1       1         2       EF/1       1       1       1       1       1         2       EF/1       1       1       1       1       1       1         2       EF/1       1       1       1       1       1       1       1       1       1       1       1       1       1       1							-											
- <u></u>	SITE #       MTD/NO       H/P       SPECIES       ST.         2       EF/1       1       BT       1         2       EF/1       1       CCG       1         2       EF/1       1       CCG       1         1       1       CCG       1       1         1       1       1       1       1         1       1       1       1       1       1         1       1       1       1       1       1         1       1       1       1       1       1       1         1       1       1       1       1       1       1       1         1 <td></td> <td></td> <td>-</td> <td></td>								-										
8	SITE #     MTD/NO     H/P     SPECIES     ST       2     EF/1     1     BT     1       2     EF/1     1     CCG     1       2     EF/1     1     1     1       2     EF/1     1     1     1       2     EF/1     1     1     1       2     EF/1     1     1550     1       2     EF/1     1     1550     1       1     2     EF/1     1     1550       2     EF/1     1     1550     1       2     EF/1     1     BT     13/2       2     EF/1     1     BT     13/2       2     EF/1     1     BT     13/2       2     EF/1     1     BT     14/2													NET	/ TRA	P SPEC	FICATION	IS	
PE(	SITE #     MTD/NO     H/P     SPECIES     ST.       2     EF/1     1     BT     1       2     EF/1     1     CCG     1       2     EF/1     1     CCG     1       3     3     3     3     1       3     3     3     3     3       4     3     4     3     3       5     3     4     3     3       6     3     4     3     3       7     3     4     3     4       1     1     1550     1       1     1     1550     1       1     2     EF/1     1     1550       1     3     3     3     3       1     1     1550     1       1     1     1550     1       1     1     1     1       2     1     1     1						IN TIME	IN DA	TE C		ME OUT	NET TY	PE L	ENGTH		DEPTH	MESH SI	ZE SET	HAB
R S		C SITE # MD/NO H/P DATE IN TIM																	
βEA																			
0									OTE										
	С	C SITE # MD/NO H/P TIME IN TIM 2 EF/1 1 1550									ER SPEC					EREO	PLSE	MAKE	MDI
	<u> </u>	2	E	-/1	1	1550	) 1610		279		200	2.47		0	300	60	Fixed	Coffelt	MkX
S	С																		1
ENT																			
AME																			
NOC																			
										ווחועו			Δ						
							I ENGTH	WEIG	HT				<u>`</u>	AGE					
С	SIT	E# M	D/NO	H/P	SP	ECIES	(mm)	(gms	S)	SEX	MATU	JR ST	rr s	AMPLE	# A	GE	CO	MMENTS	
	2	E	EF/1	1		BT	132					Sc	ale	41-1	2	2+			
	2	E	EF/1	1		BT	83					Sc	ale	41-2	-	1+			
	2	E	EF/1	1		BT	141				-	Sc	ale	41-3	2	2+			
	2		=F/1 =E/4	1		RI RI	87				+								
			_1 / 1		,	000	32												
															+				
											1								
													1						


Unnamed tributary to Graham River Site 2: View upstream from bottom of site (Roll GC4 - Exp 15A; CD 1 - Im 6)



Unnamed tributary to Graham River Site 2: Aerial view upstream from Graham River confluence (Roll GC4 - Exp 14A; CD 1 - Im 9)

# **APPENDIX III**

#### **NEEDHAM CREEK**

(235-304300-51900)

### Sample Site 3

												S	ITE	E C	ARI	D												
STF	REA	M N/	AME	Nee	edha	m Cre	eek													FIEL	D	COORDINA	TES	56°	30.4	3' 12	.3º 08.3	31'
LOO	CAT	ION	Downs	tream	of b	barrier	r																					
	S M/	4P #	94	B/11			NO	2	WA	TERSH	ED (		000	235	-304	300-	519	00				200		DE	100			
		1#	2001/0	0/06			= #	3				49 Niversif	090 Fied	5 Env	jiropr	2023	24 21 Se	SII				300 MI				,ESS V	Y N	н
			$\frac{2001}{0}$	13/00	oth	TIIVIL	_	1400	AUL			iver sir	icu				a 30				. v v 0/.							<
CH				R	PE	22	00 3	00.00	21	00 28	00	31 0	າດ	25	00	26	/y 17	met	h		/0	TEMP (°C)		70			TY	TAV
WE	TTE	ED W	/IDTH	R	RF	16.	00 1	6.00	18.	.00 8.	20	11.0	00	12	.50	13.	.62	1.	.0	/		Ph	<u> </u>	.0		Cle	ar	Ŗ
RES	S PC	DOL	DEPTH	M	IS	0.9	90 0	0.80	0.	76 0.	44	0.8	0	1.	20	0.8	82	1.	.5			FLOOD SIG	GNS	1.0	m - F	۲D		-
Wb	DE	PTH	1.10	1.3	30	1.2	20 S	TAGE		Low	/	1	No	/is (	Chan	1		Dry/	'Int			BED MATE	RIAL	_				
		C	OVER	Tot	al		ľ	Modera	ate (	5-20%)		[	Dew	/ater	•			Trib	s			Dominant	Coł	bble	(64-2	56 m	m)	
	type	SV	VD L	WD	I	B	U	D	P	OV		IV (		IWC	N CL	.OSL	JRE					Subdom.	Gra	avel (	2-64	mm)		Š
~ 1	amt		5	5		S	N D		ר ר			N		%	%0	%0	%С	<b>、</b> 0				D95 (cm)	32 flo. p		D (C	m) 2	<u>'</u> 4	- RF
/ER	loc	IW		Abu	Inda	r   nt		IST I	-	Fven		F	%	-20	1-4	-1-7(	1-9(	606-								ORS		Н
00		LBS	SHAPE	Ver	tical		R	R SHA	PF	Sloping		- F	0	1	2	ч 3	4	5				01 B1 B2	B3	D1	D2		21 C2	5
Ŭ		TE		Fine	es/C	obble		=XTUI	" – RF	Fines/B	ould	er I	NS			Ŭ	Non	le le				C3 C4 C5	S1	S2	S3	S4		−GY
		RIP	. VEG.	Con	ifero	ous	R	IP. VE	G.	Conifer	ous	· ·	VEG	SET.	ATIC	ON .				_		PATTERN	Irre	gula	Wa	nderir	ng	-
		STA	AGE	Mat	ure l	Fores	t S	TAGE		Mature	Fore	est										ISLANDS	Nor	ne				-
																						BARS	Sid	e/Mi	d-stre	am		
																						COUPLING	Par	rtially	Cou	pled		
	0											DUO	TO						21.41		_	CONFINED	Oco	casic	onally	Conf	ined	
JRE	С	NIL	) MAP #	F NII	J #		PE H	II/LG	(m)	mthd	D		10		1			CC		/IEN I	S			1	l	JIN		
ATL											R	F	-										-					-
FE,		-									R	F	=															
						1				DIS	ΓUR	BANC	ΈI	NDI	CAT	OR I	LEG	END	)									
01	Bea	ver Da	m		В3	Avulsi	ion			D3 Rec	ent LV	ND jam			C3	Eleva	ited B	Bar		ę	S1	Homogenous B	ed		S4	Extens	ive Bars	
B1	Aba	ndone	d Channe	I	D1	Small	Woody	Debris		C1 Exte	nsive	Riffles			C4	Multip	ple Cł	hanne		\$	52	Sediment Finge	ers		S5	Extens	ive Scou	irs
B2	Eroc	ling Ba	ank		D2	Large	Woody	Debris		C2 Limi	ted Po	ools			C5	Distu	rbed I	Lines			S3	Sediment Wed	ges					
		Mod	lorato to	hiah	0113	lity ba	ahitat f	or adu	lt and	d iuwonil	<u>- 6</u> 2	Imonid	le															
ГАТ	Σ	Kno		wning	are	a for l	large fl	uvial r	niara	tory BT	5 30	Intoniu	13.															
ABI⁻	JAL	Lar	ge adult	BT h	oldin	ng in d	deep p	ool at	top o	f site.																		
Ŧ	ā																											
F	SZ																				_							
NC	R		FRAME	E FO		. LN 1	DIREC					4 a a	f					CC	JMV	ЛЕМТ	S							
ATI(	G	C4 C4	10A		wd		L	1	VIEW	u/s fror	n bo n ce	ntre of	or Si feit															
NT/	G	C4	12A		wd			1	view	d/s fror	n tor	of sit	e	<u> </u>														
IME	G	C4	13A		wd		u	- I	aeria	al view u	pstre	eam																
JC											-																	
DO																												
DTC				_																								
РНС																												
	G	ROL	IP			W		F OB	SER		JS				G	ROL	IP				١٨		SEL	<b></b> γ\/Δ <sup>-</sup>	ΓΙΟΝ	S		
LIF	Ŭ							2.05	02.1																	<b>~</b>		
ILDI																												
Μ																												
		С																										
S	С	X1	Electro	-fishir	ng ef	ffort: 4	432 se	conds	@2	250 volts	. Bu	ll trout	an	d slii	my s	culpi	in ca	aptur	ed.									
ΞN.			Angling	g: adu	ult bi	ull tro	ut capi	tured.		ulina oh		ad																
IME			Auuit II	IOUIII	anv	vinteri			c gra	iyiii iy ub	SelV	eu.																
NO NO																												
0																												
																							·					

							FI	SH CC	)LLE(	CTIO	N FOR	RM						
STF	REAN	/I NAME	E [	Need	lham Creek									LA	<e th="" x<=""><th>STREAM</th><th></th><th>WETLAND</th></e>	STREAM		WETLAND
LOC				Dow	nstream of	barrier					WATE	RSHED	CODE	235	5-304300	-51900		
		ו ז עטפ חו די			Crohom Ou	oniou		4P 9	4D/11			2				ТТАСПЕL		Y N
				nay-v					areifiad	Enviro	c #	Sonvico					DE-	
			2001/0	55/00		2001/03/00	AGENO		ersineu		STDEA	MCON						
Q	S	ITE #	NID	MAF	P# NID#	SITE	UTM	ME	THOD	/NO.	TEMP			<u>,</u>		COMME	NTS	
THO		3				10 49096	3 626252	24 F	F	1		CON	C	<b>`</b>				
ME.		3				10.49096	3.626252	24 V	0	1	7.0		C					
E/		3				10.49096	3.626252	24 A	G	1	7.0		С					
SIT																		
				-												_	_	
	SIT	E# M		0	H/P SPEC	IES STAGE	AGE	TOTAL	NO N		V (mm)	MAXL	.N (mm)	FIS	SH ACT	C	OMMEN	ITS
λRΥ	3		EF/1			2		12		5	0	1	87 87		Rearing			
/WV	2				1 000	1				5	0		55		Ceaning			
SUN	3	3	VO/1	_	1 MV	/												
BH	3	;	AG/1		1 BT	Adult		1		55	55	5	55					
Ĕ																		
ECO		0.775 //								0.L.I.T.			NET /	TRA	P SPECI	FICATION	S	
SPI	С	SITE #	MD/	NOI	H/P DATE	IN TIME	IN DA	TE OUT	TIME	OUT	NET TY	PE LI	ENGTH		DEPTH	MESH SI	ZE SE	т нав
AR	ŀ																	
GE	-																	
							ELE	CTROFI	SHER	SPEC	IFICATIO	ONS						
	С	SITE #	MD/	NO	H/P TIME	IN TIME C	DUT E	F SEC	LEN	GTH	WIDT	'H El	ICL V	OLT	FREQ	PLSE	MAKE	MDL
		3	EF	/1	1 140	5 142	5	432	30	00	13.62	2	0	250	60	Fixed	Coffel	t Mk X
TS	С																	
1EN	ŀ																	
NMC																		
ö	-																	
ö								NDIVI	DUAL	FISH	H DAT	4						
о С	SITI	E # MD	)/NO	H/P	SPECIES	LENGTH	WEIG	NDIVIE	DUAL Ex	FISH MATU		4	AGE			COI	MMENT	S
о С	SITI	E#MD	)/NO	H/P	SPECIES	LENGTH (mm)	WEIGI (gms	NDIVII <sup>HT</sup> SI	DUAL EX	FISH MATU		A TR SA	AGE	# A(	GE	COI	MMENT	S
C	SITI 3	E # MD	)/NO	H/P 1	SPECIES BT BT	LENGTH (mm) 190 136	WEIGI (gms	NDIVIE <sup>HT</sup> SI	DUAL EX	FISH MATU	H DATA	A TR SA ale ale	AGE MPLE # 40-1 40-2	<b># A</b> (	GE 3+	COI	MMENT	S
C	SITI 3 3 3	E # MD	0/NO F/1 F/1 F/1	H/P 1 1	SPECIES BT BT BT BT	LENGTH (mm) 190 136 187	WEIGI (gms	NDIVII HT SI	DUAL EX	FISH MATU	H DATA	A TR SA ale ale ale	AGE MPLE # 40-1 40-2 40-3	<b># A</b> (	GE 3+ 2+ 3+	COI	MMENT	S
C	SITI 3 3 3 3	E # MD	D/NO F/1 F/1 F/1 G/1	H/P 1 1 1 1	SPECIES BT BT BT BT BT	LENGTH (mm) 190 136 187 555	WEIGI (gms	NDIVII <sup>HT</sup> SI	DUAL EX	FISH MATU	H DATA	A IR SA ale ale ray	AGE MPLE # 40-1 40-2 40-3 40-4	<b># A</b> ( 3 2 3 6	GE 3+ 2+ 3+ 3+	COI	MMENT	S
C	SITI 3 3 3 3 3 3 3	E # MD	<mark>7/NO</mark> I F/1 F/1 G/1 F/1	H/P 1 1 1 1 1 1	SPECIES BT BT BT BT BT BT	LENGTH (mm) 190 136 187 555 50	l WEIGI (gms	NDIVII <sup>HT</sup> SF	DUAL EX	FISH MATU	HDAT/ IR ST Sc Sc Sc Fin	A IR SA ale ale ale ray	AGE MPLE # 40-1 40-2 40-3 40-4	# A0 3 2 3 6	GE 3+ 2+ 3+ 5+	CO	MMENT	S
C	SITI 3 3 3 3 3 3 3 3	E # MD	D/NO F/1 F/1 F/1 G/1 F/1 F/1 F/1	H/P 1 1 1 1 1 1	SPECIES BT BT BT BT BT BT	LENGTH (mm) 190 136 187 555 50 94	WEIGI (gms	NDIVIE HT SE	DUAL EX	FISI MATU	H DAT/ IR SI Sc Sc Fin	A ale ale ale ray	AGE MPLE # 40-1 40-2 40-3 40-4	# A0 3 2 3 6	GE 3+ 2+ 3+ 3+ 6+	CO	MMENT	S
C	SITI 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	E # MD	D/NO F/1 F/1 F/1 G/1 F/1 F/1 F/1 F/1 F/1	H/P 1 1 1 1 1 1 1 1 1 1 1	SPECIES BT BT BT BT BT BT BT BT	LENGTH (mm) 190 136 187 555 50 94 94 94	WEIG (gms	NDIVIE HT SI	F	FISH MATU	H DAT/ R ST Sc Sc Sc Fin	A IR SA ale ale ale ray	AGE MPLE # 40-1 40-2 40-3 40-4	<b># A</b> (	GE 24 3+ 22 3+ 3+ 3+ 32 3+ 32+	CO	MMENT	S
C	SITI 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	E #         MD           5         E1           5         E1           6         A0           5         E1           6         A0           5         E1           6         E1           6         E1           6         E1           6         E1           6         E1           6         E1	D/NO F/1 F/1 F/1 G/1 F/1 F/1 F/1 F/1 F/1 F/1	H/P 1 1 1 1 1 1 1 1 1 1 1 1 1	SPECIES BT BT BT BT BT BT BT BT BT BT	LENGTH (mm) 190 136 187 555 50 94 94 94 91 91	WEIG (gms	NDIVII HT SI	F	FISH	HDAT/ IR ST Sc Sc Sc Fin	A IR SA ale ale ale ray	AGE MPLE # 40-1 40-2 40-3 40-4	<b># A</b> ( 33 22 33 6	GE 3+ 2+ 3+ 6+	CO	MMENT	S
C	SITI 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	E #         MD           5         E1           5         E1           5         E1           6         A0           6         E1	D/NO F/1 F/1 F/1 G/1 F/1 F/1 F/1 F/1 F/1 F/1 F/1 F/1	H/P 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	SPECIES BT BT BT BT BT BT BT BT BT BT BT	LENGTH (mm) 190 136 187 555 50 94 94 94 91 91 91 97	WEIGI (gms	NDIVIE HT SE	F	FISH	HDAT/	A ale ale ray	AGE MPLE # 40-1 40-2 40-3 40-4	#         A(           3         2           3         3           6         -	GE 3+ 2+ 3+ 3+	CO	MMENT	S
C	SITI 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	E #         MD           3         EI	D/NO         I           F/1         F/1           F/1         G/1           F/1         F/1	H/P 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	SPECIES BT BT BT BT BT BT BT BT BT BT BT BT BT	LENGTH (mm) 190 136 187 555 50 94 94 94 91 91 91 97 94	WEIGU (gms	NDIVIE HT SE	DUAL	FISH	H DAT/	A ale ale ale ray	AGE MPLE # 40-1 40-2 40-3 40-4	#         Addition           3         2           3         3           6	GE 3+ 2+ 3+ 3+ 3+	CO	MMENT	S
c	SITI 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	E #         MD           6         E1	J/NO         I           F/1         F/1	H/P 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	SPECIES BT BT BT BT BT BT BT BT BT BT BT	LENGTH (mm) 190 136 187 555 50 94 94 91 91 91 97 97 94 95	WEIG (gms	NDIVIE HT SI	F	FISH	H DAT/	A ale ale ale ray	AGE MPLE # 40-1 40-2 40-3 40-4	#         A(           3         2           3         3           6         -	GE 24	COI	MMENT	S
c	SITI 33 33 33 33 33 33 33 33 33 33 33 33 33	E #         MD           5         E1           5         E1           6         E1	P/NO         I           F/1         F/1	H/P 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	SPECIES BT BT BT BT BT BT BT BT BT BT BT CCG	LENGTH (mm) 190 136 187 555 50 94 94 94 91 91 91 91 97 94 95 93	WEIG (gms	NDIVIE HT SI	DUAL EX F	FISH	H DAT/	A ale ale ale ray	AGE MPLE # 40-1 40-2 40-3 40-4	¥ A4 3 2 3 3 6 6	GE 3+ 2+ 3+ 3+	COI	MMENT	S
C	SITI 33 33 33 33 33 33 33 33 33 33 33 33 33	E #         MD           3         E1           4         E1           5         E1           6         E1           6         E1           6         E1           6         E1	Impose         Impose           F/1         F/1	H/P 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	SPECIES BT BT BT BT BT BT BT BT BT BT BT BT CCG CCG	LENGTH (mm) 190 136 187 555 50 94 94 91 91 91 91 97 94 95 93 50 84	l WEIG (gms	NDIVIE <sup>HT</sup> SE	F	FISH	HDAT/ IR SI Sc Sc Sc Fin	A ale ale ale ray	AGE MPLE # 40-1 40-2 40-3 40-4	#         Addition           3         2           3         3           6         -	GE 3+ 2+ 3+ 3+ 3+ 3+ 3+		MMENT	S
C	SITI 33 33 33 33 33 33 33 33 33 33 33 33 33	E         MD           3         EI           4         EI           5         EI           6         EI           6         EI           6         EI           6         EI           6         EI           6         EI	Image: Normal State         Image: Normal State	H/P 1 1 1 1 1 1 1 1 1 1 1 1 1	SPECIES BT BT BT BT BT BT BT BT BT BT BT CCG CCG CCG CCG	LENGTH (mm) 190 136 187 555 50 94 94 91 91 91 91 91 97 94 95 93 50 81 59	l WEIGU (gms		DUAL	FISH	H DAT/	A ale ale ale ray	AGE MPLE # 40-1 40-2 40-3 40-4	#         A(           3         2           3         2           3         6	GE 3+ 2+ 3+ 3+ 3+ 3+ 3+ 3+ 3+ 3+ 3+ 3+ 3+ 3+ 3+		MMENT	S
c	SITI 33 33 33 33 33 33 33 33 33 33 33 33 33	E         MD           3         EI	J/NO         I           F/1         F/1	H/P 1 1 1 1 1 1 1 1 1 1 1 1 1	SPECIES BT BT BT BT BT BT BT BT BT CCG CCG CCG CCG	LENGTH (mm) 190 136 187 555 50 94 94 91 91 91 97 94 95 93 50 81 59	l WEIG (gms		F	FISH	H DAT/	A ale ale ale ray 	AGE MPLE # 40-1 40-2 40-3 40-4	#         A(           3         2           3         3           6         -           -         -           -         -	GE 3+ 2+ 3+ 3+ 3+ 3+		MMENT	S
c	SITI 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	E # MD	P/NO         I           F/1         F/1	H/P 1 1 1 1 1 1 1 1 1 1 1 1 1	SPECIES BT BT BT BT BT BT BT BT BT BT CCG CCG CCG CCG	LENGTH (mm) 190 136 187 555 50 94 94 94 91 91 91 91 97 94 95 93 50 81 59	l WEIG (gms		DUAL EX F F 1 1 1 1 1 1 1 1	FISH	H DAT/	A ale ale ale ray ray	AGE MPLE # 40-1 40-2 40-3 40-4	¥ AA 3 2 3 6 6	GE 3+ 2+ 3+ 3+		MMENT	S
c	SITI 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	E         MD           5         E           5         E           5         E           5         E           5         E           5         E           5         E           5         E           5         E           5         E           5         E           5         E           5         E           5         E           5         E           5         E           5         E           6         E           6         E           6         E           6         E           6         E           6         E           6         E           6         E           6         E           6         E           6         E           7         E           8         E           9         E           9         E           9         E	Image: Normal State         Image: Normal State           F/1         F/1	H/P 1 1 1 1 1 1 1 1 1 1 1 1 1	SPECIES BT BT BT BT BT BT BT BT BT BT CCG CCG CCG	LENGTH (mm) 190 136 187 555 50 94 94 91 91 91 91 91 97 94 95 93 50 81 59	l WEIG (gms		DUAL EX 	FISH	H DAT/	A IR SA ale ale ray ray	AGE MPLE # 40-1 40-2 40-3 40-4	#         A4           3         2           3         3           6         -	GE 3+ 2+ 3+ 3+ 3+ 3+ 3+ 3+ 3+ 3+ 3+ 3+ 3+ 3+ 3+		MMENT	S
c	SITI 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	E     MD       3     EI	J/NO         I           F/1         F/1	H/P 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	SPECIES BT BT BT BT BT BT BT BT BT BT CCG CCG CCG	LENGTH (mm) 190 136 187 555 50 94 94 91 91 91 91 97 94 95 93 50 81 59 59	l WEIG (gms			FISH	H DAT/	A ale ale ray ray	AGE MPLE # 40-1 40-2 40-3 40-4	#         A(           3         2           3         2           3         2           3         2           3         2           3         3           6	GE 3+ 2+ 3+ 3+ 3+ 3+ 3+ 3+ 3+ 3+ 3+ 3+ 3+ 3+ 3+		MMENT	S
C	SITI 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	E # MD	J/NO         I           F/1         F/1	H/P 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	SPECIES BT BT BT BT BT BT BT BT BT BT CCG CCG CCG	LENGTH (mm) 190 136 187 555 50 94 94 94 91 91 97 94 95 93 50 81 59	l WEIG (gms			FISH	H DAT/	A ale ale ray ray	AGE MPLE # 40-1 40-2 40-3 40-4	#         A(           3         2           3         2           3         6	GE 3+ 2+ 3+ 3+ 3+ 3+ 3+ 3+ 3+ 3+ 3+ 3+ 3+ 3+ 3+			S



Needham Creek Site 3: View downstream from top of site (Roll GC4 - Exp 12A; CD 1 - Im 16)



Needham Creek Site 3: Aerial view upstream (Roll GC4 - Exp 13A; CD 1 - Im 17)

# **APPENDIX IV**

#### **NEEDHAM CREEK**

(235-304300-51900)

### Sample Site 4

												SI	ΤE	C	ARI	D												
STF	REA	M N/	AME	Ν	leed	dham C	reek													FIEL	D	COORDINA	TES	56°	29.5	5' 123°	13.0	1'
LOC	CAT	ION	Upstr	eam	of t	barrier					<																	
		AP #		94B/	/6		) NO	1	VV A				262	235	-304	300-	519					200 M	тц	DE		NEGO		
	чог ГF	1#	2001	/09/0	06		⊆# 1F	4	AG			490 iversifi	ied	/ Env	vironr	nent	jo al Se	ervice	5 LC S			BC/TE	FIS		ORM	Y X	N	<u> </u>
	Ъ	NNE	(m)	00/0	met	th		1020	10			IVCIOIII	cu			av		GR	וח		2/2	EMS						<
CH				1	RF	- 13	20	14 20	10	20 11	20	13 2	0	14	80	12	9 80	meth	וטר	AI	/0	TEMP (°C)	6	35			,	VAT
WE	TTE	ED W	/IDTH	-	RF	- 13	.20	11.50	10	.20 9.	80	11.0	0	11	.00	11.	12	1.5	5			Ph	_			Clear		ĒR
RES	S PO	DOL	DEPT	н <sup>—</sup>	MS	S 0.	20	0.20	0.	45 0.	30	0.20	)	0.	15	0.2	25	1.5	5	_		FLOOD SIG	GNS	0.6	m - F	RD		
Wb	DE	PTH	0.30	)	0.4	5 0.	30	STAGE		Moder	ate	Ν	10 \	/is C	Chan			Dry/l	nt			BED MATE	RIA	_				
		C	COVER	2 1	Гota		-	Abund	lant (	>20%)		۵	)ew	ater	•			Tribs				Dominant	Co	bble	(64-2	56 mm	)	
	type	SV	VD		D	B	L L	) [ -	)P	OV	ľ			)WI		.OSL	IRE					Subdom.	Bou	ulder	· (> 2	56 mm)		Ň
~ 1	amt								S D	N				%	%0	%C	%С	<u>_</u>		_		D95 (CM)	56 flo. pr		D (c	<b>m)</b> 85		DRF
/ER	100	IW		- 	ew	Г		DIST	Γ	Fven			%	-20	1-4(	1-7(	1-9(	606-		-		DISTURBA	NCF			ORS		Чų
00		LB S	SHAP	= [9	Sloni	ina		RB SH	\PF	Vertical			0	1	2	3	4	5		_		01 B1 B2	B3	D1	D2		C2	õ
Ŭ		TEX			Grav	el/Cobh	ole	TEXTU	RF	Fines/G	rave		NS.			Ű	Alaa	e l				C3 C4 C5	S1	S2	S3	S4		GΥ
		RIP	. VEG	. 0	Conif	ferous		RIP. VE	G.	Conifer	ous	· · · ·	/EG	ET.		DN				_		PATTERN	Sin	uous	3			-
		STA	AGE	N	Лatu	ire Fore	st	STAGE		Mature	Fore	st				_						ISLANDS	No	ne				
																						BARS	Sid	е				
																						COUPLING	Co	uple	b			
	-						<u> </u>		<i>.</i>												_	CONFINED	Fre	que	ntly C	onfined		
IRE	C	NIL	) MAP	#	NID	)# IY	'PE	HT/LG	(m)	mthd				24	4 m	impo	0000		MIM		5		10		1 10024		2610	06
λTU							F	4		AE	R	4 F		SА	4 m	impa	1558		anne	er			10	4	10034	4 0	2019	00
FE/		-									R	F	:															
										DIS	TUR	BANC	ΕI	NDI	CAT	ORI	EG	END										
01	Bea	ver Da	m		E	33 Avul	sion			D3 Rece	ent LV	VD jam			C3	Eleva	ted B	ar		s	1	Homogenous E	led		S4	Extensive	Bars	
B1	Aba	ndone	d Chann	el	0	D1 Sma	ll Woo	dy Debris		C1 Exte	nsive	Riffles			C4	Multip	le Cl	nannel		S	2	Sediment Finge	ers		S5	Extensive	Scour	rs
B2	Eroc	ding Ba	ank		0	D2 Larg	e Woo	dy Debris		C2 Limi	ted Po	ools			C5	Distu	bed I	Lines		S	3	Sediment Wed	ges					
		0					a a di d	14																				
AT	Τ	Goo	od seas	sona	al rea	aring to	r adu	It and ju	venil	eBI.																		
BIT	IAL	NF(	Cafter	elec	tro-	fishing	indica	ates that	ther	e is no h	ead	vater r	non	ulati	on o	f BT	unst	tream	off	falls								
HΑ	g	Not	fish ca	ptur	red c	or obser	ved; a	apparntl	y noi	n fish-be	aring	upstr	ean	n of	4 m	barri	er d	owns	trea	m of s	site	;						
FS	δZ			<u>.</u>																								
Z	R	SLL	FRAM	1E F	FOC	CAL LN	DIRE	ECTION	ļ									CO	MM	IENTS	S							
TIC	G	C4	6A		١	wd		u	viev	v u/s fror	n bo	ttom of	fsit	e														
١TA	G		7A			WC		u d	viev	v u/s fror	n cei	ntre of	SIte	3														
ИEI	G	C4	οA 9Δ	_		wd		u II	aeri	al view u	nstre	am	8															
cul			0, (			iiu		ŭ			pour	Jann																
DO																												
ТО																												
ОH																												
ш.	_										10			_	_										TION	_		
ΕE	G		JP 4 E	الد ما	volf	V ond mo			SEF	RVATION	1S				G	ROU	Р	[			V	/ILDLIFE OE	SEF	۲VA	HON	S		
DL		WAN		ik, v		and mo	ose i	acks																				
MIL																												
		С	1												1													
	С	X1	Electr	o-fis	shing	g effort:	998	seconds	s @ 2	250 volts	. No	fish c	aptı	Jred	Ι.													
NTS																												
ME																												
MO																												
Ŭ																												

								FI	SH	COLI	ECTIO	N FOF	RM							
STF	REAN	M NA	ME	Nee	edhar	m Creek						_			L	AKE	X STRE	AM	WE	ETLAND
LOO	CATI	ON		Ups	strea	m of barr	ier		_			WATE	ERSH	ED COI	DE 2	35-304	300-51900			
WA	TER	RBOD	DYID					NTS MA	۱P	948	/6 NIE			SIT	E/LAK	ECAR			XY	N
PR	OJE(			laltway	-Gra	ham Ove		REACH	#	Discost	SI	E#	4	FIS		RMII #	SC2001-0	52 		
DA	IE		200	J1/09/0	16	to 2	001/09/06	AGENC	Y	Diversi	ried Envir	onmenta	Servi	ICES	CREV	V	BC/TE		KE-SAI	MPLE
Q	S	ITE #	# 1		NP #	NID #	SITE	UTM		METH	IOD/NO.	STRE/					CON	IMENT	S	
OH-		4					10 40662	7 626000	0	EE	1	IEMP	CO	N IU	RB					
ИЕТ		4					10.49003	7.626090	0	EF	1	0.5			<i>、</i>					
Ξ / Ν																				
SITI																				
	SIT	Έ#	MT	D/NO	H/P	SPECI	ES STAGE	AGE	TO	TAL NO	MIN L	N (mm)	MA	X LN (m	nm) F	FISH A	CT	COM	MENTS	6
RΥ		4	E	F/1	1	NFC	;			0										
IMA																				
SUN																				
HS																				
FIS																				
SS														NE	T / TR	AP SPI	ECIFICATI	ONS		
SPE	С	SITI	E#N	1D/NO	H/P	DATE	IN TIME	IN DA	ΓE C	DUT TI	ME OUT	NET T	YPE	LENG	ТΗ	DEPT	H MESH	SIZE	SET	HAB
AR S																				
GE/																				
Ŭ								ELE	CTR	OFISH			ONS							
	С	SIT	E#N	1D/NO	H/P	TIME	IN TIME C		= SE		ENGTH	WIDT		ENCL	VOL	T FR	EQ PLSE	M	AKE	MDL
		4		EF/1	1	1320	) 134	5	998		300	11.1	2	0	250	6	0 Fixed	C	offelt	Mk X
S	С																			
ENT																				
MM																				
CO																				
									NDI	VIDU	AL FIS	H DAT	A							
0	OIT	с "			0.0		LENGTH	WEIG	HT	OFY	MATI	10		AGE						
C	511	E#	ND/N	IO H/P	5P	ECIES	(mm)	(gms	)	SEX	MAT	S S	TR	SAMPL	.E #	AGE	(		INTS	
				_																
	-																			
				_																
				_																
				_																
				_																
											1									



Needham Creek Site 4: View upstream from centre of site (Roll GC4 - Exp 7A; CD 1 - Im 11)



Needham Creek Site 4: Aerial view upstream (Roll GC4 - Exp 9A; CD 1 - Im 13)

# **APPENDIX V**

#### UNNAMED TRIBUTARY TO GRAHAM RIVER (235-304300-59800)

### Sample Site 5

												SI	ΤE	C	ARI	)												
STF	REA	MNA	AME	Un	nam	ned tril	butary	∕ to Gra	ham	River										FIEI	_D (	COORDINA	TES	56°	34.92	2' 123°	09.3	37'
LOO	CAT	ION																										
	S MA	AP #	94	4B/11					WA		ED (		2	235	-304	300-	5980					000		DE	100			
		1#	2001/		:	_511 		0 1157	511			490 Aivorsifi		D Envi	ironr	1080	37 al Sc										N	H
			$\frac{2001}{1}$	03/00	, aoth	TIN		1157	AUI			1001311	eu I	_11V	ITOTI						. V V 0/_						IN	<
CH					RF	5	20	4 80	4	60 3	20	290	n Í	4	30	م م	'9 17	meth	אטי ר		/0		- 4	15		ידוחואי ודוחואי	1	VAT
WE	TTE		IDTH		RF	3.	50	2.10	3.	50 2	.00	2.00	5	2.	70	2.6	53	1.	0	/		Ph	-			Clear		ĒR
RES	S PC	DOL	DEPT	-	MS	0.3	20	0.38	0.	26 C	.36	0.26	3	0.4	44	0.3	32	1.	5			FLOOD SIG	GNS	1.0	m - F	D		
Wb	DEI	PTH	0.32	C	.48	0.3	36	STAGE		Lo	V	N	lo V	'is C	Chan			Dry/	Int			BED MATE	RIAL	_				
		С	OVER	Tc	otal			Moder	ate (	5-20%)	_	Γ	)ewa	ater				Trib	s			Dominant	Gra	avel (	2-64	mm)		
	type	SV	VD L			B	U		P	OV			RO	1W	N CL	.OSL	JRE					Subdom.	Col	oble	(64-2	56 mm	)	Z
~ 1	amt		5	5		S	S			5	_			%	%С	%0	%0	<u>`</u>				D95 (cm)	24 10. pr		D (C	m) 26		PRF
/ER	IOC			۲ Ah	unda	F ant		י דצור		F Even			%	-20	1-4(	-1-7(	1-9(	606-					NCF			ORS		Ч
00		LBS	SHAPE	Ve	rtica	dine	— Ē	RB SHA	PF	Vertica			0	-	2	3	4	5				01 B1 B2	B3	D1	D2		C2	Б
Ŭ		TEX		Fir	nes			TEXTU	RE	Fines/0	Cobbl	e I	NST	RE	AM	Ŭ	Alaa	ae		<u> </u>		C3 C4 C5	50 S1	S2	S3	S4	1-	GΥ
		RIP	. VEG.	Miz	xed (	C&D	F	RIP. VE	G.	Mixed (	C & C	) V	/EG	ET/	ΑΤΙΟ	)N	0-					PATTERN	Irre	gula	r War	dering		
		STA	AGE	Yo	ung	Fores	st S	STAGE		Young	Fore	st								_		ISLANDS	Nor	ne				
																						BARS	Sid	е				
																						COUPLING	Deo	coup	led			
	_					-			<i>,</i> ,			5110										CONFINED	Un	confi	ned			
IRE	С	NIL	MAP	# N	ID #	: IY	PE	HT/LG	(m)	mthd			·		[			CC	JMN	/IEN I	S				L	JIM		
ATU				_							R		-											-				
FE/		-									R	F	:															
										DIS	TUR	BANC	E IN	1DI	CAT	OR I	EG	END	)									
01	Beav	ver Da	m		В3	Avuls	sion			D3 Red	ent LV	ND jam			C3	Eleva	ted B	ar		٤	S1	Homogenous B	led		S4	Extensive	Bars	
B1	Abar	ndone	d Channe	el	D1	Smal	ll Wood	dy Debris		C1 Exte	ensive	Riffles			C4	Multip	ole Ch	nannel	I	5	S2	Sediment Finge	ers		S5	Extensive	Scou	rs
B2	Erod	ling Ba	ank		D2	Large	e Wood	ly Debris		C2 Lim	ited P	ools			C5	Distu	rbed L	Lines		\$	S3	Sediment Wed	ges					
		Mod	loroto (	u olita	1000		roori	na hahi	tot fo	riuvoni	0.00	monid	_															
-AT	Τ	IVIOC		quality	/ 586	a5011a	ream	ng nabi		i juverii	e sa	intoniu	5.															
ABIT	JAL																											
Η	g																											
F	δZ																											
NC	R	DLL	FRAM	E FC	DCA	L LN	DIRE	CTION										CC	OMN	/ENT	S							
ATIC	G	C3	21A	_	WC	1 1		<u>u</u>	view	/ u/s fro	m bo	ttom of	t site	e														
NT/	6	C3	22A 234	_	wc	4		u d	view	/ u/S 110	m tor		Sile															
ME	G	C3	24A		wo	2 d		u	aeri	al view ı	upstr	eam	0															
CU											•																	
DQ																												
TO																												
ЭНС				_																								
	G		ID			14			SEE		MQ				G		D				١٨					c		
H.	0	AMP		oreal	toad	vv				VAIIO	NO					NUU		[			V			\VA		3		
LDI																												
M																												
	(	С																										
G	C	X1	Electro	o-fish	ing e	effort:	273 s	seconds	6 @ 3	300 volt	s. Bu	II trout	сар	ture	ed.													
NT																												
IME																												
NO NO																												
0																												

							FI	SH C	OLLE	ECTIO	N FOR	M						
STR	REAM	/I NAME	Ur	nam	ed tributa	ry to Graham	River							LAKE	Х	STREAM	WE	ETLAND
LOO		ON							0.45.44		WATE	RSHE	D CODE	235-30	4300-	59800		<u> </u>
VV A		BODAI	) r				NISMA	.Р 	94B/1				SITE/L				ΥΧΥ	N
PR		טו ו; ~	Halfwa	y-Gra	aham Ove		REACH	# 	1	SII od Envire		5			# 302			
DA	IE	4	001/09/	00	το 2	001/09/06	AGENC	r Di	versitie	ea Envira	ornental	Servic		KEVV	В	C/TE	RE-SAI	/IPLE
Q	SI	ITE #	NID M	AP #	NID #	SITE	UTM	N	1ETHC	D/NO.	STREA			-		COMME	ENTS	
THC		5				10 40037	6 627088	7	CC	1	1 EIMP	CON	TURB					
ME		5				10.49037	0.027000	/		1	4.5							
Е / I																		
SIT																		
	SITE	E# M	TD/NO	H/F	SPECI	ES STAGE	AGE	TOTA	L NO	MIN LI	N (mm)	MAX	LN (mm)	FISH	ACT	С	OMMENTS	6
RΥ	5	;	EF/1	1	BT			4		14	43		163	Rear	ring			
٩M																		
SUN																		
SH S				-														
БЦ																		
SC													NET /	TRAP S	PECI	FICATION	IS	
SPE	С	SITE #	MD/NO	) H/F	DATE	IN TIME	IN DAT	TE OU	T TIM	IE OUT	NET TY	ΈΕΙ	ENGTH	DEP	TH	MESH SI	ZE SET	HAB
AR	-			_														
GE																		
							ELE	CTRO	FISHE	R SPEC	IFICATIO	ONS						
	С	SITE #	MD/N0	DH/F	TIME	IN TIME C	DUT EF	- SEC	LE	NGTH	WIDT	ΉE	NCL V	OLT F	REQ	PLSE	MAKE	MDL
		5	EF/1	1	120	5 1220	C	273		200	2.63		0 3	300	60	Fixed	Coffelt	Mk X
ΓS	С																	
EN.																		
MM																		
80																		
							I	NDIV	IDUA	L FISH	H DATA	4						
C	SITE					LENGTH	WEIGH	HT ,	SEY	ΜΔΤΙ	IP		AGE			00	MMENITS	
	On					(mm)	(gms	)		WATC	"` ST	rr s	AMPLE #	AGE		00		
	5		-/1 1		BT	163					Sc	ale	38-1	2+	_			
	5		-/1 1	_		153					50		38_7	2+				
	5		-/1 1		BT	147						ale	39.3	21				
			<u> </u>	+		145					Sc	ale ale ale	38-3 38-4	2+ 2+ 2+				
						145					Sc Sc	ale ale	38-3 38-4	2+ 2+ 2+				
						143					Sc.	ale ale	38-3 38-4	2+ 2+ 2+				
						143					Sci Sci	ale ale	38-3 38-4	2+ 2+				
												ale	38-2 38-3 38-4	2+ 2+ 2+				
												ale	38-3 38-4	2+ 2+ 2+				
													38-3 38-4	2+ 2+ 2+				
													38-3 38-4	2+ 2+				
													38-3 38-4	2+ 2+ 2+				
													38-3 38-4	2+ 2+ 2+				
													38-3 38-4	2+ 2+ 2+				
													38-3 38-4	2+ 2+ 2+				
													38-3 38-4					
													38-3 38-4					
													38-3 38-4					
													38-3 38-4					



Unnamed tributary to Graham River Site 5: View upstream from centre of site (Roll GC3 - Exp 22A; CD 1 - Im 19)



Unnamed tributary to Graham River Site 5: Aerial view upstream (Roll GC3 - Exp 24A; CD 1 - Im 21)

## **APPENDIX VI**

### JUSTICE CREEK

(235 - 304300 - 66400)

## Sample Site 6

											SIT	ΈC	AR	D										
STF	REA	MNA	AME	Jus	tice C	Creek											FIELD	COORDINA	TES	56°	34.35	5' 123°	18.20'	
LOC	CAT	ION																						
NTS	S MA	AP #	94	B/11			0	W/	ATERSH	IED (		23	5-304	300-6	6400	)	ENATU							
RE/	АСН ГГ	#	2001/0	0/06		SHE	# 6		EUIM	10	4813	363	62	269829				200 M		rt	ACC	ESS	H	
DA	E		2001/0	9/06		TIVE	103	SU AG	ENCY	U	iversitie	a En	viron	mental	Serv	vices	CREW	BC/TE	FIS			Y X	IN	_
	CHA	NNE	.L (m)	me	eth	0.00	7.0		50 5	50	5.00		00	avg		GRADI	IENI %	EMS				D		AVA.
						0.60	7.0	0 0	.50 5	0.50	5.00	8	.00	2.90	) m		AL	TEMP (°C)	4	.5	TUR	Cloor		Ħ
						2.20	0.1		57 0	.90	2.20	0	200	2.90	' 	1.5				1 1(				JU JU
		PTH			13 42	0.69	STA		.57 U	N. 21	0.40	U Vis	.∠o Char	0.41		I.5 )rv/Int		RED MATE	RIAI	1.10	J III - I	χD		
		C	OVER	Tot	al	0.02	Мо	derate	(5-20%)		De	wate	r	·	T	ribs		Dominant	Col	ble (	(64-25	56 mm	)	
	type	SV		ND	B	3	U	DP	OV		V C	ROW	N CI	OSUF	RE			Subdom.	Gra	avel (	2-64 r	mm)		
	amt	ę	S	S	S	;	S	D	Т		N							D95 (cm)	28	- (	D (cr	n) 18		0
к	loc	F	>	P	F	,	Р	Р	Р		Р	%0	40%	%02	20.20	~		Morph. Rif	fle-p	ool			1	P
NE NE		LW	D FNC	Abu	indar	nt	DIST	-	Even		%0	1-2	21-	4 1	-   7	<u>^</u>		DISTURBA	NCE	IND	ICAT	ORS		0
00		LB \$	SHAPE	Ver	tical		RB S	HAPE	Vertica	I	0	1	2	3 4	4 !	5		O1 B1 B2	В3	D1	D2 [	D3 C1	C2	D G
		TEX	TURE	Fine	es		TEX	TURE	Fines		IN	STR	EAM	N	one		· · · ·	C3 C4 C5	S1	S2	S3 8	34		<
		RIP	. VEG.	Con	nifero	us	RIP.	VEG.	Conife	ous	VE	EGET	ATIO	NC				PATTERN	Irre	gulai	Wan	dering		
		STA	AGE	Mat	ure F	orest	STA	GE	Mature	Fore	st							ISLANDS	Nor	ne				
																		BARS	Sid	e/Dia	igonal	1		
																		COUPLING	Par	tially	Coup			
•	~				D //						DUCT					0.014		CONFINEL	UC(	casic	nally	Confin	ed	
IRE	С	NIL	) MAP #	i Nil	D#	TYPE	= HI/I	LG (m)	mthd				1			COMM	IENIS			1	U	IM		
١TU										R		-										$\rightarrow$		
FEA										R	F	-										——		
									DIS	TUR	BANCE		ICAT	ORIF	GFI	ND								
01	Beav	ver Da	m		В3	Avulsior	1		D3 Red	ent LV	VD iam		Сз	Elevate	d Bar		S1	Homogenous E	Bed		S4 E	Extensive	Bars	
B1	Abar	ndone	d Channel		D1	Small V	/oody Del	bris	C1 Ext	ensive	Riffles		C4	Multiple	Char	nnel	S2	Sediment Fing	ers		S5 E	Extensive	Scours	
B2	Erod	ling Ba	ank		D2	Large W	/oody Del	oris	C2 Lim	ited Po	ools		C5	Disturbe	ed Lin	nes	S3	Sediment Wed	ges					
E	Y	Moc	lerate se	eason	nal rea	aring p	otential	for juv	enile BT	but s	seasona	lacc	ess c	urrentl	y res	stricted	by de-w	atered section	n do	wnst	ream	and		
TA		роо	rly define	ed ch	anne	el throu	igh bacl	k chanr	nels and	oxbo	ws at G	rahar	n cor	nfluenc	e.									
AB	ZU∕																							
	27																							
F					CAL		DECT									COM								
NO	G		104		wd			vie	wu/s fro	m ho	ttom of	site				COM								
ATI	G	C3	10/( 11A		wd		u	vie	w u/s fro	m ce	ntre of s	site												
NT	G	C3	12A		wd		d	vie	w d/s fro	m top	o of site													
JME	G	C3	13A		wd		u	aer	ial view	upstre	eam													
JCL	G	C3	14A		wd		u	ups	stream a	erial v	view of b	basin												
DO																								
TO																								
HC																								
ш.	_		10					0005					_											_
ΕE	G	ROL	JP I			VV IL	DLIFE	OBSEI	RVATIO	NS			G	ROUP	' 		V	VILDLIFE OF	SEF	<b>KVA</b>	IONS	5		
DL																								
WIL													+											
	(	С											1											
	С	X1	Electro-	fishir	ng eff	fort: 26	33 seco	nds @	300 volt	s. No	fish ca	oture	d.											
ITS																								
Ē																								
MMQ																								
80																								

									FISH	H CO	ILL	ECTIO	N FO	RM							
STR	EAN	/I NAM	ЛE	Just	tice (	Creek											LAKE	X	STREAM	/ W	ETLAND
LOC		ON								-			WAT	ERS	SHED	CODE	235-3	304300	-66400		
WA	IER	ROD	. יייי		0				SMAP	94	4B/1	1 NIL	0 NO			SITE/L/					N
PRC	)JEC		Hal	tway-	-Gra	ham Ove		RE		Dive		SII ad Envir	E #	6	) 	FISH P		# SC.	2001-032		
DAI	E		2001	/09/0	0	t0 2	001/09/06	AG	SENCY	Dive	ersiti	ed Envir		a Se	ervices		EVV		BC/TE	RE-SA	MPLE
Q	S	ITE #	NI	) Ma	P#	NID #	SIT	E UT	ГМ	ME	тно	DD/NO.	STRE		CONL				COMM	ENTS	
Н		6					10 4813	63.62	260828	F	F	1	1 EMP		JON	TURB					
MEI		0					10.4013	00.02	203020			1	4.5	-		U					
E / I																					
SIT																					
	SITI	E #	MTD/I	NO	H/P	SPECI	ES STAG	E A	AGE TO	DTAL	NO	MIN L	N (mm)	N	/AX LI	N (mm)	FISH	H ACT	(	COMMENT	'S
λRΥ	6	)	EF/	1	1	NEC	;			0				_							
<b>MM</b>														-							
SUN														-							
ЯH																					
Ĕ																					
С С Ш	0		" 45			DATE		- 18.1	DATE	OUT	7.14					NET /	TRAP	SPECI	FICATIO		
SPI	С	SILE	# MD	/NO	H/P	DATE	IN I IM	: IN	DATE	001	I IIV		NELL	YPE		NGIH	DE	PIH	MESH S	IZE SET	HAB
AR	ŀ																				
GE	ŀ																				
									ELECT	ROFI	SHE	R SPEC	IFICAT	ION	IS						
	С	SITE	# MD	/NO	H/P	TIME	IN TIME	OUT	EF S	SEC	LE	NGTH	WID.	TH	EN	CL VO	DLT	FREQ	PLSE	MAKE	MDL
	-	6	E	F/1	1	1035	5 10	55	26	3		200	2.9	0	C	) 3	00	60	Fixed	Coffelt	Mk X
JTS	C																				
MEN	ŀ																				
IMC	Ī																				
Ō																					
									INE	DIVIC	DUA	AL FISI	H DAT	A							
С	SITI	E # N	1D/NO	H/P	SP	ECIES	LENGTH	N		SE	X	ΜΑΤι		TD				_	CC	MMENTS	
		_					(11111)		(gins)				3		SAI		AG				
-																					
																		$\square$			
-																					
								_		+					_			+			
-																					
-																					
-																					
-										-								+			
										-											
		$-\top$																			
															_						
-								_										_			
-										+								+			



Justice Creek Site 6: View upstream from bottom of site (Roll GC3 - Exp 10A; CD 1 - Im 26)



Justice Creek Site 6: View downstream from top of site (Roll GC3 - Exp 12A; CD 1 - Im 28)

# **APPENDIX VII**

#### UNNAMED TRIBUTARY TO JUSTICE CREEK

(235-304300-66400-16500)

### Sample Site 7

												SI	ΤE	C	ARE	)											
STF	REA	M NA	AME	Unr	name	ed trib	outary	to Just	tice (	Creek									FIEL	D (	COORDINAT	TES	56°	34.0	2' 123°	17.6	4'
LOO	CAT	ION		<b>D</b> ///			<u></u>			TERO					00.44			1050									
		4P # + #	94	B/11			NO = #	7	VV A		1ED (		2	235	-304	300-66 60227	6400-			ш	200 ME	-TU	DE		NEGG	-	
		1#	2001/0	1 )9/06			=# F	1117	AG	E U I M FNCY		403 Diversifi	ied F	ı =nv	ironn	nental	Servi	vices		п N	BC/TF	FIS		ORM	Y X	N	
ол (	ЭНА	NNE	L (m)	m	eth		_		7.0							ava		RADI		26	EMS			0.01			5
CH				R	RF	12.	40	9.20	8.	10 7	7.60	6.80	) I	6.4	40	8.42	me	eth	AL	/0	TEMP (°C)		1.0	TUF		(	/AT
WE	ТТЕ	ED W	IDTH	R	RF	4.6	60	9.20	3.	60 6	5.20	5.60	5	5.	20	5.73		2.5			Ph				Clear		ER
RE	S PC		DEPTH	N	1S	0.1	10	0.10	0.	20 (	).31	0.1	5	0.	20	0.18		3.0			FLOOD SIG	SNS	0.2	5 m -	RD		
Wb	DE	PTH	0.25	0.	30	0.3	30 <mark>S</mark>	TAGE		Mode	erate	Ν	lo V	is (	Chan		Dr	ry/Int			BED MATE	RIAI	_				
		C	OVER	Tot	al			Abund	ant	(>20%)			)ewa	ater			Tr	ribs			Dominant	Gra	avel (	2-64	mm)		
	type	SV		WD T		B	<u>U</u>		P	OV				1W			E				Subdom.	Co	bble	(64-2	56 mm	)	M
~	amt					5			ר כ			D		%	%0	%0	2.0	-			Morph Riff			D (C	m) 28		ORF
VEF	100	LWI	D FNC	Few	v		D	IST		Clump	ed		%	1-20	21-4	41-7 71-9	06	8			DISTURBA	NCE			ORS		ЮН
Ś		LB S	SHAPE	Slop	ping		R	B SHA	PE	Vertica	al		0	1	2	3 4	5	5			O1 B1 B2	В3	D1	D2	D3 C1	C2	LO O
		TEX	TURE	Fine	es		т	EXTU	RE	Fine/C	ob/G	rav II	NST	RE	AM	AI	gae				C3 C4 C5	S1	S2	S3	S4		Υ£
		RIP.	. VEG.	Cor	nifero	ous	R	IP. VE	G.	Conife	rous	\	/EG	ET,	ATIO	N	-				PATTERN	Sin	uous	5			
		STA	GE	Mat	ure	Fores	st S	TAGE		Mature	Fore	est									ISLANDS	No	ne				
																					BARS	Sid	e/Mi	d-stre	am		
																					COUPLING	Pa	rtially	Cou	pled		-
	~				D //			17/1 0				BUIG						0.014		_	CONFINED	Fre	quer	ntly C	onfined		
IRE	С	NID	) MAP #	≠ NII	D #	IY	PE F	HI/LG	(m)	mthd			·				(	COMN	/IENTS	5				l	JIM		
٨TU											R																
FE/											R	F	:														
										DIS	TUR	BANC	E IN	<b>I</b> DI	CAT	OR LE	GEN	١D									
01	Beav	ver Dar	m		B3	Avuls	ion			D3 Re	cent L\	ND jam			C3	Elevated	l Bar		s	1	Homogenous B	ed		S4	Extensive	Bars	
B1	Abar	ndoneo	d Channel	I	D1	Smal	l Woody	/ Debris		C1 Ext	ensive	Riffles			C4	Multiple	Chan	nel	S	2	Sediment Finge	ers		S5	Extensive	Scour	S
B2	Erod	ling Ba	ank		D2	Large	e Woody	/ Debris		C2 Lin	nited P	ools			C5	Disturbe	d Line	es	S	3	Sediment Wedg	ges					
		Mad	loroto o			ooring	notor	tial for		nile DT																	
'AT	Τ	Acc		rently		ited b	y de-w	luar ior	Juve	nnel do	wnstr	eam a	nd n	nor		fined c	hanr	nel thr	ouah k	<u></u>	k channels a	nd o	vho	MS			
BIT	JAL	at co	onfluend	ce wit	h Gi	rahan	n Rive	r.	Cha		wnou	cama	nu p		ly uc	inica c	, nam		ougirt	Jac			7001	113			
Η	g						-																				
F	δZ																										
N	R	OLL	FRAME	E FO	CAL	LN	DIRE	CTION									(	COMN	/ENTS	5							
VTIC	G	C3	15A		wd			u	viev	v u/s fro	om bo	ottom of	fsite	9													
NTA	6	C3	16A		wd			u d	viev	v u/s fro	m ce	ntre or	site														
ME	G	C3	18A	_	wd			u	aeri	al view	upstr	eam	5														
CU	-																										
BO																											
TO																											
ЮН																											
ш.						14					NO				0					14					<u>_</u>		_
ΞH	G	RUU				vv	ILDLI	FE OB	SEF	<b>VATIO</b>	INS				Gr	KUUP	1			V		SEI	τνΑ	HON	5		
LDL																											
$\geq$																											
	(	С	I														_			_							
(0	С	X1	Electro	-fishir	ng e	ffort:	361 se	econds	@	250 volt	s. No	fish c	aptu	red		-			-								
NT8																											
ME																											
NO		-																									
0																											

										F	ISH	COL	LECTIC	N FOF	RM							
ST	REAN	MNA	٩ME	ι	Jnna	amed	d tributa	ry to .	Justice (	Creek				_				LAK	Е <b>Х</b>	STREAM	N N	/ETLAND
LO		ON												WATE	ERSH	HED	CODE	235	-304300	-66400-10	6500	
WA	TER	RBOL	DY IE	)						NTSN	1AP	94E	/11 NI				SITE/L/	AKE			DXY	/N
PR	OJE(		כ	Halfw	vay-C	Grah	nam Ove	erview	1	REAC	H #	, 		E#	7		FISH P	ERM	IT # SC	2001-032		
DA	IE		2	001/0	9/06	5	to 2	2001/0	)9/06	AGEN	CY	Divers	Ified Envir		Serv	vices	CR			BC/TE	RE-SA	AMPLE
Q	S	ITE	#	NID	MAF	Þ #	NID #		SITE	UTM		MET	HOD/NO.	STRE	AM C	ONL		-		COMM	IENTS	
H		7						10	10000	1 62601	007		1		CC	JN	TURB					
MEI		1							.40900	1.02092			-	4.0			U					
E / I																						
SIT																						
	SIT	Έ#	M		J ⊦	I/P	SPECI	ES S	STAGE	AGE	ТО	TAL N	) MIN L	N (mm)	MA	AX LM	N (mm)	FIS	SH ACT	(	COMMENT	rs
\RY	- 1	/	-	=F/1		1	NFC	;				0	_									
7WV											_		_									
SUN						-																
SH																						
Ë																						
EC			<b>E</b> #				DATE	INT									NET /	TRAF	P SPEC	FICATIO	NS	
SP	C	511	E#			1/P	DATE	IIN	IIVIE		AIE			INET T	TPE	LE	NGIH	U	EPIH	MESH 5	IZE SEI	НАВ
EAR						-																
GE																						
										EL	ECTF	ROFISH	IER SPE	CIFICATI	ONS	;						
	С	SIT	E #	MD/N	NO F	I/P	TIME	IN	TIME C	UT	EF SE	EC I	ENGTH	WIDT	ГН	EN	CL VO	OLT	FREQ	PLSE	MAKE	MDL
	0	1	(	EF/	1	1	1122	2	114(	)	361		200	5.73	3	C	) 3	00	60	Fixed	Coffelt	Mk X
VTS	C																					
ME																						
MO																						
0												0.051			•							
					_								JAL FIS	H DA I.	A							
С	SIT	Е#	MD/	'NO F	l/P	SPE	ECIES		mm)	(an	s)	SEX	MAT	JR S	TR	SAN	MPLF#	A	÷F	CC	OMMENTS	
								(.	,	(3.	)					0/ 1						
													_					-				
					+																	
					+																	
		]																				
																		-				
					-+								_									
					+																	
								1				1	-					1				



Unnamed tributary to Justice Creek Site 7: View upstream from centre of site (Roll GC3 - Exp 16A; CD 1 - Im 23)



Unnamed tributary to Justice Creek Site 7: Aerial view upstream (Roll GC3 - Exp 18A; CD 1 - Im 25)

# **APPENDIX VIII**

#### UNNAMED TRIBUTARY TO JUSTICE CREEK

(235-304300-66400-16500)

### Sample Site 8

												SIT	ΈC	AR	D											
STF	REA	MNA	AME	U	nnar	med tril	butary	to Just	tice (	Creek								FI	ELD	COORDINA	TES	56°	34.9	3' 123º	20.87	-
LOC	CAT	ION																								
	S M/	AP #	Ę	94B/1	1			0	WA		ED (		23	5-304	1300-	664	00-165	500		200		DE	100			
		1#	2001	/00/0	6		E#	8 0055	511			4//2	41 d En	Viron	2709. mont	33 al Sa	SILE			200 IVI						
			$\frac{2001}{(m)}$	103/0	moth			0300	AUI		D	IVEISINE		VII OIT												<
CH				-	MS	3	10	2 65	3	50 4	00	3 30	4	20	34	'Y 16	meth		1 /0	TEMP (°C)	- 4	10				TAV
WE	TTE		/IDTH	-	MS	2.9	90	2.65	2.	90 3.	70	1.50	3	.00	2.7	78	2.5		-	Ph	-			Clear		H R
RES	S PC	DOL	DEPT	н —	MS	0.1	13	0.46	0.	20 0.	20	0.15	0	.25	0.2	23	2.0		-	FLOOD SIG	GNS	0.3	m - F	RD		
Wb	DE	PTH	0.3	5	0.35	5 0.3	35 <mark>S</mark>	TAGE		Low	1	No	Vis	Char	า่		Dry/In	t	1	BED MATE	RIAL	_				
		С	OVE	₹Т	otal			Modera	ate (	5-20%)		De	wate	er			Tribs			Dominant	Col	oble	(64-2	56 mm)		
	type	SV	VD		)	B	U		P	OV	ſ	V CF	NON	N CI	LOSL	JRE			_	Subdom.	Gra	avel (	2-64	mm)		M
~ 1	amt					8			<u>ר</u>				%	%0	%0	%С	<u> </u>			D95 (cm)	46 flo. pr		D (C	m) 23		DRF
/ER	100	IW			-w/	Г			-	Clumpe	l ' d	<u>۲</u>	-20	4	1-7	1-9	606-	_		DISTURBA	NCF			ORS		OHe
00		LBS	SHAP	F Ve	ertic	al	R	RB SHA	PF	Vertical	<u> </u>	0	1	2	ч З	4	5	_	-	01 B1 B2	B3	D1	D2	D3 C1	C2	õ
Ũ		TEX		E Fi	nes		— T	EXTU	RE	Fines/B	edro	ck IN	STRI	FAM		Alaa	ae			C3 C4 C5	50 S1	S2	S3	S4		GY
		RIP	. VEG	. C	onife	erous	R	RIP. VE	G.	Conifere	ous	VE	GET	ATI	ОЛ	5			-	PATTERN	Sin	uous	;	-	1	
		STA	AGE	Μ	atur	e Fores	st S	TAGE		Mature I	Fore	st			-					ISLANDS	Nor	ne				
																				BARS	Sid	e/Mi	d-stre	eam		
																				COUPLING	Cou	uplec	łł			
0,	<u> </u>	NUE		<i>4</i> N		<i>щ</i> ту			(100)	in altered		DUOT	<u> </u>				0.01		TO	CONFINED	Co	ntine	d			
JRE	C	NIL		'# r		# IY		HI/LG	(m)	mtha	R		)	1			CON	VIVIEN	115		1	I.				
ATL		-									R	F		-								-				
Щ		-									R	F														_
										DIST	rur	BANCE	IND	ICAT	OR I	LEG	END									
01	Bear	ver Da	m		B3	3 Avuls	sion			D3 Rece	ent LV	VD jam		C3	Eleva	ted B	Bar		S1	Homogenous E	led		S4	Extensive	Bars	
B1	Aba	ndone	d Chanr	nel	D1	1 Smal	I Wood	y Debris		C1 Exter	nsive	Riffles		C4	Multip	ole Cl	hannel		S2	Sediment Finge	ers		S5	Extensive	Scours	
B2	Eroc	ling Ba	ank		D2	2 Large	Woody	y Debris		C2 Limit	ted Po	ools		C5	Distu	rbed	Lines		S3	Sediment Wed	ges					
		Limi	ited se	ason	al re	arina r	otenti	al for ii	iveni	le BT																_
ГАТ	Σ	Sea	sonal	acces	ss c	urrently	v limite	ad by de	e-wa	tered and	d po	orlv defi	ned s	seam	ents	of c	hannel	down	strea	am						
ABI-	JAL						,				- 1															_
Ŧ	Ø																									
FS	SZ				_																					
NC	R		FRAM	ЛЕ F	OC/	AL LN	DIRE	CTION		1. 6		u					CO	ИМЕЛ	TS							
ATI(	G	C3	5A 64		W	va vd		u u	VIEW	v u/s from	n boi n cei	ntre of s	ite													
NT/	G	C3	7A		w.	vd vd		d d	view	v d/s from	n tor	of site	ne													—
IME	G	C3	8A		w	vd		u	aeri	al view u	pstre	eam														
JCL	G	C3	9A		W	vd		u	aeri	al view u	pstre	eam														
DO																										
DTC																										
ЭНС																										
	G	ROI	IP			W	ע וו	FF OB	SEE		IS			G	ROU	IP			V		SEF	٦١/Δ		S		
EL.		MAN	1 N	loose	<b>;</b>					(WATHOP	••			1					•					0		
ILDI																										
$^{\wedge}$																										
		С																								
S	C	X1	Electi	ro-fish	ning	effort:	325 s	econds	@3	300 volts	. No	fish cap	oture	d.												
LN	(	51	AISO	signif	ican	it propo	ortion c	ot dould	ier p	resent.																
<b>IME</b>																										
NO NO																										_
0																										

									F	SH	COL	LECTIC	N FOF	RM							
STF	REAN	M NA	ME	U	nnam	ed tribut	ary t	to Justice C	Creek				<b>-</b> .				LA	<e td="" x<=""><td>STREAM</td><td>ЛW</td><td>ETLAND</td></e>	STREAM	ЛW	ETLAND
			חו עו						NTC M		046	/11 NII	WATI	ERS	HED	CODE	235	5-304300			
		םטטם. רו דר	טו זי ו ו	Halfwa		aham Or	<i>i</i> onvi	iow		-\ <b>⊢</b>	940		F #	8					2001-032		
DAT	TE		20	01/09	/06	to	200	01/09/06	AGENC	Y	Divers	ified Envir	onmenta	al Se	rvices		REW		BC/TE	RE-SA	MPLE
	_												STRE	AM	CONI		1				
OD	S	ITE #	¥		1AP #	NID #		SITE	UTM		MET	HOD/NO.	TEMP	С	ON	TURE	3		COMM	ENTS	
ETH		8						10.477241	1.627093	33	EF	1	4.0			С					
/ ME																					
ΠE							_														
S			-																		
	SIT	E#	MT	D/NO	H/F	SPEC	DIES	S STAGE	AGE	TO	TAL N	) MIN L	N (mm)	M	IAX LI	N (mm)	) FI	SH ACT	(	COMMENT	S
RY	8	3	E	F/1	1	NF	С				0										
MAI																					
NU												-									
SH S																					
띬																					
С	C	CITI	- # 1												- I	NET /	TRA	P SPEC	IFICATIO		
SP	C	511	= # 1			DAT				IEC			INET I	TPE		NGIN				IZE SET	ПАВ
EAR	-																				
G	-																				
	C	CITI	- # 1							CTF	ROFISH	IER SPE		ION	S				DICE		MDI
	C	8	- # 1	EF/1	1	10		1020		325		200	2.7	8			300	60	Fixed	Coffelt	MkX
Ś	С	-												-							
ENT																					
MM	-																				
S	-																				
										ND	IVIDL	JAL FIS	H DAT	A							
с	SIT	E#	MD/I	ю н/	P SI	PECIES	L	LENGTH	WEIG	HT	SEX	MAT					<i>u</i> •	05	CC	OMMENTS	
								(11111)	(gris	)			5	IR	SA	VIPLE :	≠ A	GE			
							_										_				
					_		_					-					_				
							_														
							_														
							-														
							+														
							_														
												_			_		_				
							+														



Unnamed tributary to Justice Creek Site 8: View upstream from centre of site (Roll GC3 - Exp 6A; CD 1 - Im 32)



Unnamed tributary to Justice Creek Site 8: View downstream from top of site (Roll GC3 - Exp 7A; CD 1 - Im 33)

## **APPENDIX IX**

### UNNAMED TRIBUTARY TO GRAHAM RIVER

(235-304300-74200)

### Sample Site 9

												S	ITE	E C	ARI	D											
STF	REA	MNA	AME		Unna	med t	ributa	ry to Gi	ahan	n River									F	IELD	COORDINA	TES	56°	38.03	3' 123° :	22.37'	
LOC	CAT	ION											•														
		4P #		94E	8/11								206	235	-304	300-7	420				160 M		DE	100			
	чСп ГЕ	1#	200	1/00	9/06		IE#	9 0840				47 Diversi	120 fied	5 Env	ironr	nenta	i LSe	SILE		RFW	BC/TE	FIS			ESS Y X	N	_
On (	ΉΔ		200 1_(m	)	meth	h		0040	710				neu			avo	1	GRA			EMS		////			<	5
CH				, Н	RF	4	170	5 20	3	40	3 10	32	0	2	40	3.6	9 7	meth			TEMP (°C)		3.5	TUR	BIDITY	A	T
WE	TTE	ED W	/IDTI	4	RF	3	3.20	2.50	2	.90	2.90	1.5	60	3.	40	2.7	3	1.5		_	Ph	-			Clear	5	fi D
RES	S PC	DOL	DEP	тн	MS	0	).32	0.17	0	.12	0.19	0.5	3	0.	24	0.2	6	1.0		_	FLOOD SI	GNS	0.6	m - R	D		
Wb	DE	PTH	0.4	10	0.42	2 (	).38	STAG	E	Ĺ	OW		No	∕is (	Chan			Dry/In	t		BED MATE	RIA	_				
		C	OVE	R	Total		_	Т	race	(5%)			Dev	/ater	•			Tribs		_	Dominant	Co	bble	(64-2	56 mm)		
	type	SV	VD F	LV	VD	B	l	J	DP	<u> </u>	′	IV (	CR	IWC		.OSUI	RE			_	Subdom.	Bo	ulder	(> 25	6 mm)		M
~ 1	amt					5						N		%	%0	%0	%0	<u> </u>		_	D95 (cm)	42 flo.p		D (cr	n) 28		ğ
/ER	100	IW		IC	Few	Г		DIST	F	Fven		F	%(	-20	4-1-	1-7	1-9	606-		_	DISTURBA	NCF			ORS	Ē	Ĕ
00		LBS	SHAI	PF	Vertic	al		RB SH	IAPF	Vertic	al		0	1	2	3	4	5		_	01 B1 B2	B3	D1	D2	D3 C1	C2	5
		TEX		RE	Fines			TEXT	JRE	Fines			INS	TRE	AM		•	0			C3 C4 C5	S1	S2	S3 (	S4	<u> </u>	2 2
		RIP. VEG. Coniferous RIP. VEG. Mixed C & D VEGETATION														_	PATTERN	Sin	uous	;							
		STA	AGE		Matur	e For	est	STAG	E	Matu	e Fore	est								_	ISLANDS	No	ne				
								-		-		•									BARS	Sid	е				
																					COUPLING	De	coup	led			
	_			_ //								5110									CONFINE	) Un	confi	ned			
RE	С	NIC	) MA	P #	NID	# T	YPE	HT/LO	3 (m)	mth	d	PHO	TO		1			CON	/MEI	NTS		1	1	L	JTM		
٨TU																											
FE/																						_					
										D	STUR	BANC	ΈI	NDI	САТ	OR L	EG	END									
01	I         Beaver Dam         Ba         Avulsion         D3         Recent LWD jam         C3         Elevated Bar         S1         Homogenous Bed         S4         Extensive Bars															Bars											
B1	Abar	ndone	d Chai	nnel	D	1 Sm	all Wo	ody Debri	s	C1 E	xtensive	Riffles			C4	Multipl	e Ch	nannel		S2	Sediment Fing	ers		S5 E	Extensive	Scours	
B2	Availability of annel         D1         Small woody bebils         C1         Extensive knilles         C4         Multiple Channel         S2         Segment Fingers         S5         Extensive Scours           Eroding Bank         D2         Large Woody Debris         C2         Limited Pools         C5         Disturbed Lines         S3         Sediment Wedges															_											
	Eroding Bank     U2     Large Woody Debris     C2     Limited Pools     C5     Disturbed Lines     S3     Sediment Wedges															_											
AΤ	Σ	LOW	tom		rate se	eason	al rea	ring po	tentia	1 for ju	/enile E	31. od.cov	otio	- im	modi	atolyu	Inc	troom	of m	outh							
BIT	JAL	Jea	30114			unen	lly i Co	Sincleu	by it	io in ue	-walci	eu sei	GUO		neui	atery	upo	ucam	UI III	outri.							
ЧA	б																										
FS	δZ																										_
N	R	ÖLL	FRA	ME	FOC	AL LN	I DIR	ECTIO	N									CON	/MEI	NTS							
TIC	G	C2	2	2	V	vd	_	u	vie	w u/s f	rom bo	ottom c	of si	te													
NTA	G	C2	2	3	W	VC	_	u d	vie	wu/st	rom ce	entre o	t sit	е													
ME	G	C2	2	+ 5	v v	vd	-	u 11	aei	ial viev	unstr	eam	le														_
cul	-	02			•	ru -		ŭ			apou	oum															_
DO																											
TO																											
ОН							_																				
ш																	_			14				TIONI	_		_
ΕE	G	ROL	אנ 					LIFE O	BSE	RVAII	UNS				G	ROUF	, 			V		SEI	ΚVΑ	HON	5		
Ъ																											_
MII																											_
	С														-												
	C	X1	Elec	tro-f	ishing	effor	t: 268	second	ls @	250 vc	lts. No	fish c	apt	ured	Ι.												
NT8																											
ME																											
NO																											
0																											

									FIS	SH	COLL	ECTIO	N FOF	RM							
STREAM NAME Unnamed tributary to Graham River														'ETLAND							
			חו ענ					N		D	040/		WATE	RSH	ED CO		235-30	4300- DD A	-74200		
			л н	lalfwav	Gra	ham Ov	anviow	-'		F #	94D/		F #	0	 				2001-032		
DA <sup>-</sup>	TE		200	1000000000000000000000000000000000000	-01a )6	to 2	2001/09/06		AGENC	Ϋ́	Diversif	ied Envir	<u>∽ </u> nmental	Servi	ces	CRE	W	E	C/TE	RE-SA	MPLE
					-								STRE	AM CO	ONDITI	ON					
OD	S	ITE #	#   ^	ND MA	\P #	NID #	S	ITE (	JTM		METH	OD/NO.	TEMP	CO	ΝΤυ	IRB			COMM	ENTS	
HT		9					10.477	265.	.627678′	1	EF	1	3.5			С					
/ ME																					
ΠE																					
S																					
	SIT	E#	MTE	D/NO	H/P	SPEC	IES STA	GE	AGE	TO	TAL NO	MIN L	N (mm)	MAX	K LN (n	nm)	FISH /	ACT	(	COMMENT	S
ž	ę	9	Ef	=/1	1	NFC	<b>)</b>				0										
MAF																					
MU																					
SH																					
FIS																					
ECS															NE	T / TI	RAP S	PECI	FICATIO	NS	
SPI	С	SIT	E # N	1D/NO	H/P	DATE	IN TI	ME IN	N DAT	EC		ME OUT	NET TY	/PE	LENG	TH	DEP	TH	MESH S	IZE SET	HAB
EAR																					
GE																					
									ELEC	CTR	OFISH	ER SPEC	IFICATI	ONS							
	С	SITE	E # N	ID/NO	H/P		IN TIM		JT EF	SE	C LE	ENGTH	WIDT	H	ENCL	VOI 20		REQ	PLSE	MAKE	MDL Mk X
(0	C	9			I	004	5 0	900		200		100	2.73	)	0	30	0	00	Fixeu	Coneil	
NTS	Ŭ																				
AME																					
NOC																					
									IN		עוסוע	AL FIS		Δ							
6	OIT	<u>с "</u>			0		LENGT	Ή	WEIGH	IT	OEV				AGE	Ξ			00		
C	511	⊏#			55	PECIES	(mm)		(gms)	)	SEA	IVIATO	S S	TR :	SAMPL	.E #	AGE			DIVIIVIEIN I S	
				_																	
				_																	
				_																	
				_																	
				_																	
				_																	
				_																	
				_														-			
				<u> </u>																	
				_																	
				+										-+				+			
-																		-			



Unnamed tributary to Graham River Site 9: View upstream from bottom of site (Roll GC2 - Exp 22; CD 1 - Im 35)



Unnamed tributary to Graham River Site 9: Aerial view upstream from Graham River confluence (Roll GC2 - Exp 25; CD 1 - Im 38)

# **APPENDIX X**

#### **CHOWADE RIVER**

(235-430800)

### Sample Site 10

	SITE CARD STREAM NAME Chowade River FIELD COORDINATES 56° 42.38' 123° 12.03'																											
STF	REA	ΜN	AME	Cł	nowa	de Ri	ver													FIE	LD	COORDINA	TES	56°	42.3	8' 123	° 12.0	)3'
LOO	CAT	ION																										
	S M/	4P #	g	94B/1	1			40	WA	TERSH	ED (		2	235	-430	800	25	017			<b>T</b> 11	000		DE	100			
RE/		1#	2001	100/01	5			10	SIII		10	48	//1:	5 Enví	62 iropp	8473	35 al Sc	SII				300 MI			ACC	ESS		H
DA		NINIT	2001	/09/0:		TIIV		1020	AGE		U	IVEISII	ieu i			nenta	aise						FIG					~
СН					DE	17	00	17 50	30	00 25	80	32.0		24	00	20	/g 00	GR	ADI h		%			1.0		טא דוחופס	v	LAN
WF			/ЛОТН	•	RF	9	90	9.00	30. 14	00 20	80	21 0		12	00	29. 7 1	10	1	0	AL		Ph		1.0		Clea		Ę
RES	S PC		DEPT	н —	MS	0	75	0.60	0	75 0	70	0.4	0	1 (	00	0.7	72	1	5			FLOOD SI	SNS	10	m - F	מא סא		~
Wb	DE	PTH	1.35	5 '	1.00	1.	20 S	TAGE	•	Moder	ate	1	lo V	'is C	Chan		-	Dry/	Int		1	BED MATE	RIA					
		C	OVE	<b>τ</b> α	otal			Modera	ate (S	5-20%)		[	Dewa	ater				Trib	s			Dominant	Col	bble	(64-2	56 mn	1)	
	type	SV	VD	LWD		В	U	D	Р	OV		V (	CRO	1W0	N CL	OSL	JRE					Subdom.	Gra	avel (	2-64	mm)		<
	amt		S	S		S	S	] [	)	Ν		N			%	%	%					D95 (cm)	40		D (c	m) 24	ŀ	OR
К	loc	ŀ	P	Р		Р	P	F	2	Р		P	0	20%	-40	-70	-90	%0				Morph. Rif	fle-p	ool				PH
NO		LW	D FNC	C At	bunda	ant		DIST		Clumpe	d		ô	<del>+</del>	21	4	7	~				DISTURBA	NCE	IND		ORS		65
C		TEXTURE Fines/Cobble TEXTURE Fines/Cobble INSTREAM Algae														O1 B1 B2	B3	D1	D2	D3 C	1 C2	G						
		TEXTURE Fines/Cobble TEXTURE Fines/Cobble INSTREAM Algae																S1	S2	53	S4	_						
		RIP ST/		. IVII	xeu (		ot S		G.	Maturo		ct	/EG		ATIC	JN							Oc	guia	vva	laenną	1	
		517	AGE	IVIO	aluie	rue	51 0	TAGE		Maluie		ิรเ										BARS	Sid	e/Mi	d-stre	am		
																						COUPLING	Par	tially	Cou	pled		
																						CONFINED	Fre	quer	ntly C	onfine	ł	
Щ	С	NIE	) Map	# N	IID #	TY	ΈE Η	HT/LG	(m)	mthd		PHO.	ТО					CC	DMM	/ENT	S				,	JTM		
-UR											R	F	-											[				
EAT											R	F	-															
Ē											R	F	-															
										DIS	TUR	BANC	EIN		CAT	ORI	LEG	END	)						1 1			
01	Bea	ver Da	m		B3	Avuls	sion			D3 Rec	ent LV	VD jam			C3	Eleva	ted B	Bar			S1	Homogenous E	led		S4	Extensi	e Bars	
B1 B2	Aba	ndone	d Chanr	nel	D1	Sma		y Debris		C1 Exte	nsive	Riffles			C4	Distu	ole Ch	hanne	I		S2	Sediment Finge	ers		S5	Extensi	e Scou	irs
52	LIUC	ing Di	ann		DE	Luig	e mood	, Debilo				5015			00	Diotai	ibeu i	LINCO			00		900					
	~	Мос	derate	to go	od po	otentia	al for se	easona	luse	by adu	t RB	, GR a	and I	MW	and	l juve	enile	rear	ing f	for B	T ar	nd MW.						
TA <sup>-</sup>	É																											
ABI	NA																											
Т	Ø																											
F	SZ				~~~			OTION										~										
NO	R				JCA		DIRE		viou	ula fro	n ho	ttom o	foit	~					JIVIIV	/IEN I	5							
ATI	0 C	F8	21		wc	4		u II	view		n ce	ntre of	site	5														
NT	C	F8	23		wc	2 k		d	view	d/s from	n tor	of sit	e															
JME	C	F8	24	+	WC	1		u	aeria	al view u	pstro	eam																
JC																												
DO																												
рто																												
ЭНО																												
	0	ROI	ID			١٨			SED								ID				14					S		
Ë.	G	MAN		loose	elk	V	ILULI		<b>JER</b>		10				G		/F				v			<b>NVA</b>		3		
LDL		1012 (1)		10000	, оп																							
$\mathbb{N}$																												
		С																·										
(0	С	X1	Electr	o-fish	ning e	effort:	497 s	econds	@ 2	250 volts	. Bu	II trout	wer	e ca	aptur	ed.												
NT8	(	C1	Alsos	some	bould	der pr	resent.																					
ME																												
NO																												
0																												

							FI	SH CO	OLLI	ECTIO	N FOR	RM						
STR	REAN	1 NAME	Ch	owad	de River									LAKE	Х	STREAM	1 WI	ETLAND
LOO	CATIO	NC						_			WATE	RSHE	D CODE	235-43	0800			
WA	TER	BODY I	D				NTS MA	P _ 9	94B/1		NO		SITE/L	AKE CA	RD A	TTACHE	ΥΧΥ	N
PR	OJEC	CT ID	Halfwa	y-Gra	aham Ove	erview	REACH	#		SIT	E#	10	FISH P	ERMIT	# SC2	2001-032		
DA	TE	2	2001/09/	05	to 2	2001/09/05	AGENC	Y Div	ersifi	ed Enviro	onmental	Service	es CR	EW	E	BC/TE	RE-SA	MPLE
D	SI	TE #	NID M	AP #	NID #	SITE	UTM	M	ЕТНО	DD/NO.	STREA		NDITION	4		COMM	ENTS	
OH.		10				40.47074	F 000 470			4	TEMP	CON	TURB					
ЛЕТ		10				10.47871	5.628473		:F	1	4.0							
- N																		
SITI																		
	SITE	E# M	TD/NO	H/F	SPECI	ES STAGE	AGE	TOTAL	NO	MIN LI	N (mm)	MAX	LN (mm)	FISH	ACT	C	COMMENT	6
RΥ	10	)	EF/1	1	BT			2		8	4		87	Rear	ing			
MA																		
ΝŊ																		
S H																		
FIS																		
SO							· · · · · · · · · · · · · · · · · · ·						NET /	TRAP S	PECI	FICATION	NS	
SPE	С	SITE #	MD/NC	H/F	DATE	IN TIME	IN DAT	E OUT	TI№	1E OUT	NET TY	PE L	ENGTH	DEP	ТН	MESH SI	ZE SET	HAB
AR :	▎▕																	
GE,	-																	
							ELE	CTROF	SHE	R SPEC		ONS						
	С	SITE #	MD/NC	) H/F	TIME	IN TIME C	DUT EF	SEC	LE	NGTH	WIDT	ΉE	NCL V	OLT F	REQ	PLSE	MAKE	MDL
		10	EF/1	1	102	5 1050	) ·	497		300	7.1		0 2	250	60	Fixed	Coffelt	Mk X
ΓS	С																	
EN.	▎▕																	
MM																		
80																		
							11	NDIVII	DUA	<b>L FISI</b>	H DATA	4						
C	SITE	= # MD				LENGTH	WEIGH	IT s	FΧ	ΜΔΤΙ	IR		AGE			00	MMENTS	
					LOILO	(mm)	(gms)			MATC	/`` S1	rr s.	AMPLE #	AGE		00		
	10		-/1 1		BT	84					Sc	ale	24-1	1+	_			
			-/1 1		ы	0/					50	ale	24-2	1+	_			
															+			
				1														
												1						
															_			



Chowade River Site 10: View upstream from centre of site (Roll GF8 - Exp 22; CD 1 - Im 40)



Chowade River Site 10: Aerial view upstream (Roll GF8 - Exp 24; CD 1 - Im 42)

## **APPENDIX XI**

#### **CHOWADE RIVER**

(235-430800)

### Sample Site 11

	SITE CARD STREAM NAME Chowade River FIELD COORDINATES 56° 42.34' 123° 18.74'																										
STF	REA	MNA	AME	Cho	owad	de Riv	/er												FIE	LD	COORDINA	TES	56°	42.34	4' 123	° 18.7	4'
LOC	CAT	ION																									
	S M/	AP #	94	B/11				44	WA		HED		E	235	6-430	800	70	OITE		<b>T</b> 11	2000 M		DE	100			
		1#	2001/0	10/05			E#	11			10	) 4i Divers	808t	56 Env	/iropr	:8467 nonta	'8 al Sc	SILE			200 MI				ESS V <b>X</b>	N	1
DA		NINIT	2001/0	19/05	oth	TIN		0935	AG			Jiveis	meu							_ V V		T IC					<
СН						15	00	14 00	13	00 1	1 20	11	۹N	11	00	12 (	у 68	meth		70			2.5		שי וחוד	v	۲A
WE	TTE		/IDTH	F	RF	10.	.50	7.20	8.	00	8.50	11	.20	10	.20	9.2	27	1.5			Ph				Clear		ĪĒŖ
RES	S PC	DOL	DEPTH	I N	/IS	0.6	65	0.06	0.	20	0.15	1.	30	0.	20	0.4	3	2.0			FLOOD SI	GNS	0.5	m - F	RD		
Wb	DE	PTH	0.85	0.	.60	0.5	50 <mark>S</mark>	TAGE		Mode	erate		No	Vis (	Chan		-	Dry/Int			BED MATE	RIA	_				
		С	OVER	To	tal			Abund	lant (	(>20%)			Dev	vater	ſ			Tribs			Dominant	Col	bble	(64-2	56 mm	)	
	type	SV	VD L	WD		В	U	D	P	OV		IV	CR	OWI	N CL	.OSU	IRE				Subdom.	Gra	avel (	2-64	mm)		R
	amt	7	Г	Ν		Т	Т	] [	D	S		S			%	%	%				D95 (cm)	24		D (c	<mark>m)</mark> 27		OR
ER	loc	F		P		Р	P		Ρ	Р		Р	%	-20%	1-40	1-70	1-90	%06			Morph. Rif	fle-p			000		PHO
NO N					ne		Ľ			Clanin	~		ŏ	÷	0	4	Ň	Ň									510
0				SIO	ping		— к — т			Siopin	g					3	4	5			01 B1 B2	В3 61	D1 62	D2			ΥÐ
		RIP. VEG. Shrubs RIP. VEG. Shrubs VEGETATION																Irre		r War			-				
		STA	AGE	Shr	ubs ruh/H	lerh	S	TAGE	.0.	Shrub	s /Herh				,,,,,						ISLANDS		casic	nal	luenny		-
		017		011	ub/i		0	TAOL		Onitub	TICID	,									BARS	Sid	e/Mi	d-stre	am		-
																					COUPLING	Par	tially	Coup	bled		-
																					CONFINED	Oc	casio	nally	Confin	ed	
Щ	С	NID	) MAP #	¥ NI	D #	ΤY	PE H	HT/LG	(m)	mthd		PHC	ото	1				CON	IMENT	٢S				ι	JTM		
LUR											R		F														
EAT											R		F														
щ											R		F														_
<b>6</b> 4	-	-								DR	SIUF	RBAN	CEI	INDI			EG	END		<b>0</b> 1							
01 P1	Bea	ver Da	m d Channa		B3	Avuis	sion	Dobria		D3 Re	cent L	WD jar	n		C3	Elevat		ar		S1 82	Homogenous E	sed		S4	Extensiv	e Bars	
B1 B2	Eroc	lina Ba	ank	1	D1 D2	Large	Woody	/ Debris		C1 Ex	nited F	Pools	>		C4	Distur	bed I	lines		32 S3	Sediment Wed	aes		35	EXTENSIO	e Scou	5
		0				U																0		II			
F	≻	Мос	lerate h	abitat	t pote	ential	for ad	ult MV	/, Gl	R and j	uveni	le BT	and	MW	/, hov	vever	r sea	asonal	acces	s ma	ay be partially	res	tricte	d by 2	2 m		
TA	Ľ,	falls	/cascad	de im	medi	iately	downs	stream																			
IAB	NA	No s	spawnir	ng pot	tentia	al due	e to lar	ge nati	ure c	of subst	rates																
		Exte	ended d	e-wat	terec	d zone	e begir	ns imm	iedia	tely up:	strear	n.															
FS						LN			1									COM		re							
NO	C	F8	14		wd		DIRE		viev	v u/s fro	om bo	ottom	of si	ite				CON		10							
ATI	C	F8	15		wd			u	viev	v u/s fro	om ce	entre	of sit	te													
ENT	С	F8	16		wd			d	viev	v d/s fro	om to	p of s	ite														
JME	С	F8	17		wd		-	u	aeri	al view	upstr	ream															
DC																											
DO DO																											
DTC																											
РНС																											
	G		IP			W	ו וס וו/	FF OB	SEF	νατις	)NS				G	ROLI	P			M		SEF	<b>γ</b> \/Δ'		S		
E I						••											.								0		
ILDI																											
M																											
		С																									
(0	С	X1	Electro	-fishi	ng e	ffort:	402 se	econds	s @ 2	250 vol	ts. No	o fish	capt	turec	1.												
NT(																											
ME																											
NO																											
0																											

									F	ISH	COL	LECTIC	N FOF	RM							
STF	REAN	M NA	ME	Cł	nowad	le River							_				LAKE	Х	STREAM	ΛV	VETLAND
LOO		ON		_									WATE	ERSI	HED	CODE	235-43	30800			
WA					0	h 0			NISM		948	011 NIL	) NO			SITE/LA			1 TACHE		Y N
		JIIL	ן ( כ		y-Gra	anam Ov		0/05	REACE	1#	Divoro	ified Envir		11	vicco			# 30.	2001-032		
DA			20	01/09	05	10 1	2001/0	J9/05	AGENC	, T	Divers				VICES				BC/TE	RE-3	
D	S	ITE #	¥	NID M	AP #	NID #		SITE	UTM		METI	HOD/NO.	JIRE/						COMM	ENTS	
THC		11					10	) 480856	62846	78	FF	1	3.5			C					
ME													0.0			•					
/ <u></u>																					
SIT																					
	OIT	- "				0050			105	TO	TAL N						FIGU	A 07			TO
1		E#			H/F	SPEC	IES :	STAGE	AGE	10		J MIN L	N (mm)	IVI/	ax li	N (mm)	FISH	ACT	(	JOMMEN	15
AR	1	1		/ 1							0										
MM																					
SU																					
ISH																					
ш																					
																			FICATIO	NS	
эЕС	С	SIT	E #	MD/N	DH/F	DATE	IN	TIME	IN DA	TE (		IME OUT	NET T	YPE	LE	NGTH	DEF	PTH	MESH S	IZE SET	HAB
R SI	-																				
EAI																					
0	0													0.110							
	C	C SITE # MD/NO H/P TIME IN TIME							CEISE							PEO		MAKE	MDI		
	U	1	_ <del>//</del>	EF/1	1	094	0	1000	)	402		200	9.27	7		2	50	60	Fixed	Coffelt	MkX
S	С									-											
≣NT																					
MMI																					
CO																					
										ND	IVIDU	JAL FIS	H DAT	A							
C	SIT	F #					LEI	NGTH	WEIG	ΗT	SEY	ΜΑΤΙ	IP		1	AGE			00		2
Ŭ	OII	L #				LOILO	(1	mm)	(gms	S)	OLA		S	TR	SAI	MPLE #	AGE		00		,
												_									
				-+	_							_									
		-+		-+																	
		-+		+								_									
		-+		+																	
					+																
		_																			
				-+																	
					+																


Chowade River Site 11: View upstream from bottom of site (Roll GF8 - Exp 14; CD 1 - Im 43)



Chowade River Site 11: Aerial view upstream (Roll GF8 - Exp 17; CD 1 - Im 46)

# **APPENDIX XII**

#### UNNAMED TRIBUTARY TO CHOWADE RIVER

(235-430800-32300)

### Sample Site 12

											SIT	ΞC	AR	)											
STF	REA	M N/	AME	Unn	ame	d tributa	ry to Cho	wade	e River								FIE	LD	COORDINA	TES	56°	43.3	7' 122º	52.25'	
LOC	CAT	ION						_																	
NTS	S MA	۹P #	94	B/10		NID NO		WA	TERSH	ED C	ODE	235	-430	800-3	3230	00									
RE/	ACH	#		<u> </u>		SITE #	12	SITI	EUTM	10	50790	)4	62	8654	1	SITE		TH	200 ME	ETH	RF	ACC	ESS	Н	
DA	E		2001/0	9/05		IIME	1420	AGE	-NCY	D	iversified	En	/ironr	nenta	il Se	ervices	CR	=VV	BC/IE	FIS	SH F(	JRM	YX	N	_
C	CHA	NNE	L (m)	me	eth									avę	g	GRAE	DIENT	- %	EMS			CON	ND		MΛΑ
CHA			VIDTH	R	F	12.10	18.50	19.	.00 16	.00	20.40	16	.50	17.0	)8	meth	AL		TEMP (°C)	7	<b>′</b> .0	TUF	RBIDIT		H
VVE					F	6.00	3.60	6.6	50 4.	80	4.40	8.	10	5.5	8	2.0					0.7		Clear		U
RES		JUL   DTU		M	5	0.24	0.19	0.2	22 0. Modor	37	0.32		24 Chan	0.2	6	2.0		1			0.7	m - F	KD		
VVD	DLI		OVER	Tot	al	0.00	Moder	ate (P	1000er	ale	Dev	visv	r			Tribs	_	1	Dominant	Cot	- hhle i	(64-2	56 mm		
	type	SV		WD	B				OV	l r	V CR		N CL	OSU	RF	11100			Subdom	Gra		2-64	mm)	/	
	amt	5	3	S	D		N S	S	N	1									D95 (cm)	42		D (c	m) 42		D
r	loc	F	2	P	 P	, ,	P	P	 P	F	>	%(	%01	%0,	%06	%			Morph. Riff	ile-po	ool	- (0	,		DD
VEI		LWI	D FNC	Abu	ndan	it	DIST		Clumpe	d	%0	1-20	21-7	41-7	71-6	06~			DISTURBA	NCE	IND		ORS	G	Б
00		LB S	SHAPE	Vert	ical		RB SHA	APE	Vertical		0	1	2	3	4	5			O1 B1 B2	В3	D1	D2	D3 C1	C2	Ę
		TEX	TURE	Fine	es/Co	bble	TEXTU	RE	Fines/C	obble	e INS	TRE	AM	Ā	Alga	ae			C3 C4 C5	S1	S2	S3	S4		24
		RIP	. VEG.	Con	iferou	us	RIP. VE	G.	Conifero	ous	VE	GET	ATIC	N	-			l	PATTERN	Irre	gular	r Wai	ndering		
		STA	GE	Mat	ure F	orest	STAGE		Mature I	Fores	st								ISLANDS	Nor	ne				
																			BARS	Sid	e/Mio	d-stre	eam		
																			COUPLING	Par	tially	Cou	pled		
																			CONFINED	Fre	quer	ntly C	onfined		
RE	С	NID	MAP #	E NI	D # _	TYPE	HT/LG	(m)	mthd		РНОТО					COM	MEN	ΓS				ι	JTM		
TUF										R	F														
EA.										R	F		<u> </u>												
щ										R	F			<u> </u>											
								- 1	DIST	URI	BANCE	NDI	CAT	ORL	EG	END		-							
01	Beav	/er Dai	m		B3 /	Avulsion			D3 Rece	ent LW	/D jam		C3	Elevate	ed B	ar		S1	Homogenous B	ed		S4	Extensive	Bars	
B1 B2	Abar	ing Ba	d Channel		D1 3	Small Wo	ody Debris		C1 Exter	nsive I	Riffles		C4	Distur	le Cr	ines		S2 S3	Sediment Finge	ers		85	Extensive	Scours	
DZ	LIUU	ing De	uik			Large WO	buy Debiis			curc	013		05	Distant	JCUL			00		ges					_
	2	Mod	lerate qu	uality	seas	onal rea	ring habi	tat fo	r iuvenile	anc	l sub-adi	ult si	oort-f	ish											_
TAT	Ę	Sea	sonal ad	cess	curre	ently res	tricted b	v 500	) m de-w	atere	ed sectio	n at	mout	:h.											
ABI'	IAL							,																	
H/	Ø																								
FS	δZ																								
Z	RC	DLL	FRAME	FO	CAL	LN DIR	ECTION									COM	MEN	ΓS							
TIC	G	C1	15		wd		u	view	u/s fron	n bot	tom of si	te													
JTA	G	C1	16		wd		u	view	u/s fron	n cer	ntre of sil	e													
<b>JEN</b>	G		1/		WC		a	view	al view		or site														
N)C	G	C1	10		wd		u 11	aeria	ai view u al view u	psiie nstre	am from	Ch	hewo	e Riv	er o	onfluen	ce								
õ	Т	-1	5		50		object	BT (	225 mm	) and	d RB (19	1 m	m)	CININ		ormuch									—
10.	T	' 1	7	-	50		object	BT	225 mm	) and	d RB (19	1 m	m)												
łOT	T	1	8		50		object	CCC	G (121 m	1m)			,												
Ч							,		,	,															
ш	G	ROL	IP	4		WILD	LIFE OB	SER	VATION	IS			G	ROUI	Ρ			V	/ILDLIFE OE	BSEF	RVAT	TION	S		
L IF																									
(ILD																									
\$																									
	(	С																		_					
S	C	X1	Electro	-fishir	ng eff	ort: 466	seconds	6 @ 2	250 volts	. Bul	l trout, ra	inbo	w tro	out an	d sl	imy scu	ılpin v	vere	captured.						
NT	C	٦.	AISO SIQ	gnifica	ant do	bulaer c	omponer	Iť.																	
ME																									
NO																									_
0																									_
																									-

							F	ISH	COL	LECTIO	N FOF	RM								
STF	REAN	/I NAME	l	Jnna	med tributa	ary to Chowad	e River								LAKE	Х	STREAM	1	WE	TLAND
LOC		ON									WATE	RSF	IED CO	DE	235-43	00800	-32300			
VV A	IER		) 				NISM	ΑP	94B	/10 NIL		40	511	E/LA				X	Y	N
PRO	JJEC	טו ו; מ	Halfw	vay-G	Franam Ov	erview	REACE	1#	Diversi	SII SII	E #	12	FIS			# 30.	2001-032		0.4.1	
DA	E	2	001/0	9/05	to	2001/09/05	AGENC	γĭ	Divers	ified Enviro		Serv	/ices	CRI	= V V		BC/TE	RE	-5AI	IPLE
Q	SI	ITE #	NID	MAP	# NID #	SITE	UTM		METH	HOD/NO.	STREA						COMM	ENTS		
ГНО		12				10 50700	1 62855	11	EE	1				RR						
MEI		12				10.30730	4.02033	<b>T</b> 1			7.0			0						
E / I																				
SITI																				
	SIT	E# M	TD/N	D H	I/P SPEC	IES STAGE	AGE	TO	TAL NO	D MIN LI	N (mm)	MA	X LN (n	າm)	FISH	ACT	(	COMME	ENTS	
RΥ	12	2	EF/1		1 BT				3	1.	43		225		Rea	ring				
IMA	12	2							1	1	91		191		Rea	ing				
NUS	12	2	EF/1			<i>.</i>			3	5	07		121		Rea	ing				
E H S																				
FIS																				
S													NE	T / T	RAP S	PEC	IFICATIO	٧S		
SPE	С	SITE #	MD/N	NO H	I/P DATE	IN TIME	IN DA	TE C	DUT T	IME OUT	NET TY	YPE	LENG	TH	DEP	тн	MESH S	IZE S	ET	HAB
AR (	-																			
GE/	-																			
							FLF	CTR	OFISH	IFR SPEC		ONS								
	С	SITE #	MD/N	NO H	I/P TIME	IN TIME C		F SE		ENGTH	WIDT	Н	ENCL	VO	LTF	REQ	PLSE	MAK	E	MDL
		12	EF/	1	1 142	5 144	5	466		200	5.58	}	0	25	50	60	Fixed	Coffe	elt	Mk X
S	С																			
ENT	_																			
MM	-																			
COI	-																			
								ND	IVIDU	AL FISI		Δ								
•	<b></b>					LENGTH	WEIG	HT					AGE							
С	SIII		NO F	1/P	SPECIES	(mm)	(gms	5)	SEX	MAIL	JR S	TR	SAMPL	.E #	AGE		CC	MMEN	IS	
	12	2 EF	-/1	1	BT	225					Sc	ale	28-1		4+					
	12	2 EF	-/1	1	BT	152					Sc	ale	28-2	2	2+					
	12		-/1	1	BT	143					Sc	ale	28-3	3	2+	_				
	12	2 El	-/ 1	1		57					50	,ale	28-4	r	ა+	+				
	12	2 EF	-/1	· 1	CCG	121										+				
	12	2 Ef	-/1	1	CCG	98										+				
				+											1	+				
										_										
										_						_				
																+				
				+												+				



Unnamed tributary to Chowade River Site 12: View upstream from centre of site (Roll GC1 - Exp 16; CD 1 - Im 48)



Unnamed tributary to Chowade River Site 12: Upstream aerial view of site (Roll GC1 - Exp 18; CD 1 - Im 50)



Unnamed tributary to Chowade River Site 12: Upstream aerial view from confluence with Chowade River (Roll GC1 - Exp 19; CD 1 - Im 51)



Unnamed tributary to Chowade River Site 12: 225 mm bull trout and 191 mm rainbow trout (Roll T1 - Exp 7; CD 1 - Im 52)

## **APPENDIX XIII**

#### UNNAMED TRIBUTARY TO CHOWADE RIVER (235-430800-45100)

## Sample Site 13

												SIT	ΕC	AR	D											
STE	REA	MNA	AME	l	Jnna	amed	l tributa	ary to C	howac	le River								FIEL	D	COORDINA	res	56°	40.6	3' 122°	58.0	3'
LOO	CAT	ION						_			.== .															
	5 MA	ΑΡ #		94B/	10	r		12			IED (	CODE	235	5-430	0800-4	5100				200		DE	100		_	
		#	2001	/09/(	05			1530		EUTW		iversifier	97 1 Env	viron	mental	Serv	ices		n N	BC/TE	FIS			Y X	N	٦ 
	ЪΗΔ		(m)	100/	met	th		1000	, 10			TVCIOINC			ava				2/2	EMS		////				<
СН				-	RF	=	21 00	15.0	0   11	20 1	6 30	33 40	32	2 00 V	21.48	3 m	eth	AI	/0	TEMP (°C)	7	75	TUR		•	VAT
WE	TTE	D W	/IDTH	-	RF	-	7.20	6.20	8	.30 1	0.10	5.40	7	.00	7.37		1.5			Ph				Clear		ĒR
RE	S PC	DOL	DEPT	Ή	MS	S	1.30	1.20	0	.75 (	0.30	0.73	0	.59	0.81		1.5			FLOOD SIG	SNS	1.5	m - F	RD		
Wb	DE	PTH	0.3	5	0.3	5	0.30	STAG	ε	Mode	rate	No	Vis	Char	ו	Dr	ry/Int			BED MATE	RIAL	_				
		C	OVE	۲ T	l ota	l		Abu	ndant	(>20%)	-	De	wate	r		Tr	ribs			Dominant	Gra	avel (	2-64	mm)		
	type	SV	VD		D	B		U	DP	OV		V CR	OW	N CL		E				Subdom.	Fin	es (<	2 mn	n)		M
~	amt		5	5						N			%	%0	%0		。			D95 (cm)	18 10 pt		D (C	<b>m)</b> 12		ORF
/ER	loc				hun	P Idant	·		Р	Fven		P %	-20	1-4(	1-7(	- 06					NCE			ORS		Ч
õ		LBS	SHAP	F 5	loni	ina		RB_SI		Slonin	ר ז	0	- 1	2	3 4	· ^	5			01 B1 B2	B3	D1	D2		C2	ЪГО
Ŭ		TEX		FF	ines	s		TEXT		Gravel	9 S	INS	STRI	=AM	A	dae dae				C3 C4 C5	50 S1	S2	S3	S4	02	GΥ
		RIP	VEG	. C	Conif	ferou	IS	RIP. \	/EG.	Conife	rous	VE	GET	ATIC		940				PATTERN	Irre	egulai	r War	nderina		
		STA	\GE	N	/atu	ire Fo	orest	STAG	E E	Mature	Fore	st								ISLANDS	Nor	ne				
								_						-						BARS	Sid	e/Mi	d-stre	am		
																				COUPLING	Dec	coup	led			
																				CONFINED	Uno	confi	ned			
RE	С	NIC	) MAF	°#	NID	) #	TYPE	HT/L	G (m)	mthd	-1	PHOTO	)			(	COMN	IENTS	3				ι	JTM		
TUF											R	F									<u> </u>					
EA											R															
u.,		_																								_
01	Beav	/er Da	m		F	33 A	vulsion			D3 Re	centIV			СЛ	Elevated	l Bar		S	1	Homogenous B	ed		S4	Extensive	Bars	
B1	Abar	ndone	d Chani	nel		)) )) ()	Small Wo	ody Deb	is	C1 Ext	ensive	Riffles		C4	Multiple	Chan	nnel	S	2	Sediment Finge	ers		S5	Extensive	Scour	rs
B2	Erod	ing Ba	ank		0	02 L	arge Wo	ody Debi	is	C2 Lin	ited Po	ools		C5	Disturbe	d Line	es	S	3	Sediment Wed	ges					
٨T	≿	High	n pote	ntial	for s	seas	onal re	aring of	sport	and no	n-spo	rt juvenil	es ar	nd ad	lults.											
3IT/	ALIT	Мос	lerate	pote	entia	l for	BT, RE	3, GR a	nd MV	V spawı	ning.															
HAE	QU,																									
F	SZ																									
7	R	DLL	FRAM	ИE F	-oc	CAL I	_N DIF	RECTIC	N							(	COMN	<b>MENTS</b>	3							
101	G	C1	21		١	wd		u	vie	<i>w</i> u/s fro	m bo	ttom of s	ite													
TAT	G	C1	22		١	wd		u	vie	<i>w</i> u/s fro	m ce	ntre of si	te													
EN	G	C1	23		Ň	wd		d	aer	ial view	upstro	eam														
NU	T	1	9			50		object	BT	418 mn	ا مت - ا	חח														
00	ן ד	1	10			50		object	juve	enile B I	and															
0	1	I	11			50	_	object	juve		ailu I															
IOT									+																	
Н																										
Щ	G	ROL	JP				WILD	DLIFE C	BSEF	RVATIO	NS			G	ROUP				N	/ILDLIFE OE	SEF	RVA	ΓΙΟΝ	S		
DLIF		MAN	1 V	Volf,	griz	zzly t	bear, m	oose, e	lk and	deer tra	acks															
VILL																										
>		<u>_</u>																								
	0	U V1	Floot	ro fic	hin	a off	ort. 100	8 00000	de @	250 2014	o D	ll trout -	ainh	DAI tre		olim		ninwa	ro	contured						
S	U.	~1	Elect	10-115	simié	y en	JIL 400	Secon	us@	250 101	5. Du	ii ii out, ia		Jw ut	Julanu	51111	iy scui	pinwe	ie.	captureu.						
EN																										
MM																										
00																										

							FI	SH C	COLLI	ECTIO	N FOR	M						
STF	REAM	NAME	U	nnam	ed tributa	y to Chowad	e River							LAK	EX	STREAM		WETLAND
LOC	CATIO	N									WATE	RSHEE	CODE	235-	430800	-45100		
WA	TERBO	ODY II	C				NTS MA	P	94B/1		NO		SITE/L	AKE (	CARD A	TTACHEE		Y N
PR	DJECT	D	Halfwa	ıy-Gra	aham Ove	rview	REACH	#		SIT	E#	13	FISH P	ERMI	T # SC	2001-032		
DA	ΓE	2	001/09	/05	to 2	001/09/05	AGENC	Y D	iversifi	ed Enviro	onmental	Service	es CR	EW	E	BC/TE	RE-S	SAMPLE
0	SIT	F#			NID #	SITE	υтм		метно		STREA	M CON	DITION			COMME	INTS	
ЧОГ	011	L //				ONE	0 m			DEMO.	TEMP	CON	TURB			COMME		
ЕT	1:	3				10.50199	7.628151	2	EF	1	7.5		С					
/ M																		
ТЕ																		
S																		
	CITE -	# N/					ACE	TOTA		MINEL	(mm)	MAX	N (mm)	EIC				ITC
1	13	# IVI	EE/1	1	BT	ES STAGE	AGE	1017			N (11111) 22		_IN (IIIII) 118	Re	aring	Ŭ		113
٩R	13		EF/1	1	RB				2	ç	8		118	Re	aring			
ЧМ	13		EF/1	1	000	i			8	4	6		70	Re	aring			
SUI									•		•				g			
ВН																		
Ш																		
ö													NET /	TRAP	SPECI	FICATION	IS	
ЗРЕ	CS	ITE #	MD/N	) H/F	DATE	IN TIME	IN DA	re ou	JT TIN	1E OUT	NET TY	′PE L	ENGTH	DE	PTH	MESH SI	ZE SE	T HAB
R S																		
βEA																		
0																		
	C C								FISHE			JNS						
	C S	13	EE/1		1 IIVIE			- SEC 488	, LE	200	7 37			JL1	FREQ 60	Fixed	Coffel	t Mk X
(0)	C	10			1000	1000	,	-00		200	1.01		0 2	50	00	TIXCU	Conci	
NTO	•																	
MEI																		
MO																		
Ō																		
с							I	NDIV	/IDUA	L FISI	H DATA	4						
-	SITE	# MD/		P SI	PECIES	LENGTH	WEIGH	NDIV IT	/IDUA SEX	L FISI		4	AGE			CO	MMENT	S
	SITE	# MD/	/NO H/	P SI	PECIES	LENGTH (mm)	WEIGI (gms	NDIV HT )	/IDUA SEX	L FISI MATU		A TR SA	AGE	AG	ιE	CO	MMENT	S
	SITE :	# MD	/NO H/	P SI	PECIES	LENGTH (mm) 418	WEIGH (gms	NDIV HT )	/IDUA SEX	NL FISI MATU	H DATA	T <mark>R S</mark> A ray	AGE AMPLE # 29-1	AG	E	CO	MMENT	S
	SITE : 13 13	# MD/ EF	/NO H/ 5/1 1 5/1 1	P SI	PECIES BT BT	LENGTH (mm) 418 218 145	WEIGH (gms	NDIV HT )	/IDUA SEX	AL FISI MATU	H DAT/ IR S1 Fin Sc	TR SA ray ale	AGE AMPLE # 29-1 29-2 29-3	AG 7+ 3+	iE	CO	MMENT	S
	SITE : 13 13 13 13	# MD/ EF EF	/NO H/ =/1 1 =/1 1 =/1 1 =/1 1	P SI	PECIES BT BT BT BT	LENGTH (mm) 418 218 145 122	WEIGH (gms	NDIV HT )	/IDUA SEX	MATU	I DAT/	A TR S/ ray ale ale ale	AGE AMPLE # 29-1 29-2 29-3 29-4	AG 7-1 3-1 2-1 2-1	iE	CO	MMENT	S
	SITE : 13 13 13 13 13 13	# MD/ EF EF EF EF	/NO H/ F/1 1 F/1 1 F/1 1 F/1 1 F/1 1 F/1 1	P SI	PECIES BT BT BT BT RB	LENGTH (mm) 418 218 145 122 118	WEIGH (gms	NDIV IT )	<b>SEX</b>	NL FISI MATU	H DATA	A ray ale ale ale ale	AGE AMPLE # 29-1 29-2 29-3 29-3 29-4 29-5	AG 7-1 3-1 2-1 2-1 1-1	E	CO	MMENT	S
	SITE : 13 13 13 13 13 13 13	# MD/ EF EF EF EF EF	/NO H/ E/1 1 E/1 1 E/1 1 E/1 1 E/1 1 E/1 1 E/1 1	P SI	PECIES BT BT BT BT BT RB RB	LENGTH (mm) 418 218 145 122 118 98	WEIGH (gms	NDIV IT )	/IDUA SEX	AL FISI MATU	H DAT/ IR ST Fin Sc Sc Sc Sc Sc Sc	A S/ ray ale	AGE AMPLE # 29-1 29-2 29-3 29-4 29-5 29-6	AG 7+ 3+ 2+ 2+ 1+	E	CO	MMENT	S
	SITE : 13 13 13 13 13 13 13 13	# MD, EF EF EF EF EF EF	/NO H/ E/1 1 E/1 1 E/1 1 E/1 1 E/1 1 E/1 1 E/1 1 E/1 1	P SI	BT BT BT BT BT RB RB CCG	LENGTH (mm) 418 218 145 122 118 98 70	l WEIGH (gms	NDIV IT )	/IDUA SEX	AL FISI MATU	H DAT/ JR ST Fin Sc Sc Sc Sc	A ray ale ale ale ale ale ale	AGE 29-1 29-2 29-3 29-4 29-5 29-6	AG 7+ 3+ 2+ 2+ 1+ 1+	E	CO	MMENT	S
	SITE : 13 13 13 13 13 13 13 13 13	#         MD/           EF	/NO H/ E/1 1 E/1 1 E	P SI	PECIES BT BT BT RB RB CCG CCG	LENGTH (mm) 418 218 145 122 118 98 70 63	UKEIGH (gms	NDIV IT )	/IDUA SEX	IL FISI MATU	H DAT/ IR ST Fin Sc Sc Sc Sc Sc	A ray ale ale ale ale ale	AGE 29-1 29-2 29-3 29-4 29-5 29-6	AG 7+ 3+ 2+ 2+ 1+ 1+	E	CO	MMENT	S
	SITE : 13 13 13 13 13 13 13 13 13 13	#         MD/           EF	/NO         H/           E/1         1	P SI	PECIES BT BT BT BT RB CCG CCG CCG CCG	LENGTH (mm) 418 218 145 122 118 98 70 63 53	UEIGH (gms	NDIV HT )	/IDUA SEX	L FISI MATU	H DAT/ IR ST Fin Sc Sc Sc Sc	A ray ale	AGE 29-1 29-2 29-3 29-4 29-5 29-6	AG 7+ 3+ 2+ 2+ 1+ 1+	E	СО	MMENT	S
	SITE : 13 13 13 13 13 13 13 13 13 13 13	#         MD,           EF	Image         Image <th< td=""><td>P SI</td><td>PECIES BT BT BT RB RB CCG CCG CCG CCG</td><td>LENGTH (mm) 418 218 145 122 118 98 70 63 53 53 48</td><td>li WEIGH (gms</td><td></td><td>SEX</td><td>L FISI MATU</td><td>H DAT/ IR SI Fin Sc Sc Sc Sc Sc</td><td>A ray ale ale ale ale ale ale ale ale ale ale</td><td>AGE 29-1 29-2 29-3 29-4 29-5 29-6</td><td>AG 7+ 3+ 2+ 2+ 1+ 1+</td><td></td><td>CO</td><td>MMENT</td><td>S</td></th<>	P SI	PECIES BT BT BT RB RB CCG CCG CCG CCG	LENGTH (mm) 418 218 145 122 118 98 70 63 53 53 48	li WEIGH (gms		SEX	L FISI MATU	H DAT/ IR SI Fin Sc Sc Sc Sc Sc	A ray ale	AGE 29-1 29-2 29-3 29-4 29-5 29-6	AG 7+ 3+ 2+ 2+ 1+ 1+		CO	MMENT	S
	SITE : 13 13 13 13 13 13 13 13 13 13	#         MD/           EF	INO         H/           E/1         1	P SI	PECIES BT BT BT RB RB CCG CCG CCG CCG CCG	LENGTH (mm) 418 218 145 122 118 98 70 63 53 48 52 52	li WEIGH (gms		SEX	L FISI MATU	H DAT/ IR ST Fin Sc Sc Sc Sc	A ray ale	AGE 29-1 29-2 29-3 29-4 29-5 29-6	AG 7+ 3+ 2+ 2+ 1+ 1+	E	СО	MMENT	S
	SITE : 13 13 13 13 13 13 13 13 13 13 13 13 13	# MD/ EF	Image         Hi           E/1         1	P SI	PECIES BT BT BT RB RB CCG CCG CCG CCG CCG CCG CCG	LENGTH (mm) 418 218 145 122 118 98 70 63 53 48 52 60 54	l WEIGH (gms		/IDUA SEX	AL FISI MATU	H DAT/ IR ST Fin Sc Sc Sc Sc Sc	A ray ale	AGE 29-1 29-2 29-3 29-4 29-5 29-6	AG 7+ 3+ 2+ 2+ 1+	E	CO	MMENT	S
	SITE : 13 13 13 13 13 13 13 13 13 13	#         MD/           EF           EF </td <td>Image         Image           F/1         1           F/1         1</td> <td>P SI</td> <td>PECIES BT BT BT RB RB CCG CCG CCG CCG CCG CCG CCG CCG</td> <td>LENGTH (mm) 418 218 145 122 118 98 70 63 53 48 52 60 54 48</td> <td>l WEIGH (gms</td> <td></td> <td>/IDUA SEX</td> <td>AL FISI MATU</td> <td>H DAT/ IR ST Fin Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc</td> <td>A ray ale ale ale ale ale ale ale ale ale ale</td> <td>AGE 29-1 29-2 29-3 29-4 29-5 29-6</td> <td>AG 74 34 24 14 14</td> <td></td> <td>CO</td> <td>MMENT</td> <td>S</td>	Image         Image           F/1         1	P SI	PECIES BT BT BT RB RB CCG CCG CCG CCG CCG CCG CCG CCG	LENGTH (mm) 418 218 145 122 118 98 70 63 53 48 52 60 54 48	l WEIGH (gms		/IDUA SEX	AL FISI MATU	H DAT/ IR ST Fin Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc	A ray ale	AGE 29-1 29-2 29-3 29-4 29-5 29-6	AG 74 34 24 14 14		CO	MMENT	S
	SITE : 13 13 13 13 13 13 13 13 13 13	#         MD/           EF           EF </td <td>Image         Image           F/1         1           F/1         1</td> <td>P SI</td> <td>PECIES BT BT BT RB CCG CCG CCG CCG CCG CCG CCG CCG CCG CC</td> <td>LENGTH (mm) 418 218 145 122 118 98 70 63 53 48 52 60 54 46</td> <td>li WEIGH (gms</td> <td></td> <td>/IDUA SEX</td> <td>AL FISI MATU</td> <td>H DAT/ IR SI Fin Sc Sc Sc Sc Sc </td> <td>A ray ale ale ale ale ale ale ale ale ale ale</td> <td>AGE 29-1 29-2 29-3 29-4 29-5 29-6</td> <td>AG 7+ 3+ 2+ 2+ 1+ 1+</td> <td></td> <td>CO</td> <td>MMENT</td> <td>S</td>	Image         Image           F/1         1	P SI	PECIES BT BT BT RB CCG CCG CCG CCG CCG CCG CCG CCG CCG CC	LENGTH (mm) 418 218 145 122 118 98 70 63 53 48 52 60 54 46	li WEIGH (gms		/IDUA SEX	AL FISI MATU	H DAT/ IR SI Fin Sc Sc Sc Sc Sc 	A ray ale	AGE 29-1 29-2 29-3 29-4 29-5 29-6	AG 7+ 3+ 2+ 2+ 1+ 1+		CO	MMENT	S
	SITE : 13 13 13 13 13 13 13 13 13 13	#         MD/           EF           EF </td <td>Image: No         H/           E/1         1           E/1         1</td> <td>P SI </td> <td>PECIES BT BT BT RB CCG CCG CCG CCG CCG CCG CCG CCG CCG</td> <td>LENGTH (mm) 418 218 145 122 118 98 70 63 53 48 52 60 54 46</td> <td>li WEIGH (gms</td> <td></td> <td>/IDUA SEX</td> <td>L FISI MATU</td> <td>H DAT/ IR SI Fin Sc Sc Sc Sc C Sc I I I I I I I I I I I I I</td> <td>A ray ale ale ale ale ale ale ale ale ale ale</td> <td>AGE 29-1 29-2 29-3 29-4 29-5 29-6</td> <td>AG 7+1 2+ 2+ 1+ 1+</td> <td>E</td> <td>CO</td> <td>MMENT</td> <td>S</td>	Image: No         H/           E/1         1	P SI 	PECIES BT BT BT RB CCG CCG CCG CCG CCG CCG CCG CCG CCG	LENGTH (mm) 418 218 145 122 118 98 70 63 53 48 52 60 54 46	li WEIGH (gms		/IDUA SEX	L FISI MATU	H DAT/ IR SI Fin Sc Sc Sc Sc C Sc I I I I I I I I I I I I I	A ray ale	AGE 29-1 29-2 29-3 29-4 29-5 29-6	AG 7+1 2+ 2+ 1+ 1+	E	CO	MMENT	S
	SITE : 13 13 13 13 13 13 13 13 13 13	#         MD,           EF           EF </td <td>INO         H/           F/1         1           F/1         1</td> <td>P SI </td> <td>PECIES BT BT BT RB CCG CCG CCG CCG CCG CCG CCG CCG CCG CC</td> <td>LENGTH (mm) 418 218 145 122 118 98 70 63 53 48 52 60 54 46</td> <td>li WEIGH (gms</td> <td></td> <td></td> <td>L FISI MATU</td> <td>H DAT/ IR ST Fin Sc Sc Sc Sc Sc Sc Sc Sc</td> <td>A ray ale ale ale ale ale ale ale ale ale ale</td> <td>AGE 29-1 29-2 29-3 29-4 29-5 29-6</td> <td>AG 7+ 3+ 2+ 2+ 1+ 1+</td> <td></td> <td>CO</td> <td></td> <td>S</td>	INO         H/           F/1         1	P SI 	PECIES BT BT BT RB CCG CCG CCG CCG CCG CCG CCG CCG CCG CC	LENGTH (mm) 418 218 145 122 118 98 70 63 53 48 52 60 54 46	li WEIGH (gms			L FISI MATU	H DAT/ IR ST Fin Sc Sc Sc Sc Sc Sc Sc Sc	A ray ale	AGE 29-1 29-2 29-3 29-4 29-5 29-6	AG 7+ 3+ 2+ 2+ 1+ 1+		CO		S
	SITE : 13 13 13 13 13 13 13 13 13 13	#         MD,           EF           EF </td <td>Image         Hi           F/1         1           F/1         1</td> <td>P SI </td> <td>PECIES BT BT BT RB RB CCG CCG CCG CCG CCG CCG CCG CCG CCG CC</td> <td>LENGTH (mm) 418 218 145 122 118 98 70 63 53 48 52 60 54 46</td> <td>l WEIGH (gms</td> <td></td> <td>/IDUA SEX</td> <td>L FISI MATU</td> <td>H DAT/ IR ST Fin Sc Sc Sc Sc Sc Sc Sc Sc Sc</td> <td>A ray ale ale ale ale ale ale ale ale ale ale</td> <td>AGE 29-1 29-2 29-3 29-4 29-5 29-6</td> <td>AG 7+ 2+ 2+ 1+ 1+</td> <td></td> <td>CO</td> <td>MMENT</td> <td>S</td>	Image         Hi           F/1         1	P SI 	PECIES BT BT BT RB RB CCG CCG CCG CCG CCG CCG CCG CCG CCG CC	LENGTH (mm) 418 218 145 122 118 98 70 63 53 48 52 60 54 46	l WEIGH (gms		/IDUA SEX	L FISI MATU	H DAT/ IR ST Fin Sc Sc Sc Sc Sc Sc Sc Sc Sc	A ray ale	AGE 29-1 29-2 29-3 29-4 29-5 29-6	AG 7+ 2+ 2+ 1+ 1+		CO	MMENT	S
	SITE : 13 13 13 13 13 13 13 13 13 13	#         MD/           EF           EF </td <td>Image         Image           F/1         1           F/1         1</td> <td>P SI </td> <td>PECIES BT BT BT RB RB CCG CCG CCG CCG CCG CCG CCG CCG</td> <td>LENGTH (mm) 418 218 145 122 118 98 70 63 53 48 52 60 54 46</td> <td></td> <td></td> <td></td> <td>AL FISI MATU</td> <td>H DAT/ IR ST Fin Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc</td> <td>A ray ray ale ale ale ale ale ale ale ale ale ale</td> <td>AGE 29-1 29-2 29-3 29-4 29-5 29-6</td> <td>AG 7+ 3+ 2+ 1+ 1+ 1+</td> <td></td> <td>CO</td> <td></td> <td>S</td>	Image         Image           F/1         1	P SI 	PECIES BT BT BT RB RB CCG CCG CCG CCG CCG CCG CCG CCG	LENGTH (mm) 418 218 145 122 118 98 70 63 53 48 52 60 54 46				AL FISI MATU	H DAT/ IR ST Fin Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc	A ray ray ale	AGE 29-1 29-2 29-3 29-4 29-5 29-6	AG 7+ 3+ 2+ 1+ 1+ 1+		CO		S
	SITE : 13 13 13 13 13 13 13 13 13 13	#         MD/           EF           EF </td <td>Image         Image           F/1         1           F/1         1</td> <td>P SI </td> <td>PECIES BT BT BT RB CCG CCG CCG CCG CCG CCG CCG CCG CCG</td> <td>LENGTH (mm) 418 218 145 122 118 98 70 63 53 48 52 60 54 46</td> <td>li WEIGH (gms</td> <td></td> <td></td> <td>AL FISI MATU</td> <td>H DAT/ IR ST Fin Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc</td> <td>A ray ale ale ale ale ale ale ale ale ale ale</td> <td>AGE 29-1 29-2 29-3 29-4 29-5 29-6</td> <td>AG 7+ 2+ 2+ 1+ 1+ 1+</td> <td></td> <td></td> <td></td> <td>S</td>	Image         Image           F/1         1	P SI 	PECIES BT BT BT RB CCG CCG CCG CCG CCG CCG CCG CCG CCG	LENGTH (mm) 418 218 145 122 118 98 70 63 53 48 52 60 54 46	li WEIGH (gms			AL FISI MATU	H DAT/ IR ST Fin Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc	A ray ale	AGE 29-1 29-2 29-3 29-4 29-5 29-6	AG 7+ 2+ 2+ 1+ 1+ 1+				S
	SITE : 13 13 13 13 13 13 13 13 13 13	#         MD/           EF           EF </td <td>Image         Image           F/1         1           F/1</td> <td>P SI </td> <td>PECIES BT BT BT RB CCG CCG CCG CCG CCG CCG CCG CCG CCG</td> <td>LENGTH (mm) 418 218 145 122 118 98 70 63 53 48 52 60 54 46</td> <td></td> <td></td> <td></td> <td>AL FISI MATU</td> <td>H DAT/ IR SI Fin Sc Sc Sc Sc Sc Sc H DAT/</td> <td>A ray ale ale ale ale ale ale ale ale ale ale</td> <td>AGE 29-1 29-2 29-3 29-4 29-5 29-6</td> <td>AG 7+ 3+ 2+ 2+ 1+ 1+ 1+</td> <td></td> <td></td> <td></td> <td>S</td>	Image         Image           F/1         1           F/1	P SI 	PECIES BT BT BT RB CCG CCG CCG CCG CCG CCG CCG CCG CCG	LENGTH (mm) 418 218 145 122 118 98 70 63 53 48 52 60 54 46				AL FISI MATU	H DAT/ IR SI Fin Sc Sc Sc Sc Sc Sc H DAT/	A ray ale	AGE 29-1 29-2 29-3 29-4 29-5 29-6	AG 7+ 3+ 2+ 2+ 1+ 1+ 1+				S



Unnamed tributary to Chowade River Site 13: View upstream from centre of site (Roll GC1 - Exp 22; CD 1 - Im 55)



Unnamed tributary to Chowade River Site 13: Aerial view upstream (Roll GC1 - Exp 23; CD 1 - Im 56)

## **APPENDIX XIV**

#### UNNAMED TRIBUTARY TO CHOWADE RIVER (235-430800-45100)

# Sample Site 14

												SIT	ΈC	AR	D											
STR	REA	M N/	AME	Unr	name	ed tri	butary	y to Cho	owad	le River								FIE	LD	COORDINA	TES	56°	38.5	1' 123°	59.6	2'
									10/0	TEDOL			0.01	- 400	000	454	00									
		4P # 1 #	94	IB/10			F #	14		TERSH FIITM		5004	23: 189	5-430	27790	451 06	SITE	LENG	тн	300 M	тн	RF	ACC	ESS		
DA <sup>-</sup>	ΓE		2001/0	)9/05		ТІМ	IE -	1630	AG	ENCY	D	iversifie	d En	viron	menta	al Se	ervices	CR	EW	BC/TE	FIS	SH F	ORM	YX	N	<u> </u>
(	СНА	NNE	EL (m)	m	eth										av	/q	GRA		Г %	EMS			CON	ID		≶
CH.	ANN	IEL V	WIDTH	R	RF	12	.00	11.90	12	.00 11	.50	14.50	14	4.00	12.	65	meth	AL		TEMP (°C)	8	3.5	TUR	BIDIT	(	ATE
WE	TTE	ED W	/IDTH	R	RF	7.	80	8.10	10	.00 7	.90	6.90	8	.60	8.2	22	1.0			Ph				Clear		R
RE	S PO	DOL	DEPTH	I N	1S	0.	68	0.41	0.	.18 0	.12	0.40	0	.25	0.3	34	1.0		]	FLOOD SIG	GNS	0.9	m - F	RD		
Wb	DE	PTH	0.40	0.	45	0.	55	STAGE	oto (	Moder	ate	No	) Vis	Char	ו		Dry/In	1	_	BED MATE	RIAL	- hblo	(61.2	56 mm	<b>`</b>	
		SV			ai			ivioder		5-20%)	l r				091	IDE	THDS		1	Subdom	Gr		04-2	mm)	)	
	amt		S	S		S	Т		D	Т										D95 (cm)	32		D (c	m) 15		MO
с	loc		P	P		P	P	· ·	<u>Р</u>	P		P	%0	40%	20%	%0e	%			Morph. Riff	fle-p	ool	2 (0	,		RPI
VE		LW	D FNC	Abu	inda	int	I	DIST		Clumpe	d	%0	1-2(	21-1	41-	71-9	6<			DISTURBA	NCE	IND	ICAT	ORS		þ
00		LB	SHAPE	Ver	tical		I	RB SH	٩PE	Vertical		0	1	2	3	4	5			O1 B1 B2	В3	D1	D2	D3 C1	C2	00
		TEX	XTURE	Fine	es/C	obble	e '	TEXTU	RE	Fines/C	obbl	e IN	STR	EAM		Nor	ie			C3 C4 C5	S1	S2	S3	S4		×
		RIP	. VEG.	Cor	hifero	ous	<sup>I</sup>	RIP. VE	G.	Conifer	ous	VE	GET		NC				_	PATTERN	Irre	gula	r War	ndering		
		ST	AGE	You	ing F	Fores	st s	STAGE		Young	Fores	st								ISLANDS	No	ne				
																				BARS	Sia	e/IVII	a-stre	am		
																				CONFINED	Fa	auer	tly Co	onfined		
ш	С	NIE	) MAP #	¥ NI	D #	TY	ΈE	HT/LG	(m)	mthd		PHOT	0				COM	1MEN	TS	001111122		quo.	ر ا	JTM		
NR									( )		R	F		1												
EAT											R	F														
Ē											R	F														
64		_								DIS	TUR	BANCE	IND			LEG	END								_	
01 B1	Bea Aba	ver Da	im d Channe		B3	Avuis		dy Debris		D3 Rec	ent LV	VD jam		C3	Eleva		hannel		S1 S2	Homogenous E	sed		S4 S5	Extensive	Bars	
B1 B2	Eroc	ding Ba	ank	1	D2	Large	e Wood	dy Debris		C2 Limi	ted Po	ols		C5	Distu	rbed	Lines		S2	Sediment Wed	ges		33	LACCHISIVE	Scoul	
																					-					
F	≻	Мос	derate q	uality	seas	sona	l reari	ing hab	itat fo	or juvenil	e BT	•														
SITA	ALIT	Acc	cess cur	rently	rest	tricte	d by d	de-wate	red s	section d	/s of	site and	d poo	rly de	efined	l cha	annel th	nrough	ı wet	tland area d/s	ofs	site.				
HAE	QU/																									
F	SZ																									
z	R	OLL	FRAM	E FO	CAL	LN	DIRE		J								COM	1MEN	TS							
LIO	G	iC1	25		wd			u	viev	v u/s froi	n bo	ttom of	site													
ITA <sup>-</sup>	G	iC2	1		wd			u	viev	v u/s from	n ce	ntre of s	site													
<b>NEN</b>	G	iC2	2	_	wd			d	viev	v d/s from	n top	of site														
SUN	G	02	3		wu			u	aen	iai view L	ipsire	am														
ĎŎ																										
10																										
OH																										
Ъ								_		_					_									_		
ΕE	G			olf de	oor o	N m baa		IFE OE	BSEF	RVATIO	<b>NS</b>			G	ROU	ΙP	1		V	VILDLIFE OE	BSEF	RVA	TION	S		
DL		WAN		on, ae	era	and n	loose							-												
MI														-												
		С																								
(0	С	X1	Electro	-fishir	ng et	ffort:	552 s	second	s @ 1	250 volts	. Bul	l trout a	nd sl	imy s	sculpi	in we	ere cap	tured.								
NT																										
ME																										
NO																										
0																										

							FI	SH (	COLLE	ECTIO	N FOR	M						
STF	REAMN	JAME	Uni	named	d tributar	y to Chowad	e River							LAKE	X	STREAM	V	/ETLAND
LOC	CATION	١									WATE	RSHEE	CODE	235-4	430800	-45100		
WA	TERBO	DDY ID	)				NTS MA	Ρ	94B/1	0 NIC	NO		SITE/L	AKE C	ARD A	TTACHED	X	Y N
PR	OJECT	ID	Halfway	-Grah	nam Ove	rview	REACH	#		SIT	E#	14	FISH F	PERMI	T # SC	2001-032		
DA	ΓE	20	01/09/0	)5	to 2	001/09/05	AGENC	Y C	Diversifie	ed Enviro	onmental	Service	s CF	REW	E	BC/TE	RE-S/	AMPLE
	SITE	= #		\D #		SITE	штм		метно		STREA	M CON	IDITION			COMME	NTS	
	311	- #		<b>۱</b> ۲ #	NID #	SIL				JD/NO.	TEMP	CON	TURE			COMME	.1113	
ιĖ.	14	1				10.50048	9.627790	6	EF	1	8.5		С					
ME																		
Ē																		
SI-																		
	0.75		-		0.5.5.0.1		105											
	SITE #	≠ MI	D/NO	H/P	SPECI	ES STAGE	AGE	101/	AL NO	MIN LI	N (mm)	MAXI	<u>N (mm)</u>	FISI		C	OMMEN	IS
ſRΥ	14		:F/1 -F/4	1	BI				2	1.	38		88	Re	aring			
٩MI	14		EF/ I	1	UUG	1			11	C	4		01	Re	anng			
NN																		
НS																		
FIS																		
8													NFT /	TRAP	SPECI	FICATION	S	
ЪЕ	C SI	TE #	MD/NO	H/P	DATE	IN TIME	IN DAT			IE OUT	NET TY	PEL	ENGTH	DE	PTH	MESH SIZ	ZE SET	HAB
s SI									_				-					
EAF																		
Ð																		
							ELE	CTRC	OFISHE	R SPEC	IFICATI	ONS						
	C SI	TE # I	MD/NO	H/P	TIME	IN TIME C	DUT EF	= SEC	LE	NGTH	WIDT	Ή El	NCL V	OLT	FREQ	PLSE	MAKE	MDL
		14	EF/1	1	1635	5 1705	5	552		300	8.22		0 2	250	60	Fixed	Coffelt	Mk X
ΓS	С																	
EN.	_																	
MM	_																	
CO																		
												٨						
С						LENGTH	WEIGH		/IDUA	L FISI	H DAT/	Ą	AGE					
	SITE #	# MD/I	NO H/P	SPE	ECIES	LENGTH (mm)	WEIGH (ams	NDI\ HT )	/IDUA SEX	L FISI MATU			AGE	AG	F	COI	MMENTS	
	SITE #	# MD/I	NO H/P	SPE	ECIES	LENGTH (mm) 188	WEIGH (gms	NDIN HT )	/IDUA SEX	L FISI MATU	H DATA	TR ale	AGE 30-2 30-1	AG 3+	E	COI	MMENTS	
	SITE # 14 14	# MD/I	NO H/P /1 1 /1 1	SPE	ECIES BT BT	LENGTH (mm) 188 138	WEIGI (gms	NDIN HT )	/IDUA SEX	L FISI MATU	H DATA	A TR ale ale	AGE 30-2 30-1 14-2	AG 3+ 2+	E	COI	MMENTS	
	SITE # 14 14 14	# MD/I EF/ EF/	NO H/P /1 1 /1 1 /1 1	SPE	ECIES BT BT CCG	LENGTH (mm) 188 138 79	WEIGH (gms	NDIN IT )	/IDUA SEX	IL FISI MATU	H DATA	TR ale ale	AGE 30-2 30-1 14-2	AG 3+ 2+	E	COI	MMENTS	
	SITE # 14 14 14 14	# MD/I EF/ EF/ EF/	NO H/P /1 1 /1 1 /1 1 /1 1 /1 1		ECIES BT BT CCG CCG	LENGTH (mm) 188 138 79 72	WEIGH (gms	NDIN HT )	/IDUA SEX	MATU	H DATA	R ale ale	AGE 30-2 30-1 14-2	AG 3+ 2+	E	COI	MMENTS	
	SITE # 14 14 14 14 14 14	<ul> <li>MD/I</li> <li>EF,</li> <li>EF,</li> <li>EF,</li> <li>EF,</li> </ul>	NO H/P /1 1 /1 1 /1 1 /1 1 /1 1 /1 1		BT BT CCG CCG CCG	LENGTH (mm) 188 138 79 72 72 78	WEIGH (gms	NDIN HT )	/IDUA SEX	IL FISI MATU	H DATA	TR ale ale	AGE 30-2 30-1 14-2	AG 3+ 2+		COI	MMENTS	
	SITE # 14 14 14 14 14 14 14	#         MD/I           EF/           EF/           EF/           EF/           EF/           EF/           EF/	NO H/F /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1 1	SPE C C C C C C C	ECIES BT BT CCG CCG CCG CCG	LENGTH (mm) 188 138 138 79 72 78 78 101	WEIGH (gms	NDIN IT )	/IDUA SEX	L FISI MATU	H DAT/ IR ST Sc Sc	A ale ale	AGE 30-2 30-1 14-2	AG 3+ 2+		COI	MMENTS	
	SITE # 14 14 14 14 14 14 14	#         MD/I           EF/         EF/           EF/         EF/           EF/         EF/           EF/         EF/           EF/         EF/	NO H/F /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1 1		ECIES BT BT CCG CCG CCG CCG CCG CCG	LENGTH (mm) 188 138 79 72 78 101 90	WEIGH (gms	NDIN HT )	/IDUA SEX	L FISI MATU	H DAT/ IR ST SC SC SC	A IR ale	AGE 30-2 30-1 14-2	AG 3+ 2+		COI	MMENTS	
	SITE # 14 14 14 14 14 14 14	#         MD/I           EF/         EF/           EF/         EF/           EF/         EF/           EF/         EF/           EF/         EF/           EF/         EF/	NO H/F /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1		ECIES BT BT CCG CCG CCG CCG CCG CCG	LENGTH (mm) 188 138 79 72 78 101 90 71	WEIGH (gms		/IDUA SEX	L FISI MATU	H DAT/ JR ST SC SC SC	A ale	AGE 30-2 30-1 14-2	AG 3+ 2+		COI	MMENTS	
	SITE # 14 14 14 14 14 14 14 14	<ul> <li>MD/I</li> <li>EF,</li> <li>EF,</li> <li>EF,</li> <li>EF,</li> <li>EF,</li> <li>EF,</li> <li>EF,</li> <li>EF,</li> <li>EF,</li> </ul>	NO H/F /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1		ECIES BT BT CCG CCG CCG CCG CCG CCG CCG CCG CCG	LENGTH (mm) 188 138 79 72 78 101 90 71 67	WEIGH (gms		SEX	AL FISI MATU	H DAT/ IR SI Sc Sc	A ale ale	AGE 30-2 30-1 14-2	AG 3+ 2+		COI	MMENTS	
	SITE # 14 14 14 14 14 14 14 14 14	#         MD/II           EF/         EF/	NO H/F /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1		ECIES BT BT CCG CCG CCG CCG CCG CCG CCG CCG CCG CC	LENGTH (mm) 188 138 79 72 78 101 90 71 67 68 68	WEIGH (gms		/IDUA SEX	AL FISI MATU	H DAT/	A ale	AGE 30-2 30-1 14-2	AG 3+ 2+		COI	MMENTS	
	SITE # 14 14 14 14 14 14 14 14 14 14	<ul> <li>MD/I</li> <li>EF,</li> </ul>	NO         H/F           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1	SPE CC CC CC CC CC CC CC CC CC CC CC CC CC	ECIES BT BT CCG CCG CCG CCG CCG CCG CCG CCG CCG CC	LENGTH (mm) 188 138 79 72 78 101 90 71 67 68 79 68	UVEIGH (gms		/IDUA SEX	AL FISI MATU	H DAT/	A ale	AGE 30-2 30-1 14-2	AG 3+ 2+		COI	MMENTS	
	SITE # 14 14 14 14 14 14 14 14 14 14 14	<ul> <li>MD/I</li> <li>EF,</li> </ul>	NO         H/F           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1	SPF CC CC CC CC CC CC CC CC CC CC CC CC CC	ECIES BT BT CCG CCG CCG CCG CCG CCG CCG CCG CCG CC	LENGTH (mm) 188 138 79 72 78 101 90 71 67 68 79 68 79 64 73	UVEIGH (gms		/IDUA SEX	AL FISI MATU	H DAT/	A ale	AGE 30-2 30-1 14-2	AG 3+ 2+		COI	MMENTS	
	SITE # 14 14 14 14 14 14 14 14 14 14 14 14	<ul> <li>MD/I</li> <li>EF,</li> <li>EF,</li></ul>	NO         H/F           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1	SPP	ECIES BT BT CCG CCG CCG CCG CCG CCG CCG CCG CCG CC	LENGTH (mm) 188 138 79 72 78 101 90 71 67 68 79 64 73	WEIGH (gms		/IDUA SEX	AL FISI MATU	H DAT/ IR ST Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc	A ale	AGE 30-2 30-1 14-2	AG 3+ 2+		COI	MMENTS	
	SITE # 14 14 14 14 14 14 14 14 14 14 14 14	<ul> <li>MD/I</li> <li>EF,</li> </ul>	NO         H/F           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1	SPE CC CC CC CC CC CC CC CC CC C	ECIES BT BT CCG CCG CCG CCG CCG CCG CCG CCG CCG CC	LENGTH (mm) 188 138 79 72 78 101 90 71 67 68 79 64 73	WEIGH (gms		/IDUA SEX	AL FISI MATU	H DAT/ IR ST Sc Sc Sc Sc I I I I I I I I I I I I I I	A ale	AGE 30-2 30-1 14-2	AG 3+ 2+			MMENTS	
	SITE # 14 14 14 14 14 14 14 14 14 14 14 14	<ul> <li>MD/I</li> <li>EF,</li> </ul>	NO         H/F           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1	SPE CC CC CC CC CC CC CC CC CC C	ECIES BT BT CCG CCG CCG CCG CCG CCG CCG CCG CCG CC	LENGTH (mm) 188 138 79 72 78 101 90 71 67 68 79 64 73	WEIGH (gms		/IDUA SEX	AL FISI MATU	H DAT/ IR SI Sc Sc Sc I I I I I I I I I I I I I I		AGE 30-2 30-1 14-2	AG 3+ 2+			MMENTS	
	SITE # 14 14 14 14 14 14 14 14 14 14 14 14 14	<ul> <li>MD/I</li> <li>EF,</li> </ul>	NO         H/F           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1	SPE CC CC CC CC CC CC CC CC CC CC CC CC CC	ECIES BT BT CCG CCG CCG CCG CCG CCG CCG CCG CCG CC	LENGTH (mm) 188 138 79 72 78 101 90 71 67 68 79 64 73	WEIGH (gms		/IDUA SEX	AL FISI MATU	H DAT/	A ale	AGE 30-2 30-1 14-2	AG 3+ 2+			MMENTS	
	SITE # 14 14 14 14 14 14 14 14 14 14 14 14 14	<ul> <li>MD/I</li> <li>EF,</li> <li>EF,</li></ul>	NO         H/F           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1	SPF CC CC CC CC CC CC CC CC CC CC CC CC CC	ECIES BT BT CCG CCG CCG CCG CCG CCG CCG CCG CCG CC	LENGTH (mm) 188 138 79 72 78 101 90 71 67 68 79 64 73	WEIGH (gms		/IDUA SEX	AL FISI MATU	H DAT/	A ale	AGE 30-2 30-1 14-2	AG 3+ 2+			MMENTS	
	SITE # 14 14 14 14 14 14 14 14 14 14 14 14 14	<ul> <li>MD/I</li> <li>EF,</li> <li>EF,</li></ul>	NO         H/F           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1	SPF	ECIES BT BT CCG CCG CCG CCG CCG CCG CCG CCG CCG CC	LENGTH (mm) 188 138 79 72 78 101 90 71 67 68 79 64 73	WEIGH (gms		/IDUA SEX		H DAT/	A ale	AGE 30-2 30-1 14-2	AG 3+ 2+			MMENTS	
	SITE # 14 14 14 14 14 14 14 14 14 14 14 14 14	<ul> <li>MD/I</li> <li>EF,</li> <li>EF,</li></ul>	NO         H/F           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1           /1         1	SPF	ECIES BT BT CCG CCG CCG CCG CCG CCG CCG CCG CCG CC	LENGTH (mm) 188 138 79 72 78 101 90 71 67 68 79 64 73	WEIGH (gms		/IDUA SEX		H DAT/ IR ST Sc Sc Sc Sc I Sc Sc Sc I I I I I I I I I I I I I	A ale	AGE 30-2 30-1 14-2	AG 3+ 2+			MMENTS	
	SITE # 14 14 14 14 14 14 14 14 14 14 14 14 14	<ul> <li>MD/I</li> <li>EF,</li> <li>EF,</li></ul>	NO         H/F           /1         1	SPP	ECIES BT BT CCG CCG CCG CCG CCG CCG CCG CCG CCG CC	LENGTH (mm) 188 138 79 72 78 101 90 71 67 68 79 64 73	WEIGH (gms		/IDUA SEX		H DAT/ IR SI Sc Sc Sc I I I I I I I I I I I I I I	A IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	AGE 30-2 30-1 14-2	AG 3+ 2+			MMENTS	



Unnamed tributary to Chowade River Site 14: View upstream from bottom of site (Roll GC1 - Exp 25; CD 1 - Im 59)



Unnamed tributary to Chowade River Site 14: Aerial view upstream (Roll GC2 - Exp 3; CD 1 - Im 62)

## **APPENDIX XV**

#### **UNNAMED TRIBUTARY TO CHOWADE RIVER**

(235-430800-45100)

## Sample Site 15

												S	ITE	E C	ARI	D												
STF	REA	M N/	AME	Unn	name	ed trib	outary	to Cho	wad	e River										FIELD	) (	COORDINA	TES	56°	36.04	4' 122	° 57.6	63'
LOO			0.4	D/40					14/4	TEDO				005	400		454	~~										
		AP # 」#	94	B/10			NO = #	15	VVA SIT		IED (	CODE	23/	235	-430	000-	451 20	00 SIT			_	200 M	-TU	DE	ACC	ESS		<u> </u>
	TF	1#	2001/0	9/05		TIM	-#	1830	AGI			)iversif	fied	Fnv	/ironr	nenta	al Se	ervice		CREW	v	BC/TE	FIS	SH F	ORM	Y )		
(	CHA	NNF	- (m)	me	eth		_									av	ía (	GR		IFNT %	6	FMS			CON	ID		5
CH/			NIDTH	R	RF	15.	.00	21.00	8.	70 1	1.10	10.9	90	7.	80	12.	9 42	meth	า า	AL	•	TEMP (°C)	7	7.0	TUR	BIDIT	Y	/AT
WE	TTE	ED W	/IDTH	R	۲F	3.0	00	3.60	6.	20	4.90	10.9	90	4.	60	5.5	53	1.	5			Ph	-			Clea	-	ER
RE	S P(	OOL	DEPTH	Μ	IS	0.2	26	0.32	0.	26	0.14	0.9	8	0.	24	0.3	37	2.	5			FLOOD SIG	GNS	0.8	m - F	RD		
Wb	DE	PTH	0.60	0.	50	0.6	62 <mark>S</mark>	TAGE		Lo	W	1	No	Vis (	Chan	1		Dry/	Int			BED MATE	RIA	L				
		C		Tota	al			Moder	ate (	5-20%)		]	Dew	vater				Trib	s			Dominant	Co	bble	(64-2	56 mn	1)	_
	type	SV		ND S	l t	В			94						N CL I	.OSU	IRF					Subdom.	Bo	ulder	(> 25	6  mm	)	M
~	am			о Р	L [	P			5 P	P		P		%	%0	%0	%0	%				Morph Rif	44 1e-n	001	D (C	m) <u>20</u>	>	DRP
VEF	100	LW	D FNC	Few	/			DIST	J	Even			%(	1-20	2-4	41-7	71-9	606				DISTURBA	NCE		DICAT	ORS		ЧO
Ś		LB :	SHAPE	Vert	tical		F	RB SHA	<b>PE</b>	Vertica	al		0	1	2	3	4	5				O1 B1 B2	В3	D1	D2	D3 C	1  C2	Ő
		TEX	TURE	Fine	es/C	obble	э Т	EXTU	RE	Fines/	Bould	er 丨	NS	TRE	AM		Alga	ae				C3 C4 C5	S1	S2	S3	S4	-	ΥΩ
		RIP	. VEG.	Mixe	ed C	& D	F	RIP. VE	G.	Mixed	C & [	<mark>۱</mark> (	VEC	GET	ATIC	DN 🗌	-			_		PATTERN	Irre	gula	r War	ndering	3	
		STA	AGE	You	ng F	ores	t S	TAGE		Young	Fore	st				_						ISLANDS	No	ne				
																						BARS	Sid	le/Mi	d-stre	am		
																						COUPLING	Pa	rtially	Coup	bled		
	_				_ //				<i>,</i> ,			5110										CONFINED	Fre	equer	ntly Co	onfine	b	
IRE	С	NIL	) MAP #		D #	IY	PE I	HT/LG	(m)	mtho					1			CC	JMN	/IENTS			1		L	JIM		
٨TU											R	r F	-															
FE/		-									R	F	F															
										DI	STUR	BANC	CE I	NDI	CAT	ORL	EG	END	)									
01	Веа	ver Da	m		В3	Avuls	ion			D3 Re	cent L\	ND jam			C3	Eleva	ted B	Bar		S1		Homogenous B	ed		S4	Extensiv	e Bars	
B1	Aba	ndone	d Channel		D1	Smal	l Wood	y Debris		C1 Ex	tensive	Riffles			C4	Multip	ole Cł	hannel	I	S2		Sediment Finge	ers		S5	Extensiv	e Scou	irs
B2	Eroc	ding Ba	ank		D2	Large	Wood	y Debris		C2 Lir	nited P	ools			C5	Distur	rbed I	Lines		S3	;	Sediment Wed	ges					
		Mag	doroto or			oring	noto	atial fa		nilo D1	-																	
'AT	Τ	NOU Sea	sonal ac			rently	j pole	icted b	juve v de	watere	d ser	tion an	nd n	oorly	v def	ined	cha	nnel	dow	netrear	m							
∆BIT	JAL				- our	lonay	1001		,	matorio	u 000			0011	<i>y</i> uoi	integ	ona			notroal								
Η	ğ																											
F	δZ																											
N	R	OLL	FRAME	FO	CAL	. LN	DIRE	CTION										CC	DMM	<b>IENTS</b>								
VTIC	G	C2	7		wd			u	view	/u/sfr	om bo	ottom o	of si	te														
NTA	6	C2	8		wd			u d	view	/u/stro	om to	ntre of		e														
ME	G	6C2	10	+	wd			u u	aeri	al view	upstr	eam																
CU			-		-						1. 2.0																	
В																												
TO																												
ЭНС																												
	_					10					MIC				6						14			<u>۸</u>		<u> </u>		
Щ	G	RUL				vv	ILULI	FE UE	SER	WATIC	NNS				l G	RUU	IP				vv		SEI	τνΑ		5		
LDL															-													
$\mathbb{N}$																												
		С																	_									
(0	С	X1	Electro-	fishir	ng ef	ffort:	286 s	econds	s @ 2	250 vol	s. Sli	my sc	ulpi	n we	ere ca	aptur	ed.											
NT																												
ME																												
NO																												
0																												

							FI	SH CO	OLLE	ECTIO	N FOR	M					
ST	REAN	M NAME	Ur	nam	ed tributa	ry to Chowad	le River							LAKE	X STREAM	WI	ETLAND
LO	CATI	ON									WATE	RSHED	CODE	235-430	800-45100		
WA	TER	BODY	D				NTS MA	NP 9	94B/1	0 NID	NO		SITE/LA	AKE CAF	RD ATTACHED	) <b>X</b> Y	N
PR	OJEC	CT ID	Halfwa	y-Gra	aham Ove	erview	REACH	#		SIT	E#	15	FISH PE	ERMIT #	SC2001-032		
DA	TE	2	2001/09/	05	to 2	001/09/05	AGENC	Y Div	ersifie	ed Enviro	onmental	Services	S CR	EW	BC/TE	RE-SAI	MPLE
D	s	ITE #	NID M	AP #	NID #	SITE	UTM	M	ЕТНС	D/NO.	STREA	M CON	DITION		COMME	INTS	
ЮH		4=				10 5000 (	4 007070		1		TEMP	CON	TURB				
AET		15				10.50234	4.627278	9 6	-1-	1	7.0		C				
- / N																	
SITE																	
0,																	
	SIT	E# M	TD/NO	H/F	SPECI	ES STAGE	AGE	TOTAL	. NO	MIN LI	N (mm)	MAX L	N (mm)	FISH A	CT C	OMMENT	S
RY	1	5	EF/1	1	CCC	3		4		7	3	1	13	Rearin	ng		
MA																	
NU																	
ВН																	
FIS																	
S													NET / 1	FRAP SF	PECIFICATION	IS	
SPE	С	SITE #	MD/NO	) H/F	DATE	IN TIME	IN DAT	re out	TIM	IE OUT	NET TY	PE LE	NGTH	DEPT	H MESH SIZ	ZE SET	HAB
AR S																	
3E/																	
							ELE	CTROF	SHE	R SPEC	IFICATIO	ONS					
	С	SITE #	MD/N0	) H/F	TIME	IN TIME C		= SEC	LE	NGTH	WIDT	H EN		DLT FR	EQ PLSE	MAKE	MDL
		15	EF/1	1	183	5 1850	0	286		200	5.53	; (	D 2	50 6	0 Fixed	Coffelt	Mk X
S	С																
EN																	
MM																	
CO																	
							1	NDIVI	DUA	L FIS		4					
C	сіт					LENGTH	WEIGH	HT c	EV	ΜΛΤΙ			AGE		C ()		
	311			- 31	PECIES	(mm)	(gms	) 3		MATC	S1	FR SA	MPLE #	AGE	COI	VIIVIEINTS	
	1	5 El	=/1 1		CCG	76											
	1	5 El	-/1 1		CCG	73											
	1	5 E	=/1 1 =/1 1		000	113											
	<u> </u>			_		97											
						97											
						97											
						97											
						97											
						97											
						97											
						97											
						97											
						97											
						97											
						97											
						97											
						97											



Unnamed tributary to Chowade River Site 15: View upstream from bottom of site (Roll GC1 - Exp 7; CD 1 - Im 63)



Unnamed tributary to Chowade River Site 15: Aerial view upstream (Roll GC1 - Exp 10; CD 1 - Im 66)

# **APPENDIX XVI**

# TRIBUTARY TO UNNAMED CHOWADE RIVER TRIBUTARY

(235-430800-45100-29500)

### Sample Site 16

												Sľ	ΤE	CA	٨D												
STE	REA	M NA	AME	Trik	butar	γ to ι	unnam	ed Cho	owac	de River t	ribut	tary							FIELD	) C	OORDINAT	TES	56°	37.91	l' 123º	04.30	)'
LOO	CAT	ION																									
	S MA	λP # 	9	4B/11		NID		10	WA	TERSH	ED (		2	35-4	4308	00-45	100-2	29500					-				
RE/	АСН	#	0004	00/05		SII	E#	16	SII	EUIM	10	495	580		627	6430	SI	IEL		1 , -	200 ME	: IH	RF	ACC	ESS	H	
DA	E		2001/	09/05		I IIVI	E	1741	AG	ENCY	D	Iversiti	ea E	nvir	onm	ental	Servio	ces	CREW	<u></u>	BC/IE	FIS			Y X	N	_
(	CHA	NNE	L (m)	m	leth	1.40	<b>a a</b> 1						• 1			avg	G	RADI	IENT %		EMS			CON		_	٨N
CH			VIDTE		<u>≺⊦</u>	16	.00 '	12.00	10	.50 9.	40	20.0	0	14.5	50	13.73	me	eth	AL		IEMP (°C)	6	.2	TUR	BIDIT	ŕ	TE
VVE						3.	90	2.00	2.	20 4.	50	2.00	<u>'</u>	3.70	0	3.05	2	2.5		Ľ			0.01		Clear		ע
RE:		JUL   DTU			/IS 50	0.	54 50 S		0.	15 0.	24	0.42		0.6	1 han	0.35	Dn	3.0 v/lpt					0.85	5 m -	RD		
VVD	DE		OVE		.50 tal	0.	30 <mark>3</mark>	Moder	ato (	LUW					lian	_	Tri	he	<u> </u>		Dominant	Gra	avel (	2-64 1	mm)		
	turno	SM		WD		R				0V		V C		MN	CLC	SUR	F	53			Subdom	Coł		64-2	56 mm	<u> </u>	
	amt	1		T		т	S		רי ר	N		N								Ì	D95 (cm)	27		D(cr	$\frac{100}{27}$	)	MO
~	loc	F		P		P	P		5	P		P	à	%	%0.	%0	%				Morph Riff	le-po		5 (0)	,	_	Ŕ
νEF	100	LWI	D FNC	Fev	N		D	IST		Even		Ž			2 2	7-1-2	06				DISTURBA		IND	ICAT	ORS		НО
Ő		LB S	SHAPE	Slo	pina		R	B SHA	PE	Slopina			0	1	2	3 4	5			0	O1 B1 B2	B3	D1	D2 I	D3 C1	C2	Ō
		TEX	TURE	Fin	es/G	iravel	Т	EXTU	RE	Fines/G	rave		ISTI	REA	۰. M	Al	dae			Ċ	C3 C4 C5	S1	S2	S3 3	S4		GΥ
		RIP	VEG	Mix	ced C	2 & D	R	IP. VE	G.	Mixed C	8 C	) V	EGE	ETA		<u>،</u>	0			5	PATTERN	Irre	gular	Wan	derina		
		STA	GE	Ma	ture	Fores	st S	TAGE		Mature	Fore	st							_	i	SLANDS	Irre	gular	-			
																				E	BARS	Side	e/Mic	d-stre	am		
																				C	COUPLING	Οοι	upled				
																				C	CONFINED	Oco	casic	nally	Confin	ed	
Щ	С	NID	) MAP	# NI	D#	TY	PE F	IT/LG	(m)	mthd		PHOT	0				С	COMN	<b>MENTS</b>					Ĺ	ΙТΜ		
UR				1					. ,		R	F															
EAT											R	F											t				
Щ											R	F															
										DIST	ΓUR	BANC	E IN	DIC	ATC	R LE	GEN	D									
01	Beav	/er Dai	m		В3	Avuls	sion			D3 Rece	ent LV	VD jam		С	C3 E	levated	l Bar		S1	ŀ	Homogenous B	ed		S4 E	Extensive	Bars	
B1	Abar	ndoneo	d Chann	el	D1	Smal	ll Woody	/ Debris		C1 Exte	nsive	Riffles		С	C4 N	lultiple	Chann	nel	S2	5	Sediment Finge	rs		S5 E	Extensive	e Scours	
B2	Erod	ing Ba	ank		D2	Large	e Woody	/ Debris		C2 Limit	ted Po	ools		С	C5 D	isturbe	d Lines	s	S3	S	Sediment Wedg	jes					
															<u> </u>												
AT	≿	Low	poten	tial for	sea	sona	rearin	g of ju	venil	eBI, M	/V ar	nd non-	spo	rt sp	becie	S.											
BIT	ALI	ACC	ess iin	ntea p	y ext	tensiv	ve brai	aing, a	na n	iew chan	nerc	cutting	Inrol	lgn	tores	st dow	Instre	eam to	orsever	a	km to mains	stem	·				
HA	QU																										
F	SZ																										
7	RC	) DLL	FRAM	IE FC	CAL	LN	DIRE	CTION									С		<b>MENTS</b>								
0	G	C2	4		wd			u	viev	v u/s fron	n bo	ttom of	site														
ГАТ	G	C2	5		wd		I	u	viev	v u/s fron	n ce	ntre of	site										-				
EN	G	C2	6		wd		l	u	aeri	al view u	pstre	eam															
IML																											
DC																											
Ď				_																							
ptd																											
ЭНС				_																							
-						10			000						00												_
E	G			oribou		V	ILDLI	FE OB	SEF	<b>KVATIO</b> N	12			1	GR	OUP	1		1	vvi	ILDLIFE OB	SEF	(VA		5		
DL		IVIAIV		anbou	i, mo	ose																					
VIL																											
	(	0																									
	C	X1	Electr	o-fishi	na e	ffort <sup>.</sup>	457 se	econds	ര	250 volts	Sli	my scu	Inin	were	e car	otured	1										
TS	0.												·p		0.004												
EN																											
MM																											
00																				_							

								F	ISH	COLI	ECTIO	N FOF	RM							
STR	REAN	M NAM	1E	Trib	utary	/ to unna	med Chowad	de River	tribut	tary						LAKE	Х	STREAM	л W	ETLAND
LOO	CATI	ON						-				WATE	RSF	HED C	ODE	235-4	30800	-45100-29	9500	
WA	TER	BODY	' ID					NTS M	AP	94B	11 NIC			S	SITE/LA	AKE CA	ARD A	TTACHE	DXY	N
PR	OJE	CT ID	Hal	fway-	Grah	nam Ove	erview	REACH	1#		SIT	Έ#	16	F	ISH PE	ERMIT	# SC	2001-032		
DA	ΓE		2001	/09/0	5	to 2	001/09/05	AGENC	CY	Diversi	fied Envir	onmental	Ser	vices	CRI	EW	E	BC/TE	RE-SA	MPLE
Δ	s	ITE #	NIE	) MA	Р#	NID #	SITE	UTM		METH	IOD/NO.	STREA	AM C	ONDI	ITION			COMM	ENTS	
OH.		10					40,40550	0.00704	20			TEMP	CC	DN 1	TURB					
ΛET		16					10.49558	0.62764	30	EF	1	6.2			C					
= / N					_															
SITE																				
	SIT	E#	MTD/N	NO	H/P	SPECI	ES STAGE	AGE	TO	TAL NO	MIN L	N (mm)	MA	AX LN	(mm)	FISH	ACT	(	COMMENT	S
RΥ	1	6	EF/	1	1	CCG	3			2	9	95		102	2	Rea	aring			
MA									-											
MU									-											
НS																				
FIS																				
S											l.			1	NET / T	RAP S	SPECI	IFICATIO	NS	
SPE	С	SITE	# MD	/NO	H/P	DATE	IN TIME	IN DA	TE (	ουτ τυ	ME OUT	NET TY	YPE	LEN	IGTH	DEF	PTH	MESH S	IZE SET	HAB
AR S																				
GE/																				
								ELE	СТЕ	POFISH			ONS							
	С	SITE	# MD	/NO	H/P	TIME	IN TIME C		FSE		ENGTH	WIDT	Н	ENC	LVC		REQ	PLSE	MAKE	MDL
		16	E	F/1	1	1741	1800	D C	457	,	200	3.05	5	0	2	50	60	Fixed	Coffelt	Mk X
S	С						·													
EN																				
MM																				
CO																				
									ND	IVIDU	AL FIS	H DAT	A							
<u> </u>	OIT				0.01		LENGTH	WEIG	HT		NAATI	ID.		A	GE			00		
C	311				SFI	ECIES	(mm)	(gms	S)	3EA	IVIA I C	S S	TR	SAM	IPLE #	AGE				
	1	6	EF/1	1	(	CCG	95										_			
	1	6	EF/1	1	(	CG	102										_			
				$\left  \right $													+			
																	+			
																	_			
																	+			
																	_			
																	1			
																	_			
				$\left  \right $													+			
											+						+			
														·			+			
								1		1	1					1	1			



Tributary to unnamed Chowade River tributary Site 16: View upstream from bottom of site (Roll GC2 - Exp 4; CD 1 - Im 67)



Tributary to unnamed Chowade River tributary Site 16: Aerial view upstream (Roll GC2 - Exp 6; CD 1 - Im 69)

# **APPENDIX XVII**

#### UNNAMED TRIBUTARY TO CHOWADE RIVER

(235-430800-56400)

### Sample Site 17

												SIT	ΕC	ARI	)										
STF	REA	M NA	AME		Unna	amed t	ributa	ry to Cł	lowad	le River								FIEL	D	COORDINAT	ΓES	56°	46.25	' 123º	05.74'
LOO	CATI	ION							_									-							
NTS	S MA	\P #		94E	8/14	NI			WA	TERSH	ED C	CODE	235	5-430	800-56	400									
RE/		#	200	1/00	V05	SI		17		EUIM	10	4941	33	62 (iropr	91863	Sorviv			H	200 ME	: I H		ACCI		H
DA			200	1/08	005	- I I		1235	AG	ENCT	D	iversined	EUV	/11 01 11	nental		Ces		//	BC/TE	FI3				
СН			L (M) VIDT	)	DE	n : 2	7 50	32.00	23	50 33	00	35.00	22	50	28.02		ath		%		6	: 0		ט אדוחודע	AN
WF		D W	ישיי ידחוי	4	RF	: 1	3.50	15.00	9	50 4	20	7 20	4		9.00		1 0			Ph		.0		Clear	류
RES	S PC	0011	DFP	тн <sup>-</sup>	MS	· ·	0.00	0.12	0	20 0	14	0.32	0	18	0.00	-	1.0			FLOOD SIG	SNS	10	m - R	D	
Wb	DEF	PTH	1.0	0	1.2	0 1	1.10	STAG	E	Moder	ate	No	Vis	Chan		Dry	y/Int		1	BED MATE	RIAL			-	
		С	OVE	R	Tota			Mode	erate (	(5-20%)		Dev	vate	r		Tri	bs			Dominant	Cot	oble	(64-25	6 mm)	
	type	SV	٧D	LV	/D	В	l	J	DP	OV	ľ	V CR	OW	N CL	OSUR	E				Subdom.	Gra	avel (	2-64 r	nm)	Z
	amt	N	1	1	Г	D	I	N	S	S	:	S		%	%	2				D95 (cm)	38		D (cn	n) 32	OR
ER	loc	F		F	2	Р			Р	P		P%	20%	1-40	1-70	%06				Morph. Riff	le-po			000	PH
NO:					Few					Clumpe	a	ŏ	÷	5	4 1	· ×	_								
0					Cobb					Cobbloc					3 4	5				01 B1 B2	B3 61	D1 62	DZ L		G2 G4
					Mixor					Mixed C	, . 8 L		GET			JIE					Sin	02	55 5	94	
		STA		J.	Youn		D Net	STAG	EG. F	Young F		st	021							ISLANDS	Nor	uous 1e	•		
		017			Touri	groit	.51	UIAO		Toung I	0100									BARS	Sid	e/Dia	aa/Mid	-strean	1
																				COUPLING	Par	tially	Coup	led	
																				CONFINED	Oco	casic	nally (	Confine	d
Ш	С	NID	MA	P #	NID	# T	YPE	HT/LC	G (m)	mthd		PHOTC	)			С	COMN	/ENTS	S				U	ТМ	
ΓUR											R	F													
EA <sup>-</sup>											R	F													
ш										DIO	R														
01	Deeu					2 4.4	laian					BANCE	וסמו			GEN	טו		4	Llomogonous D	o d			utonoiuo	Dere
01 B1	Abar		1 Char	nel		03 AVL		ody Debri	e	C1 Evte		Riffles		C3	Multiple	Chann	امد	ہ د	2	Sediment Finge	eu		04 E	vtensive	Scours
B2	Erod	ing Ba	ink		0	02 Lar	ge Wo	ody Debri	s	C2 Limi	ted Po	ools		C5	Disturbe	d Lines	s	S	3	Sediment Wedg	ges			ACCIIGIVE	000013
		-								1 1											-				
E	≻	Mod	lerate	e rea	aring p	ootenti	al for	adult ar	nd juv	enile spo	rt-fis	h.													
ITA	L L	Sea	sona	l aco	cess o	curren	tly res	stricted	by 1 k	km de-wa	tereo	d section	imm	nedia	tely u/s	of Cl	howa	de con	nflu	ience.					
HAB																									
	27																								
	R		FRA	MF	FOC			FCTIO	N							C	COM		5						
NO	G	C1	3			wd		d	viev	w d/s fror	n top	o of site				Ŭ									
TAT	G	C1	4		١	wd		u	vie	w u/s fror	n cei	ntre of si	te												
EN	G	C1	5		١	wd		u	vie	w u/s fror	n bot	ttom of s	ite												
NN	G	C1	6		١	wd		u	aer	ial view u	pstre	eam													
00							_		_																
ΟD									+																
IOT									+																
Н									+																
ш	G	ROU	IP				WILD	LIFE O	BSEF	RVATION	1S			G	ROUP				W	/ILDLIFE OB	SEF	RVA	LIONS	6	
LIF																									
5		<u> </u>																							
	(	у V1	Floor	tro f	iching	n offor	H- 100	00000		250 volto	D	Il trout m	hinha	NA/ tro	ut mo	untoir	n whit	ofich			n 14/2		antura	4	
လ	ری م	1 1	Also	sian	nificar	nt boui	1. 400 der c	omnone	nt w	200 VOIIS	. Bul	n uoul, fa		w uc	ωι, ΠΟ	undlf			anic	a sinny sculpi	II WE		apiure	u.	
EN	C			Sigi			301 0	- pone																	
MM																									
00																									

							F	SH (	COLLE	ECTIO	N FOR	M						
STF	REAN	1 NAME	U	nnam	ed tributa	ry to Chowad	e River							LA	KE 🗴	STREAM	1 W	'ETLAND
LOO	CATIC	NC									WATE	RSHE	CODE	235	5-43080	0-56400		
WA	TER	BODY II	D				NTS MA	NP	94B/1	4 NID	NO		SITE/	LAKE	CARD	ATTACHE	DXY	' N
PR	OJEC	TID	Halfwa	ay-Gr	aham Ove	erview	REACH	#		SIT	E#	17	FISH	PERN	AIT # SO	C2001-032		
DA.	TE	2	001/09	/05	to 2	001/09/05	AGENC	Y D	Diversifie	ed Enviro	onmental	Service	es C	REW		BC/TE	RE-SA	MPLE
0	SI	TF #		1AP #	NID #	SITE	υтм	,	METHO		STREA	M CON	DITIO	N		COMM	ENTS	
10F	0.					0=	••••			/2///01	TEMP	CON	TUR	В			0	
ΕŢ		17				10.49413	3.629186	3	EF	1	6.0		С					
/ M																		
TΕ																		
S	-																	
	SITE	= # M		H/F		ES STAGE	AGE	TOT		MINT	d (mm)	ΜΔΧ	I N (mm	) El	SH ACI			°C
$\mathbf{x}$	17	- π IVI 7	EF/1	1	MW		AGE	1017	1	3	13		313		Rearing			0
AR	17	,	EF/1	1	BT				2	1;	35		220	F	Rearing			
ΜM	17	,	EF/1	1	RB				1	2	34		234	F	Rearing			
SUI	17	,	EF/1	1	CCC	3			5	7	1		116	F	Rearing			
ВH																		
Ĕ																		
SO													NET	/ TRA	P SPE	CIFICATIO	NS	
SPE	С	SITE #	MD/N	O H/F	P DATE	IN TIME	IN DA	TE OL	JT TIN	IE OUT	NET TY	′PE L	ENGTH	1 [	DEPTH	MESH S	IZE SET	HAB
AR.																		
3E/	-																	
<u> </u>								отро										
	C	SITE #	MD/N	он/г				E SEC		NGTH		H F			EREC	PLSE	MAKE	MDI
	Ŭ	17	EF/1	1	1240	) 1300		488	,	200	9		0	250	60	Fixed	Coffelt	Mk X
S	С						_				-		-					
ΪN																		
ME																		
NO																		
0																		
								NDIV	/IDUA	L FISH	HDAT/	4	105					
С	SITE	E # MD	/NO H/	P S	PECIES	LENGTH	WEIG	HT	SEX	MATU			AGE	<i></i>	05	CC	MMENTS	
	17	7 50	-/1 1		N/NA/	(1111)	(gins	)			5		26 1	# A	GE GL			
	17		-/1 1		BT	220						ale	26-2		4+			
	17	7 EF	-/1 1		BT	135					Sc	ale	26-3		2+			
	17	' EF	-/1 1		RB	234		-+			Sc	ale	26-4	4	4+			
	17	' EF	-/1 1		CCG	116												
	17	EF	-/1 1		CCG	111												
	17	EF	-/1 1		CCG	73												
	17		-/1 1		CCG	71												
	17		-/1 1		CCG	87												
				_										_				
				+														
								-+										
								_							_			
	-										1							



Unnamed tributary to Chowade River Site 17: View upstream from bottom of site (Roll GC1 - Exp 5; CD 1 - Im 72)



Unnamed tributary to Chowade River Site 17: Aerial view upstream (Roll GC1 - Exp 6; CD 1 - Im 73)

# **APPENDIX XVIII**

#### TRIBUTARY TO UNNAMED CHOWADE RIVER TRIBUTARY (235-430800-56400-54100)

### Sample Site 18

								SITE CARD           STREAM NAME         Tributary to unnamed Chowade River tributary           FIELD COORDINATES         56° 47.13' 123° 10.21'																	
STF	REA	M NA	ME	Trib	utary t	to unna	med Ch	nowa	de River	tribut	ary						FIEL	D	COORDINA	ΓES	56°	47.1	3' 123°	10.21	
LOC	CATI	ION						_									-								
NTS	S MA	ΑP #	94	B/14			- 10	WA	TERSH	ED C		235	5-430	)800-56	400-54	4100							500	<u>.</u>	
RE/		#	2001/0	0/05	×		18	SII		10	4895	43	62	293476	SII							ACC	ESS	H	
DAI			2001/0	9/05		IIVIE	1335	AG	ENCT	U	iversitie		/IFOIT	mental		es	CRE	.VV	BC/TE	FIS				IN	~
	HA	NNE	L (m)	me	eth r	0.00	0.00	44		50	5 50	0	00	avg	GR		ENI	%			· _			_	NA.
						0.20	9.00		35 0	.50	5.50	8	00	7.84	metr 1	n o	AL		TEMP (°C)	5	0.5	TUR	Cloar		TEF
			וודטו חבסדם	M	с С	4.90	0.05	4	20 0	21	0.55	0	51	0.09	1.	0					0.79	9 m			λ
Wb			0.35	0.3	30	0.11	STAG	=	Moder	ate	0.55 No	Vis	Char	1 0.29	Drv/	.0 /Int		1	BED MATERIAL						
		C	OVER	Tota	al	0.00	Mode	rate (	5-20%)	alo	De	wate	r		Trib	s		•	Dominant	Col	ble (	(64-2	56 mm	)	
	type	SV	/D L	WD	В		J	DP	OV	ľ	V CR	OW	N CI	OSUR	E				Subdom.	Gra	avel (	2-64	mm)	·	~
	amt	5	6	Т	S		Г	D	N	1	N			<u> </u>					D95 (cm)	30		D (c	<b>m)</b> 30		l O
ц	loc	F	P P P P P P P P P P P P P P P P P P P										%(				Morph. Riff	le-po	loc				PP		
)VE		LWI	VD FNC Abundant DIST Even 8 77 77 77 78 80 77 77 78 80 77 77 78 80 77 77 78 80 77 77 78 80 78 78 78 78 78 78 78 78 78 78 78 78 78													DISTURBA	NCE	IND	ICAT	ORS		Į O			
ö		LB S	SHAPE	Slop	ing		<b>RB SH</b>	APE	Sloping		0	1	2	3 4	5				O1 B1 B2	В3	D1	D2	D3 C1	C2	0 G
		TEX	TURE	Cob	bles		ΤΕΧΤΙ	JRE	Cobbles	3	INS	STR	EAM	No	one				C3 C4 C5	S1	S2	S3	S4		×
		RIP.	VEG.	Con	iferou	s	RIP. V	EG.	Conifer	ous	VE	GET	ATI	NC					PATTERN	Sin	uous	5			
		STAGE Mature Forest STAGE Mature Forest														ISLANDS	Nor	ne							
																	BARS	Sid	e/Dia	ag/Mio	d-strea	n			
																	COUPLING	Par	tially	Coup	Died				
	6			4 N.I.I.T	<u>ч</u>			(m)	math d		DUOT	<b>`</b>			<u> </u>			<u>_</u>	CONFINED	UC	casic	bhally	Contin	ea	
JRE	C	NID		F INIL	)#	TTPE	HI/LO	• (m)	mtha			) 	r -					5			1	Ľ			
ATL										R	F														
FE/				+																					
									DIS	TURI	BANCE	IND	ICAT	OR LE	GEND	)									
01	Beav	er Dar	n		B3 A	vulsion			D3 Rec	ent LV	VD jam		C3	Elevated	Bar		5	51	Homogenous B	ed		S4	Extensive	Bars	
B1	Abar	ndoneo	d Channe		D1 S	mall Wo	ody Debris	6	C1 Exte	nsive	Riffles		C4	Multiple	Channe	el	5	52	Sediment Finge	ers		S5	Extensive	Scours	
B2	Erod	ing Ba	ink		D2 La	arge Wo	ody Debris	6	C2 Limi	ted Po	ols		C5	Disturbe	d Lines		S	53	Sediment Wedges						
ΥT	≿	Mod	erate p	otentia	al for s	season	al rearin	g for	sport and	d nor	n-sport s	peci	es.												
3IT/	ALI <sup>-</sup>	Sea	sonal a	ccess	curre	ntly res	stricted I	by de	-watered	reac	h at mou	uth.													
HAE	QU,																								
FS	57																								
7	RC		FRAME	E FO	CAL L	N DIR	ECTIO	N							CC	OMM	1ENT	S							
Í.	G	C1	7	1	wd		u	vie	v u/s fror	n bot	ttom of s	ite													
ГАТ	G	C1	8		wd		u	vie	v u/s fror	n cer	ntre of s	ite													_
EN	G	C1	9		wd		d	vie	v d/s from	n top	of site		_												
MU	G	C1	10	-	wd		u	aer	ial view u	pstre	eam														
00	G	C1	11		wd		u	ups	stream ae	erial v	view of b	asin													
ОC																									
OTO				-																					
ΗЧ				+																					_
111	G	ROL	IP		_	WILD	LIFE O	BSEF	RVATIO	VS			G	ROUP				N	/ILDLIFE OF	SEF	RVAT	TION	S		
ΕĽ		MAN	I Mc	ose tr	acks								1										-		
ILDI													t												
≥																									
	C																								
(0)	C	X1	Electro	-fishin	g effc	ort: 401	second	s @	250 volts	. No	fish cap	ture	d.												
NTS	C	C1 Also boulder present.																							
ME																									
MO																									
Ö																									

									FISH	I COL	LECTIC	N FOF	RM										
STF	REAN		ЛЕ	Trib	outary	y to unna	med Chowa	de Rive	er tribu	tary		_			LA	AKE X	STREAM	I WI	ETLAND				
LOC		ON										WATE	ERSH	HED COL	DE 23	35-430800	)-56400-54	100	<u> </u>				
VV A	IER	BODI	Y ID		-				MAP	948	/14 NIL	) NO		511		ARE CARD ATTACHED X Y N							
PRO	JJEC	טו ו:	На	lfway	-Gra	ham Ove	erview		)H #	Divers	SII SII		18	FIS									
DA	E		2001	1/09/0	05	to 2	001/09/05	AGEI	NCY	Divers	ified Envir		Ser	VICES	CREV	V	BC/TE	RE-SA	MPLE				
D	S	ITE #	NI	d Ma	NP #	NID #	SIT	E UTM		MET	HOD/NO.	SIRE					COMME	ENTS					
ГНС		10					10 4805	13 6203	476	CC	1	1 EMP	EMP CON TUR										
MEI		10					10.4030	+0.0230	0.0293470		-	5.5		```	<i>,</i>								
E / I																							
SIT																							
	SIT	E#	MTD/	NO	H/P	SPECI	ES STAG	E AGE	E TO	TAL NO	D MIN L	N (mm)	MA	AX LN (m	nm) F	ISH ACT	C	OMMENT	S				
RΥ	18	8	EF/	1	1	NFC	;			0													
IMA	AMM																						
SUN																							
SH S																							
ШШ																							
SO:														NE	T / TR.	AP SPEC	IFICATION	NS					
SPE	С	SITE	# ME	D/NO	H/P	DATE	IN TIME	IN E	DATE (	T TUC	IME OUT	NET T	YPE	LENG	ТН	DEPTH	MESH SI	ZE SET	HAB				
AR	-																						
GE	-																						
								E	ELECTR		IER SPEC	CIFICATI	IONS	IS									
	С	SITE	# M0	D/NO	H/P	TIME	IN TIME	OUT	EF SI	EC I	ENGTH	WID	TH	ENCL	VOLT	T FREQ	PLSE	MAKE	MDL				
		18	E	EF/1 1		1340	) 140	00	401		250	5.09	9	0 2		60	Fixed	Coffelt	Mk X				
TS	С																						
IEN	-																						
MMO	-																						
SO	-																						
									IND	IVIDU	AL FIS	H DAT	A										
С	SIT	F#N		) H/P	SP	PECIES	LENGTH	WE	IGHT	SEX	ΜΑΤΙ	IR		AGE			00	MMENTS					
	0				0.		(mm)	(gi	ms)	0_/		S	TR	SAMPL	.E # /	AGE							
				_																			
		-+		+																			
				-																			
				+							1												
				-							_												
				1						1													



Tributary to unnamed Chowade River tributary Site 18: View downstream from top of site (Roll GC1 - Exp 9; CD 1 - Im 76)



Tributary to unnamed Chowade River tributary Site 18: Aerial view upstream (Roll GC1 - Exp 10; CD 1 - Im 77)

# **APPENDIX XIX**

#### UNNAMED TRIBUTARY TO CHOWADE RIVER

(235-430800-62600)

### Sample Site 19

	SITE CARD STREAM NAME Unnamed tributary to Chowade River FIELD COORDINATES 56° 40.23' 123° 10.23																										
STF	REAM NAME Unnamed tributary to Chowade River														FI	ELD	COORDINA	TES	56°	40.2	3' 123º	10.2	3'				
LOC	CAT	ION		o 4 D					1.0.0			~~	<b>-</b> -	005	400												
	5 MA	ΑΡ# ι#		94B	/11			10	- W /		HED			235	-430	800-6	6260			<u>отн</u>	200 M		DE	100		_	
		#	2300	1/00	9/05		⊑# 1⊨	1155		EUT		) Dive	4090 rsified	Env	/ironr	nenta	al Se	Prvices		SIN SEW	BC/TE	FIS			Y X	N	1
	Ъ		2000 L (m)	170	meth	1 110		1100	710			5100	Iomea			214	a 00	GRA		т %	EMS						<
CH				H	RF	5	20	4 20	5	10	5 90		5 10	4	60	5.0	9 )2	meth		1 /0	TEMP (°C)	- ?	38	TUF		,	VAT
WE	TTE		IDTF	 1	RF	4.	90	4.20	3	.25	5.90		2.40	4.	60	4.2	21	2.5			Ph	_			Clear		ĒR
RES	S PC	DOL	DEPT	ГН	MS	0.	05	0.15	0	.14	0.15	(	0.20	0.	50	0.2	20	2.5		-	FLOOD SI	GNS	0.8	m - F	RD		
Wb	DE	PTH	0.5	5	0.60	0.	55	STAG	E	L	ow		No	Vis (	Chan	1		Dry/In	t	-	BED MATE						
		C	OVE	R	Total			Mode	erate	(5-20%	)		Dev	vater	•			Tribs			Dominant	Co	bble	(64-2	56 mm)		
	type	SV	٧D	LW	/D	В	ι	J	DP	OV		IV	CR	JWI	N CL	osu	RE				Subdom. Boulder (> 256 mm						Z
	amt			N	1	D	Т		S	Т		Ν	_	<b>、</b> 0	%	%	%			_	D95 (cm)	45		D (c	<mark>m)</mark> 15		ORI
ER	loc	F	P         P										%0e		_	Morph. Rif	fle-p					PHC					
NO N			WD FNC     None     DISI     8     4     N     4       R SHADE     Sloping     0     1     2     3										4	2	Ň		_							510			
0			3 SHAPE Sloping RB SHAPE Sloping 0 1										2	3	4	5			01 B1 B2	B3	D1	D2	D3 C1	02	ĞΥ		
			EXTURE Gravel/Cobble TEXTURE Gravel/Cobble INSTREAM Mo											IVIOS	s		-		Sin	52	53	54					
		STA	XIP. VEG.         Coniferous         RIP. VEG.         Coniferous         VEGETATION           STAGE         Mature Ecrest         STAGE         Mature Ecrest         STAGE												-		No	ne	)								
		017			Mature	1010	31	UIAU		Matu		551								-	BARS	Sid	le				
																					COUPLING	Pa	rtiallv	Cou	oled		
																					CONFINED	Fre	quer	ntly C	onfined		
Щ	С	NID	MAF	Р#	NID #	ΤY	ΈE	HT/L(	G (m)	mth	d	Pł	IOTO					COM	1MEN	ITS				l	JTM		
JUR											R		F														
EAT											R		F														
Ē.											R		F														
										DI	STUR	RBA	NCE I	NDI		ORL	.EG	END		1				1 1			
01	Beav	/er Dai	m		B3	Avul	sion			D3 R	ecent L	WDj	jam		C3	Elevat	ted B	ar		S1	Homogenous I	Bed		S4	Extensive	Bars	
B1	Abar	Indoneo	d Chan	inel	D1	Sma		dy Debri	s	C1 E	xtensive	e Riff	les		C4	Multip	le Ch	hannel S2 Sediment Fingers						S5	Extensive	Scour	S
DZ	LIUU	ing ba			DZ	Lary	e woo	lay Debh	3	02 L	nnieu r	0015			05	Distui	Deu I	LINES		33	Sediment wet	iyes					
	<u> </u>	Mod	lerate	sea	asonal r	earin	a pot	ential f	or BT	and M	W.																
TAT	Ę	Abs	ence	of \	OY or	yearli	ng B	T sugg	est lo	w suita	bility f	or E	BT spa	wnir	ng.												
ABI	NAI					-									-												
Ξ	Ø																										
FS	SZ				5004															170							
NO	R		FRA	ME	FOCA		DIRE	ECTIO	N	ww/o fi	om br	ottor	n of oi	to				CON	1MEN	115							
ATI(	G	го С1	20	,	wc	1		u II	vie	wu/sn wu/sn		ontre	n or si	e P													
NT,	G	C1	2		wo	1		d	vie	w d/s fi	om to	p of	site	C													
IME	-					-		-																			
CU																											
DC																											-
TO																											
ЭНО																											
ш		DO					/11.51		DOE							DOL									0		
ΕE	G		1 1 [/	<u>ri</u>	zh (trool	V ko or			BSEI	- ANN	JNS				G	ROU	Р	[		V	VILDLIFE OI	BSEI	RVA	HON	S		
DL			<u> </u>		∠ıyuaCl	NO, U		uduk	5.																		
MI																											
	(	С																									
	С	X1	Elect	tro-f	ishing e	effort:	374	second	ds @	250 vo	lts. Bu	ull tr	out we	ere c	aptu	red.											
UTS	С	X2	Read	ch b	reak at	top o	f site	- impo	unde	d area	and se	epa	age ch	anne	els.												
<b>AEN</b>																											
NMQ																											
ö																											

							FI	SH	COLL	ECTIO	N FOR	RM									
STF	REAM	1 NAME	Ur	name	ed tributa	ry to Chowad	e River							L	AKE	Χ	STREA	M	WE	ETLAND	
LOO	CATIC	DN						_			WATE	RSHE		E 2	235-430	0800-	62600	「			
WA	TERE	BODY II	D				NTS MA	۱P	94B/1	I1 NIC	0 NO		SITE		NE CARD ATTACHED X Y N						
PR	DJEC	TID	Halfwa	y-Gra	aham Ove	erview	REACH	#	D:	SIT	E#	19	FISH		RMIT #	SC2	2001-03	2			
DA	E	2	001/09/	05	to 2	001/09/05	AGENC	Υ	Diversifi	ed Enviro	onmental	Servic	es		VV	В	C/TE		RE-SAN	/IPLE	
Q	SI	TE #	NID M	AP #	NID #	SITE	UTM		METH	OD/NO.	STREA						COM	MENT	S		
OH-		10				10 49061	2 620005	5	EE	1		CON		KR							
ИЕТ		19				10.40901	2.020000	5		1	5.0										
E / 1																					
SIT																					
	SITE	E# M	TD/NO	H/F	SPECI	ES STAGE	AGE T		TAL NO	MIN LI	N (mm)	MAX	LN (mi	n)	FISH A	ACT		COM	MENTS	6	
ſRΥ	19	)	EF/1	1	BI			2 149 210 Rearing						ng							
4MP																					
SUN																					
SH S																					
ШЦ																					
ECC													NET	- / TF	RAP SF	PECI	FICATIO	ONS			
SPE	C	SITE #	MD/NO H/P		DATE	IN TIME	IN DA	TE C	DUT TIN	IE OUT	NET TY	PE I	ENGT	H	DEPT	ГН	MESH	SIZE	SET	HAB	
AR	-																				
GE	-																				
							ELE	CTR	OFISHE	ER SPEC	IFICATIO	ONS									
	C	SITE #	MD/N0	DH/F	TIME	IN TIME C	DUT E	F SE	EC LE	INGTH	WIDT	ΉE	NCL	VOL	T FR	REQ	PLSE	AKE	MDL		
	19		19 EF/1 1		4000	1010	-	274						250	250 60		Fixed		Coffelt Mk X		
		19	EF/1	1	1200		5	3/4		200	4.21		0	200	5 6	50	Fixed		JITEIL		
TS	С	19	EF/1	1	1200		5	374		200	4.21		0	250	5 6	50	FIXEO		JITEIL		
AENTS	С	19	EF/1	1	1200			374		200	4.21		0	250	J   6	50	Fixed				
DMMENTS	С	19	EF/1		1200		5	374		200	4.21		0	200		50	Fixed				
COMMENTS	С	19	EF/1		1200			574		200	4.21			230		50	Fixed				
COMMENTS	С	19	EF/1		1200			NDI	IVIDU	200 AL FISI	4.21	4		230		50	Fixed				
COMMENTS	C	= # MD	/NO H/	P SF	PECIES	LENGTH	o I WEIGI	NDI HT	IVIDU/	200 AL FISI MATL	H DAT	4	AGE	230		50	Fixed	COMMI	ENTS		
О COMMENTS	C SITE	E # MD	/NO H/	P SF	PECIES	LENGTH (mm)	WEIGI (gms	NDI HT	IVIDU/ SEX	200 AL FISI MATU	H DATA	A TR S	AGE	230	AGE		C	OMMI	ENTS		
COMMENTS	C SITE	E # MD	/NO H//	P SF	PECIES	LENGTH (mm) 210 149	WEIGI (gms	NDI HT	VIDUA SEX	200 AL FISI MATU	H DATA	A FR S ale ale	AGE AMPLE 25-1 25-2	230 E #	AGE 3+ 2+		C	:0MMI	ENTS		
COMMENTS	C 	E # MD E F	/NO H// =/1 1 =/1 1	P SF	PECIES BT BT	LENGTH (mm) 210 149	WEIGI (gms	NDI HT	VIDU/ SEX	AL FISI MATU	H DAT/ JR ST Sc Sc	A TR S ale ale	AGE AMPLE 25-1 25-2	230 E #	AGE 3+ 2+		C	COMMI	ENTS		
COMMENTS	C SITE 19 19	E # MD E F	/NO H/ =/1 1 =/1 1	P SF	PECIES BT BT	LENGTH (mm) 210 149	WEIGI (gms	NDI HT :)	IVIDUA SEX	AL FISI MATU	H DAT/ JR ST Sc Sc	A TR S ale ale	AGE AMPLE 25-1 25-2	= #	AGE 3+ 2+		C	OMMI	ENTS		
COMMENTS	C SITE 19 19	E # MD E F E F	/NO H// F/1 1 F/1 1	P SF	PECIES BT BT	LENGTH (mm) 210 149	WEIGI (gms	NDI HT ;)	IVIDUA SEX	AL FISI MATU	H DAT/ JR ST Sc Sc	A TR S ale ale	AGE AMPLE 25-1 25-2	<u> </u>	AGE 3+ 2+		C	OMMI	ENTS		
COMMENTS	C SITE 19 19	E # MD E F E F	/NO H/ =/1 1 =/1 1	P SF	PECIES BT BT	LENGTH (mm) 210 149	WEIGI (gms	NDI HT ()	VIDU/ SEX	AL FISI MATU	H DAT/ JR ST Sc Sc	A TR S ale ale	AGE AMPLE 25-1 25-2		AGE 3+ 2+		C	OMMI	ENTS		
COMMENTS	C SITE 19 19	E # MD E F E F	/NO H// =/1 1 =/1 1	P SF	PECIES BT BT	LENGTH (mm) 210 149	WEIGI (gms	NDI HT .)	SEX	AL FISI MATU	H DAT/ JR ST Sc Sc	A TR S ale ale	AGE AMPLE 25-1 25-2		AGE 3+ 2+		C	OMM	ENTS		
COMMENTS	C SITE 19 19	E # MD E F E F E F	/NO H// E/1 1 E/1 1	P SF	PECIES BT BT	LENGTH (mm) 210 149	WEIGI (gms	NDI HT	IVIDUA SEX	AL FISI MATU	H DAT/ JR S1 Sc Sc	A TR S ale ale	AGE AMPLE 25-1 25-2		AGE 3+ 2+		C	OMMI	ENTS		
COMMENTS	C SITE 19 19	E # MD E F E F E F E F E F E F E F E F	/NO H//	P SF	PECIES BT BT	LENGTH (mm) 210 149	l WEIGI (gms	NDI HT ()	IVIDUA SEX		H DAT/ JR ST Sc Sc	A TR S ale ale	AGE AMPLE 25-1 25-2	E #	AGE 3+ 2+		C	OMMI	ENTS		
COMMENTS	C SITE 19 19	E # MD E F E F	/NO H// =/1 1 =/1 1	P SF	PECIES BT BT	LENGTH (mm) 210 149	WEIGI (gms	NDI HT ()	SEX		4.21	A TR S ale ale	AGE AMPLE 25-1 25-2		AGE 3+ 2+		C	COMMI	ENTS		
COMMENTS	C	E # MD E F E F E F E F E F E F E F E F	/NO H// =/1 1 =/1 1	P SF	PECIES BT BT	LENGTH (mm) 210 149	WEIGI (gms	ND HT :)		AL FISI MATU	H DAT/ JR ST Sc Sc	A TR S ale ale	AGE AMPLE 25-1 25-2		AGE 3+ 2+				ENTS		
COMMENTS	C SITE 19 19	E # MD E F E F E F E F E F E F E F E F	/NO H// E/1 1 E/1 1	P SF	PECIES BT BT	LENGTH (mm) 210 149	l WEIGI (gms	NDI HT ::)			H DAT/ JR ST Sc Sc Sc	A IR S ale ale	AGE AMPLE 25-1 25-2		AGE 3+ 2+				ENTS		
COMMENTS	C SITE 19 19	E # MD E F E F E F E F E F E F E F E F	/NO H// F/1 1 F/1 1 	P SF	PECIES BT BT	LENGTH (mm) 210 149	l WEIGI (gms	NDI HT ()	IVIDUA SEX		H DAT/ JR ST Sc Sc	A TR S ale ale ale	AGE AMPLE 25-1 25-2		AGE 3+ 2+			COMMI	ENTS		
COMMENTS	C	E # MD E F E F E F E F E F E F E F E F	/NO H// =/1 1 =/1 1 	P SF	PECIES BT BT	LENGTH (mm) 210 149	WEIGI (gms	NDI HT :)			H DAT/ JR ST Sc Sc Sc	A IR S ale ale	AGE AMPLE 25-1 25-2		AGE 3+ 2+			:OMMI	ENTS		
COMMENTS	C SITE 19 19	E # MD E F E F E F E F E F E F E F E F	/NO H// =/1 1 =/1 1 =/1 1 = = = = = = = = = = = = =	P SF 	PECIES BT BT	LENGTH (mm) 210 149	WEIGI (gms	ND HT ))			H DAT/ JR ST Sc Sc Sc	A IR S ale ale ale	AGE AMPLE 25-1 25-2		AGE 3+ 2+				ENTS		
COMMENTS	C SITE 19 19	E # MD E F E F E F E F E F E F E F E F	/NO H// E/1 1 E/1 1 E/1 1	P SF	PECIES BT BT	LENGTH (mm) 210 149	l WEIGI (gms	NDI HT ::)			H DAT/ JR SI Sc Sc Sc	A IR S ale ale ale ale ale ale ale ale ale ale	AGE AMPLE 25-1 25-2		AGE 3+ 2+				ENTS		
COMMENTS	C SITE 19 19	E # MD E F E F E F E F E F E F E F E F	/NO H// F/1 1 F/1 1 	P SF	PECIES BT BT	LENGTH (mm) 210 149	l WEIGI (gms	NDI HT ()			H DAT/ JR ST Sc Sc Sc Sc	A IR S ale ale ale ale ale ale ale ale ale ale	AGE AMPLE 25-1 25-2		AGE 3+ 2+						
COMMENTS	C SITE 19 19	E # MD E F E F E F E F E F E F E F E F	/NO H// =/1 1 =/1	P SR	PECIES BT BT	LENGTH (mm) 210 149	WEIGI (gms	NDI HT :)			H DAT/ JR ST Sc Sc Sc	A IR S ale ale i i i i i i i i i i i i i	AGE AMPLE 25-1 25-2		AGE 3+ 2+						
COMMENTS	C SITE 19 19	E # MD			PECIES BT BT	LENGTH (mm) 210 149	WEIGI (gms	NDI HT :)			H DAT/ JR SI SC SC SC SC	A IR S ale ale i i i i i i i i i i i i i	AGE AMPLE 25-1 25-2		AGE 3+ 2+				ENTS		



Unnamed tributary to Chowade River Site 19: View upstream from centre of site (Roll GC1 - Exp 1; CD 1 - Im 79)



Unnamed tributary to Chowade River Site 19: View downstream from top of site (Roll GC1 - Exp 2; CD 1 - Im 80)

# **APPENDIX XX**

#### **CYPRESS CREEK**

(235-492500)

## Sample Site 20

												SI	ΈC	AR	D											
STF	STREAM NAME Cypress Creek FIEL														D	COORDINA	TES	56°	53.7	3' 123°	58.58	3'				
LOC	CATI	ION							_				_													
NTS	S MA	\P # 	ç	94B	/15	N	ID NC	)	W#	ATERSH	IED (	CODE	23	5-492	2500											
RE/		#	2004	10.0	/01	S		20	SI		10	500	959 d En	63	305303	3	SHEL		H	300 MI		RF	ACC	ESS	H	1
DA			2001	/06/	21	1		1000	AG	DENCT	D	iversine		VITOTI	nentai	Sei	rvices		/ V	BC/TE	FIS				IN	~
	HA	NNE	L (m)		met	tn - I.	10.00	50.0			- 00	00.00		0.00	avg	2	GRAD		%	EMS						NA.
			יו טוע עדחוי			- 4	17.00	59.0	$J I_2$	2.00 5	2.00	90.00	20	3.00	22.0	3 r				TEIMP (°C)	C	0.5				Ē
			חדשו דספח	· ·		2	0.60	0.70		+.00 J	2.00	20.00		1.00	23.0	0 1	1.0					1.60	) m		_	λ
Wb	DEF	PTH	1.6	0	1.8	0	1.40	STAC	E	Mode	rate	0.30	) Vis	Char	0.70	, [	Drv/Int			BED MATE	RIAL	1.00	5 111 -	ΠD		
		С	OVE	R	Tota		-	Mod	erate	(5-20%)		D	wate	er		1	Tribs			Dominant	Col	ble	(64-2	56 mm)		
	type	S٧	VD	LW	D	В		U	DP	OV	ſ	V C	ROW	N CL	OSUF	RE				Subdom.	Gra	avel (	2-64	mm)		2
	amt	Ν	1	S	;	S		Т	D	Т		N		~	~ \	0				D95 (cm)	50		D (c	<b>m)</b> 60		40
к	loc	F	2	Ρ	1	Р		P	Р	Р		P .	20%	40%	-10%	202-	%0			Morph. Rif	fle-p	loc				ŔΡΗ
BVC		LWI	D FN	C _	Few			DIST		Even		%U	4	21	4 1	-	6			DISTURBA	NCE	IND	ICAT	ORS		20
ŏ		LB S	SHAP	ΈĽ	Verti	cal		RB SI	HAPE	Sloping	)	C	1	2	3 4	4	5			O1 B1 B2	B3	D1	D2	D3 C1	C2	OG,
		TEXTURE Fines TEXT								Fines		IN	STR	EAM	N	one	Э			C3 C4 C5	S1	S2	S3	S4		~
		RIP. VEG. Mixed C & D RIP. VEG. Mixed C STACE Young Except											GET	ATIC						PATTERN	Sin	uous				
		STA	GE	_	Youn	ig ⊦or	rest	STAG	iΕ	Young	Fores	st								ISLANDS	000 Sid		onal	d atraan	_	
																					Bar					
																				CONFINED	F ai Oci	casic	nally	Confine	h	
ň	С	NIC	MAF	<b>)</b> #	NID	# -	TYPE	HT/I	G (m)	mthd		PHOT	0				COM	<b>JENTS</b>	2	OOM INED	00	00010	l	ITM		
URE	Ŭ			 					<b>O</b> (III)		R	F		1			0.0111				1					
ATI											R	F		-												
Щ											R	F														
										DIS	TUR	BANCE	IND	ICAT	OR LE	EGE	END									
01	Beav	er Da	m		E	33 Av	ulsion/			D3 Red	ent LV	VD jam		C3	Elevate	d Ba	ar	S	1	Homogenous E	led		S4	Extensive	Bars	
B1	Abar	ndoneo	d Chani	nel	0	D1 Sr	nall Wo	ody Deb	ris	C1 Ext	ensive	Riffles		C4	Multiple	e Cha	annel	S	2	Sediment Finge	ers		S5	Extensive	Scours	;
B2	Erod	ing Ba	ink		[	D2 La	arge Wo	ody Debi	is	C2 Lim	ited Po	ools		C5	Disturbe	ed Li	ines	S	3	Sediment Wedges						
		Mod	loroto	auc	lity y	oor re	und h	obitot f	oropo	nt and n		ort ono	Nico													
-AT	Σ	IVIOU	leiale	que	anty y			abilali	or spu		JII-SP	ur spe	165.													
BIT	JAL																									-
ЧA	g																									
FS	SΖ																									
Z	RC	ÓLL	FRAM	٨E	FOC	AL L	N DIR	RECTIC	N.								COM	<b>MENTS</b>	5							
TIC	H	G4	18		١	wd	_	d	vie	w d/s fro	m cei	ntre of s	site													
١TA	H	G4	19		1	wd	_	u	vie	w u/s fro	m cei	ntre of s	site													
MEN	н( ц	G4 G4	20			wa	_	a 	VIE	w u/s tro		OT SILE														
CUI	110		21			wu	+	u	aei		apout	Jann														
Õ							+																			
10							+																			
P																										
Ы																										
Η	G	ROL	IP				WILD	LIFE C	DBSEI	RVATIO	NS			G	ROUP	)			Ν	VILDLIFE OE	BSEF	RVAT	ΓΙΟΝ	S		
DLI														+												
VIL														+		+										
~	-																									
	C	у Х1	Flect	ro-fi	shind	a effo	rt <sup>.</sup> 604	secon	ds @	250 volt	s Rai	inbow t	out	oull tr	out m	oun	ntain wh	itefish	an	d slimv sculr	oin c	aptur	ed			
TS	C	X2	Large	e vol	ume	s of n	on-fur	ictional	LWD	within c	hanne	el width		. un u	5ac, 111	Juil				omny oour		-p.ui	50.			
ΕN																										
MM																										
8																										-
							FI	SH	COLL	ECTIO	N FOF	RM														
---------	--	---	--	---	--	--	--------------------	----------------	-------------------	-----------------	--	--	---	--	---	----------	----------------------------	------------	--------							
STF	REAM NA	AME	Cy	press	s Creek									LAK	KE X	STREA	M	W	ETLAND							
LOO	CATION		_								WATE	RSHED	CODE	235	-492500	)										
WA	TERBOI	DY ID	)				NTS MA	NP	94B/1	15 NIC	NO		SITE/L	AKE	CARD A	TTACHE	ED	<b>X</b> Y	N							
PR	DJECT II	DH	Halfwa	y-Gra	ham Ove	rview	REACH	#		SIT	E#	20	FISH P	ERM	IT # SC	2001-032	2									
DA	ΓE	20	001/08	21	to 2	001/08/21	AGENC	Y	Diversifi	ed Enviro	onmental	Service	s CF	EW		BC/TE		RE-SAI	MPLE							
0	SITE	#		AP #	NID #	SITE	υтм		METH		STREA	AM CON	DITION			COM	JENT	s								
10L	ONE	"		/		0112	UTW			obino.	TEMP	CON	TURB			COMIN	vii <u>_</u> i <b>v</b> ii	Ŭ								
ΕŢ	20					10.500959	9.630530	)3	EF	1	6.5		С													
/ M																										
ТЕ																										
S																										
	SITE #	MT					ACE	TOT			(mm)		N (mm)	EIC			COM		2							
1	20		E/1	1	BR	ES STAGE	AGE	101	2	2	N (IIIII) 16		.N (11111) 75	R	earing		CON		5							
٩R١	20	F	=F/1	1	BT				10	4	.4	3	48	R	earing											
ЧМ	20	F	=F/1	1	MW				2	2	18	3	05	R	earing											
SUN	20	E	EF/1	1	CCG	ì			3	7	6	1	05	R	earing											
SH	-								-		-				5											
Ц																										
S													NET /	TRAF	P SPEC	IFICATIC	ONS									
SPE	C SIT	Ē# [	MD/NO	) H/P	DATE	IN TIME	IN DA	TE O		IE OUT	NET TY	/PE LI	ENGTH	D	EPTH	MESH S	SIZE	SET	HAB							
R S																										
ЭЕA																										
0								стр				ONC														
	C SIT	E # 1		лн/р	TIME					INGTH					EREO	DI SE	M	AKE	MDI							
	2	20	FF/1	1	1700	) 1725		604		300	23.0			250	60	Fixed	C	offelt	Mk X							
6	C										_0.0		•				Ŭ									
NT(	-																									
111																										
M																										
IMMO:																										
COMMI																										
COMMI								NDI	VIDU	AL FISI	H DAT	4	405													
COMM	SITE #	MD/ľ	NO H/	P SF	PECIES	LENGTH	WEIGI	NDI HT	VIDU/ SEX	AL FISI MATU			AGE			C	OMM	ENTS								
COMM	SITE #	MD/I	NO H/	P SF	PECIES	LENGTH (mm) 216	WEIGI (gms	NDI HT )	VIDU/ SEX	AL FISI MATU	H DAT	A TR SA	AGE MPLE #		GE -	C	OMM	ENTS								
COMM	SITE #	MD/N EF/	NO H/ /1 1 /1 1	P SF	PECIES RB MW	LENGTH (mm) 216 305	WEIGI (gms	NDI HT )	VIDU/ SEX	AL FISI MATU	H DATA	A TR SA cale	AGE MPLE # 19-1 19-2	A(	GE	C	OMM	ENTS								
COMMI	SITE # 20 20 20	MD/I EF/ EF/	NO H/ /1 1 /1 1 /1 1	P SF	PECIES RB MW BT	LENGTH (mm) 216 305 348	WEIGI (gms	NDI HT )	VIDUA SEX M	AL FISI MATU	H DAT	A TR SA ale ale ray	AGE MPLE # 19-1 19-2 19-3	AC 3 5 6	GE + + +	C	OMM	ENTS								
COMMI	SITE # 20 20 20 20 20	MD/N EF/ EF/ EF/	NO H/ /1 1 /1 1 /1 1 /1 1 /1 1	P SF	PECIES RB MW BT RB	LENGTH (mm) 216 305 348 275	WEIGI (gms	NDI HT )	VIDU/ SEX M	AL FISI MATU	H DAT/ JR S <sup>-</sup> Sc Sc Sc Fin Sc	A TR SA ale ale ray ale	AGE MPLE # 19-1 19-2 19-3 19-4	AC 3 5 6 4	GE + + + +	С	OMM	ENTS								
COMMI	SITE # 20 20 20 20 20 20 20	MD/f EF/ EF/ EF/ EF/	NO H// /1 1 /1 1 /1 1 /1 1 /1 1 /1 1	P SF	PECIES RB MW BT RB MW	LENGTH (mm) 216 305 348 275 218	l WEIGI (gms	NDI HT )	VIDUA SEX M	MATU	H DAT/ JR S Sc Sc Sc Fin Sc Sc	A TR SA cale ray ray ale cale	AGE MPLE # 19-1 19-2 19-3 19-4 19-5	AC 3 3 5 6 4 4	GE + + + + + + + + + + +	C	OMM	ENTS								
COMMI	SITE # 20 20 20 20 20 20 20 20 20	MD/I EF/ EF/ EF/ EF/ EF/	NO H// /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1 1	P SF	PECIES RB MW BT RB MW BT BT	LENGTH (mm) 216 305 348 275 218 144	WEIGI (gms	NDI HT )	VIDUA SEX M	AL FISI MATU	H DAT/ JR S Sc Sc Sc Sc Sc Sc Sc Sc Sc	A IR SA ale ray ale ale ale ale ale	AGE MPLE # 19-1 19-2 19-3 19-4 19-5 19-6	AC 33 55 6 4 4 2	GE +	C	OMM	ENTS								
C COMMI	SITE # 20 20 20 20 20 20 20 20 20 20 20 20	MD/N EF/ EF/ EF/ EF/ EF/ EF/	NO H/ /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /	P SF	PECIES RB MW BT RB MW BT BT BT	LENGTH (mm) 216 305 348 275 218 144 82	l WEIGI (gms	NDI HT )	VIDUA SEX M	AL FISI MATU	H DAT/ JR S Sc Sc Sc Sc Sc Sc Sc Sc	A SA ale	AGE MPLE # 19-1 19-2 19-3 19-4 19-5 19-6 19-7	AC 3 5 6 4 4 2 1	BE + + + + + + + + + + + + +	C	OMM	ENTS								
COMMI	SITE # 20 20 20 20 20 20 20 20 20 20 20	MD/f EF/ EF/ EF/ EF/ EF/ EF/	NO H/ /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1 1	SF SF	PECIES RB MW BT RB MW BT BT BT	LENGTH (mm) 216 305 348 275 218 144 82 95 95	l WEIGI (gms	ND '   T	VIDUA SEX M	AL FISI MATU	H DATA JR S Sc Sc Sc Sc Sc Sc Sc Sc	A SA ale ale ray ale	AGE MPLE # 19-1 19-2 19-3 19-4 19-5 19-6 19-7 19-8	A0 33 55 66 4 4 4 22 11	3E + + + + + + + + + + + + + +	C	OMM	ENTS								
COMMI	SITE # 20 20 20 20 20 20 20 20 20 20 20 20 20	MD/N EF/ EF/ EF/ EF/ EF/ EF/ EF/	NO H// /1 1 /1 1	SR SR	RB MW BT RB MW BT BT BT BT BT BT	LENGTH (mm) 216 305 348 275 218 144 82 95 110	l WEIGI (gms	NDI'	VIDUA SEX M	AL FISI MATU	H DAT/ JR S Sc Sc Sc Sc Sc Sc Sc	A ale ale ale ale ale ale ale ale ale	AGE MPLE # 19-1 19-2 19-3 19-4 19-5 19-6 19-7 19-8	AC 33 55 66 44 4 2 1 1	3E ++ ++ ++ ++ ++ ++ ++	C	OMM	ENTS								
COMMI	SITE # 20 20 20 20 20 20 20 20 20 20 20 20 20	MD/I EF/ EF/ EF/ EF/ EF/ EF/ EF/ EF/	NO H// /1 1 /1 1	P SR	RB MW BT RB MW BT BT BT BT BT BT BT BT	LENGTH (mm) 216 305 348 275 218 144 82 95 110 83 82	WEIGI (gms	NDI'	VIDU/ SEX M	MATU	H DAT/ JR S Sc Sc Sc Sc Sc Sc Sc Sc	A TR SA aale aale aale aale aale aale	AGE MPLE # 19-1 19-2 19-3 19-4 19-5 19-6 19-7 19-8	ACC 33 35 66 4 4 4 2 1 1	3E       +       -    <	C	OMM	ENTS								
COMMI	SITE # 20 20 20 20 20 20 20 20 20 20 20 20 20	MD/IN EF/ EF/ EF/ EF/ EF/ EF/ EF/ EF/ EF/	NO H// /1 1 /1 1	P SF	RB MW BT RB MW BT BT BT BT BT BT BT BT BT	LENGTH (mm) 216 305 348 275 218 144 82 95 144 82 95 110 83 93 44	WEIGI (gms	NDI'	VIDUA SEX M	AL FISI MATU	H DAT/ JR S Sc Sc Sc Sc Sc Sc Sc Sc Sc	A IR SA ale ray ale ale ale ale ale ale ale ale	AGE MPLE # 19-1 19-2 19-3 19-4 19-5 19-6 19-7 19-8	AC 33 55 66 44 4 2 1 1	GE +	C	OMM	ENTS								
COMM	SITE # 20 20 20 20 20 20 20 20 20 20 20 20 20	MD/IN EF/ EF/ EF/ EF/ EF/ EF/ EF/ EF/ EF/	NO H// /1 1 /1 1	SR SR SR	PECIES RB MW BT RB MW BT BT BT BT BT BT BT BT BT BT BT BT	LENGTH (mm) 216 305 348 275 218 144 82 95 110 83 93 44 81	l WEIGI (gms	NDI'	VIDUA SEX M		H DAT/ JR S Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc	A SA ale	AGE MPLE # 19-1 19-2 19-3 19-4 19-5 19-6 19-7 19-8	AC 33 55 66 44 42 11	BE + + + + + + + + + + + + + + + + + +	C	OMM	ENTS								
COMM	SITE # 20 20 20 20 20 20 20 20 20 20 20 20 20	MD/I EF/ EF/ EF/ EF/ EF/ EF/ EF/ EF/ EF/ EF/	NO H// /1 1 /1 1	SF	PECIES RB MW BT RB MW BT BT BT BT BT BT BT BT BT BT BT BT BT	LENGTH (mm) 216 305 348 275 218 144 82 95 110 83 93 44 81 91	l WEIGI (gms		M		H DAT/ JR S Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc	A SA ale	AGE MPLE # 19-1 19-2 19-3 19-4 19-5 19-6 19-7 19-8	AC 33 55 66 44 22 11	3E + + + + + + + + + + + + - - - -	C	OMM	ENTS								
COMM	SITE # 20 20 20 20 20 20 20 20 20 20 20 20 20	MD/I EF/ EF/ EF/ EF/ EF/ EF/ EF/ EF/ EF/ EF/	NO H// /1 1 /1 1	SF	PECIES RB MW BT RB MW BT BT BT BT BT BT BT BT BT BT CCCG	LENGTH (mm) 216 305 348 275 218 144 82 95 110 83 93 44 81 91 105	l WEIGI (gms		M		H DAT/ JR S Sc Sc Sc Sc Sc Sc Sc Sc Sc	A SA CALLER SA C	AGE MPLE # 19-1 19-2 19-3 19-4 19-5 19-6 19-7 19-8	ACC 33 55 66 4 4 4 2 1 1	3E + + + + + + + + + - - - - - - - - - -		OMM	ENTS								
COMM	SITE # 20 20 20 20 20 20 20 20 20 20 20 20 20	MD/I EF/ EF/ EF/ EF/ EF/ EF/ EF/ EF/ EF/ EF/	NO H// /1 1 /1 1	SF SF SF SF SF SF SF SF SF SF SF SF SF S	PECIES RB MW BT RB MW BT BT BT BT BT BT BT BT BT CCG CCG	LENGTH (mm) 216 305 348 275 218 144 82 95 110 83 93 44 81 91 105 76	l WEIGI (gms	NDI'	M		H DAT/ JR S Sc Sc Sc Sc Sc Sc Sc Sc	A ale ale ale ale ale ale ale ale ale ale	AGE MPLE # 19-1 19-2 19-3 19-4 19-5 19-6 19-7 19-8	ACC 33 55 66 44 4 22 11 1	3E + + + + + + + + + - - - - - - - - - -		OMM	ENTS								
COMM	SITE # 20 20 20 20 20 20 20 20 20 20 20 20 20	MD/IN EF/ EF/ EF/ EF/ EF/ EF/ EF/ EF/ EF/ EF/	NO H// /1 1 /1 1	SF SF SF SF SF SF SF SF SF SF SF SF SF S	PECIES RB MW BT RB MW BT BT BT BT BT BT BT BT CCG CCG CCG	LENGTH (mm) 216 305 348 275 218 144 82 95 110 83 93 44 81 93 44 81 91 105 76 83	WEIGI (gms	NDI HT )	VIDU/ SEX M		H DAT/ JR S Sc Sc Sc Sc Sc Sc Sc Sc	A TR SA cale ca	AGE MPLE # 19-1 19-2 19-3 19-4 19-5 19-6 19-7 19-8	A0033556644422	GE + + + + + + + + + + + + + - - - - - -			ENTS								
COMM	SITE # 20 20 20 20 20 20 20 20 20 20 20 20 20	MD/N EF/ EF/ EF/ EF/ EF/ EF/ EF/ EF/ EF/ EF/	NO H// /1 1 /1 1	SF SF SF SF SF SF SF SF SF SF SF SF SF S	PECIES RB MW BT RB MW BT BT BT BT BT BT BT BT BT CCG CCG CCG	LENGTH (mm) 216 305 348 275 218 144 82 95 110 83 93 44 81 93 44 81 91 105 76 83	WEIGI (gms	NDI HT )	M		H DAT/ IR S Sc Sc Sc Sc Sc Sc Sc Sc Sc S	A IR SA ale in a	AGE MPLE # 19-1 19-2 19-3 19-4 19-5 19-6 19-7 19-8	ACC 33 55 66 44 42 21 1 1	3E + + + + + + + + + + + + + + + + + -			ENTS								
COMM	SITE # 20 20 20 20 20 20 20 20 20 20 20 20 20	MD/I EF/ EF/ EF/ EF/ EF/ EF/ EF/ EF/ EF/ EF/	NO H// /1 1 /1 1	SR SR SR SR SR SR SR SR SR SR SR SR SR S	PECIES RB MW BT RB MW BT BT BT BT BT BT BT BT BT CCG CCG CCG	LENGTH (mm) 216 305 348 275 218 144 82 95 110 83 93 44 81 91 105 76 83	l WEIGI (gms		M		H DAT/ IR S Sc Sc Sc Sc Sc Sc Sc Sc Sc S	A SA ale	AGE MPLE # 19-1 19-2 19-3 19-4 19-5 19-6 19-7 19-8	ACC 33 55 66 44 22 11 1	BE + + + + + + + + + + + + + + + + + -			ENTS								
COMM	SITE # 20 20 20 20 20 20 20 20 20 20 20 20 20	MD/I EF/ EF/ EF/ EF/ EF/ EF/ EF/ EF/ EF/ EF/	NO H// /1 1 /1 1	SF	PECIES RB MW BT RB MW BT BT BT BT BT BT BT BT BT CCG CCG CCG	LENGTH (mm) 216 305 348 275 218 144 82 95 110 83 93 44 81 91 105 76 83	l WEIGI (gms		M		H DAT/ JR S Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc	A ale	AGE MPLE # 19-1 19-2 19-3 19-4 19-5 19-6 19-7 19-8	A( 33 55 66 4 4 2 1 1 1	3E + + + + + + + + + + + + + - - - - - -			ENTS								
COMM	SITE # 20 20 20 20 20 20 20 20 20 20 20 20 20	MD/I EF/ EF/ EF/ EF/ EF/ EF/ EF/ EF/ EF/ EF/	NO H// /1 1 /1 1	SF     SF     SF     S	PECIES RB MW BT RB MW BT BT BT BT BT BT BT BT CCG CCG CCG	LENGTH (mm) 216 305 348 275 218 144 82 95 110 83 93 44 81 91 105 76 83	l WEIGI (gms		M		H DAT/ JR S Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc	A SA CALLER SA C	AGE MPLE # 19-1 19-2 19-3 19-4 19-5 19-6 19-7 19-8	ACC 33 55 66 4 4 4 2 1 1 1	3E + + + + + + + + + + + - - - - - - - -			ENTS								



Cypress Creek Site 20: View upstream from centre of site (Roll HG4 - Exp 19; CD 1 - Im 83)



Cypress Creek Site 20: View downstream from top of site (Roll HG4 - Exp 20; CD 1 - Im 84)

# **APPENDIX XXI**

# CYPRESS CREEK

(235-492500)

## Sample Site 21

												SI	ΤE	CA	٨RD	)												
STF	REA	MNA	AME	Су	/pres	s Cre	ek												FIELD	) (	COORDIN	ATES	56	° 49.9	91' 1:	23° 15	5.32	
LOO	CAT	ION																										
NTS	5 M/	<b>ΑΡ</b> #	9	4B/14	4	NID	NO		WA	TERSH	ED (	CODE	2	35-4	4925	500	_							_		_		
RE/	ACH	#				SIT	E#	21	SIT	EUTM	10	484	4506		629	98787	SIT	EL	ENGTH	1	200	/ET⊦	RF	AC	CES	\$	Н	
DA	ΓE		2001/	/08/2	1	TIM	E	1255	AGI	ENCY	D	iversif	ied E	nvir	onm	nental S	ervic	es	CREW	/	BC/TE	FI	SH F	OR№	1 Y	X	N	
(	CHA	NNE	L (m)	n	neth				1							avg	GF	RADI	IENT %	,	EMS			СО	ND			M٨
CH/	ANN	IEL V	VIDTH	•	RF	13	.00	10.00	7.	00 8.	50	6.80	0	7.5	0	8.80	met	h	AL	ľ	TEMP (°C	)	4.0	TU	RBID	ITY		Ħ
WE	TTE	ED W	IDTH	_	RF	10	.50	10.00	7.	00 8.	00	6.80	0	7.5	0	8.30	1.	.5			Ph				Cle	ar		ת
RE	S PC	DOL	DEPT	H	MS	0.	30	0.25	0.	30 0.	25	0.13	3	0.2	0	0.24	1.	.5			FLOOD S	IGNS	5 <u>1.2</u>	: m -	RD			
Wb	DE		0.70		).70	0.	65 <mark>S</mark>	TAGE		Moder	ate			s Cl	han		Dry/	Int			BED MAT	ERIA	L	. (> 0	50			
					otal			Abund	ant (	>20%)			Jewa	ter			I rib	s			Dominant	BC	ouide	r(>2)	56 m	m)	_	
	type	50				B	U T			OV N		V C			CLU	JSURE	-				Subdom.	Gr	avei	(2-64	mm)	6	_	M
~ 1	amt					<u>о</u>			י ר					%	%0	3% 0%	<b>`</b> 0				Morph D	40 ifflor		D (	cm)	0	_	RF
/ER	100				ne	F			-	Г			%	07-	4	1-9	606								TOR	\$		ŘС
õ						<u></u>			DE	Undorei	.+		0 ·	1	2	3 V 4 V	^ 5					2 23					2	ГO
0						11	— <b>`</b>			Finos					2	3 4	5			-		2 D3		02	03		,2	ĞΥ
			VEG		nifer	rous			ς Γ	Conifer			N21 /EGI	КЕ <i>Р</i> =та		N	ae						02	55	34		_	
		STA		. OC Ma	ature	Fore	et S		0.	Mature	Fore	et V		- 1 -								No	ne	5			_	
		017	NOL	IVIC	aturc	1 010	51 0	TAOL		Mature		.51									BARS	No	ne					
																								oled			_	
																					CONFINE		casi	onally	/ Con	fined		
ň	C	NIC		# N	IID #	TY	PF F	HT/LG	(m)	mthd		PHO	ΓO				CO		<b>IENTS</b>				00001	ornan		Innea		
JRE	Ŭ			1		1		III/LO	(111)		R		:				0.											
ATI		-									R	F	:										-					
Ш Ц											R	F	:															
										DIST	ΓUR	BANC	EIN	DIC	ATC	OR LEO	GEND	)										
01	Beav	/er Da	m		В3	Avuls	sion			D3 Rece	ent LV	VD jam		C	C3 E	Elevated	Bar		S1	1	Homogenous	Bed		S4	Exten	sive Ba	rs	
B1	Abar	ndone	d Chann	el	D1	Sma	II Woody	y Debris		C1 Exte	nsive	Riffles		C	C4 I	Multiple C	hanne	el	S2	;	Sediment Fin	gers		S5	Exten	sive Sc	ours	
B2	Erod	NID MAP #       NID #       TYPE       HT/LG (m)       mthd       PHOTO       COMMENTS         Image: Second															1	Sediment We	edges				-					
		NID MAP #       NID #       TYPE       HT/LG (m)       mthd       PHOTO       COMMENTS         Image: Second																										
E	≻	Мос	lerate	to hig	h qu	ality re	earing	habitat	for I	BT, MW,	RB	and G	GR.															
ITA	E.	Nos	seasor	nal ac	cess	s due f	to falls	downs	trea	m - non f	ïsh-	bearin	g.															
IAB	NA																											
Т	0		1																									
F	SZ																_											
N	RC		FRAM	1E FO	CA			CTION					c				C	JMV	IENTS									
TIC	H	G4	1		WC	3		u	view	v u/s fron	n bo	ttom of	f site															
٩T٨	H	G4	2		WC			<u>น</u>	view	v u/s from	n ce	ntre or	site															
ΛEΝ		G4 G4	3		WC	4		u	view		n iop		e															
N)	11	64	4		WC	J		u	acii	ai view u	psur	cam																
ŏ																												
10																												
OT																												
Н																												
111	G	ROL	JP			N	/ILDLI	FE OB	SEF	VATION	IS				GF	ROUP			1	W	ILDLIFE C	BSE	RVA		١S			
ΠE		MAN	1 N	loose													1											
LDI																												
$\geq$														$\top$														
	(	С																										
	C	X1	Electr	o-fish	ning e	effort:	404 se	econds	@2	250 volts	. No	fish c	aptu	ed.														
ITS																												
IEN																												
MM																												
8																												

									F	ISH	COL	LECTIC	ON FO	RM							
STF	REAN	M NA	ME	Су	press	s Creek							_				LAKE	X	STREAM	ЛV	VETLAND
LOO		ON									0.45		WAT	ERS	SHED	CODE	235-4	92500	TTAOUE		
WA			טו אינ י	1-16	0	h 0			NISM		946	5/14 NI				SITE/L/					Y N
		JIIL	ן ( סכ		y-Gra	anam Ov		N 100/01	REACE	1#	Divor	ified Envi		21		FISH P		# 30.	2001-032		
DA			20	01/06/	21		2001/	00/21	AGEN	, T	Divers								BC/TE	RE-3	AIVIFLE
D	S	ITE #	¥ I	NID M	AP #	NID #		SITE	UTM		MET	HOD/NO.	TEME				-		COMM	ENTS	
THC		21					1	0 484506	62987	87	FF	1	4 0			C					
ME												· ·				-					
/ Э.																					
SIT																					
		- "				0050		07405	105	TO	<b>TAL M</b>				4424		FIOL				TO
1	2	E#	MI		H/P	SPEC	IES	STAGE	AGE	10	I AL N		_N (mm)	IV	/IAX LI	N (mm)	FISF	ACT	(	JOMMEN	15
AR	2	1		/ 1			,				0										
MM																					
SU																					
ISH																					
ш																					
																NET /			EICATIO	NS	
эЕС	С	SIT	E # 1	MD/NC	) H/P	DATE	IN	TIME	IN DA	TE (	ד דעכ	IME OUT	NET T	YPE	E LE		DE	PTH	MESH S	IZE SET	HAB
R SI	-																				
EAI																					
0																					
	C	SITI	= # 1				IN	TIME			ROFISI								DISE	MAKE	MDI
	U	2	_ # [ ] 1	EF/1	1	130	0	1320	)	404		200	8.3	0		2	50	60	Fixed	Coffelt	MkX
S	С						-			-				-							
≣NT																					
MMI	-																				
CO	-																				
										ND	IVIDU	JAL FIS	H DAT	Ā							
C	SIT	F #					LE	NGTH	WEIG	ΗT	SEX	МАТ				AGE			CC		2
Ŭ	011	L #				LOILO	(	(mm)	(gm	S)				STR	SA	MPLE #	AGE	Ξ			,
				_								_									
		[																			
		_																			
		-+																			



Cypress Creek Site 21: View upstream from bottom of site (Roll HG4 - Exp 1; CD 1 - Im 86)



Cypress Creek Site 21: View downstream from top of site (Roll HG4 - Exp 3; CD 1 - Im 88)

# **APPENDIX XXII**

#### **GEESDALE CREEK**

(235-492500-43800)

## Sample Site 22

												SIT	ЕC	AR	D											
STF	REA	MNA	AME	Gee	esdal	e Cre	ek											FIELD	) (	COORDINA	TES	56°	53.76	5' 123°	<sup>°</sup> 12.7	6'
LOO	CAT	ION											_													
NTS	S MA	AP #	94	B/14		NID	10	N	ATEF	RSHEI		DDE	235	5-492	2500-4	438	00		_						_	
RE/	ACH	#	0004/0	0.100		SITE	# 2	22 S	ITE U	TM _	10	4970	58	63	30661	4	SITEL	ENGTH	!	210 ME	TH	RF	ACC	ESS	ł	-
DA	E		2001/0	8/23		TIME	12	218 <mark>A</mark>	GENC	;Y	Div	ersified		vironi	menta	al Se	ervices	CREW	/	BC/DC	FIS	H F(	JRM	Y X	N	
(	CHA	NNE	L (m)	me	eth			<b>.</b>					1.0		av	g	GRAD	IENT %	5	EMS			CON	D		MA
CH/						6.00	0 6.9	90	6.00	15.0	00	9.00	6	.00	8.1	5	meth	AL		TEMP (°C)	5	0.0	TUR	BIDIL	(	TE
						4.40	5 0.0	00	5.70	3.0	1	3.90	2	.50	4.3	5	2.7	<b></b>				0.01		Clear		J.
RE:		DUL			15 75	0.1			0.18 M	0.1	1	0.11	Vie	.32 Char	0.1	9	3.0 Dry/Int			FLOOD SIC		0.93	3 m - I	RD		
** 0			OVER	Tot	al	0.00	Mc	oderate	(5-20	(%)	.0	De	wate	r	•		Tribs			Dominant	Col	- oble (	64-25	56 mm	)	
	type	SV		WD.		3	U	DP		NV	IV	CR	OW	N CI	OSU	RF				Subdom	Boi	ulder	(> 25	6 mm)	/	_
	amt	1	Г	S	C	)	S	S		S	N		1							D95 (cm)	42		D (cr	n) 29		NO
ц	loc	F	>	P	F	2	Р	Р		P	Р		%0	40%	%02	%06	%			Morph. Riff	le-po	ool		,		RP
VE		LW	D FNC	Abu	Indar	nt	DIS	Т	Eve	n		%0	1-2	5	41-	71-	06<			DISTURBA	NCE	IND	ICAT	ORS		101
8		LB \$	SHAPE	Slop	oing		RB	SHAP	E Slo	ping		0	1	2	3	4	5			O1 B1 B2	В3	D1	D2 [	D3 C1	C2	0
		TEX	TURE	Fine	es		TEX	KTURE	Fine	es		INS	STR	AM	l L	Non	ie	<u> </u>	ſ	C3 C4 C5	S1	S2	S3 S	54		Ϋ́
		RIP	. VEG.	Con	nifero	us	RIP	. VEG.	Cor	niferou	IS	VE	GET	ATIC	DN					PATTERN	Irre	gular	Wan	dering		
		STA	AGE	You	ing F	orest	STA	AGE	You	ing Fo	rest				_					ISLANDS	Oc	casio	nal			
				_																BARS	Sid	e/Mic	d-strea	am		
																				COUPLING	Par	tially	Coup	led		
																				CONFINED	Oc	casio	nally	Confin	ed	
RES	С	NIC	) MAP #	NII	D#	TYP	E HT.	'/LG (m	ı) m	thd	F	рнотс	)				COM	MENTS			1	1	U	ТМ		
ΤU									_	- F	2	F														
EA											۲ ۲															
ш.		_														FC										
01	Rea	or Da	m		<b>B</b> 3	Διμιείο	n		03	Becon					Elevet			S1		Homogenous B	od		S4 E	tonsive	Rare	
01 B1	Abar		NID MAP #       NID #       TYPE       HT/LG (m)       mthd       PHOTO       COMMENTS         Image: Second Control of															Sediment Finge	are		S4 E	tonsive	Scour			
B2	Erod	NID MAP #       NID #       TYPE       HT/LG (m)       mthd       PHOTO       COMMENTS         Image: Note: The second sec															S3		Sediment Wed	aes			ACCHISIVE	. 0000	3	
_		0	ID MAP #       NID #       TYPE       HT/LG (m)       mthd       PHOTO       COMMENTS         Image: Second															-		5						
Ŀ	×	Low	to mod	erate	seas	onal r	rearing	potenti	al for j	uvenil	e BT															
TA <sup>-</sup>	É	Suit	able spo	ort-fis	h spa	awnin	g habita	at on n	ext rea	ch do	wnst	tream.														
ABI	NA																									
Т	Ø																									
F	SZ																									
NC	R		FRAME	FO	CAL		DIRECT	ION .		,							COM	MENTS								
<b>VTIC</b>	H	G5	9		Wd		u	VI	ew u/s	from	botto	om of s	ite													-
NT/	н	G5 C5	10		wd		u d	Vi	ew u/s	from	top	of site	le													
MEI	Н	G5	12		wd		u	26	erial vi		strea	m														
cul	Н	G5	13		wd		u		ostrea	m aeri	al ba	asin vie	w													
DO																										
T0																										
OH																										
Б																										
Щ	G	ROL	JP			WI	LDLIFE	OBSE	ERVA	TIONS	3			G	ROU	Ρ	1	1	W	ILDLIFE OE	SEF	RVAT	FIONS	5		
VIL																										
>		$\hat{\mathbf{C}}$																								
	C	U V1	Electro	fichir	an off	fort: 3	57 000	onde 6	250	volte	No fi	ch can	turo	4												
S	U		LICCIIO	-1131111	iy en	1011. 5	57 3000		, 200	voits.		эн сар	luie	J.												
EN																										
MM																										
00																										

									F	ISH	COL	LECTIC	N FO	RM							
STF	REAN	M NA	ME	Ge	esda	le Creek							_				LAK	Е <b>Х</b>	STREAM	V N	/ETLAND
LOO		ON		_									WAT	ERS	HED	CODE	235	492500	-43800	-	
WA	TER	BOD	DY ID						NTS M	٩P	94E	6/14 NI				SITE/L	AKE (			DX	/ N
PR	DJE(		)	Halfway	/-Gra	ham Ove	erview		REACH	#	<b>D</b> :		E#	22	2	FISH P	PERM		2001-032		
DA	IE		20	01/08/2	23	to 2	2001/08	3/23	AGENC	γ	Divers	Ified Envi	ronmenta	al Sei	rvices			E	BC/DC	RE-S/	AMPLE
Q	S	ITE #	¥ I		\P #	NID #		SITE	UTM		MET	HOD/NO.	STRE	:AM (	CON		-		COMM	IENTS	
OH-		22	_				10	407056	2 62066	14	EE	1	I EMP	, C	ON:	TURB					
ИЕТ		22					10.	497030	5.05000	14			5.0	-		U					
E / I														+							
SIT																					
	SIT	E#	MTI	D/NO	H/P	SPEC	IES S	TAGE	AGE	TO	TAL N		.N (mm)	M	IAX LI	N (mm)	FIS	H ACT	(	COMMEN	rs
λRΥ	2	2	E	F/1	1		;				0			_							
ΔMΛ																					
SUN														-							
SH S																					
Ε																					
ECO	0					DATE		<b>TIN 45</b>								NET /	TRAF	P SPECI	FICATIO	NS	
SP	C	SIT	= # 1	VID/NO	H/P	DATE	IN	IIME	IN DA	IEC		IME OUT	NELI	YPE	LE	NGIH	D	EPTH	MESH S	IZE SET	HAB
AR																					
GE																					
									ELE	CTF	ROFISH	IER SPE	CIFICAT	ION	S						
	С	SITE	E # N	MD/NC	H/P	TIME	IN T	IME O	UT E	F SE	EC I	ENGTH	WID	TH	EN	ICL V	OLT	FREQ	PLSE	MAKE	MDL
	0	22	2	EF/1	1	122	2	1240	)	357	, 	210	4.3	5	(	0 3	800	60	Fixed	Coffelt	Mk X
١TS	C																				
MEN																					
OMI																					
C																					
								OTH		ND	IVIDU	JAL FIS	H DAT	A							
С	SIT	E#I	MD/N	NO H/F	SF	PECIES	LEN (m	GIH m)	WEIG (ams	HI ಬ	SEX	MAT						26	CC	OMMENTS	
							(11	)	(gine	,					54						
															_		_				
					<u> </u>																
					-							_			_						
					-										+		+				
												_			-						
					-																
					-																
					1																



Geesdale Creek Site 22: View upstream from centre of site (Roll HG5 - Exp 10; CD 1 - Im 91)



Geesdale Creek Site 22: Aerial view upstream of creek basin (Roll HG5 - Exp 12; CD 1 - Im 93)

# **APPENDIX XXIII**

#### UNNAMED TRIBUTARY TO GEESDALE CREEK

(235-492500-43800-13500)

#### Sample Site 23

												SI	Έ (	CA	RD												
STF	REA	MNA	AME	Un	name	ed tri	butar	y to Ge	esdal	e Cree	k								FIEL	D	COORDINA	TES	56°	54.0	8' 123°	02.9	0'
			0						14/4	TEDO			00		00500	. 400	00.4	250	0								
		4P # I #	94	4B/14				23		LERS E LITM		JODE 487	23	5-4	6305	251	1-006	3500		н	200 M	тн	DE	ACC	1500 C		
	(Ch	#	2001/	08/23			L#	1025	AGI	ENCY		iversifie	d Fr	virc	onmen	tal S	ervic	es L	CRE	N	BC/DC	FIS	SH F	ORM	Y X	N	<u> </u>
ол (	ЭНА	NNE	L (m)	m	eth			1020	7101			Troronne					G			%	EMS			0.0			5
CH				N	//S	3.	70	1.90	2.	70	2.90	2.70		2.80	) 2	.78	met	h	AL	/0	TEMP (°C)		1.0	TUF		(	/AT
WE	тте	ED W	IDTH	Ν	/IS	3.	60	2.50	2.	90	2.90	2.70		1.70	) 2	.72	2	.0			Ph	-	-		Clear		ER
RE	S PC	DOL	DEPT	I N	/IS	0.	16	0.15	0.	11	0.10	0.27	(	).18	3 0	.16	3	.0			FLOOD SIG	GNS	0.7	m - F	۶D		
Wb	DE	PTH	0.45	0	.36	0.	43	STAGE		Mod	erate	N	) Vis	Ch	nan		Dry/	/Int			BED MATE	RIA	_				
		С	OVER	To	tal			Tra	ace (	5%)		De	ewate	er			Trib	S			Dominant	Co	bble	(64-2	56 mm	)	
	type	SV				B	U		)P	OV T				/N (	CLOS						Subdom.	Gra	avel (	2-64	mm)		Ň
- 4	amt							5	5				8	ò	%	%(					D95 (cm)	46	<u></u>	D (C	<b>m)</b> 20		DRF
/ER	loc			P Fev	N	Р			Р	P Even		P %	-20	1	1-4(	1-90	%06					NCF					ЧЧ
0					tical			RB SH		Vertic	al			-	2 3		^					R3	D1	D2		C2	Б
Ŭ		TEX		Fin	es			TEXTU	RE	Fines			STP				ae					51 S1	S2	S3	S4	-02	GΥ
		RIP	. VEG.	Co	nifer	ous	_	RIP. VE	G.	Conife	rous		EGE		TION	Mos	ss				PATTERN	Irre		r Wa	nderina		-
		STA	GE	You	ung F	Fores	st	STAGE		Yound	Fore	st									ISLANDS	No	ne				
					0														_		BARS	Sid	е				-
																					COUPLING	Pa	rtially	Cou	pled		
																					CONFINED	Fre	quer	ntly C	onfined		
RE	С	NID	MAP	#_ NI	D #	TY	ΈE	HT/LG	(m)	mtho		PHOT	0				C	OWN	/ENTS	S				l	JTM		
TUF											R	F		_													
EA.				_							R	F		+													
ш.																		`									
01	Beau	ver Da	ID MAP #       NID #       TYPE       HT/LG (m)       mthd       PHOTO       COMMENTS         Image: Second condition of the second conditis and the second conditis and the second co															Homogenous F	ed		S4	Extensive	Bare				
B1	Abar	ndoned	NID MAP #       NID #       TYPE       HT/LG (m)       mthd       PHOTO       COMMENTS         Image: Second Channel       Secon															Sediment Finge	ers		S5	Extensive	Scour	rs			
B2	Erod	ling Ba	ID MAP # NID # TYPE HT/LG (m)       mthd       PHOTO       COMMENTS         R       R       F       Image: Second S															3	Sediment Wed	ges							
			D MAP #       NID #       TYPE       HT/LG (m)       mthd       PHOTO       COMMENTS         R       R       F       R       F       R       F       R       F       R       F       R       F       R       F       R       F       R       F       R       R       F       R       R       R       F       R																								
E	Y	NID MAP # NID # TYPE HT/LG (m)       mthd       PHOTO       COMMENTS       UTM         R       F       R       F       Image: State of the state of t																									
۹TI		R       F       R       F       R       F       R																									
HAE	7N7																										
E G	27																										
_	R	ווכ	FRAM	F FC	)CAI	IN	DIRE		J								C	OMM	/FNTS	5							
NO!	Н	G5	1	1	wd			u	view	v u/s fr	om bo	ttom of	site														
ГАТ	Н	G5	2		wd			u	view	v u/s fr	om ce	ntre of s	site														
EN	Н	G5	3		wd			d	view	v d/s fr	om top	o of site															
ΝN	Н	G5	4		wd			u	aeri	al view	upstr	eam															
OCI																											
Ō O																											
DTC																											
PH(									-																		
111	G	ROL	JP			N		IFF OF	SFR	RVATIO	)NS				GRO	UP				N	/II DI IFF OF	SF	RVA <sup>-</sup>	τιον	S		
ΠΗ	Ŭ	MAN	1 M	oose											0.10	••									Ť		
ILDI														+													
$\mathbb{N}$																											
		С																									
G	С	X1	Electro	o-fishi	ng e	effort:	324 :	seconds	s @ 2	250 vol	ts. No	fish ca	pture	:d.													
NT																											
ME																											
NO																											
0																											

									F	ISH	COL	LECTIC	N FOF	RM							
STR	REAN	M NA	ME	U	nnam	ed tribut	ary t	o Geesdal	e Creek				_				LAKE	X	STREAM	/ W	'ETLAND
LOO		ON		_									WATE	ERSI	HED	CODE	235-4	192500	-43800-13	3500	
				)		- h			NISM		94B	/14 NIL	) NO			SITE/L/			1 1 ACHE		N
PR	DJE(	JIIL	ך ר סנ	Halfwa	ay-Gra	aham O	/ervie	ew	REACE	1#	Divora	SII fied Envir		23		FISH P					
DA			20	JU 1/Uo	123	10	200	1/06/23	AGENC	) ľ	Divers	neu Envir	onnenta	i Sei	vices				SC/DC	RE-SP	MPLE
Q	S	ITE :	#		1AP #	NID #		SITE	UTM		METH	IOD/NO.	STRE/				-		COMM	ENTS	
THC		23						10 487000	1 63058	51	FF	1	1 EMP		UN	LOKB C					
ME		20						10.407 000		51		· ·	7.0			0					
/ Э.																					
SIT																					
		- "			L				105	TO							FIOI	LAOT			0
~	SII	E#	MI		H/F		C S	STAGE	AGE	10			N (mm)	IVI	ax li	N (mm)	FISH	ACT	(	JOMMENT	8
AR		5		_ / / I			0				0										
MM																					
SU																					
ISH																					
ш																					
97																NET /		SDECI	FICATIO	MS	
эЕС	С	SIT	E#	MD/N	OH/F	DAT	E IN	TIME	IN DA	TE (		IME OUT	NET T	YPE	LE		DE	PTH	MESH S	IZE SET	HAB
R SI	-				-																
EA																					
0																					
	C	SIT	E #				IN					ER SPEC			5 EN			EREO	PI SE	MAKE	MDI
	0	2	3	EF/1	1	103	30	1050	)	324		200	2.72	2		) 2	50	60	Fixed	Coffelt	Mk X
S	С																				
ENT																					
MM																					
S																					
										ND	IVIDU	AL FIS	H DAT.	A							
С	SIT	F#	MD/		P SI	PECIES	L	ENGTH	WEIG	ΗT	SEX	ΜΑΤΙ	JR		1	AGE			00	MMENTS	
Ľ	•					20.20		(mm)	(gms	5)	0_/		S	TR	SAI	MPLE #	AG	E	00	2	
												_									
					-		+								-			_			
																		_			
					_		_														
					_		-											_			
												1									
	_	T								_				-							



Unnamed tributary to Geesdale Creek Site 23: View upstream from bottom of site (Roll HG5 - Exp 1; CD 1 - Im 95)



Unnamed tributary to Geesdale Creek Site 23: Aerial view upstream (Roll HG5 - Exp 4; CD 1 - Im 98)

## **APPENDIX XXIV**

#### UNNAMED TRIBUTARY TO GEESDALE CREEK (235-492500-43800-50500)

## Sample Site 24

												SI	ΤE	C	ARI	C												
STF	REA	M NA	ME	Unr	name	ed trib	outary t	o Gee	sdale	e Creek										FIE	LD	COORDINA	TES	56°	54.5	9' 123	° 10.5	58'
LOC	CATI	ION																										
NTS	5 MA	۹Р #	94	B/14		NID	NO	04	WA	TERSH	ED (		1	235	-492	500-	4380	00-5	0500			000		<b>DC</b>	100			
RE/		#	2001/0	0/22		SILE	:# - 1	24	SIL		10	489	918 od	6 Env	63	30719 mont	93	SII		ENG					ACC	ESS		H
DA			2001/0	0/23	- 41-			1121	AGE			iversin	eu	EUA	Ironi	nenta	ai Se				: VV		FIS				. IN	_
				me		4.0		1 50	5 (		10	2.00	<b>.</b> 1	5	00	av	/g 27	GR	KADI h		%			2 0			v	AN A
СП/ WF		ע ח= W ח:		M	15	4.9		+.50 3.60	0.8 6.4	10 4	. 10	3.90	י א	5. 4	90 40	4.0	30 30	111eu 2	5	AL		Ph		5.0		Clear	т •	Η̈́
RES	S PC		ТЕРТН	M	15	0.0		) 10	0		.00	0.16	, ,	0	18	0.4	14	2.	0				SNS	07	m - F			~
Wb	DEF	РТН	0.30	0.4	42	0.3	8 <mark>S</mark>	TAGE	0.	Mode	rate	0. K	lo V	/is (	Chan	0.		Dry/	'Int			BED MATE	RIA	0.1				
		С	OVER	Tot	al			Tra	ce (5	5%)		C	)ew	ater				Trib	s			Dominant	Co	bble	(64-2	56 mm	1)	
	type	S٧	/D L\	ND		в	U	D	P	OV		V C	RC	IWC	N CL	.OSL	JRE					Subdom.	Gra	avel (	2-64	mm)		7
	amt	Т	-	Т	[	D	Ν	S	5	Т		N			<i>.</i>	Ŷ	Ŷ	Ì				D95 (cm)	28		D (c	m) 23	3	l QF
К	loc	F	)	Ρ	I	P	Р	F	)	Р		Р		s0%	40%	-70%	606-	%0				Morph. Rif	fle-p	ool				ЯРН
OVE		LW	D FNC	Few	V		DI	ST	_	Even		0	š O	4	21.	4	71.	6~				DISTURBA	NCE		ICAT	ORS		ē
ö		LB S	SHAPE	Ver	tical		R	B SHA	PE	Sloping			0	1	2	3	4	5				O1 B1 B2	В3	D1	D2	D3 C	1 C2	QG
		TEX	TURE	Fine	es		TE	EXTUR	RE	Fines		II	VS	TRE	AM		Non	е				C3 C4 C5	S1	S2	S3	S4		~
		RIP.	VEG.	Con	hifero	ous	RI	P. VE	G	Conifer	ous	V	'EG	SET.	ATIC	ON						PATTERN	Irre	gula	r War	ndering	J	
		STA	GE	Mat	urel	Fores	t ST	FAGE		Mature	Fore	st										ISLANDS	No	ne				
																						BARS	Sid	le				_
																						COUPLING	Par	rtially	Coup	bled		-
	6			NIII	<b>4</b>	TVI			(m)	noth d					_			00				CONFINED	Fre	equer		ITM	ג 	
JRE	C		WAP #		U #		2E H	T/LG (	(m) 	mina											5				Ľ			
ATL											R													-				
FE/											R	F	:															
										DIS	TUR	BANC	E II	NDI	CAT	ORI	LEG	END	)									
01	Beav	er Dar	n		B3	Avulsi	on			D3 Rec	ent LV	VD jam			C3	Eleva	ted B	ar		:	S1	Homogenous E	led		S4	Extensiv	e Bars	
B1	Abar	ndonec	IID MAP #       NID #       TYPE       HT/LG (m)       mthd       PHOTO       COMMENTS         Image: Second structure       R       F       Image: Second structure       R       F       Image: Second structure															Sediment Finge	ers		S5	Extensiv	e Scour	rs				
B2	Erod	ing Ba	ID MAP # NID # TYPE       HT/LG (m)       mthd       PHOTO       COMMENTS         Image: R       F       Image: R       F<															S3	Sediment Wed	ges								
			D MAP # NID # TYPE       TYPE       HT/LG (m)       mthd       PHOTO       COMMENTS         R       F       R       F       R       F       R       F       R       F       R       F       R       F       R       F       R       F       R       R       F       R       R       F       R <td< th=""><th></th><th></th><th></th><th></th><th></th><th></th><th></th></td<>																									
λT	Ł	Mod	Initial       PHOTO       COMMENTS         R       F       R       F         R       F       R       F         R       F       R       F         R       F       R       F         R       F       R       F         R       F       R       F         R       F       R       F         R       F       R       F         R       F       R       F         R       F       R       F         R       F       R       F         R       F       R       R         R       F       R       R         R       F       R       R         R       R       F       R         R       R       F       R         R       R       R       R         R       R       R       R         R       R       R       R         R       R       R       R         R       R       R       R         R       R       R       R         R       <																									
3IT/	ALIT	Low	Image: Normal State in the image in the																									
HAE	JU,																											
E	37																											
	RC		FRAME	FO	CAL	LN [	DIREC	TION										CC	DMN	ЛЕNT	S							
NO!	H	G5	5		wd		u		view	u/s fro	m bo	ttom of	f sit	e														
ГАТ	H	G5	6		wd		u	1	view	u/s fro	m ce	ntre of	site	Э														
EN	H	G5	7		wd		d		view	d/s fro	m top	o of site	Э															
NN	H	G5	8		wd		u		aeria	al view u	ipstr	eam																
0C																												
Ō																												
OTO																												
ΡH				-		-+																						
111	G	ROU	P			W	II DI IF	E OB	SER	VATIO	NS				G	ROU	IP				W		SFE	RVA <sup>-</sup>	TION	S		
Щ		MAM	Ca	ribou																								
LDI																												
$\geq$																												
	(	C																										
(0)	C	X1	Electro-	fishir	ng ef	ffort: 2	288 se	conds	@ 2	250 volts	s. Bu	ll trout	cap	oture	ed.													
NTB																												
ME		-																										
MO																												
õ		-																										
		-																										

								F	ISH	COL	LEC	TIO	N FOF	RM							
STF	REAN	M NAME		Unn	ame	d tributar	ry to Geesdal	e Creek									LAK	KE X	STREAM	/ W	ETLAND
LOC		ON										=	WATE	RSF	HED (	CODE	235	-492500	-43800-50	0500	
WA	IER	BODY	D					NISM	ΑΡ 	94	B/14		NO			SITE/LA	AKE			ΟΥΥ	N
PRO	JJF(	טו ו <i>ג</i>	Half	way-	Gra	ham Ove		REACH	1#	Disco	6	SIT		24		FISH P			2001-032		
DA	E	-	2001/	08/2	3	to 2	001/08/23	AGEN	ĴΥ	Divers	SIFIED	Enviro	onmental	Ser	vices	CR			SC/DC	RE-SA	MPLE
Q	S	ITE #	NID	MA	P #	NID #	SITE	UTM		MET	HOD/	'NO.	STREA						COMM	ENTS	
ГНО		24					10 / 9019	6 63071	03		· [	1	1EMP	C	JN	TURB					
MEJ		24					10.40910	0.03071	95	LI		1	0.0			U					
E / I																					
SITI																					
	SIT	E# N	ITD/N	10	H/P	SPECI	ES STAGE	AGE	TO	TAL N	IO N	1IN LI	N (mm)	MA	AX LN	l (mm)	FIS	SH ACT	(	COMMENT	S
RΥ	2	4	EF/1		1	BT				4		1	72		17	7	R	earing			
IMA																					
NUS																					
н																					
FIS																					
SS																NET / T	<b>FRA</b>	P SPECI	FICATIO	NS	
SPE	С	SITE #	MD/	'NO	H/P	DATE	IN TIME	IN DA	TE (	DUT 1	TIME (	OUT	NET TY	YPE	LEI	NGTH	D	EPTH	MESH S	IZE SET	HAB
AR (																					
GE/																					
								ELE	CTF	ROFIS	HERS	SPEC		ONS							
	С	SITE #	MD/	'NO	H/P	TIME	IN TIME C		FSE	EC	LENG	TH	WIDT	TH	EN		DLT	FREQ	PLSE	MAKE	MDL
		24	EF	/1	1	1125	5 1140	)	288	3	20	0	4.3		0	3	00	60	Fixed	Coffelt	Mk X
S	С																	•			
ENT																					
MM																					
CO																					
									IND	IVIDI	JAL	FISI	H DAT	A							
0	OIT				00		LENGTH	WEIG	HT			44.71			A	GE			00		
C	511		//NO	H/P	5P	ECIES	(mm)	(gm:	S)	SE/	X P	VIATC	S S	TR	SAN	/IPLE #	A	GE		DIVINENTS	
	2	4 E	F/1	1		BT	177						Sc	cale	2	21-1	2	+			
	2	4 E	F/1	1		BT	173						Sc	ale	2	21-2	2	+			
	2	4 E 1 E	F/1 E/1	1		BI	172						50	cale	2	21-3	2	+			
			. / 1	'			115							Juie		4					
															-						
																	1				
															-						
										L											



Unnamed tributary to Geesdale Creek Site 24: View upstream from bottom of site (Roll HG5 - Exp 5; CD 1 - Im 99)



Unnamed tributary to Geesdale Creek Site 24: Aerial view upstream (Roll HG5 - Exp 8; CD 1 - Im 102)

## **APPENDIX XXV**

#### UNNAMED TRIBUTARY TO CYPRESS CREEK (235-492500-53800)

## Sample Site 25

												Sľ	TE (	СА	RD												
STR	REA	M NA	AME	Unr	name	ed trib	outary	to Cyp	ress	Creek									FIE	D	COORDINA	ΓES	56°	56.20	)' 123°	05.0	4'
LOO	CAT	ION																									
	S MA	ΑP #	94	B/14		NID			WA	TERSH	ED (		23	35-4	49250	0-53	800				000		<b>DF</b>		500		
RE/		#	2001/0	0/01		SILE	= #	25	SII		10	494	910 24 E		630	1061 Intel 9	Sonvia		ENG		200 ME			ACC	ESS		1
DA	E		2001/0	8/21		I IIVII		1608	AG	ENCY	U	iversiti	ea El	nvir	onme	intal :	Servic	ces	CRE	: VV	BC/TE	FIS			Y X	IN	_
	HA	NNE	L (m)	me	eth		-0	F 70		20 4	70	5.00	-1			avg	G		IENI	%	EMS		0	CON			NA.
			иртн иртн	IV M	15	4.5		5.70	5. 3	30 4. 90 4	70 60	5.20		5.5 3 1	0	5.15 4.02	me	2 0	AL		TEMP (°C)	4	Z	TUR	Clear		Ē
				M	10	4.0	11	4.00	). 0	20 0	21	4.50		0.1	1	4.02 0.17		2.0	<u> </u>				0.8	m - P			20
Wb	DE	PTH	0.45	0.4	40	0.1	19 S	STAGE	0.	Moder	ate	0.20	o Vis	3 Cl	han		Drv	//Int		1	BED MATE	RIAL	0.0	111 - 13	U		
		С	OVER	Tot	al	-		Modera	ate (	5-20%)		D	ewat	er	-		Tril	bs			Dominant	Coł	ble (	(64-25	56 mm)		
	type	S٧	VD L	WD	E	3	U	D	P	OV		V C	ROV	٧N	CLO	SUR	E				Subdom.	Gra	avel (	2-64 r	nm)		~
	amt	٦	r	Т	0	D	Т	5	S	N		N		Τ	<u>``</u>		,				D95 (cm)	57		D (cr	n) 7		l OF
К	loc	F	2	Р	F	>	Р	F	D	Р		Р	%0	2	40%	06	%C				Morph. Riff	le-po	loc				RPF
DVE		LWI	D FNC	Few	V		C	DIST		Even		6		-	21.	7 1	6^				DISTURBA	NCE	IND	ICAT	ORS		Ρ
ö		LB S	SHAPE	Ver	tical		F	RB SHA	PE	Sloping		(	) 1	1	2	3 4	5				O1 B1 B2	В3	D1	D2 [	D3 C1	C2	OG
		ТЕХ	TURE	Gra	ivel/C	Cobbl	e T	EXTU	RE	Gravel/0	Cobb	ole IN	ISTF	REA	AM	Al	gae				C3 C4 C5	S1	S2	S3 S	54		~
		RIP	. VEG.	Con	nifero	ous	F	RIP. VE	G.	Coniferent	ous	V	EGE	TA	TION						PATTERN	Sin	uous				
		STA	GE	Mat	ure F	Fores	st S	STAGE		Mature	Fore	st									ISLANDS	Nor	ne				
																					BARS	Sid	e	0	11		
																					COUPLING	Par	tially	Coup	led		
	C				D #	TVI			(m)	mthd			$\sim$	_			C			C	CONFINED	FIE	quei				
JRE	C		/ IVI/~\F #		U #			III/LG	(111)	munu	R						U			3		<b></b>		U			
ATI											R	F		-								-					
H											R	F		╈								<b>—</b>					
										DIS	ΓUR	BANCI	E INI	DIC	САТО	R LE	GEN	D									
01	Beav	/er Dai	m	IAP #       NID #       TYPE       HT/LG (m)       mthd       PHOTO       COMMENTS         Image: Application of the set															Homogenous B	ed		S4 E	Extensive	Bars			
B1	Abar	ndoned	d Channel	IAP # NID # TYPE HT/LG (m) mthd       PHOTO       COMMENTS         R       F       R       F         R       F       R       F         R       F       R       F         R       F       R       F         R       F       R       F         R       F       R       F         R       F       R       F         R       F       R       F         R       F       R       F         R       F       R       R         R       F       R       R         R       F       R       R         R       F       R       R         R       F       R       R         R       F       R       R         R       F       R       R         R       F       R       R         R       R       F       R         R       R       F       R         R       R       R       R         R       R       R       R         R       R       R       R      R															Sediment Finge	ers		S5 E	Extensive	Scour	S		
B2	Erod	ing Ba	ink	AP # NID # TYPE       HT/LG (m)       mthd       PHOTO       COMMENTS         R       F       R       F       Image: State seasonal rearing for BT, MW and RB; limited cover - boulders and shallow pools.       State seasonal rearing for BT, MW and RB; limited cover - boulders and shallow pools.															S3	Sediment Wed	jes						
		Mod	lorato or	AP #       NID #       TYPE       HT/LG (m)       mthd       PHOTO       COMMENTS         AP #       NID #       TYPE       HT/LG (m)       mthd       PHOTO       COMMENTS         AP #       NID #       TYPE       HT/LG (m)       mthd       PHOTO       COMMENTS         AP #       NID #       R       F       Image: Commentary of the state of the s																							
'AT	Σ	IVIOU	MAP #       NID #       TYPE       HT/LG (m)       mthd       PHOTO       COMMENTS         Image: Second Sec																								
BIT	JAL		R       F       R       F       R       F         R       R       F       Image: Second method with the second with second																								
ЧA	g																										
F	δZ																										
Z	R	<u>ÓLL</u>	FRAME	FO	CAL	LN	DIRE	CTION									С	OM	MENT	S							
TIO	H	G4	14		wd			u	viev	v u/s fror	n bo	ttom of	site														
١TA	<u>H</u>	G4	15		wd			<u>u</u>	viev	v u/s fror	n ce	ntre of	site														
<b>AEN</b>		G4	16		Wd			d 	viev	v d/s fror	n top	o of site	1														
SUN		G4	17		wu			u	aen	ai view u	psu	eann															
ŏ																											
0																											
Ю																											
Ы																											-
Ш	G	ROL	IP			W	ILDLI	FE OB	SEF	RVATIO	IS				GR	DUP	_			V	VILDLIFE OE	SEF	RVAT	<b>FIONS</b>	S		
DLIF		MAN	1 Mo	ose																							
VILL														_													
>																											
	с С	U X1	Electro	fichir	na of	fort <sup>.</sup>	350 0	oconde	<u> </u>	250 volte	No	fich co	ntur														
S	C C	21	Boulder	's als		esent	in hic	nh prop	ortio	200 voita n	. 110		plui	su.													
EN			20000	2 010	2 10				5.00																		
MM																											
00																											
																											_

									F	ISH	COLL	ECTIO	N FOF	RM							
STF	REAN	M NA	ME	Unr	name	ed tributa	ary to C	Cypress	Creek								LAKE	Х	STREAM	1 W	ETLAND
LOO		ON									040/		WATE	ERSH	HED C	CODE	235-49	92500	-53800		<u> </u>
					0	h a m 0			NISM	чР 1 <i>#</i>	94B/	14 NIL		05	°				2001 032		N
			) <u>H</u>		-Gra	nam Ov		0/04	REACE	1 #	Diversit	SII ind Envir		25	, iaaa			# 30/			
DA			200	)1/00/2	. 1	10 2	2001/0	10/21	AGENC	<i>,</i> 1	Diversi								BC/TE	RE-5A	
D	S	ITE #	≠   Ւ	IID MA	νP #	NID #		SITE	UTM		METH	OD/NO.	TEMP						COMM	ENTS	
THC		25					10	49491	0 63010	51	FF	1	42			C					
ME																-					
/ Э.																					
SIT																					
		- "	N ATE			0050			105	TO	TAL NO						FIGU	1 OT			0
1	2	E#		J/NO =/1	H/P 1	SPEC	IES 3	STAGE	AGE	10		MIIN L	N (MM)	IVIA	AX LIN	(mm)	FISH	ACT	(	OMMENT	5
AR		5		/1							0										
MM																					
SU																					
ISH																					
ш																					
																			FICATIO		
эЕС	С	SITE	E# N	1D/NO	H/P	DATE	IN	TIME	IN DA	TE (		ME OUT	NET T	YPE	LEN	IGTH	DEF		MESH S	ZE SET	HAB
R SI	-																				
EAI																					
0																					
	C	SITE	= # N		LI/D		INI				ROFISH				ENC			DEO		MAKE	MDL
	0	25	- # IV	EF/1	1	161	0	1630		350		200	4.02	2	0	2	50	60	Fixed	Coffelt	MkX
S	С												-								
≣NT																					
MMI																					
CO																					
										ND	IVIDU	AL FIS	H DAT	A							
C	SIT	E # 1		ОЦ/Р	SD		LEN	NGTH	WEIG	ΗT	SEX	ΜΑΤΙ	IP		A	GE			00		
Ŭ	011				0	LOILO	(r	nm)	(gms	5)	OLX	WIATC	S S	TR	SAM	IPLE #	AGE		00		
				_											-						
				_																	
				-																	
												-									
				_																	
				_																	
				_																	
		1																			



Unnamed tributary to Cypress Creek Site 25: View downstream from top of site (Roll HG4 - Exp 16; CD 1 - Im 105)



Unnamed tributary to Cypress Creek Site 25: Aerial view upstream (Roll HG4 - Exp 17; CD 1 - Im 106)

# **APPENDIX XXVI**

#### UNNAMED TRIBUTARY TO CYPRESS CREEK

(235-492500-53800)

#### Sample Site 26

												SIT	ΈC	CAR	RD												
STE	REA	MNA	AME	Unr	name	ed trik	butar	y to Cyp	oress	Creek									FIELD	) (	COORDINA	TES	56°	50.2	2' 123	° 03.5	51'
							NO		10/0	TEDO			221	E 40	2500	520	00										
RE		чр # I #	94	+D/ 14				26	SIT	FUTM	10	4963	23:	5-49 F	2300	-530 40	SIT	ΈIJ	ENGT	4	200 M	тн	RF	ACC	ESS.		н
DA <sup>T</sup>	ΓE		2001/0	08/21		ТІМ	E _	1530	AGI	ENCY	D	iversifie	d En	viror	nment	al S	ervic	es E	CREV	v	BC/TE	FIS	SH F	ORM	Y	( N	
(	СНА	NNE	L (m)	m	eth										a	vq	GF	RADI	IENT %	, 0	EMS			CO	ND		≶
CH		IEL V	VIDTH	N	1S	2.8	80	2.60	3.	40	3.50	3.50	3	.10	3.	15	met	h	AL		TEMP (°C)	3	3.0	TUF	RBIDIT	Υ	ATE
WE	TTE	ED W	IDTH	N	1S	2.8	80	2.60	3.	40	2.80	2.20	2	.00	2.	63	4.	.0			Ph				Clea	r	R
RE	S PC	DOL	DEPTH	I N	1S	0.1	13	0.15	0.	13	0.14	0.12	0	.14	0.	14	3.	.0			FLOOD SIG	GNS	0.9	m - F	RD		
Wb	DE	PTH	0.42	0.	.50	0.4	45	STAGE		Mode	erate	No	Vis	Cha	In		Dry/	/Int			BED MATE	RIA	-	(0.4.0			
		0		l ot				Tra	ace (	5%)		De	wate	r			Irib	S			Dominant	Co	bble	(64-2	256 mn	ו)	-
	type	SV				В	U S		<u>۹ر</u>		+ '			NC	LOSI	JRE					Subdom.	38 R0	ulder	(> 2:	$\frac{1}{2}$	)	MC
~	amt		2	P		P	P	, ,	9 P	P	-	P	%	%0	%0	%0	%				Morph Rif	le-n	ool	ם (נ	20	)	RP
VEF	100	LW	D FNC	Few	v			DIST		Even	-	. %0	1-20	21-4	41-7	71-9	,06<				DISTURBA	NCE	E INC		FORS		HOI
CO		LB S	SHAPE	Ver	tical			RB SH/	APE	Vertica	al	0	1	2	3	4	5				O1 B1 B2	B3	D1	D2	D3 C	1  C2	0
		TEX	TURE	Fine	es		-	TEXTU	RE	Fines		IN	STR	EAN	1	Alg	ae				C3 C4 C5	S1	S2	S3	S4		¥
		RIP	. VEG.	Mix	ed C	2 & D		rip. Ve	G.	Mixed	C & E	) VE	GET	ATI	ION						PATTERN	Sin	uous	5	•		
		STA	GE	You	ing F	Fores	t	STAGE		Young	Fore	st									ISLANDS	No	ne				
																					BARS	Sid	e				
																					COUPLING	Pa	tially	Cou	pled	4	-
27	C	NIF	MAD	H NII	D #	TV	DE	HT/LC	(m)	mthd			<b>`</b>	_			<u> </u>				CONFINED	FIE	quei			J	
JRE	U	INIL		- INH	υ #		·	III/LO	(11)	mulo	R											1					
ATI		-									R	F		-													
Ш											R	F															
										DIS	STUR	BANCE	IND	ICA	TOR	LEG	BEND	)									
01	Bear	ver Da	ID MAP #       NID #       TYPE       HT/LG (m)       mthd       PHOTO       COMMENTS         Image: Relevant of the state of th															Homogenous E	ed		S4	Extensi	e Bars				
B1	Aba	ndone	NID       MID #       TYPE       HT/LG (m)       mthd       PHOTO       COMMENTS         NID       MID #       TYPE       HT/LG (m)       mthd       PHOTO       COMMENTS         R       F       R       F															Sediment Finge	ers		S5	Extensiv	e Scou	irs			
BZ	Eroc	ling Ba	MAP #       NID #       TYPE       HT/LG (m)       mthd       PHOTO       COMMENTS         Image: Marked Mar															•	Sediment wea	ges							
		NID MAP #       NID #       TYPE       HT/LG (m)       mthd       PHOTO       COMMENTS       UTM         Image: Strain S																									
TAT	Ę	NID MAP # NID #       TYPE       HT/LG (m)       mthd       PHOTO       COMMENTS       UTM         R       F       R       F       Image: Second Seco																									
ABI	NAI		-	-																							
Т	Ø																										
F	SZ					I NI	חוח										00										
NO	R( H	JLL G4			wd	- LIN	DIRE		viev	uu/s fra	m ho	ttom of	site						IEN I S								
ATI	H	G4 G4	12		wd			u	viev	$\frac{1}{1}$ u/s from $\frac{1}{1}$	om ce	ntre of s	ite														
ENT	Н	G4	13		wd			u	aeri	al view	upstr	eam															
JME											-																
DC																											
Õ O									<u> </u>																		
DTC																											
Ηd																											
ш	G	ROL	IP			W	/ILDL	IFE OE	BSEF	VATIC	NS			(	GROL	JP				W	/ILDLIFE OE	BSEF	RVA <sup>-</sup>	TION	S		
LIF																											
(ILD																											
≤																											
	~	C V4	Clast.	fi-1-1	nc -	Hereit	244			050		fich															
လ	C	XI	Electro	D-TISNII	ng e	mort:	311 9	secona	s @ 2	250 VOI	S. NO	tish ca	oture	a.													
EN																											
MM																											
00																											

FISH COLLECTION FORM         STREAM NAME       Unnamed tributary to Cypress Creek       LAKE       X       STREAM       WETLANE																								
STF	REAN	M NA	ME	L	Inna	me	d tributa	ry to	Cypress	Creek									LAK	EX	STREA	M	WE	FLAND
			יי ער	、 –						NTS M		045	111 N		NATE	RSF	HED (		235-		-53800			N
			רינ ר	, Halfw	21/0	2rat			A/		-\ <b>⊢</b>   #	940	S 14 N		•	26	`	ы с/с/ сісн р			2001-032		Ť	IN
DAT	ΓE		2	001/0	8/21		to 2	2001/	08/21	AGENC	Υ ;	Divers	ified Env	ironr	nental	Ser	vices	CR	EW	E	BC/TE	RE	-SAM	PLE
														S	TREA	AM C		ITION					-	
OD	S	IIE i	#	NIDI	MAP	, #	NID #		SILE	UIM		MEI	HOD/NO	Т	EMP	C	NC	TURB			COMM	IENTS		
ЕТН		26						1	0.496386	6.629924	10	EF	1		3.0			С						
/ M																								
ITE						-								-										
S																								
	SITE # MTD/NO H/P SPECIES						STAGE	AGE	TO	TAL N	O MIN	LN (	mm)	MA	AX LN	l (mm)	FIS	H ACT		COMME	NTS			
RΥ	26 EF/1 1 NFC										0													
лмд						_																		
SUN																								
ISH																								
ш																								
8																		NFT /	TRAF	SPEC	FICATIO	NS		
PEC	С	SIT	E #	MD/N	IO F	I/P	DATE	IN	TIME	IN DA	TE (	τ τυς	IME OU	ΤN	ET T	YPE	LEN	NGTH	DI	EPTH	MESH S	SIZE SI	ET	HAB
\R S																								
GEA														_										
										ELE	CTF	ROFISH	IER SPE	CIF	CATI	ONS	}							
	С	SIT	E #	MD/N	IO F	I/P	TIME	IN	TIME C	UT E	f Se	C	ENGTH		WIDT	Н	ENC	CL VO	OLT	FREQ	PLSE	MAK	E	MDL
	0	20	6	EF/	1	1	153	5	1552	2	311		200		2.63	3	0	2	50	60	Fixed	Coffe	elt	Mk X
NTS	C																							
IME																								
NOC																								
											ND	IVIDI	JAL EIS	SHI		Δ								
C	SIT	<b>=</b> #				90	ECIES	LE	NGTH	WEIG	HT	QEV	MAT				A	GE			C		те	
C	311	⊏#	יטויו			SFI	ECIES	(	(mm)	(gms	5)	3EA	IVIA	UK	S	TR	SAM	1PLE #	AG	θE			13	
															-									
													_											
															_									
								<u> </u>																
				-+	+			-					-											
				+				<u> </u>							+									



Unnamed tributary to Cypress Creek Site 26: View upstream from centre of site (Roll HG4 - Exp 12; CD 2 - Im 108)



Unnamed tributary to Cypress Creek Site 26: Aerial view upstream (Roll HG4 - Exp 13; CD 2 - Im 109)

# **APPENDIX XXVII**

# UNNAMED TRIBUTARY TO CYPRESS CREEK (235-492500-60800)

#### Sample Site 27

	SITE CARD STREAM NAME Unnamed tributary to Cypress Creek FIELD COORDINATES 56° 50.54' 123° 07.70'																									
STF	REA	M NA	AME		Unna	amed	tributa	ry to Cy	oress	s Creek								FIE	LD	COORDINA	ΓES	56°	50.54	4' 123º (	J7.7C	)'
LOC	CAT	ION							_																	
NTS	S MA	\P #		94E	8/14	N	ID NO		WA	TERSH	ED C	CODE	235	5-492	500-60	800								(		
RE/	ACH	#		4/00	10.1	S	ITE #	27	SIT	EUTM	10	4921	47	62	299854	SI	TEL	ENG	TH	150 ME	TH	RF	ACC	ESS	Н	l
DA	E		200	1/08	8/21		IME	1442	AG	ENCY	D	iversified	En	/ironr	nental	Servi	ces	CRE	=VV	BC/TE	FIS		JRM	Y X	N	-
(	CHA	NNE	L (m	)	met	th				<u></u>					avg	G	RAD	IENT	%	EMS			CON	ID		٨N
CH/			ו עוע	н.	MS	5	4.30	3.50	3	.80 7.	10	6.40	4.	.00	4.85	me	eth	AL		TEMP (°C)	5	.0	TUR	BIDITY		ΤE
				ן דיי	IVIS	>	3.00	3.50	3	.10 2.	50	2.70	4.	50	3.13		1.0					0.01		Clear		λ
Wh		PTH		15	0.4	0	0.20	STAGE	0	.20 0. Moder	39 ate	0.41 No	U. Vis (	.50 Chan	0.41	Dr	v/Int		1	RED MATE	RIAI	0.0:	5 111 -	RD		
		C	OVE	R	Tota		0.10	Mode	ate (	(5-20%)	ato	Dev	vate	r		Tri	bs		•	Dominant	Gra	vel (	2-64	mm)		
	type	S٧	VD	LV	/D	В		U	DP	OV	l r	V CR	OW	N CL	OSUR	E				Subdom.	Cot	ble	(64-2			-
	amt	١	١	٦	Г	Т	:	s	D	N	1	N								D95 (cm)	33		D (ci	<b>m)</b> 9	_	<u>lo</u>
к	loc	F	2	F	2	Р		P	Р	Р		P	%0	40%	%06 %06	%(				Morph. Riff	le-po	ool				RPF
OVE		LWI	D FN	C	Few			DIST		Even		%0	42	21-	41-	6^				DISTURBA	NCE	IND	ICAT	ORS		þ
ö		LB S	SHA	PE	Unde	ercut		RB SH	APE	Undercu	ut	0	1	2	3 4	5				O1 B1 B2	B3	D1	D2	D3 C1	C2	0G
		ТΕХ	EXTURE Fines TEXTURE Fines INSTREAM None												C3 C4 C5	S1	S2	S3 (	S4		$\prec$					
		RIP	IP. VEG. Shrubs RIP. VEG. Shrubs VEGETATION													PATTERN	Irre	gulai	·Wan	Idering						
		STA	TAGE Shrub/Herb STAGE Shrub/Herb																	ISLANDS	Nor	ne				
																				BARS	Sid	e				
																				COUPLING	Dec	coup	ed			
	6	NUE		<b>D</b> #		<u></u> ч -			(m)	m th d		DUOTO								CONFINED	Und	COUL	lea			
JRE	C	INIL		P #	סוא	+ 1	TPE		(111)	muna	P			<b></b>		U			5			1	L L			
₹T											R	F		-												
FE/											R	F														
										DIST	rur	BANCE	IND	CAT	OR LE	GEN	D									
01	Beav	/er Dai	m		E	33 Av	ulsion			D3 Rece	ent LV	VD jam		C3	Elevated	Bar			S1	Homogenous B	ed		S4 I	Extensive F	3ars	
B1	Abar	ndoned	d Char	nnel	0	D1 Sr	nall Wo	ody Debris		C1 Exte	nsive	Riffles		C4	Multiple	Chann	nel		S2	Sediment Finge	rs		S5 [	Extensive §	Scours	;
B2	Erod	ing Ba	ank		0	D2 La	irge Wo	ody Debris		C2 Limit	ted Po	ools		C5	Disturbe	d Line	s		S3	Sediment Wedg	ges					
		-																								
٩T	≿	Mod	lerate	esea	asona	al rear	ing for	sport-fi	sh (B	BT, RB, N	1W).															
3IT/	ALI'	Limi	ted p	oter	ntial fo	or spa	wning	within th	ne si	te due to	high	fines in	subs	strate	•											
HAE	QU																									
FS	57																									
7	R	) DLL	FRA	ME	FOC	AL L	N DIR	ECTION	J							С	OMN	/ENT	ſS							
Í.	H	G4	8	;	,	wd		u	vie	w u/s fron	n bot	ttom of s	ite													
ГАТ	H	G4	9	)	,	wd		d	viev	w d/s fron	n top	o of site														
EN.	H	G4	1(	C		wd		u	aer	ial view u	pstre	eam														
NN																										
00																										
OTO																										
Ηd																										
ш	G	ROL	JP				WILD	LIFE OF	BSEF	RVATION	1S			G	ROUP				V	/ILDLIFE OB	SEF	RVAT		S		
LIF		MAN	1	Мос	se, w	/olf																				
ILD																										
$\geq$																										
	C																									
S	С	X1	Elec	tro-f	ishin	g effo	rt: 427	second	s @	250 volts	. Slir	my sculp	in we	ere ca	aptured											
NT	C	7	⊢ine	s als	so in s	signifi	cant p	roportior	1.																	
ME																										
NO																										
0																										

FISH COLLECTION FORM           STREAM NAME         Unnamed tributary to Cypress Creek         LAKE         X         STREAM         WETLAND																			
STF	REAM	NAME		Unna	amed tributa	ary to Cypress	s Creek							LAKE	Х	STREA	М	WE	TLAND
LOC	CATIO	N									WATE	RSHE	CODE	235-4	92500	-60800		_	
WA	TERB	BODY I	D				NTS MA	\P	94B/1	4 NIC			SITE/L/	AKE CA	ARD A	TTACHE	DX	Y	Ν
PR	DJEC	T ID	Half	way-	Graham Ov	erview	REACH	#		SIT	E#	27	FISH P	ERMIT	# SC2	2001-032	2		
DA	ΓE	2	2001/0	08/2 <i>°</i>	1 to :	2001/08/21	AGENC	Y Div	versifi	ed Enviro	onmental	Service	es CR	EW	E	BC/TE	RE	E-SAM	PLE
0	SIT	TF #		ΜΔΙ		SITE	штм	M	етно		STREA		DITION			COMM	IENTS		
10L	011					One		101		DEMO.	TEMP	CON	TURB			001111			
ΕŢ	2	27				10.49214	7.629985	4	EF	1	5.0		С						
/ MI																			
ΓE																			
S.			<u> </u>																
	SITE	:# M			H/P SPEC	IES STAGE	AGE		LNO	MIN LI	N (mm)	MAX	LN (mm)	FISH	ACT		COMM	ENIS	
ſRΥ	27		EF/1		1 00	3		9	,	4	·0		92	Rea	aring				
٩MI																			
NN																			
нS																			
N IS																			
92														TRAP	SPECI	FICATIO	NS		
ЪЕС	CS	SITE #	MD/	'NO					т тім		NET TY	PF I	ENGTH	DEF		MESH	SIZE	SET	HAB
SF	0		11127		Dreit		int Dirth							DLI		MEONIC			10.0
EAF			+																
GE			+																
					·	4	ELE	CTROF	FISHE	R SPEC	IFICATI	ONS							
	CS	SITE #	MD/	'NO I	H/P TIME	IN TIME C	DUT EF	= SEC	LE	NGTH	WIDT	ΉE	NCL VO	OLT F	REQ	PLSE	MAł	<e< th=""><th>MDL</th></e<>	MDL
		27	EF	/1	1 144	6 150	5	427		150	3.13		0 2	50	60	Fixed	Coff	elt	Mk X
		27 EF/1 1 144																	
S	С			l															
ENTS	C																		
MMENTS	С																		
COMMENTS	С																L		
COMMENTS	С																· · · · · · · · · · · · · · · · · · ·		
COMMENTS	C					LENGTH	WEIGH		IDUA	AL FISI	H DAT/	4	AGE						
O COMMENTS	C SITE	E # MD	)/NO	H/P	SPECIES	LENGTH (mm)	WEIGH (ams	NDIVI	IDUA Sex	L FISI MATU		A IR IS	AGE	AGE		C	OMMEN	NTS	
COMMENTS	C SITE	E # MD	)/NO	H/P 1	SPECIES	LENGTH (mm) 92	WEIGH (gms	NDIVI HT 5	IDUA SEX	NL FISI MATU		A FR S/	AGE AMPLE #	AGE		C	OMMEN	ITS	
COMMENTS	C	E # MD	)/NO F/1 F/1	H/P 1 1	SPECIES CCG CCG	LENGTH (mm) 92 72	WEIGH (gms	NDIVI HT E	IDUA SEX	LL FISI MATU		A IR S	AGE AMPLE #	AGE		CC	ЭММЕ	ITS	
COMMENTS	C 	E # MD	9/NO F/1 F/1 F/1	H/P 1 1	SPECIES CCG CCG CCG	LENGTH (mm) 92 72 46	WEIGH (gms	NDIVI <sup>ΗΤ</sup> ξ	IDUA SEX	NL FISI MATU	H DAT/ JR ST	A TR SA	AGE AMPLE #	AGE		CC	OMME	NTS	
COMMENTS	C SITE 27 27 27 27	E # MD	7/NO F/1 F/1 F/1 F/1 F/1	H/P 1 1 1 1	SPECIES CCG CCG CCG CCG	LENGTH (mm) 92 72 46 54	WEIGH (gms	NDIVI HT 5	IDUA SEX	AL FISI MATU	H DAT/ JR ST	A FR SA	AGE AMPLE #	AGE		C	13MMC	NTS	
COMMENTS	C SITE 27 27 27 27 27 27	E # MD	9/NO F/1 F/1 F/1 F/1 F/1 F/1	H/P 1 1 1 1 1 1	SPECIES CCG CCG CCG CCG CCG CCG	LENGTH (mm) 92 72 46 54 59	WEIGH (gms	NDIVI HT s	IDUA SEX	LL FISI MATU	H DAT/ JR S	A IR S	AGE AMPLE #	AGE		Co		NTS	
COMMENTS	C SITE 27 27 27 27 27 27 27	E # MD	//NO F/1 F/1 F/1 F/1 F/1 F/1 F/1	H/P 1 1 1 1 1 1 1 1	SPECIES CCG CCG CCG CCG CCG CCG CCG	LENGTH (mm) 92 72 46 54 59 75	WEIGH (gms	NDIVI	IDUA SEX	L FISI MATU	H DAT/ JR ST	A TR S/	AGE AMPLE #	AGE		C	OMME	NTS	
COMMENTS	C SITE 27 27 27 27 27 27 27 27	<b># MD E</b>	//NO F/1 F/1 F/1 F/1 F/1 F/1 F/1 F/1	H/P 1 1 1 1 1 1 1 1 1 1	SPECIES CCG CCG CCG CCG CCG CCG CCG	LENGTH (mm) 92 72 46 54 59 75 75 73	WEIGH (gms		IDUA SEX	L FISI MATU	H DAT/ JR ST	A S	AGE AMPLE #	AGE		C	OMME	JTS	
COMMENTS	C SITE 27 27 27 27 27 27 27 27 27	<b># MD E</b>	//NO F/1 F/1 F/1 F/1 F/1 F/1 F/1 F/1	H/P 1 1 1 1 1 1 1 1 1 1 1 1	SPECIES CCG CCG CCG CCG CCG CCG CCG CCG	LENGTH (mm) 92 72 46 54 59 75 75 73 73 76	UWEIGH (gms		IDUA SEX	L FISI MATU	H DAT/ JR ST	A SA	AGE AMPLE #	AGE		Co		JTS	
COMMENTS	C SITE 27 27 27 27 27 27 27 27 27 27 27	#         MD            EI	/NO F/1 F/1 F/1 F/1 F/1 F/1 F/1 F/1 F/1 F/1	H/P 1 1 1 1 1 1 1 1 1 1 1 1 1	SPECIES CCG CCG CCG CCG CCG CCG CCG CCG CCG	LENGTH (mm) 92 72 46 54 59 75 75 73 76 48	UWEIGH (gms		DUA SEX	L FISI MATU	H DAT/ JR ST	A SA	AGE AMPLE #	AGE		Co	13MMC	JTS	
COMMENTS	C SITE 27 27 27 27 27 27 27 27 27 27	# MD	/NO F/1 F/1 F/1 F/1 F/1 F/1 F/1 F/1 F/1 F/1	H/P 1 1 1 1 1 1 1 1 1 1 1 1 1	SPECIES CCG CCG CCG CCG CCG CCG CCG CCG CCG	LENGTH (mm) 92 72 46 54 59 75 73 76 48	WEIGH (gms		IDU <sup>A</sup> SEX	AL FISI MATU		A SA	AGE AMPLE #	AGE		C	NMMC	NTS	
COMMENTS	C SITE 27 27 27 27 27 27 27 27 27 27 27 27 27	# MD	/NO F/1 F/1 F/1 F/1 F/1 F/1 F/1 F/1	H/P 1 1 1 1 1 1 1 1 1 1 1	SPECIES CCG CCG CCG CCG CCG CCG CCG CCG CCG	LENGTH (mm) 92 72 46 54 59 75 75 73 76 48	WEIGH (gms		IDU <sup>A</sup> SEX	AL FISI MATU	H DAT/ IR ST	A TR SA	AGE AMPLE #	AGE		Co	13MMC	NTS	
COMMENTS	C SITE 27 27 27 27 27 27 27 27 27 27 27 27 27	#     MD       -     EI	//NO F/1 F/1 F/1 F/1 F/1 F/1 F/1 F/1 F/1 F/1	H/P 1 1 1 1 1 1 1 1 1 1 1 1	SPECIES CCG CCG CCG CCG CCG CCG CCG CCG CCG CC	LENGTH (mm) 92 72 46 54 59 75 73 76 48	WEIGH (gms		IDUA SEX	L FISI MATU	H DAT/ JR S	A S/	AGE AMPLE #	AGE		Co	OMME	NTS	
COMMENTS	C SITE 27 27 27 27 27 27 27 27 27 27 27 27 27	#     MD       E     E       E     E       E     E       E     E       E     E       E     E       E     E       E     E       E     E       E     E       E     E       E     E       E     E       E     E	/NO F/1 F/1 F/1 F/1 F/1 F/1 F/1 F/1 F/1 F/1	H/P 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	SPECIES CCG CCG CCG CCG CCG CCG CCG CCG CCG	LENGTH (mm) 92 72 46 54 59 75 73 75 73 76 48	WEIGH (gms		IDUA SEX	L FISI MATU	H DAT/ JR ST		AGE AMPLE #	AGE		Co		JTS	
COMMENTS	C SITE 27 27 27 27 27 27 27 27 27 27 27	#     MD       -     EI	//NO F/1 F/1 F/1 F/1 F/1 F/1 F/1 F/1 F/1 F/1	H/P 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	SPECIES CCG CCG CCG CCG CCG CCG CCG CCG CCG	LENGTH (mm) 92 72 46 54 59 75 73 76 48	WEIGH (gms		SEX	L FISI MATU	H DAT/ JR ST	A SA	AGE AMPLE #	AGE		Co		JTS	
COMMENTS	C SITE 27 27 27 27 27 27 27 27 27 27 27	#     MD       .     EI       .     .       .     .       .     .       .     .       .     .       .     .       .     .       .     .       .     .	//NO F/1 F/1 F/1 F/1 F/1 F/1 F/1 F/1	H/P 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	SPECIES CCG CCG CCG CCG CCG CCG CCG CCG	LENGTH (mm) 92 72 46 54 59 75 73 76 48	li WEIGH (gms		DUA SEX	L FISI MATU	H DAT/ JR ST	A SA	AGE AMPLE #	AGE		Co		JTS	
COMMENTS	C SITE 27 27 27 27 27 27 27 27 27	#     MD       -     EI	/NO F/1 F/1 F/1 F/1 F/1 F/1 F/1 F/1	H/P 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	SPECIES CCG CCG CCG CCG CCG CCG CCG CCG	LENGTH (mm) 92 72 46 54 59 75 73 76 48	UWEIGH (gms		SEX	L FISI MATU	H DAT/ JR ST	A SA	AGE AMPLE #	AGE				JTS	
COMMENTS	C SITE 27 27 27 27 27 27 27 27 27 27	#     MD       -     EI	/NO F/1 F/1 F/1 F/1 F/1 F/1 F/1 F/1	H/P 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	SPECIES CCG CCG CCG CCG CCG CCG CCG	LENGTH (mm) 92 72 46 54 59 75 73 76 48	WEIGH (gms		SEX	L FISI MATU		A SA	AGE AMPLE #	AGE		Co		JTS	
COMMENTS	C SITE 27 27 27 27 27 27 27 27 27 27 27 27	#     MD       -     EI	/NO F/1 F/1 F/1 F/1 F/1 F/1 F/1 F/1	H/P 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	SPECIES CCG CCG CCG CCG CCG CCG CCG CCG	LENGTH (mm) 92 72 46 54 59 75 73 76 48	WEIGH (gms		IDUA SEX			A	AGE AMPLE #	AGE				NTS	
COMMENTS	C SITE 27 27 27 27 27 27 27 27 27 27 27 27	#     MD       -     EI       - <th>/NO F/1 F/1 F/1 F/1 F/1 F/1 F/1 F/1</th> <th>H/P 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1</th> <th>SPECIES CCG CCG CCG CCG CCG CCG CCG CCG CCG</th> <th>LENGTH (mm) 92 72 46 54 59 75 73 76 48 48</th> <th>WEIGH (gms</th> <th></th> <th>SEX</th> <th></th> <th></th> <th>A SA</th> <th>AGE AMPLE #</th> <th>AGE</th> <th></th> <th></th> <th></th> <th>JTS</th> <th></th>	/NO F/1 F/1 F/1 F/1 F/1 F/1 F/1 F/1	H/P 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	SPECIES CCG CCG CCG CCG CCG CCG CCG CCG CCG	LENGTH (mm) 92 72 46 54 59 75 73 76 48 48	WEIGH (gms		SEX			A SA	AGE AMPLE #	AGE				JTS	
COMMENTS	C SITE 27 27 27 27 27 27 27 27 27 27 27 27	#     MD       E     EI       E <th>//NO F/1 F/1 F/1 F/1 F/1 F/1 F/1 F/1</th> <th>H/P 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1</th> <th>SPECIES CCG CCG CCG CCG CCG CCG CCG CCG</th> <th>LENGTH (mm) 92 72 46 54 59 75 73 76 48</th> <th>WEIGH (gms</th> <th></th> <th>SEX</th> <th></th> <th>H DAT/ JR ST</th> <th>A SA</th> <th>AGE AMPLE #</th> <th>AGE</th> <th></th> <th></th> <th></th> <th>JTS</th> <th></th>	//NO F/1 F/1 F/1 F/1 F/1 F/1 F/1 F/1	H/P 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	SPECIES CCG CCG CCG CCG CCG CCG CCG CCG	LENGTH (mm) 92 72 46 54 59 75 73 76 48	WEIGH (gms		SEX		H DAT/ JR ST	A SA	AGE AMPLE #	AGE				JTS	



Unnamed tributary to Cypress Creek Site 27: View upstream from bottom of site (Roll HG4 - Exp 8; CD 2 - Im 110)



Unnamed tributary to Cypress Creek Site 27: Aerial view upstream (Roll HG4 - Exp 10; CD 2 - Im 112)

## **APPENDIX XXVIII**

#### UNNAMED TRIBUTARY TO CYPRESS CREEK

(235-492500-74500)

## Sample Site 28

	SITE CARD STREAM NAME Unnamed tributary to Cypress Creek FIELD COORDINATES 56° 50.49' 123° 14.15																											
STF	REA	MNA	AME	Unr	name	ed trit	outary	to Cyp	ress	Creek										FIEL	D	COORDINA	ΓES	56°	50.4	9' 123	<sup>5</sup> 14.1	15'
LOC	CAT	ION											_															
	S M	AP #	94	B/14		NID		00	WA		ED (			235	-492	2500-	.745					000		DE	100			
		1#	2001/0	8/21			= #	28					fied		0∠ /irop/	<u>1997</u> mont	39 al Se	SII			H					255 V Y		н
			2001/0	0/21	oth	TIIVI	-	1550	AUI			IVEI SI	neu			nent	a 00				v v 0/							<
CH				R		30	90	4 00	5	20 4	70	37	0	4	20	a، 1	79 28	meth			/0			5			Y	۲A۸
WE	TTE		/IDTH	R	RF	3.6	50 50	2.80	4.0	00 4	.00	3.7	0	4.	20	3.	72	3.0	D	/		Ph	<u> </u>	.0		Clear		ĒR
RES	S PO	DOL	DEPTH	M	1S	0.1	13	0.24	0.3	34 0	.16	0.1	2	0.	21	0.2	20	2.0	0			FLOOD SIG	SNS	1.30	) m -	RD		
Wb	DE	PTH	0.60	0.	70	0.6	60 <mark>S</mark>	TAGE		Mode	ate		No	∕is (	Char	1		Dry/l	nt			BED MATE	RIAL	-				
		C	OVER	Tot	al			Modera	ate (	5-20%)	-		Dev	/ater	•			Tribs	3			Dominant	Coł	oble	(64-2	56 mm	)	
	type	SV	VD L\	ND -	I	B	U		P	OV		IV (	CR	IWC		.OSL	JRE					Subdom.	Βοι	ulder	(> 25	56 mm)	)	Ň
~ 1	amt					D	<u>S</u>		5			N		%	%C	%C	%С	<u>`</u>				D95 (cm)	32 10 pt		D (C	m) <u>32</u>		- RF
/ER	loc			Few		P			-	F Fven		P	%	-20	4(	-1-7(	1-9(	606-					NCF			ORS		ЧС
00		LBS	SHAPE	Ver	tical			B SHA	PF	Vertical			0	1	2	3	∼ 4	^ 5				01 B1 B2	B3	D1	D2		102	õ
Ŭ		TEX	XTURE         Fines         TEXTURE         Fines         INSTREAM         None													C3 C4 C5	S1	S2	S3	S4		GY						
		RIP	IP. VEG. Mixed C & D RIP. VEG. Mixed C & D VEGETATION													PATTERN	Sin	uous				-						
		STA	AGE	You	ing F	ores	t S	TAGE		Young	Fore	st										ISLANDS	Nor	ne				
																						BARS	Sid	е				
																						COUPLING	Dec	coup	led			_
•/	0				D //			17/1 0	( )			BUIG	TO								1	CONFINED	Und	confi	ned	1714		
JRE	C	NIL	) MAP #	: NII	D#	T Y		HI/LG	(m)	mthd					1			CC	NIN	1EN I 3	5			1	ι			
ATL											R		F										-					
ΡĒ											R		F										-					
										DIS	TUR	BANC	CE I	NDI	CAT	OR	LEG	END										
01	Bea	ver Da	m		В3	Avuls	ion			D3 Rec	ent LV	ND jam			C3	Eleva	ated B	ar		S	1	Homogenous B	ed		S4	Extensiv	e Bars	
B1	Aba	ndone	d Channel		D1	Smal	l Woody	/ Debris		C1 Exte	ensive	Riffles			C4	Multi	ple Cł	nannel		s	2	Sediment Finge	ers		S5	Extensiv	e Scou	rs
B2	Eroc	ding Ba	ank		D2	Large	Woody	/ Debris		C2 Lim	ted P	ools			C5	Distu	rbed I	Lines		S	3	Sediment Wed	jes					
		Mod	lorato a	uality	6000	conal	roarin	a hahi	tat fo	r coort i	ich c	nocio	<u> </u>															
ΓAΤ	Σ	IVIOC	iei ale yl	Jailty	Seat	SUIIai	Tean	iy nabi		i sport-i	1511 3	specie	з.															
ABIT	JAL																											
H	ğ																											
FS	SZ																											
NC	R		FRAME	FO	CAL	. LN	DIRE	CTION		1- 6								CC	MN	1ENTS	S							
ATI(	н	G4 G4	5 6		wd			u u	VIEW	/ u/s froi		ottom c	DTSI fcit															
NT/	Н	G4	7		wd			d d	aeria	al view u	pstr	eam	1 31	<u> </u>														
IME		•.	•									oum																
JCL																												
DO																												
DTC																												
ЭНС			-																									
	C													١٨		SEF	2\/Δ٦		S									
EL.	GROUP WILDLIFE OBSERVATIONS GROUP																	0										
ILDI																												
≥																												
		С																										
S	C	X1	Electro-	-fishir	ng ef	ffort:	563 se	econds	@2	250 volts	s. Bu	Ill trout	t we	rec	aptu	red.												
ΠN.	( C	51 •V2	Site is o	on lov	ver r	each	of trib	utary v	vithin 1 km	Cypres	s Cr	eek va	alley	; be	com	es co	onfin	ed up	ostre	eam.								
AIME	U	~~2	mpass	aule I	Jaill	eis d	iphioxi	matery	I KI	n u/S UI	SILE.																	
NO																												

FISH COLLECTION FORM           STREAM NAME         Unnamed tributary to Cypress Creek         LAKE         X         STREAM         WETLAND																		
STR	REAN	1 NAME	U	nnam	ned tributa	ry to Cypress	Creek							LAK	Е <b>х</b>	STREAM	1 W	ETLAND
LOO	CATIC	NC	_				_	_			WATE	RSHE	CODE	235	-492500	-74500		
WA	TER	BODY II	D _				NTS MA	۱P	94B/1	4 NID	NO		SITE/L	AKE (	CARD A	TTACHE	DXY	N
PR	OJEC	TID	Halfwa	ay-Gr	aham Ove	erview	REACH	#		SIT	E#	28	FISH F	PERM	IT # SC	2001-032		
DA.	TE	2	2001/08	8/21	to 2	2001/08/21	AGENC	Y	Diversifi	ed Enviro	onmental	Service	es CF	REW		BC/TE	RE-SA	MPLE
0	SI	TE #			# NID #	SITE	υтм		METHO	DD/NO.	STREA	M CON	DITION			СОММ	ENTS	
ЮН											TEMP	CON	TURE	3				
ET		28				10.48561	7.629973	9	EF	1	4.5		С					
/ N																		
Ë																		
S																		
	SITE	E# M	P SPEC	ES STAGE	AGE	TOT	AL NO	MIN LI	N (mm)	MAX	LN (mm)	FIS	H ACT		COMMENT	S		
≿	28	3	BT				4	9	5		156	R	earing					
AAF																		
NML																		
H SI																		
-ISF														_				
ч <u>н</u>				+														
2													NFT /	TRAF	SPEC	FICATIO	NS	
PEC	С	SITE #	MD/N	OH/	P DATE	IN TIME	IN DA	TE O		1E OUT	NET TY	PE L	ENGTH	D	EPTH	MESH S	IZE SET	HAB
R S																		
EA																		
0								OTD										
	C	SITE #													EREO	DISE	MAKE	MDI
	C	28	EF/1	1	134			563		220	3.72			250	60	Fixed	Coffelt	Mk X
S	С						-						-					
NT																		
AME																		
NOC	-																	
												1						
						LENGTH	WEIG		VIDUA			<b>`</b>	AGE					
С	SITE	E # MD	/NO H	/P S	PECIES	(mm)	(gms	)	SEX	MATU	IR ST	R S	AMPLE #	¥ AC	ΞE	CC	MMENTS	
	28	B EF	=/1 ·	1	BT	156					Sc	ale	15-1	2	+			
	28	B EF	=/1 <sup>·</sup>	1	BT	127					Sc	ale	15-2	2	+			
	28	B EF	=/1 ·	1	BT	151					Sc	ale	15-3	2	+			
	- 28	s EF	-/1 /	1	BI	95					Sc	ale	15-4	1	+			
				+														
				+														
				_														
				_														
				_										_				
														_				



Unnamed tributary to Cypress Creek Site 28: View upstream from bottom of site (Roll HG4 - Exp 5; CD 2 - Im 113)



Unnamed tributary to Cypress Creek Site 28: Aerial view upstream (Roll HG4 - Exp 7; CD 2 - Im 115)

# **APPENDIX XXIX**

#### UNNAMED TRIBUTARY TO CYPRESS CREEK

(235-492500-74500)

#### Sample Site 29

	SITE CARD STREAM NAME Unnamed tributary to Cypress Creek FIELD COORDINATES 56° 51.46' 123° 18.0																										
STF	REA	ΜN	AME	U	Innan	ned tr	ibuta	ry to C	Cypress	S Creek								F	IELD	COORE	DINA	TES	56°	51.46	5' 123°	18.03	3'
LOC	CAT	ION	Upstre	am	of im	pass	able b	carrier	rs	TEROL		2005	0.01														
		4P #	94	4B/1	14		) NO == #	20			ED (		235	)-492	2500-7	450				200	5.40	TU	DE	100	ESS		
		1#	2001/	08/2	21		E# //F	29 120		EUTW		4010	0∠ 1 Fnv		mental	, Ser	rvices		RFW	200 BC/		FIS				N	
	Ъ		200 l/	00/2	moth			120		LINGT		TVCI SITIC		/11 01 11	ava	001	GRA			EMS							<
CH					MS	3	30	3.0	0 4	70 3	50	4 20	2	80	3 58	3 r	neth			TEMP	(°C)	4	5	TUR	BIDITY	,	VAT
WE	TTE	ED W	/IDTH	-	RF	3	.30	3.0	0 4	.70 3	.50	3.40	2	.80	3.45	5	1.0		<u> </u>	Ph	( - )				Clear		ĒR
RES	S PC	DOL	DEPT	-	MS	0	.34	0.3	2 0	.34 0	.12	0.36	0	.26	0.29	)	2.0		_	FLOO	D SIO	GNS	0.9	m - R	D		
Wb	DE	PTH	0.40		0.40	0	.50	STA	GE	Mode	ate	No	Vis	Char	n	0	Dry/In	t	1	BED M	ATE	RIAL	_				
			COVER	L T	otal		_	Moo	derate (	5-20%)		De	wate	r		٦	Tribs			Domina	ant	Coł	ble	(64-2	56 mm)	)	
	type	SV	VD L		)	B	l	L L	DP	OV			OW	N CL	OSUF	RE			_	Subdor	n.	Gra	avel (	2-64 ו	nm)		M
~ 1	amt							5	<u>S</u>	S		N	%	%0	%0	%	<u> </u>	_	_	D95 (CI	m)	26 flo. pr		D (cr	n) 16		DRF
/ER	IOC	IW			lone	Г	ſ	DIST	۲ ·			۲ %	-20	4	1-7	20-	°06-	_	-	DISTU	RBA	NCF			ORS		Чų
00		LB	LB SHAPE     Vertical     RB SHAPE     Vertical     0     1											2	3	4	5		_	01 B1	B2	B3	D1		D3 C1	C2	ō
Ũ		TEX	TEXTURE         Fines         TEXTURE         Fines         INSTREA											- AM	A	laae	e			C3 C4	C5	S1	S2	S3 (	54 S4		GY
		RIP	IEXTURE         Fines         INSTREAM         Algae           RIP. VEG.         Shrubs         RIP. VEG.         Shrubs         VEGETATION												_	PATTE	RN	Irre	gula	r Wan	dering	-					
		RIP. VEG.         Shrubs         VEGETATION           STAGE         Shrub/Herb         STAGE         Shrub/Herb													ISLAN	DS	Nor	ne									
																				BARS		Sid	е				
																				COUPI	LING	Dec	coup	led	0 6		
0,	<u> </u>	NUE		щ,		μ <b>Τ</b>				اء والجمع		DUOTO					0.01		NTO	CONFI	NED	UC(	casic	onally	Confin	ed	
JRE	C	INIL		# 1	NID Ŧ	<b>7</b> Γ	IPE		_G (m)	mina	P		) 				CON		INTS					L			
ATL		-		-							R	F		-													
ШЦ		-									R	F															
										DIS	TUR	BANCE	IND	CAT	OR LE	EGE	IND								<u> </u>		
01	Beav	ver Da	ım		В3	3 Avu	sion			D3 Rec	ent LV	VD jam		C3	Elevate	d Ba	ır		S1	Homoger	nous E	Bed		S4 E	Extensive	Bars	
B1	Abar	ndone	d Channe	el	D1	I Sma	all Woo	ody Deb	oris	C1 Exte	nsive	Riffles		C4	Multiple	e Cha	annel		S2	Sedimen	t Finge	ers		S5 E	Extensive	Scours	;
B2	Erod	ling Ba	ank		D2	2 Larg	je Woo	ody Deb	oris	C2 Lim	ted Po	ools		C5	Disturb	ed Li	ines		S3	Sedimen	t Wed	ges					_
		Mod	derate (	ileur	itv se	asona	al rea	rina h	ahitat fi	or BT iuv	onile	s Nose	asor	nal ar		1110	to har	rioro	s dowr	ostream							
ГАТ	Σ	No	season	al a	cces	s due	to ba	rriers	downs	tream - r	ion fi	sh-beari	na		.0033 (	ue	10 04	nera	5 0000	isu cam.							
ABI <sup>-</sup>	NAL										-		5														
Ŧ	Ø																										
FS	SZ																										
NC	RC		FRAM	IE F	-OCA	AL LN	DIR	ECTI	ON	1. 6							CON	1ME	NTS								
ATI(	H H	G3 G3	20A		W	/d /d		u 	viev	V U/S Troi		ntre of s	te														
NT/		G3	21A	-	w	/d		d	viev	v d/s fro	n tor	of site															
IME	H	G3	23A	+	w	/d		u	aer	ial view u	pstre	eam															
JCL																											
DO																											
DTC																											
ЭНС																											
	G		IP			V	ם וו V		OBSER		NS.			G	ROUP	)			V			RSEE	2\/Δ		2		_
EL.	Ŭ					•	VILD		OBOLI		••					1			•						<b>,</b>		
ILDI														+													
$\mathbb{N}$																											
	(	С																									
S	C	X1	Electro	o-fis	hing	effort	253	seco	nds @	250 volts	. No	fish cap	tured	J.													
NT	C	1	AISO S	ignif	ricant	t tines	and	bluoa	er com	ponent.																	
IME																											
Ň																											
							FIS	SH CC	)LLE	ECTIO	N FOF	RM															
-------	------	---------	----------	-------	------------	---------------	-----------	--------	------------	-----------	----------	----------	---------	--------	---------	-----------	---------	--------									
STF	REAN	/I NAME	Un	name	ed tributa	ry to Cypress	Creek							LAKE	XS	STREAM	WE	ETLAND									
LOO		ON									WATE	RSHE	D CODE	235-49	92500-7	4500											
WA	TER	BODYI	D				NTS MAI	P 9	4B/14	4 NID	NO		SITE/L	AKE CA	RD AT	TACHED	XY	N									
PR	OJEC	CT ID	Halfwa	y-Gra	ham Ove	erview	REACH	#		SIT	E#	29	FISH F	PERMIT	# SC20	001-032											
DA	E	Ż	2001/08/	21	to 2	001/08/21	AGENCY	Dive	ersifie	ed Enviro	onmental	Servic	es CF	KEW	BC	J/IE	RE-SAI	/IPLE									
Q	SI	ITE #	NID M	AP #	NID #	SITE	UTM	ME	ТНС	D/NO.	STREA		NDITION	-		COMMEN	NTS										
OH.		20				10 40166	0.6001570		· 1	4	TEMP	CON	TURB														
ЛЕТ		29				10.40100	2.0301578		: <b>F</b>	I	4.5																
≡ / N																											
SITE																											
	SIT	E# M	TD/NO	H/P	SPECI	ES STAGE	AGE	TOTAL	NO	MIN LI	N (mm)	MAX	LN (mm)	FISH	ACT	CC	MMENTS	6									
RΥ	29	9	EF/1	1	NFC	;		0																			
MA																											
MU																											
НS																											
FIS																											
ы													NET /	TRAP S	PECIF	ICATIONS	6										
зРЕ	С	SITE #	MD/NC	) H/P	DATE	IN TIME	IN DAT	E OUT	TIM	E OUT	NET TY	/PE l	ENGTH	DEF	PTH N	/IESH SIZ	E SET	HAB									
R S																											
ЭEA	-																										
0							FLEC																				
	C	SITE #		)H/P	TIME			SEC	SHE	NGTH					REO	PLSE	MAKE	MDI									
	0	29	EF/1	1	1210	) 1230		253		200	3.45	;	0 2	250	60	Fixed	Coffelt	MkX									
S	С	-					-						-														
NT																											
1ME																											
SON	-																										
Ŭ							IN	יועורו				٨															
						LENGTH	WEIGH					<u>_</u>	AGE														
С	SITI	E # MD	/NO H/I	P SF	PECIES	(mm)	(gms)	' SI	EX	MATL		TR S	AMPLE #	AGE	-	COM	IMENTS										
						. ,																					
		1																									
				_																							



Unnamed tributary to Cypress Creek Site 29: View upstream from bottom of site (Roll HG3 - Exp 20A; CD 2 - Im 116)



Unnamed tributary to Cypress Creek Site 29: Aerial view upstream (Roll HG3 - Exp 23A; CD 2 - Im 119)

# **APPENDIX XXX**

#### HALFWAY RIVER (235)

### Sample Site 30

												SIT	ЕC	ARI	D											
STF	REA	M N/	AME	Hal	fway	River												FIELD	) (	COORDINA	res	56°	59.2	9' 12	3° 04.1	16'
LOC	CAT	ION																								
NTS	5 MA	λP #	9	4B/14		NID N	<u>o</u>		WATER	RSHE	DC	ODE	235	5-000	000											
RE/	АСН ТС	#	2001	100/20			‡ 3	0	SITE U	TM	10	4955	87	63	316128	Sort					TH	RF	ACC	ESS	Y NI	H
DA	E		2001/	/08/20		TIME	10	26	AGENC	ĴΥ	Di	versmed	1 Env	/Ironi	nentai	Serv	/ices	CREV	V ·	BC/TE	FIS	HFU		Y	XIN	
	CHA	NNE	L (m)	m	eth	50.00	. 00	20	<u></u>	70	20	00.00	0.5	- 00	avg		GRADI	IENT 🤊	0	EMS	<u> </u>		CO			AN A
		EL V	VIDTE		ל⊦ רבר	52.00	) <u>38</u> .	.00	60.00	78.	00	88.00	20	00.00	20.1	0 m		AL		TEMP (°C)	9	).0			Y	Ē
					(F 10	24.00	) 20.	.00	32.00	30.0	20	29.00	0	2.00	0.70		1.0					1 2	~ [		ir.	20
Wb			1 50	יי 1 וי	15 60	1 70	ST/		0.90 M	0.1 Iodera		0.00 No	Uis (	.öp Char	0.19		nv/Int			BED MATE	RIAI	1.2	m - r	U)		
***	52.	C	OVEF	R Tot	a	1.1 0	M	odera	ite (5-2(	1%)		De	wate	r		Tr	ribs	-		Dominant	Coł	bble (	(64-2	56 m	m)	
	type	S٧	VD	LWD	E	B	U	D	P (	JV VC	- IV	V CR	OW	N CL	OSUF	RE				Subdom.	Gra	avel (	2-64	mm)	.,	_
	amt	ક	3	S	Ś	s	S	D	)	N	١	1	T							D95 (cm)	36		D (c	<u>m)</u> 4	0	NOF
ц	loc	F	2	Р	F	P	Р	P	,	P	F	2	%0	40%	20%	»n«				Morph. Riff	ile-po	ool				RPF
DVE		LW	D FNC	C Abi	undar	nt	DIS	Т	Eve	en		%0	1-2	21-	4 - 4	- )6<	Ř 📃			DISTURBA	NCE	IND	ICAT	ORS		þ
ö		LB S	SHAPI	E Ver	tical		RB	SHA	PE Ver	rtical		0	1	2	3 4	4 5	5			O1 B1 B2	В3	D1	D2	D3 (	;1 C2	0G
		ТЕХ	TURE	Fine	es		TEX	TUR	E Fin	ies		INS	STRE	EAM	A	lgae				C3 C4 C5	S1	S2	S3	S4		$\prec$
		RIP	. VEG	. Mix	ed C	& D	RIP	. VEC	G. Mix	(ed C	& D	VE	GET	ATIC	)N					PATTERN	Irre	gular	Wa	nderin	g	
		STA	GE	You	ing F	orest	STA	٨GE	Υοι	ung Fo	ores	st								ISLANDS	Nor	ne				
																				BARS	Sid	e/Dia	₃g/Mi	d-stre	am	
																				COUPLING	Par	tially	Cou	pled	·	
	0			// NII	2.4					the al	_	PHOTO	_							CONFINED	Uco	casio	naliy	Cont	nea	
JRE	C	ND	MAP	# NI	D#	TYPE	: HI.	/LG (	m) m	itna			)			,	COlvin	/IENTS					l	JTIVI		
ÅΤU				_			_														+			-+		
FE/				+			+				R	F		+							+	+				
										DIST	URI	BANCE	IND	ICAT	OR LE	GEN	ND									
01	Beav	ver Da	m		B3	Avulsion	1		D3	Recer	nt LW	/D jam		СЗ	Elevate	d Bar		S1		Homogenous B	ed		S4	Extens	ive Bars	
B1	Abar	ndoned	d Chann	nel	D1	Small W	/oody D	ebris	C1	Exten	sive F	Riffles		C4	Multiple	Chan	nnel	S2	2	Sediment Finge	ers		S5	Extens	ive Scou	ırs
B2	Erod	ing Ba	ank		D2	Large W	oody De	ebris	C2	Limite	d Po	ols		C5	Disturbe	ed Line	es	S3	}	Sediment Wedg	ges					
F	≿	Mod	lerate	to high	qua	lity sum	1mer/fa	all ha	bitat for	adult	spo	ort-fish.														
3IT/	ALIT	Suit	able s	almoni	d spa	awning	habita	t pres	sent.																	
HAE	gU/	Suit	able ye	ear-rou	ind re	earing r	nabitat	tor ju	Jvenile s	sport-1	lisn.	. <u> </u>														
E!	S7	<b> </b>																								
	R(		FRAM	IE FO	CAL		RECT	ION								. (	COMN	<b>IENTS</b>								
б	H	G3	ЗA		wd		u	;	aerial vi	iew up	ostre	eam					•••									
TAT	H	G3	4A		wd		u	,	view u/s	s from	bot	tom of s	ite													
ENT	H	G3	5A	$\top$	wd		u		view u/s	s from	cer	ntre of se	econ	dary	channe	el										
IMU	H	G3	6A		wd		d	,	view d/s	s from	top	of site														
DCI				<u> </u>																						
D D O								$\rightarrow$																		
рто								$\dashv$																		
ОНа	<u> </u>			+				$\rightarrow$																		
-	G							OR			c			6		L			١٨			דע/גר		C		
E		MAN	1 N	loose.	hisor	n elk				HOR	5				NUU	1			ν.					3		
LDI		100	<u> </u>		0100.	1, 011								+												
N			-+																							
	(	С	<u>_</u>					-																		-
	C	X1	Electr	o-fishi	ng ef	ifort: 60	3 seco	onds	@ 250	volts.	Rai	nbow tro	out, r	noun	tain wh	nitefis	sh and	slimy	sc	ulpin were ca	aptur	red.				
NTS																										
ΛEΝ																										
NINC																										
ö					-	-				-												-	-			
	1 1	1																								

							FI	SH (	COLLI	ECTIO	N FOR	M							
STF	REAM	INAME	Hal	fway	River									LAKE	ΞX	STREA	M	WE	ETLAND
LOC	CATIO	ON					_				WATE	RSHE	CODE	235-0	000000			_	_
WA	TERB	BODY II	D				NTS MA	P	94B/1	4 NID	NO		SITE/L	AKE C	ARD A	TTACHE	ED	<b>X</b> Y	N
PRO	OJEC-	T ID	Halfway	-Gra	ham Ove	rview	REACH	#		SIT	E#	30	FISH F	PERMI	T # SC	2001-032	2		
DAT	ΓE	2	001/08/2	20	to 2	001/08/20	AGENC	YC	Diversifi	ed Enviro	onmental	Service	es CF	REW	E	BC/TE	ł	RE-SAI	<b>IPLE</b>
0	SIT	TF #		AP #	NID #	SITE	ПТМ		METHO		STREA	M CON	IDITION			COM		s	
10L	011			u //		ONE	. O T M		METT.	DEMO.	TEMP	CON	TURB			0011		0	
Ē	3	30				10.49558	7.631612	8	EF	1	9.0		С						
W N																			
Щ																			
<u>.</u>																			
	OITE	- #				TOT		NAINT I N				FIOI	LACT		0014				
2	SITE #MTD/NOH/PSPECIESSTA30EF/11RB						AGE	101	AL NO		N (MM)	MAX	<u>-N (mm)</u>	FISI	HACT		COM	MENT	>
<b>JR</b>	30         EF/1         1         RB           30         EF/1         1         MW								7		0		45	Re	aring				
1M/	30         EF/1         1         MW           30         EE/1         1         CCC								7		5		15	Po	aring				
ŝUN	30 EF/1 1 CCG								21	5	5		115		anny				
H																			
EIS SI																			
ö													NET /	TRAP	SPEC	FICATIO	ONS		
ΡE	CS	SITE #	MD/NO	H/P	DATE	IN TIME	IN DA	ΓΕ ΟΙ		1E OUT	NET TY	PE L	ENGTH	DE	PTH	MESH S	SIZE	SET	HAB
R S																			
EAI																			
G																			
							ELE	CTRO	OFISHE	R SPEC	IFICATI	ONS					_		
	CS	SITE #	MD/NO	H/P	TIME	IN TIME C	DUT EI	= SEC	C LE	NGTH	WIDT	ΉE	NCL V	OLT	FREQ	PLSE	M	AKE	MDL
	-	30	EF/1	1	1830	1900	)	603		300	30.1	(	0 2	250	60	Fixed	C	offelt	Mk X
ITS	C																		
IEN	-																		
MM	-																		
S	-																		
0	OITE	- # MD							VIDUA	L FISH	H DAT/	4							
	SILE					LENGTH	WEIGH	NDI\ IT				4	AGE						
	30		NO H/F	SP	ECIES	LENGTH (mm)	WEIGI (gms	NDIN HT )	VIDUA SEX	L FISI MATU		A TR S	AGE	4 AG	E	C	OMMI	ENTS	
		EF	/NO H/F	SP	ECIES RB	LENGTH (mm) 120	WEIGI (gms	NDIN HT )	VIDUA SEX	MATU	H DAT/ IR ST	A TR SA ale	AGE AMPLE # 9-1	4 AG	E	C	OMM	ENTS	
	30	EF	7/NO H/F 7/1 1 7/1 1	SP	RB MW	LENGTH (mm) 120 40	WEIGH (gms	NDIN HT )	VIDUA SEX	MATU	H DAT/ IR ST Sc	A TR SA ale	AGE AMPLE # 9-1	t AG 2+ YO	E - Y	C	OMMI	ENTS	
	30 30	EF	7/1 1 7/1 1 7/1 1 7/1 1	SP	RB MW MW	LENGTH (mm) 120 40 42	WEIGH (gms	NDIN HT )	VIDUA SEX	AL FISH MATU	H DAT/	A TR SA ale	AGE AMPLE # 9-1	AG 2+ YO YO	E - Y Y	C	OMM	ENTS	
	30 30 30	EF	F/I         1           F/I         1           F/I         1           F/I         1           F/I         1	SP	RB MW MW MW	LENGTH (mm) 120 40 42 40 40	WEIGH (gms	NDIN HT )	VIDUA SEX	MATU	H DAT/	A TR SA ale	AGE AMPLE # 9-1	ł AG 2+ YO YO YO	E - Y Y Y Y	C	OMMI	ENTS	
	30 30 30 30	EF EF EF EF	F/1         1	SP	RB MW MW MW MW MW	LENGTH (mm) 120 40 42 40 40 40	WEIGH (gms	NDIN HT )	VIDUA SEX	AL FISH MATU		R S/ ale	AGE AMPLE # 9-1	* AG 2+ YO YO YO YO	E Y Y Y Y Y	C	OMM	ENTS	
	30 30 30 30 30	EF EF EF EF EF EF EF	F/NO         H/F           F/1         1	SP	RB MW MW MW MW MW MW	LENGTH (mm) 120 40 42 40 40 40 45 42	WEIGH (gms	NDIN HT )	VIDUA SEX	AL FISH MATU	H DAT/ IR ST Sc	A IR S/ ale	AGE AMPLE # 9-1	* AG 2+ YO YO YO YO YO	E Y Y Y Y Y Y	C	OMM	ENTS	
	30 30 30 30 30 30 30	) EF ) EF ) EF ) EF ) EF ) EF	F/NO         H/F           F/1         1	SP	ECIES RB MW MW MW MW MW MW	LENGTH (mm) 120 40 42 40 40 40 45 43 43	WEIGH (gms		SEX	MATU	H DAT/	A SA ale	AGE AMPLE # 9-1	<ul> <li>AG</li> <li>2+</li> <li>YO</li> <li>YO</li> <li>YO</li> <li>YO</li> <li>YO</li> <li>YO</li> <li>YO</li> </ul>	E Y Y Y Y Y Y Y Y	C	OMM	ENTS	
	30 30 30 30 30 30 30 30	EF	F/NO         H/F           F/1         1	P SP	RB MW MW MW MW MW MW MW	LENGTH (mm) 120 40 42 40 40 40 45 43 42 115	li WEIGH (gms		SEX	AL FISH MATU	H DAT/	A IR S/ ale	AGE AMPLE # 9-1	<ul> <li>AG</li> <li>2+</li> <li>YO</li> <li>YO</li> <li>YO</li> <li>YO</li> <li>YO</li> <li>YO</li> <li>YO</li> </ul>	E Y Y Y Y Y Y Y Y Y Y	C	OMM	ENTS	
	30 30 30 30 30 30 30 30 30	EF           EF	F/I         1		RB MW MW MW MW MW MW MW CCG CCG	LENGTH (mm) 120 40 42 40 40 40 40 45 43 42 115 92	li WEIGH (gms		SEX	MATU	H DAT/ JR ST SC	A TR S/ ale	AGE AMPLE # 9-1	AG           2+           YO           YO	E Y Y Y Y Y Y Y Y Y Y	C	OMM	ENTS	
	30 30 30 30 30 30 30 30 30 30	EF           EF	F/I         1		RB MW MW MW MW MW MW MW CCG CCG CCG	LENGTH (mm) 120 40 42 40 40 40 40 45 43 42 115 92 72	l WEIGH (gms		SEX	MATU	H DAT/	A S/ ale	AGE AMPLE # 9-1	AG           2+           YO	E Y Y Y Y Y Y Y Y	C	OMM	ENTS	
	30 30 30 30 30 30 30 30 30 30 30	EF           EF	F/I         1		RB MW MW MW MW MW MW MW CCG CCG CCG CCG	LENGTH (mm) 120 40 42 40 40 40 45 43 42 43 42 115 92 72 52	l WEIGH (gms		SEX	MATU	H DAT/ IR ST SC	A S/ ale	AGE AMPLE # 9-1	AG           2+           YO           YO           YO           YO           YO           YO           YO           YO           YO	E Y Y Y Y Y Y Y Y	C		ENTS	
	30 30 30 30 30 30 30 30 30 30 30 30	EF           EF	F/I         1		RB MW MW MW MW MW MW MW CCG CCG CCG CCG CCG	LENGTH (mm) 120 40 42 40 40 40 45 43 42 43 42 115 92 72 52 59	l WEIGH (gms		SEX	AL FISH MATU	H DAT/	A S/ ale	AGE AMPLE # 9-1	Image: AG           2+           YO           YO	E Y Y Y Y Y Y Y Y	C	OMMI	ENTS	
	30 30 30 30 30 30 30 30 30 30 30 30 30	EF           EF	F/I         I           F/I         1	SP     SP     (     )     )     )     )     )     )	RB MW MW MW MW MW MW MW CCG CCG CCG CCG CCG CCG	LENGTH (mm) 120 40 42 40 40 40 45 43 42 115 92 72 52 59 73	l WEIGH (gms		SEX	AL FISH MATU	H DAT/	A S/ ale .	AGE AMPLE # 9-1	<ul> <li>AG</li> <li>2+</li> <li>YO</li> <li>YO</li> <li>YO</li> <li>YO</li> <li>YO</li> <li>YO</li> </ul>	E Y Y Y Y Y Y Y Y	C		ENTS	
	30 30 30 30 30 30 30 30 30 30 30 30 30 3	EF           EF	F/I         1	SP 	RB MW MW MW MW MW MW MW CCG CCG CCG CCG CCG CCG CCG CCG	LENGTH (mm) 120 40 42 40 40 45 43 42 115 92 72 52 59 73 90	l WEIGH (gms		SEX	AL FISH MATU	H DAT/ JR ST SC SC SC SC SC SC SC SC SC SC SC SC SC	A S/ ale	AGE AMPLE # 9-1	<ul> <li>AG</li> <li>2+</li> <li>YO</li> <li>YO</li> <li>YO</li> <li>YO</li> <li>YO</li> <li>YO</li> </ul>	E Y Y Y Y Y Y Y Y Y	C		ENTS	
	30 30 30 30 30 30 30 30 30 30 30 30 30 3	EF	F/I         I           F/I         1		RB MW MW MW MW MW MW MW CCG CCG CCG CCG CCG CCG CCG CCG CCG CC	LENGTH (mm) 120 40 42 40 40 45 43 42 115 92 72 52 59 73 90 61	l WEIGH (gms		SEX		H DAT/ JR ST SC SC SC SC SC SC SC SC SC SC SC SC SC	A S/ ale	AGE AMPLE # 9-1	<ul> <li>AG</li> <li>2+</li> <li>YO</li> <li>YO</li> <li>YO</li> <li>YO</li> <li>YO</li> <li>YO</li> <li>YO</li> </ul>	E Y Y Y Y Y Y Y Y Y Y			ENTS	
	30 30 30 30 30 30 30 30 30 30 30 30 30 3	EF           EF	F/I         I           F/I         1	SP 	RB MW MW MW MW MW MW MW CCG CCG CCG CCG CCG CCG CCG CCG CCG CC	LENGTH (mm) 120 40 42 40 40 45 43 42 115 92 72 52 59 73 90 61 26	l WEIGH (gms		VIDUA SEX	MATU	H DAT/ JR ST SC SC SC SC SC SC SC SC SC SC SC SC SC	A S/ ale	AGE AMPLE # 9-1	<ul> <li>AG</li> <li>2+</li> <li>YO</li> <li>YO</li> <li>YO</li> <li>YO</li> <li>YO</li> <li>YO</li> <li>YO</li> </ul>	E Y Y Y Y Y Y Y Y Y Y Y Y	C		ENTS	
	300 300 300 300 300 300 300 300 300 300	EF           EF	FIO         HIF           F/1         1	SP     SP	RB MW MW MW MW MW MW MW CCG CCG CCG CCG CCG CCG CCG CCG CCG CC	LENGTH (mm) 120 40 42 40 40 45 43 42 115 92 72 52 59 73 90 61 26 75	l WEIGH (gms		SEX	MATU	H DAT/ IR ST SC IC IC IC IC IC IC IC IC IC I	A SA	AGE AMPLE # 9-1	AG     2+     YO	E Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y			ENTS	
	300 300 300 300 300 300 300 300 300 300	EF           EF	FIO         HIF           F/1         1           F/1         1	SP     SP	RB MW MW MW MW MW MW MW MW CCG CCG CCG CCG CCG CCG CCG CCG CCG CC	LENGTH (mm) 120 40 42 40 40 45 43 42 115 92 72 52 59 73 90 61 26 75 73 90	l WEIGH (gms		VIDUA SEX		H DAT/ IR ST SC SC SC SC SC SC SC SC SC SC SC SC SC	A S/ ale	AGE AMPLE # 9-1	AG     2+     YO     YO     YO     YO     YO     YO     YO     YO     YO     O     O     O     O     O     O	E Y Y Y Y Y Y Y Y - - - - - - - - - - - - -			ENTS	
	300 300 300 300 300 300 300 300 300 300	EF           EF	FICO         HIF           F/1         1           F/1         1	SP     SP	RB MW MW MW MW MW MW MW MW CCG CCG CCG CCG CCG CCG CCG CCG CCG CC	LENGTH (mm) 120 40 42 40 40 45 43 42 115 92 72 52 59 73 90 61 26 75 73 90 61 26 75 73 81	l WEIGH (gms		SEX		H DAT/ IR ST SC SC SC SC SC SC SC SC SC SC SC SC SC	A S/ ale	AGE AMPLE # 9-1	<ul> <li>AG</li> <li>2+</li> <li>YO</li> <li>YO</li> <li>YO</li> <li>YO</li> <li>YO</li> <li>YO</li> <li>YO</li> </ul>	E Y Y Y Y Y Y Y Y - - - - - - - - - - - - -			ENTS	
	300 300 300 300 300 300 300 300 300 300	EF           EF	FICO         HIF           F/1         1           F/1         1	SP     SP	RB MW MW MW MW MW MW MW CCG CCG CCG CCG CCG CCG CCG CCG CCG CC	LENGTH (mm) 120 40 42 40 40 45 43 42 115 92 72 52 59 73 90 61 26 75 73 90 61 26 75 73 81 26 75	l WEIGH (gms 		SEX		H DAT/ IR ST SC SC I I I I I I I I I I I I I	A S/ ale	AGE AMPLE # 9-1	<ul> <li>AG</li> <li>2+</li> <li>YO</li> <li>YO</li> <li>YO</li> <li>YO</li> <li>YO</li> <li>YO</li> <li>YO</li> </ul>	E Y Y Y Y Y Y Y Y Y I I I I I I I I I I I I I			ENTS	

						IND	IVIDUA	AL FISH D	ATA			
					LENGTH	WEIGHT				AGE		
С	SITE #	MD/NO	H/P	SPECIES	(mm)	(ams)	SEX	MATUR	STP		AGE	COMMENTS
-	20		4	000	(1111)	(giiis)			SIK	SAIVIFLE #	AGE	
	30	EF/1	1	CCG	12							
	30	EF/1	1	CCG	73							
	30	EF/1	1	CCG	63							
	30	EF/1	1	CCG	56							
	30	FF/1	1	CCG	55							
	20		1	000	56							
	30				50							
	30	EF/1	1	CCG	35							
		1										
		-										
			-						-			
		<u> </u>										
			1	1	1	1			1	1		



Halfway River Site 30: View upstream from bottom of site (Roll HG3 - Exp 4A; CD 2 - Im 120)



Halfway River Site 30: Aerial view upstream (Roll HG3 - Exp 3A; CD 2 - Im 123)

## **APPENDIX XXXI**

### HALFWAY RIVER (235)

### Sample Site 31

												SIT	ΕC	AR	)											
STF	REA	M NA	AME		Halfv	vay Riv	er											FIEL	D	COORDINAT	res	56°	58.08	3' 123°	25.8	2'
LOO	CAT	ION							_				_													
NTS	S MA	\P #		94B	8/14	NI			/	TERSH	ED C	CODE	235	5-000	000	_										
RE/		#	200	4/00	100		E#	31	SI	EUIM	10	4/3/	96	63	13923	SI	IEL		H	300 ME	: IH	RF	ACC	ESS	F I	1
DA	E		200	1/08	5/20		/IE	1400	AG	ENCY	D	iversified		vironn	nental s	ervic	ces	CRE	VV	BC/TE	FIS			Y X	IN	
	CHA	NNE	L (m)	)	met	th - I or	- 00	07.00			00	00.50			avg	G	RADI		%	EMS			CON			NA
				H J		- 25	2.00	27.00	20	0.50 46	.20	28.50	32	2.00	30.87	me		AL		TEMP (°C)	9	.5	TUR	Cloor		Ē
				י דט			00	25.00		42 0	20	10.00	23	60	19.70		1.0					15		Clear		20
Wb			12	20	1.3	$\frac{5}{0}$ 1	20	STAG	=	Moder	ate	0.50 No	Vis	.00 Chan	0.57	Drv	v/Int		1	BED MATE	RIAI	1.5	III - K			
		C	OVE	R	Tota			Abun	dant	(>20%)		Dev	vate	r		Trit	bs		•	Dominant	Gra	ivel (:	2-64 r	mm)		
	type	S٧	VD	LW	/D	В	ι	J	DP	ov	ľ	V CR	OW	N CL	OSURI					Subdom.	Fine		2 mm	) 1)		~
	amt	5	S	5	3	Ν	1	Г	D	N	1	N		<u>、</u> 。	<u></u>					D95 (cm)	6		D (cr	n) 3		10F
К	loc	F	2	F	>	Р	F	>	Ρ	Р	ŀ	P	%0	40%	%06 60%	%(				Morph. Riff	le-po	loc				RPF
OVE		LWI	D FN	С	Few			DIST		Even		%0	1-2	21-	41- 71-	~90				DISTURBA	NCE	IND	ICAT	ORS		IOL
ö		LB S	SHAF	ΡE	Verti	cal		RB SH	APE	Vertical		0	1	2	3 4	5				O1 B1 B2	B3	D1	D2 [	C1 C3	C2	OG
		TEX	TUR	RE	Fines	5		ΤΕΧΤΙ	JRE	Fines		INS	TRE	EAM	No	ne				C3 C4 C5	S1	S2	S3 (	S4		$\prec$
		RIP	. VEC	Э.	Conif	ferous		RIP. V	EG.	Coniferent	ous	VE	GET	ATIC	N					PATTERN	Irre	gular	Wan	dering		
		STA	GE		Matu	re Fore	est	STAG		Mature	Fore	st								ISLANDS		asio	nal			
																				BARS	Side	e/IVIIC	1-strea	am		
																				COUPLING	Dec	:oupi				
	C			D #		μ Τ\			(m)	mthd						<u> </u>			2	CONFINED	Und		leu			
JRE	U			- #		# 1			, (III)	mulu	R		, 	1		U			5				U			
ATI											R	F														
ΕĒ											R	F														
										DIS	<b>TUR</b>	BANCE	IND	ICAT	OR LE	GEN	D									
01	Beav	/er Dai	m		E	33 Avul	lsion			D3 Rec	ent LV	VD jam		C3	Elevated	Bar		s	1	Homogenous B	ed		S4 E	Extensive	Bars	
B1	Abar	ndoned	d Char	nnel	0	D1 Sma	all Woo	ody Debri	S	C1 Exte	nsive	Riffles		C4	Multiple (	Chann	nel	S	2	Sediment Finge	rs		S5 E	Extensive	Scour	s
B2	Erod	ing Ba	ank		C	D2 Larg	ge Woo	ody Debri	5	C2 Limi	ted Po	ools		C5	Disturbed	Lines	s	S	3	Sediment Wedg	jes					
ΑT	≿	Goo	d sea	asor	nal rea	aring fo	or adu	ilt BT, C	BR, M	1W and F	RB.															
BIT,	ALI'	NOC	lerate			for rea	aring	juvenile	IVIVV	and BT i	n sid	le chann	els v	vith L	WD.											-
HAI	QU	Abu	nuan	ιrc		vv sugę	jesis	succes	siuis	spawning	•															
FS	SZ																									
7	RC	) DLL	FRA	ME	FOC	AL LN	DIR	ECTIO	N							С	OMN	/ENTS	S							
ÍO.	H	G2	1		Ņ	wd		u	viev	<i>w</i> u/s fror	n bot	ttom of s	ite													
TAT	H	G2	2		١	wd		u	viev	<i>w</i> u/s fror	n cer	ntre of si	te										-			
EN.	H	G2	3		١	wd		d	viev	<i>w</i> d/s fror	n top	of site														
NN	H	G2	4		N	wd		u	aer	ial view u	pstre	eam														
OC																										
ОС																										
DTC																										
ЬН(																										
111	G	ROI	IP			V			BSE		JS			G	ROUP				١٨		SEE	γ\/Δ٦		\$		
EI-	Ŭ	MAN	1	Мос	se. b	ison. de	eer. v	volf. ariz	zzlv.					1		1					02.		ion	7		
LDI					, -	,-	,	· , <b>j</b>	,																	
M														1												
	(	C		_															_							
	C	21	Som	e co	bble	also pr	esent	t.																		
NTO	C	X1	Qua	d tra	acks a	at site.																				
ME	C.	X2	Elec	tro-f	ishing	g effort	: 463	second	ls @	250 volts	. Мо	untain w	hitef	ish ar	nd slimy	/ scu	ılpin v	vere ca	apt	tured.						
MC																										
õ																										

							FIS	SH (	COLL	ECTIO	N FOF	RM								
STF	REAN	M NAME	E _	Halfv	vay River										LAKE	Х	STREAM	1	WE	TLAND
LOO		ON						_			WATE	ERSH	IED	CODE	235-00	00000				<u> </u>
WA	IER	BODY I	D				NISMA	, 	94B/1	4 NID				SITE/LA					Y	N
PR	JJEC	טו ו <i>ג</i>	Halfy	Nay-0	Graham Ove		REACH #	‡ , _		SIT	E#	31		FISH PE		# 50				
DA	E	2	2001/0	J8/20	) to 2	2001/08/20	AGENCY		Jiversiti	ed Enviro	onmenta	Serv	lices	CRI	_VV		BC/TE	R	-5AI	/IPLE
Q	S	ITE #	NID	MAF	P# NID#	SITE	UTM		METHO	DD/NO.	STRE	AM C					COMM	ENTS		
OH.		24				10 47270	6 6242026	<u>,</u>		1	IEMP	CO	)N	TURB						
ЛЕТ		31				10.47379	0.0313920	)	EF	I	9.5			C						
Ξ / Ν																				
SITE																				
	SIT	SITE # MTD/NO H/P SPECIES STAC					AGE	τοτ	AL NO	MIN LI	N (mm)	MA	X LN	N (mm)	FISH	ACT	(	COMM	ENTS	6
RΥ	3	31         EF/1         1         MW           34         EF/1         4         6000							19	3	8		52	2	Rea	ring				
MA	3	31 EF/1 1 CCG							3	3	51		49	9	Rea	ring				
NU																				
H S																				
FIS																				
												1								
S														NET / T	RAP S	PEC	FICATIO	NS		
SPE	С	SITE #	MD/I	NO	H/P DATE	IN TIME	IN DAT	E Ol	JT TIN	IE OUT	NET T	YPE	LE	NGTH	DEF	TH	MESH S	ZE S	SET	HAB
AR (	-																			
GE/																				
							FLEC	TRC	FISHE	R SPEC	IFICATI	ONS								
	С	SITE #	MD/	NO	H/P TIME	IN TIME C	UT EF	SEC	C LE	NGTH	WIDT	ГН	EN	CL VC	LTF	REQ	PLSE	MA	ΚE	MDL
		31	EF/	/1	1 140	5 1420	) <u> </u>	163		300	19.7	8	С	) 2:	50	60	Fixed	Cof	elt	Mk X
٢S	С																			
EN.	-																			
MM	-																			
SC	ŀ																			
							IN	1DI/	VIDUA	<b>AL FISH</b>	H DAT	A								
С	SIT	F#MD		H/P	SPECIES	LENGTH	WEIGH	Т	SEX	ΜΑΤΙ			ŀ	AGE			00	MMEN	JTS	
Ŭ	0.1					(mm)	(gms)		02/1		S S	TR	SAN	MPLE #	AGE		00			
	3		=/1	1		50										-				
	3	1 EI	F/1	1	MW	38									YOY	-				
	3	1 El	F/1	1	MW	50		-+				+			YOY	+				
	3	1 EI	F/1	1	MW	49									YOY					
	3	1 E	F/1	1	MW	46									YOY					
	3	1 El	F/1	1	MW	47									YOY					
	3		F/1	1		49										_				
	3		F/1	1	MW	44									Y0Y	_				
	3	1 E	F/1	1	MW	48						-			YOY					
	3	1 E	F/1	1	MW	45									YOY	1				
	3	1 El	F/1	1	MW	48									YOY					
	3	1 E	F/1	1	MW	52									YOY					
	3			1	MW	49									YOY	_				
	3		F/1	1		4/										_				
	3	1 F	F/1	1	MW	45									YOY	_				
	3	1 El	F/1	1	MW	41									YOY	+				
	3	1 El	F/1	1	MW	42									YOY					
	3	1 El	F/1	1	MW	50									YOY					
	3	1   El	F/1	1	CCG	32	1			1										
	-		- 14		000	<u>c</u> :										_				
	3	1 El	F/1	1	CCG	31														



Halfway River Site 31: View upstream from bottom of site (Roll HG2 - Exp 1; CD 2 - Im 124)



Halfway River Site 31: Aerial view upstream (Roll HG2 - Exp 4; CD 2 - Im 127)

# **APPENDIX XXXII**

#### **HEADSTONE CREEK**

(235-754400)

### Sample Site 32

												SI	ΤE	CA	١R	)											
STF	REA	M NA	AME	Н	lead	stone (	Creek	(											FIELD	) (	COORDINA	TES	57°	02.7	5' 123'	' 11.2	26'
LOO	CAT	ION							_																		
NTS	S MA	\P #	9	94G/	3	NIE	D NO		WA	TERS	IED (	CODE	2	235-	754	400	_										
RE/		#	0004	10010		SIT	E#	32	SIT	EUTM	10	48	8677		63	22541		SITE L	ENGTH	+	200 M	ETH	RF	ACC	ESS		rl
DA	E		2001	/08/2	20	1 11V	/IE	1742	AG	ENCY	D	iversit	lea E	nvi	ronn	nental	Ser	vices	CREW	V	BC/TE	FIS	SH F		Y X	N	
(	CHA	NNE	L (m)		met	h I de		0.00	1.40					10	<b>a</b> a	avg		GRAD	IENT %	D	EMS			COI			٨N
CH				-		15	0.20	9.20	12	2.00 1	3.20	11.0		10.0	80	11.90	) m	neth	AL		TEMP (°C)		/.0	IUF	BIDIT	(	Ē
				–		9	.00	4.00	9.	.90 0	20	4.0	J 4	0.0	50 DE	1.47	_	3.5	<u> </u>				1 5		Clear		20
Wb			1 03	п 3 Г	1 10	0.0	20	STAGE	0.	.25 C	rate	0.24	+ Jo V	is C	25 Shan	0.21		3.0 )rv/Int	<u> </u>		RED MATE	RIAI	1.5	111 - 1	۲D		
***		C	OVE	у <sub> </sub> र т	otal		20	Mode	rate (	5-20%)	iute		)ewa	ater	man		Т	ribs			Dominant	Gra	avel (	2-64	mm)		
	type	SV	VD	LWE	2	В	ι					V	CRO	WN	I CL	OSUR	E				Subdom.	Bo	ulder	(> 2	56 mm)		
	amt	N	1	Т		D	N	1	S	N		N									D95 (cm)	52		D (c	m) 12		NO
к	loc	F	> _	Ρ		Р	F	>	Ρ	Р		Р		%0	40%	20%		%			Morph. Rif	ile-p	ool	_			RPF
NE NE		LWI	D FNC	C N	lone	1		DIST					%0	1-2	21-	4	2	-0C			DISTURBA	NCE	e ind	ICA	TORS		þ
8		LB S	SHAP	ΕV	'ertic	cal		RB SH	APE	Vertica			0	1	2	3 4	+ +	5			O1 B1 B2	В3	D1	D2	D3 C1	C2	00
		ТΕХ	TUR	E F	ines	/Cobbl	е	TEXTU	IRE	Cobble	s	I	NST	RE	AM	Al	gae	;			C3 C4 C5	S1	S2	S3	S4		×
		RIP	. VEG	. C	Conif	erous		RIP. VI	EG.	Conife	ous	١	/EG	ETA	ATIC	N					PATTERN	Sin	luous	5			
		STA	GE	N	1atur	re Fore	st	STAGE	Ξ	Mature	Fore	st									ISLANDS	No	ne				
																					BARS	Sid	le				
																					COUPLING	Pa	rtially	Cou	pled		_
	_						<b>/5 -</b>					<u> </u>									CONFINED	Oc	casio	onally	Confin	ed	
IRE	С	NIL	MAP	# 1	NID	# IN	IPE	HT/LG	i (m)	mthd								COMIN	/IENTS			1	1		JIM		
١TU											R		-														
FE/											R	F	:														
										DIS	TUR	BANC	EIN	IDIC	CAT	OR LE	GE	ND									
01	Beav	/er Dai	m		В	3 Avul	sion			D3 Re	cent LV	VD jam			СЗ	Elevated	l Bar	·	S1		Homogenous E	ed		S4	Extensive	e Bars	
B1	Abar	ndoned	d Chanr	nel	D	1 Sma	all Woo	dy Debris	;	C1 Ext	ensive	Riffles		(	C4	Multiple	Char	nnel	S2		Sediment Finge	ers		S5	Extensive	Scour	rs
B2	Erod	ing Ba	ink		D	2 Larg	e Woo	dy Debris		C2 Lim	ited Po	ools			C5	Disturbe	d Lin	nes	S3		Sediment Wed	ges			-		-
T	Y	Mod	lerate	seas	sona	l rearin	g for	BT, MV	V and	d RB - c	over s	somew	/hat	limit	ted,	mostly	bou	ulder po	ockets.								
3IT ∕	<b>L</b> LI	Spa	wning	pote	entia	l limite	d by l	arge su	bstra	tes and	subs	urface	flow	/ at i	mou	th.											
HAE		Limi	ted ju	venile	e rea	aring ha	abitat	presen	t.	h	- fl			1 1													
	27	Sea	sonal	acce	ess c	currenti	ly res	tricted t	by su	o-surrac	e flov	v at iov	ver		1.												
			FRAM			ΔΕΙΝ	DIRI	FOTION	J									COM									
NO	Н	G2	23		v	vd			viev	v u/s fro	m bo	ttom o	f site	ż				00111									
AT	Н	G2	24		v	vd		u	viev	v u/s fro	m ce	ntre of	site														
ENT	Н	G2	25		v	vd		d	viev	v d/s fro	m top	o of sit	е														
JME	Н	G3	1A		V	vd		u	aer	ial view	upstre	eam															
DCL																											
DQ																											
DTC																											
ЭНС																											
	<u> </u>		ID			M					MC									14					C		
Щ	G	MAN	7 1   P	lison	elk	• •			DOEL	<b>VATIO</b>	NO				G	TOUP	1			vv		SEI	τνΑ		3		
ГDГ				13011	, сп												-										
M														+			+										
	(	0	1																								
	C	X1	Electr	o-fis	hing	effort:	428	second	s @	250 volt	s. Bu	ll trout	and	rair	nbow	/ trout	were	e captu	ured.								
NTS	C	X2	Lowe	r 100	00 m	of stre	eam d	le-water	ed (s	ubsurfa	ce at	conflu	ienc	e).						-							
MEN																											
NMO																											
ö																											

							FI	SH C	OLLI	ECTIO	N FOR	M						
STF	REAN	/ NAME	He	adsto	one Creel	(								LAK	EX	STREAM	V	VETLAND
LOO								<b>D</b>	040		WATE	RSHED	CODE	235-	754400	TTAOLIE		
								лР 	94G/			20	SITE/L		, ARD A	2001 032	, <u>x</u>	Y N
	JJEC		Haliwa	y-Gra	to 2		REACH		iv oroifi			32 Sonico			1 # 30			
DA			.001/06/	20	10 2	001/08/20	AGENC		IVEISIII			Service				BC/TE	RE-3	
Q	S	ITE #	NID M	AP #	NID #	SITE	UTM	Ν	NETHO	DD/NO.	JIKEA			-		COMME	INTS	
ГНC		32				10 48867	7 632254	1	FF	1		CON	LOKP					
ME.		02				10.40007	1.002204			•	1.0							
E /																		
SIT																		
	SIT	E# M	TD/NO	H/P	SPECI	ES STAGE	AGE	TOTA	AL NO	MIN LI	N (mm)	MAX L	.N (mm)	FIS	HACT	C	OMMEN	TS
λRΥ	34	2		1	BI			4	2	10	30	3	35 80	RE	aring			
√M/	54	2		1					1	10	50	-	00		anny			
SUN																		
SH																		
Ш																		
ECO		01 <b>7</b> 5 //											NET /	TRAP	SPECI	FICATION	IS	
SPI	С	SITE #	MD/NC	) H/P	DATE	IN TIME	IN DA	re ou	TIM	IE OUT	NET TY	PE LI	ENGTH	DE	PTH	MESH SI	ZE SET	HAB
AR	╞																	_
GE																		
							ELE	CTRO	FISHE	R SPEC	IFICATIO	ONS						
	С	SITE #	MD/NC	) H/P	TIME	IN TIME C	OUT EI	= SEC	LE	NGTH	WIDT	H El	ICL V	OLT	FREQ	PLSE	MAKE	MDL
		32	EF/1	1	1745	5 1800	)	428		200	7.47		0 2	250	60	Fixed	Coffelt	Mk X
TS	С																	
1EN																		
MMC																		
ö																		
							l	NDIV	IDUA									
С	SIT	E # MD	/NO H/I	> SF						L FISH	H DATA	٩						
-				-	PECIES	LENGTH	WEIGH	HT	SEX	L FISH MATU		4	AGE			CO	MMENTS	3
	32		-/1   1		PECIES	LENGTH (mm)	WEIGI (gms	HT )	SEX	MATU	I DATA		AGE	AG	E	CO	MMENTS	3
	- 32	· -	=/1 1		RB	LENGTH (mm) 180 335	WEIGI (gms	HT )	SEX	AL FISH MATU	I DATA	R SA	AGE MPLE # 6-1	AG	E	CO	MMENTS	3
		2 EI 2 FI	=/1 1 =/1 1		RB BT BT	LENGTH (mm) 180 335 186	WEIGI (gms	HT )	SEX	MATU	I DATA	A TR SA ale ale ale	AGE MPLE # 6-1 6-2 6-3	AG 3+ 5+	E - -	CO	MMENTS	3
		2 El	=/1 1 =/1 1		RB BT BT	LENGTH (mm) 180 335 186	WEIGI (gms	HT )	SEX	MATU	HDATA	TR SA ale ale ale	AGE MPLE # 6-1 6-2 6-3	AG 3+ 5+ 2+	E .	CO	MMENTS	; 
		2 El	F/1 1 F/1 1		RB BT BT	LENGTH (mm) 180 335 186	WEIGH (gms	HT )	SEX	MATU	HDATA IR S1 Sc Sc Sc	A SA ale ale ale ale ale	AGE MPLE # 6-1 6-2 6-3	AG 3+ 5+ 2+	E - - -	CO	MMENTS	3
		2 EI	F/1 1 F/1 1		RB BT BT	LENGTH (mm) 180 335 186	WEIGH (gms	HT	SEX	MATU	I DATA	A SA ale	AGE MPLE # 6-1 6-2 6-3	AG 3+ 5+ 2+	E	CO	MMENTS	}
		2 EI	F/1 1 F/1 1		RB BT BT	LENGTH (mm) 180 335 186	WEIGH (gms		SEX	MATU	H DATA	A SA ale	AGE MPLE # 6-1 6-2 6-3	AG 3+ 5+ 2+	E	CO	MMENTS	5
		2 EI	F/1 1 F/1 1		RB BT BT	LENGTH (mm) 180 335 186	WEIGH (gms		SEX	MATU	H DATA	A SA ale	AGE MPLE # 6-1 6-2 6-3	AG 3+ 5+ 2+		CO	MMENTS	\$ 
			=/1 1 =/1 1		RB BT BT	LENGTH (mm) 180 335 186	WEIGH (gms		SEX	MATU	H DATA	A TR SA ale ale ale	AGE MPLE # 6-1 6-2 6-3	AG 3+ 5+ 2+	E	CO	MMENTS	
			F/1 1 F/1 1		RB BT BT	LENGTH (mm) 180 335 186	WEIGH (gms		SEX	MATU	H DATA	A ale ale ale	AGE MPLE # 6-1 6-2 6-3	AG 3+ 5+ 2+	E	CO	MMENTS	
			F/1 1 F/1 1		RB BT BT	LENGTH (mm) 180 335 186	WEIGH (gms		SEX	MATU	H DATA	A ale ale ale	AGE MPLE # 6-1 6-2 6-3	AG 3+ 5+ 2+		CO	MMENTS	
					RB BT BT	LENGTH (mm) 180 335 186	WEIGH (gms		SEX	MATU	H DATA	A SA ale	AGE MPLE # 6-1 6-2 6-3	E AG 31 51 21		CO	MMENTS	
					RB BT BT	LENGTH (mm) 180 335 186	WEIGH (gms		SEX	MATU	H DATA	A SA ale	AGE MPLE # 6-1 6-2 6-3	AG 3+ 2+ 		CO	MMENTS	
					RB BT BT	LENGTH (mm) 180 335 186	WEIGH (gms		SEX	MATU	H DATA	A SA ale	AGE MPLE # 6-1 6-2 6-3	AG 3+ 2+			MMENTS	
					RB BT BT	LENGTH (mm) 180 335 186	WEIGH (gms		SEX		H DATA	A SA ale	AGE MPLE # 6-1 6-2 6-3	AG 3+ 5+ 2+			MMENTS	
					RB BT BT	LENGTH (mm) 180 335 186	WEIGH (gms		SEX		H DATA	A SA ale	AGE MPLE # 6-1 6-2 6-3	AG 3+ 5+ 2+				
					RB BT BT	LENGTH (mm) 180 335 186	WEIGH (gms		SEX		H DATA	A SA ale	AGE MPLE # 6-1 6-2 6-3 	AG 3+ 2+ 				
					RB BT BT	LENGTH (mm) 180 335 186	WEIGH (gms		SEX		H DATA	A ale	AGE MPLE # 6-1 6-2 6-3	AG 3+ 2+ 				
					RB BT BT	LENGTH (mm) 180 335 186	WEIGH (gms		SEX		H DATA	A SA ale sale sale sale sale sale sale sale	AGE MPLE # 6-1 6-2 6-3	AG 3+ 2+				



Headstone Creek Site 32: View upstream from bottom of site (Roll HG2 - Exp 23; CD 2 - Im 128)



Headstone Creek Site 32: Aerial view upstream (Roll HG3 - Exp 1A; CD 2 - Im 131)

# **APPENDIX XXXIII**

## UNNAMED TRIBUTARY TO HALFWAY RIVER

(235-793900)

### Sample Site 33

											SI	ΈC	AR	D											
STF	REA	M NA	ME	Unr	name	d tribut	ary to	Halfway	/River								FIELI	D	COORDINA	TES	56°	59.07	' 123° ′	14.04'	i
LOO	CAT	ION					-																		
	5 MA	ΑΡ #	94	B/14				W/		IED (		23	5-793	3900			ENOT		000		DE	100			
		#	2001/0	9/21			۲ J.			10	485i	301 d En	viron	315660	Sorv			H M				ACC	$\sim \mathbf{v}$	H	
DA			2001/0	0/21	-44		00/	20 AG		U	IVEISIIIE		VILOTI	menitai	Selv					FIS				IN	~
				me	etn	10.00	10	50 J 26		0 00	16.00	10	00	avg		JRAD		/0			5		ע עדוחוכ		NA-
WF				R	r PF	3.00	3 5	50 Z	00 2	0.00 2 50	4 80	4	30	3.68		25	AL		$\frac{1}{2} \text{ Im} \left( \begin{array}{c} 0 \end{array} \right)$		0.0		Clear		Ţ
			ЛЕРТН	M	us	0.00	0.0		20 (	) 15	0.30		20	0.18		2.5	<u> </u>			SNS	04	m - R	D		~
Wb	DE	PTH	0.50	0.	60	0.50	STA	GE	Mode	erate	N0.00	) Vis	Char	1	Dr	ry/Int		1	BED MATE	RIAL	0.4		5		
		С	OVER	Tot	al			Trace	(5%)		De	ewate	r		Tr	ribs	<u> </u>		Dominant	Coł	oble	(64-25	6 mm)		
	type	SV	/D L	WD	E	3	U	DP	OV		V CI	ROW	N CL	OSUR	RE				Subdom.	Gra	avel (	2-64 r	nm)	_	~
	amt	T	-	Ν	C	)	Ν	Т	N		N		~	~ ~					D95 (cm)	29		D (cr	n) 10		<u></u>
Ř	loc	F	<b>)</b>	Р	F	2	Р	Р	Р		Р	%0;	40%	-70%	%	°			Morph. Riff	fle-po	loc	_			RPT
DVE		LWI	D FNC	Few	/		DIS	Г	Clump	ed	%0	4	21.	41.	- 6	<u>۳</u>			DISTURBA	NCE	IND	ICAT	ORS		ρ
ö		LB S	SHAPE	Ver	tical		RB \$	SHAPE	Slopin	9	C	1	2	3 4	4 5	5		_	O1 B1 B2	В3	D1	D2 [	03 C1	C2	0G
		TEX	TURE	Gra	vel/C	obble	TEX	TURE	Gravel	/Cobb	ole IN	STR	EAM	N	one				C3 C4 C5	S1	S2	S3 S	64		~
		RIP.	VEG.	Con	ifero	us	RIP.	VEG.	Conife	rous	VE	GET							PATTERN	Sin	uous	;			
		STA	GE	Mat	ure F	Forest	STA	GE	Mature	Fore	st								ISLANDS	Nor	ne				
																			BARS	Sid	e	la d			
																					coup	nod			
	C				ד <del>ש</del>			I G (m)	mthd			<u> </u>							CONFINED	Und	JOIIII	lieu	тм		
JRE	C				<i></i>		/	LO (III)		R			1			COM		,			1	0			
ATI										R	F									-					
ШЦ										R	F														
									DIS	TUR	BANCE	IND	ICAT	OR LE	GEN	ND									
01	Beav	/er Dai	n		B3	Avulsion			D3 Re	cent LV	VD jam		C3	Elevated	d Bar		S	1	Homogenous B	led		S4 E	xtensive E	Bars	
B1	Abar	ndoned	d Channel		D1	Small W	oody De	bris	C1 Ext	ensive	Riffles		C4	Multiple	Chan	nnel	S	2	Sediment Finge	ers		S5 E	xtensive S	Scours	
B2	Erod	ing Ba	ink		D2	Large W	oody De	bris	C2 Lin	nited Po	ools		C5	Disturbe	ed Line	es	S	3	Sediment Wed	ges					
					,									<u> </u>											
AT	₹	Limi	ted pote	ential	tor s	easona	l use t	y rearir	ig juveni	ie spo	ort-tisn i	out ad	cess	s preciu	laea	by sur	o-surta	ace	e flow and						
BIT	IAL	unu	enneu c	lidiii		alluvia	i iaii.																		
НA	gu																								
F	δZ																								
z	R	DLL	FRAME	E FO	CAL	LN DI	RECT	ION							(	COMN	<b>IENTS</b>	3							
LIO	Н	G3	7A		wd		u	vie	w u/s fro	m bo	ttom of	site													
TA <sup>-</sup>	Н	G3	8A		wd		u	vie	w u/s fro	m ce	ntre of s	site													
IEN	H	G3	9A		wd		d	vie	w d/s fro	om top	o of site														
ŇÜ	Н	G3	10A		wd		u	aer	ial view	upstro	eam														
ŏ																									
10.																									
łOT																									
Ч																									
Ш	G	ROU	IP			WIL	DLIFE	OBSE	RVATIO	NS			G	ROUP				W	/ILDLIFE OE	BSEF	RVAT	LIONS	6		
DLIF																									
עורם																									
\$		_																							
			Alc -				4																		
S	C C	רק עז	AISO SC	fichir		ers pre	sent.	ndo @	250 volt	0 No	fich pr	oont													
ENT	C C	X2		ace o	iy el	or.∠o	with H	alfwav F	ZUU VUII	3. INU WS SI	ib-surfe		/ith n/	o stable	- cha	annel	through	h ŀ	arge alluvial f	fan					
AIME	U		downst	ream	of si	te.		anwayı				, vi					ougi			an					
NOC						-																			
0																									

								F	ISH	COLL	ECTIO	N FOR	RM								
STF	REAN	M NA	ME	Unr	name	ed tributa	ry to Halfway	/River							l	LAKE	Х	STREA	М	WE	TLAND
LOC		ON								0.40		WATE	RSHE		DE 2	235-79	3900	TTAOU			
VV A			טו אנ יי	1-16	0	h 0		NISM	AP	94B/*	I4 NID		00	SIT						Ŷ	N
		JIIL	) <u>-</u>	1altway	-Gra	nam Ove			1# ~~	Divoraif			33 Sonic	FIS		RIVIT 7	# 302	2001-032			
DA			20	01/00/2	<u>- 1</u>	10 2	.001/06/21	AGEIN	ז כ	Diversii			Servic			vv		DC/TE		-3AW	FLC
DC	S	ITE #	# 1	NID MA	AP #	NID #	SITE	E UTM		METH	OD/NO.	JIKE/						COMN	<b>IENTS</b>		
THC		33					10 48580	1 63156	60	FF	1	5.5	CON		λD 2						
ME															-						
/ <u>∃</u> _																					
SIT																					
	OIT		NATI						ITO								AOT				
۲	3	E#	F	J/NO F/1	Н/Р 1	SPECI	ES STAGE	AGE	10			N (mm)	IVIAX	LIN (M	im)	FISH /	ACT		COMM	ENIS	
AR		•		. , .	· ·		, 			0											
MM																					
SU																					
ISH																					
ш									_												
8														NF	т / ті	RAP S	PFCI	FICATIO	NS		
PEC	С	SIT	E#N	/ID/NO	H/P	DATE	IN TIME	IN DA	TE (		/IE OUT	NET TY	/PE	LENG	ГН	DEP	TH	MESH S	SIZE	SET	HAB
R S																					
ЭЕА																					
0									СТГ				ONC								
	С	SIT	E#N	/ID/NO	H/P	TIME			EF SE			WIDT	H I	ENCL	VOI	LT FF	REQ	PLSE	MAł	KE	MDL
	-	33	3	EF/1	1	0830	084	7	258	1	200	3.68	;	0	25	0	60	Fixed	Coff	elt	Mk X
										, I											
ΓS	С						I			,	200								I		
IENTS	С							L		,											
MMENTS	С									,   									<u> </u>		
COMMENTS	С									,									· · · · · · · · · · · · · · · · · · ·		
COMMENTS	С								IND	IVIDU	AL FISI	H DAT/	4								
COMMENTS	C	E#	MD/N		SF	PECIES	LENGTH	WEIG	IND HT	IVIDU/ SEX	AL FISI MATU		4	AGE				C	OMMEN	JTS	
COMMENTS	C	E#	MD/N	IO H/P	SF	PECIES	LENGTH (mm)	WEIG (gm	IND iHT s)	IVIDU/ SEX	AL FISI MATU		A TR S	AGE	E #	AGE		C	OMMEN	NTS	
COMMENTS	C	E#	MD/N	10 H/P	SF	PECIES	LENGTH (mm)	WEIG (gm	IND 6HT s)	IVIDU/ SEX	AL FISI MATU		A TR S	AGE	E #	AGE		C	OMMEN	ITS	
COMMENTS	C	E #	MD/N	10 H/P	SF	PECIES	LENGTH (mm)	WEIG (gm	IND 6HT s)	IVIDU/ SEX	AL FISI MATU	H DAT/ IR ST	A TR S	AGE	E #	AGE		C	OMMEN	NTS	
COMMENTS	SIT	E #	MD/N		SF	PECIES	LENGTH (mm)	WEIG (gm	IND 6HT s)	IVIDU/ SEX	AL FISI MATU	H DAT/ IR S	A TR S	AGE	E #	AGE		Co		NTS	
COMMENTS	SIT	E #	MD/N		SF	PECIES	LENGTH (mm)	WEIG (gm	IND 6HT s)	IVIDU/ SEX	AL FISI MATU	H DAT/ IR ST	A TR S	AGE	E # 1	AGE		C	OMMEN	ITS	
COMMENTS	SIT	E #	MD/N		SF	PECIES	LENGTH (mm)	WEIG (gm	IND SHT s)	IVIDU/ SEX	AL FISI MATU	H DAT	A TR S	AGE SAMPL	E# [	AGE		C	OMMEN	ITS	
COMMENTS	SIT	E#	MD/N		SF	PECIES	LENGTH (mm)	WEIG (gm	IND GHT s)	IVIDU/ SEX	AL FISI MATU	H DAT/ IR S	A TR S	AGE	E # 0	AGE		C	OMMEN	ITS	
COMMENTS	SIT	E #	MD/N		SF	PECIES	LENGTH (mm)	WEIG (gm	IND SHT s)	IVIDU/ SEX	AL FISI MATU	H DAT/ IR ST	A TR S	AGE	E#	AGE		C	OMMEN	JTS	
COMMENTS	SIT	E #	MD/N		SF	PECIES	LENGTH (mm)	WEIG (gm	IND SHT s)	IVIDU/ SEX	AL FISI MATU			AGE	E # 1	AGE		C	OMMEN	ITS	
COMMENTS	SIT	E #	MD/N		SF	PECIES	LENGTH (mm)	WEIG (gm	IND SHT s)	IVIDU/ SEX		H DAT/ IR S		AGE	E # I	AGE		Co		JTS	
COMMENTS	SIT	E #	MD/N		SF	PECIES	LENGTH (mm)	WEIG (gm	IND SHT s)	IVIDU/ SEX		H DAT/ IR ST		AGE	E #	AGE		C(		JTS	
COMMENTS COMMENTS	SIT	E #	MD/N		SF	PECIES	LENGTH (mm)	WEIG (gm	IND SHT s)					AGE	E # 1	AGE		C(		JTS	
COMMENTS	SIT	E #	MD/N		SF	PECIES	LENGTH (mm)	WEIG (gm	IND 6HT s)	IVIDU/ SEX		H DAT/ IR S		AGE		AGE				NTS	
COMMENTS	SIT	E#	MD/N		SF	PECIES	LENGTH (mm)	W EIG (gm	IND SHT s)			H DAT/ JR ST		AGE		AGE				JTS	
COMMENTS	SIT	E # 4	MD/N		SF	PECIES	LENGTH (mm)	W EIG (gm	IND sHT s)			H DAT/ IR ST		AGE		AGE				JTS	
COMMENTS	SIT		MD/N		SF	PECIES	LENGTH (mm)	WEIG (gm	IND 6HT s)			H DAT		AGE		AGE				NTS	
COMMENTS	SIT			NO H/P 		PECIES	LENGTH (mm)	WEIG (gm	IND SHT s)			H DAT/ IR ST ST ST ST ST ST ST ST ST ST		AGE		AGE				JTS	
COMMENTS	SIT				SF		LENGTH (mm)	W EIG (gm	IND sHT s)			H DAT/ IR SI SI SI SI SI SI SI SI SI SI SI SI SI S		AGE		AGE				JTS	



Unnamed tributary to Halfway River Site 33: View upstream from centre of site (Roll HG3 - Exp 8A; CD 2 - Im 133)



Unnamed tributary to Halfway River Site 33: Aerial view upstream (Roll HG3 - Exp 10A; CD 2 - Im 135)

# **APPENDIX XXXIV**

# UNNAMED TRIBUTARY TO HALFWAY RIVER

(235-804800)

### Sample Site 34

												SIT	ΕC	ARI	)										
STF	REA	M N/	AME	U	Jnna	med tri	butary	to Half	way	River								FIELD	) (	COORDINA	TES	56°	58.9	9' 123°	16.21'
LOC	CAT	ION							14/4	TEROLU			0.01												
		4P # + #	ę	94B/	14			34	VVA SITI		=D (	20DE	235	1-804	800					200 M	тц	DE		, E66	ш
	IE	#	2001	/08/2	21		L#_ IE	0915	AGE		D	iversified	I Env	vironr	nental	Servic	es L	CREW	/	BC/TE	FIS	H FC	ORM	Y X	N
C	ЭНА	NNF	l (m)		met	h									ava	GF		IENT %	, ,	FMS			CON		5
CH/		IEL V	VIDTH	1	MS	6 2.	50	2.60	2.8	80 2.	30	3.50	2	.20	2.65	met	h	AL		TEMP (°C)	3	8.0	TUF	RBIDITY	ΙΤΑ <sup>γ</sup>
WE	TTE	ED W	IDTH		MS	6 2.	50	2.60	2.8	80 2.	30	3.50	2.	.20	2.65	5	.0			Ph				Clear	ΨR
RES	S PC	DOL	DEPT	н	MS	<b>3</b> 0.	14	0.09	0.3	38 0.	21	0.12	0.	.48	0.24	6	.0			FLOOD SIG	GNS	0.5	m - F	RD	
Wb	DE	PTH	0.60	)	0.70	0 0.	60	STAGE		Moder	ate	No	Vis	Chan		Dry/	′Int			BED MATE	RIAL	-	(0.4.0		
		C	OVEF	<b>λ</b>	otal			Tra	ace (5	5%)		De	vate	ſ		Trib	s			Dominant	Col	oble	(64-2	56 mm)	
	type	SV				<u> </u>	U		94	OV			OW I		OSUR	E				Subdom.	Bou	ulder	(> 2t	$\frac{1}{2}$	M
~	amt		2	і Р		<u>р</u>	<u>р</u>		D D	P	1		%	%0	%0	%				Morph Rif	42 fle-ni	201	ט) U	III) <u>22</u>	Ř
VEF	100	LWI		, F	ew	•		DIST	1	Even		%(	1-20	4	41-7 71-9	606~				DISTURBA	NCE		ICAT	ORS	HO
C C		LB S	SHAP	ΕV	/ertic	cal	F	RB SHA	PE	Vertical		0	1	2	3 4	5				O1 B1 B2	B3	D1	D2	D3 C1	
		TEX	TURE	E F	ines	;		TEXTU	RE	Fines		INS	TRE	EAM	A	gae				C3 C4 C5	S1	S2	S3	S4	- GY
		RIP	. VEG	. C	Conif	erous	F	RIP. VE	G.	Conifere	ous	VE	GET	ATIC	N	•				PATTERN	Sin	uous	5	I	1
		STA	GE	Ν	/latur	re Fore	st S	STAGE		Mature	Fore	st								ISLANDS	Nor	ne			
																				BARS	Nor	ne			
																				COUPLING	Par	tially	Cou	pled	
•	_			4					()	and the st		DUOTO		_						CONFINED	⊦re	quen	ntly C	ontined	
JRE	C	NIL		#	NID	# IY	PE	HI/LG	(m)	mtha	Þ		,					/IEINTS					l		
ATL											R	F		-											
ΕË		-									R	F													
										DIST	UR	BANCE	IND	CAT	OR LE	GENE	)								
01	Beav	ver Dai	m		В	3 Avuls	sion			D3 Rece	ent LV	/D jam		C3	Elevated	Bar		S1		Homogenous E	led		S4	Extensive	Bars
B1	Abar	ndoned	d Chanr	nel	D	01 Sma	ll Wood	dy Debris		C1 Exte	nsive	Riffles		C4	Multiple	Channe	el 🛛	S2		Sediment Finge	ers		S5	Extensive	Scours
B2	Erod	ling Ba	ink		D	02 Larg	e Wood	dy Debris		C2 Limit	ed Po	ols		C5	Disturbe	d Lines		S3		Sediment Wed	ges				
		Low	to mo	dore	to o		Iroori	na noto	ntial		or di	ia ta rala	tivol	( biał	aradia	nt lou		mmor t	00	noroturo m	av bo	limit	lina		
-AT	Τ	LOW No f	ish ca	ntur			ved	ng pole	illidi,				uvery	/ nigi	i gradie	in, iov	v su			nperature ma	ay De	;	ung.		
ABIT	JAL																								
Η	g																								
FS	δZ																								
N	R	OLL	FRAM	/E F	-OC	AL LN	DIRE	CTION								C	DMV	<i>I</i> ENTS							
ATIC	H	G3	11A	<b>`</b>	V	<i>v</i> d		u	view	u/s fron	n bot	tom of s	ite												
NT/	<u>п</u> Н	63 63	124	\ \	V	wd		u d	view	/ u/s Iron		of site	le												
ME	H	G3	14/		v	<i>w</i> d		u	view	of confl		e with F	lalfw	av riv	rer										
CU						-		-					-	- ,	-										
DQ																									
ТО																									
ОН																									
ш.		DOI							055		10								1.4				FLON	_	
ΗE	G	RUL				V	/ILDL	IFE OB	SER	VATION	15			G	ROUP				vv		SEF	<b>KVA</b>	IION	5	
LDL														-											
MII																									
		С																							
	С	X1	Electr	o-fis	hing	g effort:	307 s	seconds	s @ 2	250 volts	. No	fish cap	tured	J.											
NTS																									
MEI																									
MO																									
0																									

									F	ISH	COL	LECTIO	DN F	OR	Μ								
STF	REAN	M NA	ME	Ur	nam	ed tributa	iry to Hali	fway	River				_					LAKE	Х	STREAM	Λ	WE	TLAND
LOO		ON									0.45		WA	ATE	RSHI	ED CC		235-80	)4800	TTAOUE			
			עו צע ר	)		ah ana Ou				AP	946	5/14 NI			24	5				2001 032		Ŷ	N
			ן נ סכ	Halfwa	y-Gra			71	ACEN	1# ~v	Divor	ified Envi		ntol	34 Son <i>i</i>	FI			# 30/	2001-032	БС	CAM.	
DA			20	01/08/	21	10 2	2001/08/2	21	AGEN	J T	Divers				Servi					BC/TE	RE	-SAIVI	FLC
Q	S	ITE	#	NID M	AP #	* NID #	5	SITE	UTM		MET	HOD/NO								COMM	ENTS		
THC		34					10.48	33606	63155	03	FF	1	3	VIF 0	00		C C						
ME		• ·												•			•						
/ Э.																							
SIT																							
_		- 4									TAL N		N1 (1-1-1					FIGU	AOT				
2	<u>।</u> २	⊑# 4	IVI I	D/NO	H/F	SPECI		AGE	AGE	10			_N (mr	n)	MA)	X LN (	mm)	FISH	ACT		JOIMIME	INTS	
AR		-		-1 / 1	+ '		, 			+	0												
MM																							
SU																							
ISH																							
ш						_				_													
92																N	ET / T	RAPS	PECI	FICATIO	NS		
эЕС	С	SIT	E #	MD/NC	DH/F	P DATE	IN T	IME	IN DA	TE (	τ Τυς		NE	ΓΤΥ	ΈE	LENG	STH	DEF	PTH	MESH S	IZE S	ET I	HAB
R SI																							
βEA																							
0									-1														
	C	SIT	F#		) H/E			ME O		ESP		ENGTH			JNS H	ENCL	VC		REO	PLSE	MAK	F	MDI
	Ŭ	3	4	EF/1	1	092	0	0940	)	307	,	200	2	2.65		0	2!	50	60	Fixed	Coffe	elt	Mk X
S	С					ľ												ł					
ENJ																							
MM																							
00																							
										IND	IVIDU	JAL FIS	SH DA	٩TA	ł								
С	SIT	E#	MD/	NO H/I	P SI	PECIES	LENG	TH	WEIG	HT	SEX	MAT	UR			AG	E	1		CC	OMMEN	тѕ	
_							(mm	ı)	(gm	s)			-	ST	R	SAMP	LE #	AGE					
					_														_				
		]																					
					+										-+				+				
					+										-+				+				
								_						_			_						
					+										$\rightarrow$								
					+										$\rightarrow$				$\top$				
																			_				
					-										-+				-				
					+										-+				+				
					-										-+								
-		-																				-	



Unnamed tributary to Halfway River Site 34: View upstream from bottom of site (Roll HG3 - Exp 11A; CD 2 - Im 136)



Unnamed tributary to Halfway River Site 34: View of confluence with Halfway River (Roll HG3 - Exp 14A; CD 2 - Im 139)

# **APPENDIX XXXV**

#### **TURNOFF CREEK**

(235-821300)

### Sample Site 35

												SI	ΤE	C	ARI	)											
STF	REA	M NA	٩ME		Turne	off Cr	reek												FIEL	D	COORDINAT	res	57°	04.41	' 123°	22.9	7'
LOC	CAT	ION							_				_														
NTS	S MA	\P #		940	G/3	N			WA	TERSH	ED (	ODE	1	235	-821	300	_										
RE/		#	000	4/00	200	S		35	SII	EUIM	10	476	679	2	63	25633	S			н	200 ME	: I H	RF	ACC	ESS		1
DA	E		200	1/08	5/20		IIVIE	1636	AG	ENCY	D	iversit	lea	Env	Ironr	nental	Servi	ces	CRE	VV Q(	BC/TE	FI5			Y X	IN	_
	CHA	NNE	L (m	)	met	in N	0.00	0.00		50   O	00			~	00	avg	G	RADI		%	EMS			CON			NA
			י עוע דסע	⊔H ⊔		>	2.80	2.90	2.	50 3	20	2.8	5	3.5	90	3.02	me		AL		TEMP (°C)	9	.0	TUR			Ē
			חדשר חבח	n Tu'		>	2.00	2.90	2.	12 0	.30 22	2.20		0.0	90 20	2.11	_	1.0					0 0				20
Wb			06	50	0.5	5	0.20	STAGE	0.	Moder	ate	0.10	10 V	/is (	20 Chan	0.17	Dr	v/Int		1	BED MATE	RIAI	0.0	III - K	U		
		C	OVE	R	Tota		0.00	Moder	ate (	5-20%)	alo		Dew	ater			Tri	ibs		•	Dominant	Cot	ble (	(64-25	56 mm)		
	type	S٧	۷D	LV	٧D	В	1	UC	)P	OV	ſ	V	CRC	W	V CL	OSUR	E				Subdom.	Gra	vel (	2-64 r	nm)		~
	amt	٦	Г	١	N	S		S	D	S		N			<u>`</u> 0	<u></u>					D95 (cm)	36	,	D (cr	n) 22		l O
Ř	loc	F	2	F	2	Р		P	Р	Р	I	D		%0;	40%	-70%	%0				Morph. Riff	le-po	ool				RPF
DVE		LWI	D FN	IC	None	;		DIST					%0	4	21-	41-	6<				DISTURBA	NCE	IND	ICAT	ORS		þ
ö		LB S	SHA	PE	Vertio	cal		RB SH/	٩PE	Vertical			0	1	2	3 4	5				O1 B1 B2	В3	D1	D2 [	D3 C1	C2	OG
		TEX	TUF	RE	Fines	6		TEXTU	RE	Fines		I	NST	RE	AM						C3 C4 C5	S1	S2	S3 8	54		$\prec$
		RIP	. VE	G.	Shru	bs		RIP. VE	G.	Shrubs		۷	/EG	ET	ΑΤΙΟ	DN					PATTERN	Sin	uous				
		STA	١GE		Shru	b/Her	ъ	STAGE		Shrub/H	lerb										ISLANDS	Nor	ne				
																					BARS	Sid	e				
																					COUPLING	Dec	coup	led	Confina	4	
	C			D #		-# -			(m)	mthd							-			c	CONFINED	UC	asio	many		a	
JRE	C	INIL	, IVIA	Р#		#	ITPE	HI/LG	(11)	mina	Þ						U U			3			1	U			
₹T											R	F	:														
FE/											R	F	:														
										DIS	TUR	BANC	EIN		CAT	OR LE	GEN	ID									
01	Beav	/er Dai	m		E	33 AV	vulsion			D3 Rec	ent LV	/D jam			C3	Elevated	Bar		s	51	Homogenous B	ed		S4 E	xtensive	Bars	
B1	Abar	ndoned	d Cha	nnel	C	D1 Sr	mall Wo	ody Debris		C1 Exte	nsive	Riffles			C4	Multiple	Chanr	nel	S	62	Sediment Finge	rs		S5 E	Extensive	Scour	s
B2	Erod	ing Ba	ank		C	02 La	arge Wo	ody Debris		C2 Limi	ted Po	ols			C5	Disturbe	d Line	es	S	63	Sediment Wedg	ges					
						_																					
AT	≿	Mod	lerate	e po	tential	for s	eason	al use by	rear	ing juver	nile E	Т.															
BIT	ALI	POS	sible	juve	enile c	over-v	vinterin	ig potent	iai.																		-
HΑ	QU																										
FS	δZ																										
7	R	DLL	FRA	ME	FOC	AL L	N DIR	ECTION	l								C	COMN	/ENT	S							
I0	H	G2	1	7	١	wd		u	viev	v u/s fror	n boi	tom of	f sit	е													
TAT	H	G2	1	8	١	wd		u	viev	v u/s fror	n cei	ntre of	site	;													
EN	H	G2	1	9	١	wd		d	viev	v d/s fror	n top	of site	е														
NU	H	G2	2	0	١	wd	_	u	aeri	al view u	pstre	eam															
000							_																				
0							_																				
ЮT							+																				
Н																											
ш	G	ROL	JP				WILD	LIFE OE	SEF	<u>IOITAV</u>	١S				G	ROUP				Ν	/ILDLIFE OB	SEF	RVAT	<b>FION</b>	6		
LIF		MAN	1	Bisc	on trad	cks																					
(ILD																											
$\leq$																											
	(	С																									
S	C	X1	Elec	tro-f	ishing	g effo	rt: 409	seconds	s @ .	250 volts	. Bu	l trout	wer	e ca	aptur	ed.											
NT	C	1	AISC	nig	n prop	JULIO	n ot tin	ies and s	ome	bouider	5.																
IME																											
NO NO																											
0																											

							FI	SH (	COLLI	ECTIO	N FOR	M						
STF	REAN	/I NAME	E [	Turn	off Creek									LAK	Е <b>Х</b>	STREAM	Λ	WETLAND
LOC		ON									WATE	RSHE	D CODE	235	-821300	TTAOUE		
					0		NIS MA	ч ,	94G/			05	SITE/L			11ACHE		Y N
	JIEC	טו וג י	Halty	vay-0			REACH		Vivoroifi			35 Sonio				2001-032		
DA	E	4	2001/0	10/20	) 10 2	2001/08/20	AGENC	T L	Jiversin			Service				BC/TE	RE-3	DAIVIPLE
Q	S	ITE #	NID	MAF	P# NID#	SITE	UTM	1	METHO	DD/NO.	STREA					COMM	ENTS	
ГНС		35				10 47670	2 632563	3	EE	1		CON	TURE	5				
MEI		55				10.47073	2.002000	5		•	5.0							
E / I																		
SIT																		
	SIT	E# M		O H	H/P SPEC	ES STAGE	AGE	TOT	AL NO	MIN LI	N (mm)	MAX	LN (mm)	FIS	H ACT	(	COMMEN	ITS
ſRΥ	3	5	EF/1		1 BI				5	8	7		235	R	earing			
٩M٩																		
SUN																		
SH S																		
Ш																		
EC6			_										NET /	TRA	P SPECI	FICATIO	NS	
SPE	С	SITE #	MD/I	NO	H/P DATE	IN TIME	IN DA	ΓΕ Οι	JT TIN	1E OUT	NET TY	PE L	ENGTH	D	EPTH	MESH S	IZE SE	T HAB
AR	-																	
GE	-																	
							ELE	CTRC	FISHE	R SPEC	IFICATIO	ONS						
	С	SITE #	MD/	NO	H/P TIME	IN TIME C	DUT E	= SEC	LE	NGTH	WIDT	ΉE	NCL V	OLT	FREQ	PLSE	MAKE	MDL
		35	EF/	1	1 164	0 165	5	409		200	2.77		0	250	60	Fixed	Coffelt	t Mk X
TS	С																	
1EN	-																	
MMC	-																	
ö																		
								NDI\	/IDUA	<b>AL FISI</b>	H DATA	4						
С	SIT	F # MD		I/P	SPECIES	LENGTH	WEIG	ΗT	SEX	ΜΑΤΙ			AGE			00	MMENT	s
-	-		<b>E</b> ( 4			(mm)	(gms	)			ST ST	rr s	AMPLE #	# A0	SE .			-
	3		F/1	1	BI	94					Sc	ale	5-1	1	+			
	3	5 F	F/1	1	BT	200					00 	ale	5-3	3	+			
	3	5 E	F/1	1	BT	185					Sc	ale	5-4	3	+			
	3	5 E	F/1	1	BT	235					Sc	ale	5-5	4	+			
			-+	+														
				+														
				-+										_				
			1			1	1					1						



Turnoff Creek Site 35: View upstream from bottom of site (Roll HG2 - Exp 17; CD 2 - Im 140)



Turnoff Creek Site 35: Aerial view upstream (Roll HG2 - Exp 20; CD 2 - Im 143)

## **APPENDIX XXXVI**

#### **FIDDES CREEK**

(235-821600)

### Sample Site 36

												S	ITE	EC	ARI	)											
STF	REA	MNA	AME	Fid	des (	Creeł	k												FIEL	D	COORDIN	IATE	S 56	° 52.5	53' 12	3° 23	.90'
LOO	CAT	ION					_																				
	S MA	λP #	94	4B/14		NID			WA	TERS	IED (			235	-821	600									0500		<u> </u>
RE/		#	2001/	00/01			E#	36	SII		10	47	'568 fied	33	63	03600	SI				200 BC/TE					V N	Н
DA			2001/	J6/21	- 41-	TIIVI		1030	AGI	ENCT		iversi	nea	EUA	/ITOTI	nemai s		es		.VV	BC/TE	FI	эпг				
			L (m)	m		5.9	80	2 50	5	20 /	00	56	0	1	50	avg	GF	KADI b		70			6.0		עאו וחופס	ту	NA.
WF		ע בםו W ח:	חדטוע וודחוי	N	/13	3	70	2.50	0. 3	20 2	1.00 1.60	3.0	20	4. 4	00	4.00	3	5	AL		Ph		0.0		СІе	ar	Ē
RE	S PC		DEPTH	- 1	//S	0.1	30	0.28	0	20 (	0.00	0.2	35	0	20	0.07	3	.0	-		FLOOD S	SIGN	5 0 9	)5 m ·	- RD		~
Wb	DE	PTH	0.32	0.	.38	0.3	35	STAGE	0.	Mode	rate		No	Vis (	 Chan		Dry/	/Int		1	BED MAT	ERI/	۰L				
		С	OVER	Tot	tal			Abund	ant (	(>20%)		1	Dew	vater	-		Trib	s			Dominant	C	obble	(64-2	256 m	m)	
	type	SV	VD L	WD		В	U	D	P	OV		V	CRO	IWC	N CL	OSURE	Ξ				Subdom.	B	oulde	r (> 2	56 mr	n)	<
	amt	١	1	Ν	;	S	Т	]	D	Т		Т			%	% %					D95 (cm)	65	5	D (0	cm) 1	4	OR
ШЧ	loc	F		P		P	Р	F	>	Р		Р	%	20%	-40	06-	%0				Morph. F	Riffle-	looc				PH
NO		LW	D FNC	Nor	ne			DIST					。 0	÷	21	4 7	~				DISTURE	BANC	EIN		TORS		
O		LB S	SHAPE	Ver	tical		F	RB SHA	APE	Under	ut		0	1	2	3 4	5				01 B1 E	32 B	3 D1	D2	D3 (	21 C	2 G
		TE)		Fin	es				RE	Fines			INS		EAM	Alg	jae				C3  C4  C	25 S	1  S2	S3	S4		_
		RIP	. VEG.	Shr	ubs	Jorh	r	RIP. VE	G.	Shrub/			VEC	5E I.	ALIC	л <b>м</b>								s			_
		317	GE	311	ub/r	leib		STAGE		Shirub/	heib										BARS	Si	de				-
																					COUPLIN		artiall		inled		
																					CONFINE	D Fr	eaue	ntly C	Confine	ed	-
ш	С	NIC	MAP	# NI	D #	ΤY	PE	HT/LG	(m)	mthd		PHO	то				C	OMN	<b>/ENT</b>	S				.,	UTM		
UR				1					• •		R		F														
EAT											R		F														
Ë											R		F														
					1					DIS	TUR	BANC	CEI	NDI	CAT	OR LEO	GENE	)			1				1		
01	Beav	/er Da	m		B3	Avuls	sion			D3 Re	cent LV	VD jam	ı		C3	Elevated	Bar		5	51	Homogenou	s Bed		S4	Extens	ive Bar	S
B1	Abar	ndoneo	d Channe	el	D1	Smal	I Wood	ly Debris		C1 Ext	ensive	Riffles			C4	Multiple (	Channe	el	5	52	Sediment Fi	ngers		S5	Extens	ive Sco	ours
БZ	EIOU	пу ва	ITIK		DZ	Large	9 0000	ly Debris		C2 LIII	ited P	DOIS			60	Disturbed	Lines		2	53	Sediment w	euges					
	2	Goo	d seas	onal	reari	na fo	r iuve	nile BT-	- abu	undant o	leen	oool a	nd ł	ooulo	der c	over											
TAT	Ę	Limi	ted spa	awnin	g wit	hin th	nis rea	ach - gra	avels	s not ab	unda	nt and	d fine	es a	re pr	evalent.											
ABI'	NAI	Suit	able sp	awnir	ng ha	abitat	on ne	ext reac	h do	wnstrea	m.																
Ŧ	Ø																										
F	SZ																										
N	RC		FRAM	E FO		. LN	DIRE	CTION									C	OMN	ΛENT	S							
ATIC	H(	63	15A	_	wd			u	view	v u/s fro	m bo	ttom o	of Si	te													
NT/	H	63 63	17A		wd			u d	view	v u/s iic	m tor		to	e													
ME	H	G3	19A	+	wd			u	aeri	al view	Jostr	eam															
cu	H	G3	18A		wd		ob	piect	vea	rling an	1 2+ I	BT ca	ptur	ed a	at site	936											
DO								,	, 	0			•														
TO																											
ЮН																											
Д.																											
ΕE	G	ROL				W	/ILDL	IFE OB	SER	RVATIO	NS				G	ROUP	1			N	/ILDLIFE (	OBSE	RVA		1S		
DL		IVIAIV		oose																							
WIL																	+										
	(	C																									
	C	- X1	Electro	)-fishi	ng e	ffort:	255 s	econds	@2	250 volt	s. Bu	ll trou	t ca	pture	ed.												
ITS	C	21	Also a	small	l prop	oortio	n of g	ravels.	-																		
<b>IEN</b>																											
MMG																											
80																											

							FI	SH	COLL	ECTIO	N FOR	M						
STF	REAM	/I NAME	Fic	ldes	Creek									LAK	EX	STREAM		WETLAND
LOC		ON									WATE	RSHED	CODE	235-	821600			
WA	TER		ر 		<u> </u>		NISMA	.P	94B/1	4 NID			SITE/L	AKE (			) <u>X</u>	Y N
PRO	DJEC	CT ID	Halfwa	y-Gra	ham Ove	erview	REACH	#	<b>D</b> :	SIT	E#	36	FISH P	PERMI	T # SC2	2001-032		
DA	IE	2	001/08/	21	to 2	001/08/21	AGENC	Y	Diversifie	ed Enviro	onmental	Service	s Ch	REW	E	BC/TE	RE-8	SAMPLE
D	SI	ITE #	NID M	AP #	NID #	SITE	UTM		METHO	DD/NO.	STREA	M CON	DITION	-		COMME	INTS	
OH.		00				40.47500	0.000000	0		4	TEMP	CON	TURB					
ЛЕТ		30			<u> </u>	10.47568	3.630360	0	EF	1	6.0		C					
Ξ / N																		
SITE					+													
0)					<u> </u>													
	SITE	E#  M	TD/NO	H/F	SPECI	ES STAGE	AGE	TOT	TAL NO	MIN LI	N (mm)	MAX I	N (mm)	FIS	H ACT	С	OMMEN	NTS
Υ	36	6	EF/1	1	BT				7	1:	23	2	02	Re	earing			
MAF																		
JML																		
H SI																		
-ISF					<u> </u>													
ш.					───									-				
92													NET /	TRAP	SPECI	FICATION	S	
ЪЕС	С	SITF #	MD/N	) H/F	DATE	IN TIME	IN DAT	TF O			NET TY	PF I		DF	PTH	MESH SI	7F SF	T HAB
s SI	-																	
EAF					1													
G																		
							ELE(	CTR	OFISHE	R SPEC	IFICATI	ONS						
	С	SITE #	MD/NC	) H/F	TIME	IN TIME C	DUT EF	= SE	C LE	NGTH	WIDT	Ή El	NCL V	OLT	FREQ	PLSE	MAKE	MDL
		36	EF/1	1	1035	5 105	7	255		200	3.37		0 2	250	60	Fixed	Coffel	t Mk X
TS	С																	
IEN	-																	
MN	-																	
S	-																	
							11	NDI	VIDUA									
0	OIT									\L FISH	H DATA	4						
C	SIL		NO H/I	S		LENGTH	WEIGH	IT	051		HDAT/	4	AGE			0.01		0
	36	6 EF	/1 1		PECIES	LENGTH (mm)	WEIGF (gms)	HT )	SEX	L FISH MATU		A IR SA	AGE	AG	iE	COI	MMENT	S
	36		71 1		BT	LENGTH (mm) 202	WEIGF (gms)	HT )	SEX	MATU	I DATA	TR SA ray	AGE MPLE # 12-1	AG	iE	CO	MMENT	S
		6 EF	-/1 1		BT BT	LENGTH (mm) 202 177	WEIGF (gms)	HT )	SEX	MATU	I DATA	TR SA ray ray	AGE MPLE # 12-1 12-2	AG 3+	E	CO	MMENT	S
	36	6 EF	F/1 1 F/1 1		BT BT BT BT	LENGTH (mm) 202 177 171	WEIGF (gms)	HT )	SEX	MATU	I DATA	TR SA ray ray ray ray	AGE MPLE # 12-1 12-2 12-3	AG 3+ 2+ 2+	•E	COI	MMENT	S
	36	6 EF 6 EF 6 EF	-/1     1       -/1     1       -/1     1       -/1     1       -/1     1		BT BT BT BT BT	LENGTH (mm) 202 177 171 170 152	WEIGF (gms)	HT )	SEX	MATU	H DATA	R SA ray ray ray ray ray	AGE MPLE # 12-1 12-2 12-3 12-4	E AG 3+ 2+ 2+ 2+ 2+	E F F F F F F	COI	MMENT	S
	36 36 36	6         Ef           6         Ef           6         Ef           6         Ef           6         Ef	71     1       F/1     1       F/1     1       F/1     1       F/1     1       F/1     1       F/1     1		BT BT BT BT BT BT BT	LENGTH (mm) 202 177 171 171 170 153 123	WEIGF (gms)	HT )	SEX	MATU	H DATA	TR SA ray ray ray ray ray ray	AGE MPLE # 12-1 12-2 12-3 12-3 12-4 12-5 12-6	AG 3+ 2+ 2+ 2+ 2+ 2+ 2+	E	CO	MMENT	S
	36 36 36 36	6         Ef	F/1     1		BT BT BT BT BT BT BT BT BT	LENGTH (mm) 202 177 171 170 153 123 123	WEIGH (gms)	IT )	SEX	MATU	H DAT/	A SA ray ray ray ray ray ray ray ray	AGE MPLE # 12-1 12-2 12-3 12-4 12-5 12-6 12-7	E AG 3+ 2+ 2+ 2+ 2+ 2+ 2+ 1+ 1+	E	COI	MMENT	S
	36 36 36 36 36	6         EF           6         EF           6         EF           6         EF           6         EF           6         EF	7/1         1           7/1         1           7/1         1           7/1         1           7/1         1           7/1         1           7/1         1           7/1         1           7/1         1           7/1         1		BT BT BT BT BT BT BT BT	LENGTH (mm) 202 177 171 170 153 123 123	WEIGH (gms)	IT )	SEX	MATU	H DAT/ R SI Fin Fin Fin Fin Fin Fin Fin Fin	A ray ray ray ray ray ray ray ray	AGE MPLE # 12-1 12-2 12-3 12-4 12-5 12-6 12-7	E AG 3+ 2+ 2+ 2+ 2+ 2+ 1+ 1+	E	CO	MMENT	S
	36 36 36 36 36	6         Ef	7/1     1       F/1     1		BT BT BT BT BT BT BT BT	LENGTH (mm) 202 177 171 170 153 123 123 126	WEIGH (gms)		SEX	MATU	H DAT/ R SI Fin Fin Fin Fin Fin Fin Fin Fin	R     SA       ray	AGE MPLE # 12-1 12-2 12-3 12-4 12-5 12-6 12-7	E AG 3+ 2+ 2+ 2+ 2+ 2+ 1+ 1+	E	CO	MMENT	S
	36 36 36 36 36	6         Ef	7/1     1       7/1     1       7/1     1       7/1     1       7/1     1       7/1     1       7/1     1       7/1     1       7/1     1		BT BT BT BT BT BT BT	LENGTH (mm) 202 177 171 170 153 123 126	WEIGH (gms)		SEX	MATU	H DAT/ R Fin Fin Fin Fin Fin Fin Fin Fin	R     SA       ray	AGE MPLE # 12-1 12-2 12-3 12-4 12-5 12-6 12-7	E AG 3+ 2+ 2+ 2+ 2+ 2+ 1+ 1+		CO	MMENT	S
	36 36 36 36 36	6         EF           6         EF           6         EF           6         EF           6         EF           6         EF	7/1     1       7/1     1       7/1     1       7/1     1       7/1     1       7/1     1       7/1     1       7/1     1		BT BT BT BT BT BT BT	LENGTH (mm) 202 177 171 170 153 123 123 126	WEIGH (gms)		SEX	MATU	H DAT/ IR ST Fin Fin Fin Fin Fin Fin Fin H	A ray ray ray ray ray ray ray ray ray	AGE MPLE # 12-1 12-2 12-3 12-4 12-5 12-6 12-7	E AG 3+ 2+ 2+ 2+ 2+ 2+ 1+ 1+	E	COI	MMENT	S
	36 36 36 36 36	6         EF           6         EF           6         EF           6         EF           6         EF           6         EF	7/1     1       F/1     1       F/1     1       F/1     1       F/1     1       F/1     1       F/1     1		BT BT BT BT BT BT BT	LENGTH (mm) 202 177 171 170 153 123 123 126	WEIGH (gms)		SEX	MATU	H DAT/ IR ST Fin Fin Fin Fin Fin Fin A Fin Fin Fin Fin	A ray	AGE MPLE # 12-1 12-2 12-3 12-4 12-5 12-6 12-7	E AG 3+ 2+ 2+ 2+ 2+ 1+ 1+	Image: Constraint of the sector of	COI	MMENT	S
	36 36 36 36 36	5         EF           6         EF           5         EF           6         EF           6         EF           6         EF	7/1     1       E/1     1		BT BT BT BT BT BT BT BT	LENGTH (mm) 202 177 171 170 153 123 123 126	WEIGH (gms)		SEX	MATU	H DAT/ IR ST Fin Fin Fin Fin Fin Fin Fin	R     SA       ray     -       ray	AGE MPLE # 12-1 12-2 12-3 12-4 12-5 12-6 12-7	E AG 3+ 2+ 2+ 2+ 2+ 2+ 1+ 1+	Image: Constraint of the sector of		MMENT	S
	36 36 36 36 36	6         EF           6         EF	7/1     1       E/1     1		BT BT BT BT BT BT BT	LENGTH (mm) 202 177 171 170 153 123 126	WEIGH (gms)		SEX	MATU	H DAT/ IR SI Fin Fin Fin Fin Fin Fin Fin Fin	R     SA       ray     -       -     -       -     -       -     -       -     -       -     -       -     -       -     -	AGE MPLE # 12-1 12-2 12-3 12-4 12-5 12-6 12-7	E AG 3+ 2+ 2+ 2+ 2+ 2+ 1+ 1+ 1+			MMENT	S
	36 36 36 36 36	6         EF           7         EF	7/1     1       F/1     1		BT BT BT BT BT BT BT	LENGTH (mm) 202 1777 171 170 153 123 126	WEIGH (gms)		SEX	MATU	H DAT/ IR SI Fin Fin Fin Fin Fin Fin U Fin C C C C C C C C C C C C C	A ray	AGE MPLE # 12-1 12-2 12-3 12-4 12-5 12-6 12-7	AG 3+ 2+ 2+ 2+ 2+ 2+ 2+ 1+ 1+			MMENT	S
		6         EF           6         EF           6         EF           6         EF           6         EF           6         EF           7         T           7         T	7/1     1       F/1     1		BT BT BT BT BT BT BT	LENGTH (mm) 202 177 171 170 153 123 123 126	WEIGH (gms)		SEX	MATU	H DAT/ IR ST Fin Fin Fin Fin Fin Fin C Fin C C C C C C C C C C C C C	R     SA       ray     -       ray	AGE MPLE # 12-1 12-2 12-3 12-4 12-5 12-6 12-7	AG 3+ 2+ 2+ 2+ 2+ 2+ 2+ 1+ 1+			MMENT	S
		6         EF           6         EF           6         EF           6         EF           6         EF           7         7	7/1     1       F/1     1		BT           BT           BT           BT           BT           BT	LENGTH (mm) 202 177 171 170 153 123 123 126	WEIGH (gms)		SEX		H DAT/ IR ST Fin Fin Fin Fin Fin Fin Comparison Fin Fin Fin Comparison Fin Fin Fin Fin Fin Fin Fin Fi	A ray	AGE MPLE # 12-1 12-2 12-3 12-4 12-5 12-6 12-7	AG 3+ 2+ 2+ 2+ 2+ 2+ 1+ 1+ 1+			MMENT	S
		6         EF           6         EF           6         EF           6         EF           6         EF           7         7	7/1     1       F/1     1		BT           BT           BT           BT           BT           BT           BT	LENGTH (mm) 202 177 171 170 153 123 126	WEIGH (gms)		SEX		H DAT/ IR ST Fin Fin Fin Fin Fin Fin Fin A Fin A A A A A A A A A A A A A	R     SA       ray     -       ray	AGE MPLE # 12-1 12-2 12-3 12-4 12-5 12-6 12-7	E AG 3+ 2+ 2+ 2+ 2+ 2+ 1+ 1+ 1+			MMENT	S
		6         EF           7         EF           7         EF           7         EF           6         EF           7         EF           7         EF           7         EF           7         EF	7/1     1       F/1     1		BT           BT           BT           BT           BT           BT           BT	LENGTH (mm) 202 177 171 170 153 123 126	WEIGH (gms)		SEX		H DAT/ IR SI Fin Fin Fin Fin Fin Fin Fin A A A A A A A A A A A A A	IR     SA       ray     -       ray	AGE MPLE # 12-1 12-2 12-3 12-4 12-5 12-6 12-7 	E AG 3+ 2+ 2+ 2+ 2+ 2+ 1+ 1+ 1+				S
		6         EF           6         EF           6         EF           6         EF           6         EF           7         7	7/1     1       F/1     1		BT           BT           BT           BT           BT           BT           BT	LENGTH (mm) 202 177 171 170 153 123 126	WEIGH (gms)		SEX		H DAT/ IR SI Fin Fin Fin Fin Fin Fin Fin Fin Fin Fin	IR     SA       ray     -       ray	AGE MPLE # 12-1 12-2 12-3 12-4 12-5 12-6 12-7	E AG 3+ 2+ 2+ 2+ 2+ 2+ 1+ 1+ 1+				S



Fiddes Creek Site 36: View upstream from bottom of site (Roll HG3 - Exp 15A; CD 2 - Im 144)



Fiddes Creek Site 36: View downstream from top of site (Roll HG3 - Exp 17A; CD 2 - Im 146)



Fiddes Creek Site 36: Aerial view upstream (Roll HG3 - Exp 19A; CD 2 - Im 147)



Fiddes Creek Site 36: Yearling and age 2+ juvenile bull trout (Roll HG3 - Exp 18A; CD 2 - Im 148)

## **APPENDIX XXXVII**

## UNNAMED TRIBUTARY TO HALFWAY RIVER

(235-841200)

### Sample Site 37

												SI	ΤE	C/	AR	)												
STF	REA	MNA	AME	Unn	name	ed trib	utary to	o Halfv	way	River										FIELD	) (	COORDINA	TES	56°	59.1	8' 123	° 23.2	21'
LOO	CAT	ION																										
	S MA	\P #	94	B/14			NO	07	WA		ED (		2	235-	-841	200		OITI				000		DE	100			
		#	2001/0	Q/20			.#	31 545			10		od 6	D Envi	b3 iropr	nontr	12	SIII			1					ESS	N	н
DA			2001/0	0/20	- 41-			040	AGE			iversin	eu			nenta			:S		/	BC/TE	FIS					
				me	etn	20.6	0 4	0.50	16	00 4	- 00	40.0	0	10	50	av	g 77	GR		ENT %	D			0			<u> </u>	AN.
						39.0		9.50	70		5.00	40.0		12.	.50	23.	11	metri 2 I	5	AL		TEIVIP (°C)	8	5.0			Ŷ	Ē
					10	4.0		.90	7.0	15 0	25	0.00	, 	0.4	+0 10	0.7	5	2.	2	_			MC	0 0				~
Wb		PTH	0.60	10	00	1.0	/ 0 0 ST	AGE	0.4	Mode	.35 rate	0.10	ן י ו ע הו	is C	19 Chan	0.2	.9	Drv/I	nt			RED MATE	RIAI	0.0	III - F	D		
***		C	OVER	Tot	al	1.0	0 0. M	lodera	ite (!	5-20%)	uic		lewa	ater				Tribs	3	_		Dominant	Col	- oble	(64-2	56 mm	)	
	type	SV		ND	E	3	U	D	P	OV		IV C	RO	WN	V CL	OSU	IRE					Subdom.	Boi	ulder	(> 25	56 mm	,	_
	amt	1	۱ I	Т	5	S	N	D	)	N		N			-			F		_		D95 (cm)	46		D (c	m) 12		Õ
ц	loc	F	>	Р	F	>	Р	P	,	Р		Р		%0	40%	20%	%06	%				Morph. Riff	le-p	ool		·		- PP
NΕ		LW	D FNC	Few	V		DI	ST		Clumpe	d	à	% 0	1-2(	51-1	4	71-9	6<				DISTURBA	NCE	IND	ICAT	ORS		þ
00		LB S	SHAPE	Vert	tical		RE	SHA	PE	Sloping			0	1	2	3	4	5				O1 B1 B2	В3	D1	D2	D3 C	C2	Ø
		TEX	TURE	Fine	es/Co	obble	TE	XTUR	RE	Cobble	s	11	NST	RE	AM		Alga	e		_		C3 C4 C5	S1	S2	S3	S4		Ϋ́
		RIP	. VEG.	Con	niferc	ous	RI	P. VEC	G.	Conifer	ous	V	'EG	ET/	ATIC	DN _						PATTERN	Sin	uous	;			-
		STA	GE	Mat	ure F	Forest	: ST	AGE		Mature	Fore	est				_						ISLANDS	Nor	ne				
																						BARS	Sid	e/Mio	d-stre	am		
																						COUPLING	Со	uplec				
																						CONFINED	Fre	quer	ntly C	onfined		
RE	С	NIC	) MAP #		D #	TYP	E H	T/LG (	m)	mthd		PHOT	ГО					CC	MM	IENTS					l	JTM		
TU											R	F																
EA											R		_										<u> </u>					
ш.										DIO	ĸ				0 A T		FO											
01	Deer				DO	A					IUR	BANC	EIN				EG	END			1				04	<b>-</b>	Dava	
01 P1	Abor	/er Da			B3	Avuisio	) Woody I	Johria		C1 Ever		ND jam			C3	Elevat		ar		51	_	Romogenous B	<u>ea</u>		54 85	Extensiv	e Bars	
вт B2	Frod	ing Ba	ank		D1 D2	Large	Woody I	Debris		C1 Exte	ited P	ools			C4	Distur	bed I	ines		52 S3		Sediment Wed	res		35	Extensiv	e Scou	IS
-	2.00	ing be			52	Laigo		000110		02 2	liou i i	0010			00	Biotai	500 2			00			,00					
	~	Мос	lerate se	eason	nal re	aring	for BT	, RB a	and I	MW - lir	nited	cover.																
TAT	É					<u> </u>																						
ABI	NAI																											
Ξ	Ø																											
FS	SZ																											
N	RC	OLL	FRAME	FO	CAL	LNC	DIREC	TION										CC	MM	IENTS								
TIC	H	G2	10	-	wd		u	'	view	u/s fro	m bo	ttom of	site	Э														-
۱T⊿		G2	11		Wd		<u>น</u>		view	/ U/S Tro	m ce	ntre of	site	•														
ИЕР		G2 G2	12		wd		u		view		in lop		9															-
SUN	11	02	15		wu		u		acina		ipsu	cam																
ŏ																												
0																												
þ																												
Ч																												
Щ	G	ROL	JP	·		WI	LDLIF	E OBS	SER	VATIO	٧S				G	ROU	Р				W	ILDLIFE OE	SEF	RVA	ΓΙΟΝ	S		
DLIF																												
עורם																												
$\leq$																												
	(	C		<u></u>																								
S	C.	X1	Electro-	fishir	ng et	fort: 3	847 sec	conds	@ 2	250 volts	s. Bu	II trout	and	mo	ounta	an wr	nitefi	ish w	ere	capture	eo	l.						
ENT																												
IME																												
NO:																												
0																												

							FI	SH C	OLL	ECTIO	N FOR	Μ						
STF	REAN	1 NAME	U	nnam	ed tributa	ry to Halfway	River							LAKE	X STR	REAM	WE	TLAND
LOC								<b>_</b>	0.15.11		WATE	RSHED	CODE	235-84	1200			
					- h		NISMA	Р "	94B/1			07	SITE/L/			O22	X Y	N
	JJEC		Halfwa	ay-Gra	anam Ove		REACH	# 	ivoroifi			31 Sonico	FISH P		BC/TE	-032		
DA			2001/06	/20	10 2	.001/06/20	AGENC		iversine					.Evv	BC/T	=    '	KE-SAN	IPLE
D	SI	TE #	NID N	1AP #	NID #	SITE	UTM	Ν	/ETHC	DD/NO.	SIREA			-	CC	OMMENT	S	
THO		37				10 47622	6 631621	2	FF	1		CON						
ME.		01				10.47022	0.001021	-		•	0.0							
E /																		
SIT																		
	SITE	E# M		H/F	P SPECI	ES STAGE	AGE	TOTA	L NO	MIN LI	N (mm)	MAXL	N (mm)	FISH A		COM	MENTS	
٩RΥ	37	7	EF/1	1	BT			1	1	21	51	2	51	Reari	ng			
MM	01	·	<u> </u>						•		,	-		rtean	i ig			
SUI																		
SH																		
Ш																		
0,																TIONO		
EC	C	SITE #									NET TY						SET	HAB
R SF	0				DATE			200	1 110									
EAF																		
G																		
				<u></u>			ELE	CTRO	FISHE	R SPEC	IFICATIO	ONS						
	С	SITE #			1550 1			• SEC	LE	NGTH	WIDT 6.73	H E				SE M		MDL Mk X
()	С	57			1000		5	1+0		200	0.75		0 2	.00 0			Jicit	
NT(	-																	
1ME																		
NOC																		
							11			I FISI								
						LENGTH	   WEIGH	NDIV	IDUA	L FISH		1	AGE			0.01.01.01		
С	SITE	E#MD	NO H	P S	PECIES	LENGTH (mm)	WEIGH (gms)		IDUA SEX	L FISH MATU	H DATA	R SA	AGE MPLE #	AGE		COMM	ENTS	
С	SITE 37	E # MD	/NO H. F/1	P S	PECIES	LENGTH (mm) 310	WEIGF (gms)	NDIV	IDUA SEX	L FISH MATU	H DATA	R SA	AGE MPLE # 6-1	AGE 5+	•	COMM	ENTS	
С	SITE 37 37	E # MD 7 EI 7 EI	<mark>//NO</mark> H/ F/1 <sup>-</sup> F/1 -	P S	PECIES MW BT	LENGTH (mm) 310 251	UEIGH (gms)	NDIV	IDUA SEX M	IL FISH MATU	H DATA	R SA ale ale	AGE MPLE # 6-1 6-2	AGE 5+ 3+	-	COMM	ENTS	
С	SITE 37 37	E # MD 7 EI 7 EI	7/NO H. F/1 - F/1 -	P S	PECIES MW BT	LENGTH (mm) 310 251	WEIGF (gms)		IDUA SEX M	AL FISH MATU	H DATA	R SA ale ale	AGE MPLE # 6-1 6-2	AGE 5+ 3+		COMMI	ENTS	
С	SITE 37 37	E # MD 7 EI 7 EI	r/NO H. F/1 - F/1 -	P S	PECIES MW BT	LENGTH (mm) 310 251	WEIGH (gms)		IDUA SEX M	L FISH MATU	H DATA	R SA ale ale	AGE MPLE # 6-1 6-2	AGE 5+ 3+		COMM	ENTS	
С	SITE 37 37	E # MD 7 EI 7 EI	F/1	P S	PECIES MW BT	LENGTH (mm) 310 251	WEIGH (gms)		IDUA SEX M	AL FISH MATU	H DATA	R SA	AGE MPLE # 6-1 6-2	AGE 5+ 3+		COMM	ENTS	
С	SITE 37 37	E #         MD           7         EI           7         EI           7         I           8         I           9         I           9         I           9         I	F/1 -	P S	PECIES MW BT	LENGTH (mm) 310 251	WEIGH (gms)		IDUA SEX M	MATU	H DAT A R ST Sca Sca Sca	R SA ale ale	AGE MPLE # 6-1 6-2	AGE 5+ 3+		COMMI	ENTS	
С	SITE 37 37	E # MD 7 EI 7 EI 7 EI	r/NO H, F/1 - F/1 -		PECIES MW BT	LENGTH (mm) 310 251	UEIGF (gms)		IDUA SEX M	AL FISH MATU	H DAT A R ST SCA SCA	IR SA ale ale	AGE MPLE # 6-1 6-2	AGE 5+ 3+		COMM	ENTS	
С	SITE 37 37	E # MD 7 EI 7 EI 8	//NO H. F/1		PECIES MW BT	LENGTH (mm) 310 251	UEIGH (gms)		IDUA SEX M	AL FISH MATU	H DAT A ST Sca Sca Sca	R SA ale ale	AGE MPLE # 6-1 6-2	AGE 5+ 3+		COMMI	ENTS	
С	SITE 37 37	E # MD 7 EI 7 EI 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	//NO H, F/1 - F/1 - - - - - - - - - - - - - - - - - - -	P S	PECIES MW BT	LENGTH (mm) 310 251	WEIGH (gms)		M	AL FISH MATU	H DATA	IR SA ale ale	AGE MPLE # 6-1 6-2	AGE 5+ 3+		COMMI	ENTS	
С	SITE 37 37	E # MD 7 EI 7 EI 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	F/1		PECIES MW BT	LENGTH (mm) 310 251	WEIGH (gms)		M	AL FISH MATU	H DAT A R ST SCA SCA CALLENT	R SA ale	AGE MPLE # 6-1 6-2	AGE 5+ 3+		COMM	ENTS	
С	SITE 37 37	E # MD 7 EI 7 EI 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	//NO H, F/1 - F/1 - - - - - - - - - - - - - - - - - - -		PECIES MW BT	LENGTH (mm) 310 251	II WEIGH (gms)		M	AL FISH MATU	H DAT A ST SCA SCA SCA	R SA ale	AGE MPLE # 6-1 6-2	AGE 5+ 3+			ENTS	
С	SITE 37 37	E # MD 7 EI 7 EI 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	//NO H, F/1 - F/1 - - - - - - - - - - - - - - - - - - -	P S	PECIES MW BT	LENGTH (mm) 310 251	WEIGH (gms)		M	AL FISH MATU	H DATA R ST Sca Sca Sca Carterio	I'R SA ale ale ale ale ale ale ale ale ale ale	AGE MPLE # 6-1 6-2	AGE 5+ 3+			ENTS	
С	SITEE 377 377 	E # MD 7 EI 7 EI 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	//NO H, F/1	P S	PECIES MW BT	LENGTH (mm) 310 251	WEIGH (gms)		M	AL FISH MATU	H DATA	R SA ale	AGE MPLE # 6-1 6-2	AGE 5+ 3+			ENTS	
С	SITE 377 377 	E # MD 7 EI 7 EI 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	I/NO H, F/1 - F/1 - - - - - - - - - - - - - - - - - - -	P S	PECIES	LENGTH (mm) 310 251	WEIGH (gms)		M	AL FISH MATU	H DAT A ST SCA SCA SCA SCA SCA SCA SCA SCA SCA SCA	IR     SA       ale	AGE MPLE # 6-1 6-2	AGE 5+ 3+			ENTS	
C	SITE 377 377 377 377 377 377 377 377 377 37	E # MD 7 EI 7 EI 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	//NO H, F/1 - F/1 - - - - - - - - - - - - - - - - - - -		PECIES MW BT	LENGTH (mm) 310 251	WEIGH (gms)		M		H DATA IR ST SC: SC: SC: SC: SC: SC: SC: SC:	R SA ale	AGE MPLE # 6-1 6-2	AGE 5+ 3+			ENTS	
C	SITE 377 377 	E # MD 7 EI 7 EI 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	//NO H, F/1		PECIES	LENGTH (mm) 310 251	WEIGH (gms)		M		H DATA R ST Sca Sca Sca Sca Sca Sca Sca Sca	IR SA ale	AGE MPLE # 6-1 6-2	AGE 5+ 3+			ENTS	
C	SITE 377 377 	E # MD 7 EI 7 EI 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	I/NO     H.       F/1     -       F/1     -       F/1     -       I     -		PECIES	LENGTH (mm) 310 251	WEIGH (gms)		M		H DATA R ST Sca Sca 	R SA ale	AGE MPLE # 6-1 6-2	AGE 5+ 3+			ENTS	
C	SITE 37 37 37 37 37 37 37 37 37 37 37 37 37	E # MD 7 EI 7 EI 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	//NO H, F/1 - F/1 - - - - - - - - - - - - - - - - - - -		PECIES	LENGTH (mm) 310 251	WEIGH (gms)		M		H DAT A SC SC SC SC SC SC SC SC SC SC SC SC SC	R SA ale	AGE MPLE # 6-1 6-2	AGE 5+ 3+			ENTS	



Unnamed tributary to Halfway River Site 37: View upstream from bottom of site (Roll HG2 - Exp 10; CD 2 - Im 149)



Unnamed tributary to Halfway River Site 37: Aerial view upstream (Roll HG2 - Exp 13; CD 2 - Im 152)
## **APPENDIX XXXVIII**

#### UNNAMED TRIBUTARY TO HALFWAY RIVER

(235-841200)

### Sample Site 38

												SIT	ΈC	AR	RD												
STF	REA	MNA	AME	Unr	name	ed trib	outary	y to Hal	fway	River									FIELD	) (	COORDINA	ΓES	56°	01.1	6' 123	° 26.3	34'
LOO	CAT	ION	-	40/0		NUD			14/4	TEDOL			0.01	- 04	4000												
		4P # 1 #	94	4G/3			NU : #	38	SIT	LERSF E LITM		JODE 473'	23	5-84	1200	88	SIT	EII			200 ME	тн	DE		YE99		н
	(Ch	1#	2001/0	08/20			- #	1500	AGI	ENCY		iversifie	d Fn	viror	ment	al Se	ervic	es L	CREV	V	BC/TE	FIS		ORM	Y 3	<b>(</b> N	
(	ЭНА	NNE	_ (m)	m	eth										a	<u>/n</u>	GE		IENT %	6	EMS			0.0			5
CH				R	RF	5.7	0	5.40	4.	00 3	.70	5.40	3	.30	4	'9 58	met	h	AL	0	TEMP (°C)	6	6.0	TUF		Υ	/AT
WE	тте	ED W	IDTH	R	RF	5.7	0	4.90	4.	00 3	.70	5.40	3	.30	4.	50	2	.0			Ph		-		Clea	r	ĒR
RE	S PC	DOL	DEPTH	I M	1S	0.1	2	0.26	0.	19 0	.09	0.14	0	.28	0.	18	2	.0			FLOOD SIG	SNS	0.9	m - F	RD		
Wb	DE	PTH	0.40	0.	40	0.5	50 <mark>5</mark>	STAGE		Mode	rate	No	Vis	Cha	in		Dry/	/Int			BED MATE	RIA	-				
		C	OVER	Tot	al			Moder	ate (	5-20%)		De	wate	r			Trib	S			Dominant	Col	ble	(64-2	56 mr	ר)	
	type	SV		WD	E	B	0		)P	OV			ROW	NC	LOSI	JRE					Subdom.	Gra	avel (	2-64	mm)		Ň
~	amt			5			- S		5 D				%	%0	%0	%0	<u>_</u> 0				D95 (CM)	38		D (C	m) <u>2</u>	5	) RF
VEF	100	LW	D FNC	Few	v			DIST	1	Even		- %	1-20	4	t1-7	71-9	6064				DISTURBA	NCE			ORS		Ч
C O		LB S	SHAPE	Ver	tical			RB SH/	APE	Vertica		0	1	2	3	4	5				O1 B1 B2	В3	D1	D2	D3 C	1  C2	б
		TEX	TURE	Fine	es		-	TEXTU	RE	Fines		IN	STR	EAN	1	Alga	ae				C3 C4 C5	S1	S2	S3	S4		Υ£
		RIP	. VEG.	Mixe	ed C	& D	F	RIP. VE	G.	Mixed (	C & C	) VE	GET	ATI	ON						PATTERN	Sin	uous	i			
		STA	GE	You	ing F	orest	: 8	STAGE		Young	Fores	st									ISLANDS	No	ne				
																					BARS	Sid	е				
																					COUPLING	Par	tially	Cou	pled		
•	_								()	and the st		DUOT	_	_			0				CONFINED	Oc	casic	onally	Confi	ned	
JRE	C	NIL	MAP 7	7 NII	D#		'E	HT/LG	(m)	mtna	D		) 	1			C		/IENTS	)		1	1	ļ			
ATL											R	F	-														
FE/											R	F	-	-													
						1				DIS	TUR	BANCE	IND	ICA	TOR	LEG	GENE	)				1			l		
01	Beav	ver Da	m		B3	Avulsi	on			D3 Red	ent LV	VD jam		C3	Eleva	ated E	Bar		S1	I	Homogenous B	ed		S4	Extensi	/e Bars	
B1	Abar	ndone	d Channe	el .	D1	Small	Wood	dy Debris		C1 Ext	ensive	Riffles		C4	Multi	ple C	hanne	el 🛛	S2	2	Sediment Finge	ers		S5	Extensi	/e Scou	rs
B2	Erod	ling Ba	ank		D2	Large	Wood	dy Debris		C2 Lim	ited Po	ools		C5	Distu	rbed	Lines		S3	3	Sediment Wed	ges					
		Mod	loroto o	00000	ol ro	oring	noto	ntial fa	r iu vo	nilo DT	Diet	onoo fra		oino	tomn	2014	ho lir	nitin	~								
'AT	Τ	IVIOC	ierate s	eason	are	anng	pole	initial 10	i juve	ппеві	. Disi	ancent		ams	temn	lay	bein	mung	y.								
ABIT	JAL	-																									
Η	ð																										
F	δZ																										
N	R	OLL	FRAM	E FO	CAL	. LN [	DIRE	CTION									C	DMM	IENTS	;							
VTIC	H	G2	6		wd			u	view	v u/s fro	m bo	ttom of a	site														
NTA	<u>п</u> н	G2 G2	/ 8		wd			u d	view	v u/s iio	m tor		ne														
ME	Н	G2	9	+	wd			u	aeri	al view	upstro	eam															
CU			-					-				-															
В																											
TO																											
НО																											
																				14					<u>_</u>		
Щ	G	MAN	ле 1 Ма	nnse		VV	ILUL		OSER	(VATIO	112				SRUU	JP	1			vv		SEI	<b>XVA</b>		3		
LDL				0000										-													
N														+													
		С															<u>.</u>										
	С	X1	Electro	-fishir	ng ef	ffort: 4	460 s	seconds	s @ 2	250 volt	s. No	fish ca	oture	d.													
NT8																											
ME																											
NO																											
0																											

								F	SH	COLL	ECTIO	N FOR	RM						
STF	REA	M NA	ME	Unn	ame	d tributar	ry to Halfway	River							LAKE	X	STREAM	1 W	ETLAND
			חו צו	_				NTS M		94G/		WATE	RSHEL		235-8	341200	ТТАСНЕ		
			ны на	alfwav	Gra	ham Ove	rview		-\r ⊨#	940/			38	FISH I			2001-032		IN
DAT	TE		200	1/08/2	0	to 2	001/08/20	AGENC	Ϋ́	Diversifi	ed Enviro	onmental	Service	s C	REW	E	BC/TE	RE-SA	MPLE
					_				-			STREA	M CON		1				
OD	S	SITE #	‡   N	ID MA	P #	NID #	SITE	EUTM		METHO	DD/NO.	TEMP	CON	TURE	3		COMM	ENTS	
ETH		38					10.47319	8.631958	38	EF	1	6		С					
/ ME																			
IΤΕ			_																
S																			
	SIT	E#	MTD	/NO	H/P	SPECI	ES STAGE	AGE	TO	TAL NO	MIN LI	l (mm)	MAX I	N (mm	) FISH	I ACT	(	COMMENT	S
RY	3	88	EF	/1	1	NFC	;			0	-								
MA																			
SUM																			
SH S																			
띬																			
Ë	C	CITI	- # M			DATE								NET /	TRAP	SPECI	FICATIO		
s SP	C	SITE	= # 11	D/NO	Π/P	DATE		IN DA	IEC			INET II	PE L		DE	PIN		IZE SET	ПАВ
EAR																			
G																			
	0	OUT				TIME		ELE	CTF	ROFISHE	R SPEC	IFICATI	ONS			EDEO			MDI
	C	38	= # IVII 3 F	D/NO F/1	H/P 1	1505	IN TIME 1	5 5	F SE		200	4.5	HE		250	FREQ 60	Fixed	Coffelt	MDL Mk X
S	С	00	·   -			1000	102	•	100		200	1.0		0	200	00	Tixtou	Conoit	MIK /
ENT																			
MME																			
COI																			
С									ND	IVIDUA	L FISH	H DAT/	4						
_	SIT	E#I	MD/N	) H/P	SP	ECIES	LENGTH	WEIG	ND HT	IVIDUA SEX	L FISI		4	AGE			CC	MMENTS	
	SIT	E#	MD/NG	) H/P	SP	ECIES	LENGTH (mm)	WEIG (gms	ND HT ;)	IVIDUA SEX	AL FISI MATU		A FR S/	AGE	# AG	E	CC	MMENTS	
	SIT	E#	MD/N(	D H/P	SP	ECIES	LENGTH (mm)	WEIG (gms	ND HT ;)	IVIDUA SEX	MATU	H DAT/	A FR SA	AGE	# AG	E	CC	MMENTS	
	SIT	E#	MD/N(	D H/P	SP	ECIES	LENGTH (mm)	WEIG (gms	ND HT ;)	SEX	MATU		A FR SA	AGE	# AG	E	CC	OMMENTS	
	SIT	E #	MD/N(	D H/P	SP	ECIES	LENGTH (mm)	WEIG (gms	ND HT ;)	SEX	MATU		A TR SA	AGE	# AG	E	CC	OMMENTS	
	SIT	E # 1	MD/N0	D H/P	SP	ECIES	LENGTH (mm)	WEIG (gms	ND HT ;)	SEX	MATU	H DAT	A FR SA	AGE	# AG		CC	DMMENTS	
	SIT	Ē# [	MD/NG		SP	ECIES	LENGTH (mm)	WEIG (gms	ND HT ;)	SEX	MATU		A SA	AGE MPLE :	# AG		CC	DMMENTS	
	SIT	E # 1	MD/NO	H/P	SP	ECIES	LENGTH (mm)	WEIG (gms	ND HT ;)	SEX	MATU	H DAT/	A IR SA	AGE MPLE :	# AG		CC	DMMENTS	
	SIT	E # 1	MD/NG	D H/P	SP	ECIES	LENGTH (mm)	l WEIG (gms	ND HT s)	SEX	AL FISH MATU		A IR SA	AGE MPLE :	# AG		CC	DMMENTS	
		E # 1	MD/NG		SP	ECIES	LENGTH (mm)	l WEIG (gms	ND HT 3)	SEX	MATU	H DAT/	A SA	AGE	# AG		CC	DMMENTS	
	SIT	E # 1	MD/NG		SP	ECIES	LENGTH (mm)	WEIG (gms	ND HT ;)	IVIDUA SEX	AL FISH MATU	H DAT/	A SA	AGE	# AG		CC	DMMENTS	
	SIT		MD/NG		SP	ECIES	LENGTH (mm)	l WEIG (gms	ND HT 3)	IVIDUA SEX	AL FISH MATU		A SA	AGE	# AG		CC	DMMENTS	
				H/P	SP	ECIES	LENGTH (mm)	l WEIG (gms	ND HT \$)	IVIDUA SEX		H DAT/	A SA	AGE	# AG			DMMENTS	
					SP	ECIES	LENGTH (mm)	WEIG (gms 	ND HT ()	IVIDUA SEX		H DAT/	A SA	AGE	# AG			DMMENTS	
					SP		LENGTH (mm)	WEIG (gms   	ND HT 3)	IVIDUA SEX			A SA	AGE	# AG			DMMENTS	
					SP		LENGTH (mm)	l WEIG (gms 	ND HT 3)			H DAT/ IR ST ST ST ST ST ST ST ST ST ST ST ST ST S	A SA	AGE	# AG			DMMENTS	
					SP		LENGTH (mm)	WEIG (gms 	ND HT 3)	IVIDUA SEX		H DAT/ IR ST ST ST ST ST ST ST ST ST ST	A SA	AGE	# AG			DMMENTS	
					SP		LENGTH (mm)	WEIG (gms 	ND HT ;)			H DAT/ IR S S S S S S S S S S S S S S	A SA IR SA I I I I I I I I I I I I I I I	AGE	# AG			DMMENTS	
					SP		LENGTH (mm)	WEIG (gms 				H DAT/ IR 5 5 4 5 5 5 5 5 5 5 5 5 5 5 5 5	A SA	AGE	# AG			DMMENTS	



Unnamed tributary to Halfway River Site 38: View upstream from centre of site (Roll HG2 - Exp 7; CD 2 - Im 154)



Unnamed tributary to Halfway River Site 38: Aerial view upstream (Roll HG2 - Exp 9; CD 2 - Im 156)

## **APPENDIX XXXIX**

## UNNAMED TRIBUTARY TO HALFWAY RIVER

(235-879200)

#### Sample Site 39

												S	ITE	E C	ARI	D												
STF	REA	M NA	AME	Unn	name	ed tril	butary	y to Half	way	River										FIELD	) (	COORDINA	TES	56	° 57.8	32' 12	23º 28.5	56'
LOC	CAT	ION	0.4	D/4.4						TEROLI				005	070													
		\Ρ#	94	B/14				20	VVA SIT				000	235	-879	200	2	CITE		NOTI		200 M	сть			~E90	<u> </u>	<u> </u>
		#	2001/0	8/20				1300	AGE			47 iversif	uoc fied	Fnv	ironr	nenta	2 LSe	orvice		CREV	n V	200 N					X N	
	Ъ		2001/0	0/20 m	oth	1 1101	-	1000	101			TVCION	lica			ave	, .				• /_	EMS						<
CH				R	2011 2F	5	90	5 00	4	80 4	60	39	0	5	40	4 9	3	meth		AI	0	TEMP (°C)	-	75			ITY	ΤA
WE	TTE	D W	IDTH	R	RF	5.	90	5.00	4.	80 4	.60	3.9	0	5.4	40	4.9	3	2.0	)			Ph				Cle	ar	ĒR
RES	S PC	DOLI	DEPTH	Μ	IS	0.	22	0.12	0.	17 0	.13	0.1	2	0.	19	0.1	6	2.5	;	_		FLOOD SI	GNS	0.9	) m -	RD		
Wb	DE	PTH	0.45	0.	50			STAGE		Moder	ate	1	No	√is (	Chan			Dry/lı	nt			BED MATE	RIA	L				
		С	OVER	Tot	al			Moder	ate (	5-20%)	-	]	Dew	/ater				Tribs				Dominant	Сс	bble	(64-2	256 m	ım)	
	type	SV	VD L\	ND T	E	3	U		)P	OV		V (		JWN	N CL	OSU	RE					Subdom.	Bc	ulde	r (> 2	56 m	m)	Ň
~ 1	amt		<u> </u>			ר	S		S			N		%	%0	%0	%0	<u>_</u>				D95 (cm)	90 flor		D ((	cm)	40	RF
/ER	IOC			Few	/ r			י אור		F Even		F	%	-20	1-4	1-7(	1-9	~06-		_			NCI			TOR	۹.	Н
00		LBS	SHAPE	Vert	tical			RR SHA	PF	Vertical			0	1	2	3	4	5				01 B1 B2	B.	D1	D2	D3	C1 C2	6
Ŭ		TEX	TURE	Fine	es			TEXTU	RE	Fines			NS		AM	, e	Nga	ie l				C3 C4 C5	S1	S2	S3	S4	01 02	GY
		RIP.	VEG.	Mixe	ed C	& D	F	RIP. VE	G.	Mixed C	C & C	) \	VEC	SET/	ATIC	DN .				-		PATTERN	Si	nuou	s			
		STA	GE	You	ng F	ores	st S	STAGE		Young I	Fores	st				_				_		ISLANDS	No	ne				
																						BARS	No	ne				
																						COUPLING	Pa	rtiall	y Cou	pled		
	0					-	0-					DUO	TO									CONFINE	) Fr	eque	ntly C	Confin	ed	
JRE	С	NID	MAP #	i Nil	D #	IY I		HI/LG	(m)					22	limn	accab	lo fr	CO alle 5			5		10	<u>ا ا</u>	17058		63141	160
ATL							-	30		AE	R		-	23	mp	assau		ans o	JU 11	n u/s				, ·	+705	57	0314	100
FE/											R	F	F										-					
						1				DIS	TUR	BANC	CE I	NDI	CAT	OR L	EG	END										
01	Beav	/er Dar	m		В3	Avuls	sion			D3 Rec	ent LV	VD jam			C3	Elevate	ed Ba	ar		S1	I	Homogenous	Bed		S4	Exten	sive Bars	
B1	Abar	ndoneo	d Channel		D1	Smal	ll Wood	dy Debris		C1 Exte	nsive	Riffles			C4	Multipl	e Ch	annel		S2	2	Sediment Fing	ers		S5	Exten	sive Scou	irs
B2	Erod	ing Ba	ink		D2	Large	e Wood	dy Debris		C2 Limi	ted Po	ools			C5	Disturb	ed L	ines		S3	3	Sediment Wee	lges					
		Mod	lorato sc	00000	ol ro	orin	a hahi	itat for c	nort	fich coc		(PT )	CP	MV		D)												
ΓAΤ	Σ	IVIOU		23011		ann	y nau		sport	-nsn spe	50165	(ы,	GR	, 1010	v, r.	Б).												
ABIT	JAL	-																										
H	Ø																											
FS	δZ				_																							
NC	RC		FRAME	FO		. LN	DIRE	CTION		la fran	a la ai	<b></b>	<b>f</b> al					CO	MMI	ENTS	;							
<b>∆</b> TI(	H H	G1 G1	19 20		wd			<u>u</u>	VIEW	/ U/S Tron	n bo n ce	ttom c	DTSI fcit	ie 														
NT/	<u>– H</u>	G1	20		wd			d	view	$\frac{1}{1}$ d/s from	n tor	of sit	te.															
IME	H	G1	22		wd			u	aeria	al view u	pstre	eam																
рос																												
DO																												
DTC																												
ЭНС																												
	G	ROL	IP			١٨	וח וו/		SER		NS.				G	RUI	)				M		RSE	R\/A		IS		
Ë,	0	MAN	1 Mo	ose. (	deer	. bise	on tra	cks			10						1				•••			1107		10		
ILDI				,		,																						
M																												
	(	C																										
S	C	X1	Electro-	fishir	ng ef	fort:	499 s	seconds	6@2	250 volts	. Bu	II trout	t, m	ount	ain v	vhitefi	sh a	and ra	ainbo	ow tro	ut	were captu	ed.					
NT	C	Χ2	30 m in	ipass	able	atalis	500	m upsti	eam	of site.																		
IME		-																										
NO																												
0																												

							FI	SH C	OLLI	ECTIO	N FOR	RM						
STF	REAM	I NAME	: L	Unna	med tributa	ry to Halfway	River							LA	KE X	STREAM	1	WETLAND
LOO		DN DODVU						-	0 4 5 4		WATE	RSHE	D CODE	235	5-879200			
							NTS MA	.Р 	94B/1	4 NIL		00	_SITE/I			2001 022	X	Y N
	JJEC	עו ו	Halty	way-e			REACH	# 	i voro ifi	SII od Envir		39	FISH		/// # 30		Прг	
DA			001/0	J0/20	0 10 2	001/06/20	AGENC	ם ז	iversin			Servic				BUTE	RE-	SAMPLE
D	Sľ	TE #	NID	MAP	P# NID#	SITE	UTM	Ν	METHO	DD/NO.	SIREA			<u>,</u>		COMM	ENTS	
THC		30				10 47088	4 631380	2	FF	1	TEMP 75	CON	TUR	3				
ME		00				10.47000	4.001000	2		1	7.5							
E /																		
SIT																		
	_			_													_	
	SITE	E# M		0  -	I/P SPECI	ES STAGE	AGE	TOTA	AL NO	MIN LI	N (mm)	MAX	LN (mm	) FI	SH ACT	C	COMME	NTS
λRγ	39	,			1 KB	,			। २	ی 1	50 71		300		Rearing			
MM/	39	)	EF/1		1 BT				2	1	14		463	F	Rearing			
SUN	00	,						-	_		14			- ·	tearing			
SH																		
Ë																		
ECS	0												NET /	/ TRA	P SPEC	IFICATION		
SP	U i	511E #	ND/I	NOF	1/P DATE	IN TIME	IN DA	IE OU		EOUI	NELTY	rpe I	ENGTH		DEPTH	MESH SI	ZE SE	I HAB
EAR	-																	
GE																		
							ELE	CTRO	FISHE	R SPEC	IFICATIO	ONS						
	C	SITE #	MD/I	NO F	I/P TIME	IN TIME C	DUT E	= SEC	LE	NGTH	WIDT	ΉE	NCL V	/OLT	FREQ	PLSE	MAK	E MDL
	0	39	EF/	/1	1 1305	5   1328	5	499		200	4.93	5	0	250	60	Fixed	Coffe	lt Mk X
١TS	C																	
MEN																		
IMO																		
C																		
								NDIV	(IDUA	L FISI	H DAT	4	105					
С	SITE	E # MD	/NO H	H/P	SPECIES	LENGTH (mm)	WEIGI	HT	SEX	MATU				# A	CE.	CO	MMEN	rs
	39	) FF	-/1	1	RB	350	(gins	)			Sc	ale	3-1	# A	5+			
	39	EF	=/1	1	BT	463			М		Fin	ray	3-2		7+			
	39	) EF	-/1	1	MW	171					Sc	ale	3-3	3	3+			
	39	) EF	-/1	1	MW	300					Sc	ale	3-4		7+			
	39		-/1	1	MW	295					Sc	ale	3-5	6	j+			
	39		71		DI	114					50	ale	3-0		1.7			
				+														
			-+	-+										_				
				$\square$														
				-+										_				
						1	1							1	1			



Unnamed tributary to Halfway River Site 39: View upstream from bottom of site (Roll HG1 - Exp 19; CD 2 - Im 157)



Unnamed tributary to Halfway River Site 39: Aerial view upstream (Roll HG1 - Exp 22; CD 2 - Im 160)

## **APPENDIX XL**

#### **CALNAN CREEK**

(235-927700)

### Sample Site 40

													S	SITE	E C	ARI	)											
STF	REA	MNA	AME		Calr	nan C	Creek												F	FIELD	COOR	DINA	TES	56°	53.1	1' 123	° 35.7	1'
LOC	CAT	ION																										
NTS	S MA	\P #		94B	/13		NID			WA	TERSH	ED (	CODI	E	235	-927	700					_						
RE/		#	0004		100		SITE		40	SIT	EUTM	10	4	6354	6	63	804551	SITE		NGTH	250		ETH	RF	ACC	ESS	l N	-
DA	E		2001	1/08	/20		TIME		1030	AG	ENCY	D	ivers	ified	Env	ronr	mental S	ervices	s C	REW	BC	/1E	FIS	SHF	JRM	YX	N	
(	CHA	NNE	L (m)		me	eth											avg	GRA	DIE	NT %	EMS					1D		AN N
CH/				н.			14.0	00 2	21.00	13	.50 17	.00	17.	.50	13	.00	16.00	meth	A	.L	IEM	(°C) د	- (	5.0	TUR	BIDII	Y	ΤE
				1	R		14.0		15.00	0.	50 15	0.50	10.	.50	13	.00	12.42	1.0	_	_	Ph		ONIC	0.0		Clear		J.
KE3 Wh						30	0.0	0 5	U.55 TAGE	0.	32 0. Moder	.ou ate	1.0	00 No 1	U. Vis (	72 Chan	0.00	Dry/In	nt		RED			0.0	III - F	KD		
***		C	OVE	R	Tota	al	0.0		Modera	ate (	5-20%)	uic		Dev	vater			Tribs			Domir	nant	Co	bble	(64-2	56 mm	)	
	type	SV	VD	LW	/D	B	3	U	D	P	OV	ſ	V	CR	IWC	N CL	OSURE				Subdo	om.	Gr	avel (	2-64	mm)	,	-
	amt	5	S	S	3	S	\$	S	-	)	S		N								D95 (	cm)	30		D (c	m) 16		ð
К	loc	F	>	F	>	Р	,	Р	F	D C	Р		Р		%0	40%	%06	%			Morp	h. Rif	fle-p	ool		·		PP
VE		LW	D FN	С	Abu	ndan	nt	D	IST		Clumpe	d		%0	1-2	21-	71-	06<			DIST	URBA	NCE	e ind	ICAT	ORS		þ
CC		LB S	SHAP	Έ	Vert	ical		R	B SHA	νPE	Vertical			0	1	2	3 4	5			01 B	1 B2	B3	D1	D2	D3 C	I C2	00
		TEX	TUR	E	Fine	s		Т	EXTU	RE	Fines			INS	TRE	AM		1			C3 C	4 C5	5 S1	S2	S3	S4		Ϋ́
		RIP	. VEG	<b>)</b> .	Con	iferou	us	R	IP. VE	G.	Coniferent	ous		VEC	GET.	ATIC	N				PATT	ERN	Irre	gula	rWar	ndering	l	
		STA	GE		You	ng Fo	orest	S	TAGE		Young F	Fores	st								ISLAN	NDS	No	ne				
																					BARS	5	Sic	le/Mi	d-stre	am		
																					COU		Pa	rtially	Cou	oled		
																					CON	-INEL	) Oc	casio	onally	Confir	ed	
RE	С	NIL	) MAF	י <del>#</del>	NIL	)#	IYF	'E F	11/LG	(m)	mthd		PHC			1		CON	MME	INTS			1	1	ι	MIL		
LΤU												R																
√∃_												R		г F									-					
											DIS		RAN			САТ	ORIEC											
01	Beav	/er Da	m			B3 /	Avulsio	on			D3 Rec	ent I V	VD iar	n n		C3	Elevated F	Bar		S1	Homog	enous I	Bed		S4	Extensiv	e Bars	
в1	Abar	ndone	d Chan	nel		D1 5	Small	Woody	Debris		C1 Exte	nsive	Riffles	 ;		C4	Multiple C	hannel		S2	Sedime	ent Fing	ers		S5	Extensiv	e Scoul	rs
B2	Erod	ing Ba	ank	-		D2 I	Large	Woody	Debris		C2 Limi	ted Po	ools			C5	Disturbed	Lines		S3	Sedime	ent Wed	lges					-
Е	≻	Goo	d qua	ality	seas	sonal	l reari	ing fo	r resid	ent E	3T.																	
ITA		Pote	ential	ΒT	spav	vning	g alth	ough	fines a	ppe	ar high.																	
HAB	ν																											
F					FO	~ ^ 1												CO1		NTC								
NO			6		FU	wd				view	vu/s from	n hoi	ttom	ofei	to			00		.1113								
ATI	H	G1	7			wd			1	viev	v u/s from	n cei	ntre o	of sit	e													
NT	H	G1	. 8			wd			- 1	viev	v d/s fror	n top	ofs	ite	<u> </u>													
IME	H	G1	9			wd	+		J	aeri	al view u	pstre	eam															
Ŋ																												
Б																												
ТО																												
ЭНС																												
ш.		DO					1.47					10														0		
ΕE	G	ROL	רי 				VV I	LDLI	-E OB	SEF	<b>VATION</b>	15				G	ROUP	1		V	VILDLI	FEO	BSE	RVA	TUN	5		
DL																												
WIL																												
	(	С														I		1										
	C	X1	Elect	ro-f	ishin	ig eff	fort: 6	63 se	econds	@	250 volts	. Bul	ll trou	ut we	ere ca	aptu	red.											
ITS	C	X2	Upst	rear	n res	siden	nt BT	popu	lation is	solat	ted abov	e Ha	lfway	Riv	er fa	lls.												
IEN	C	X3	Seve	ral (	50+ (	cm m	nature	e BT a	approa	chin	g spawn	ing c	condi	tion	obse	erved	but not	sample	ed; a	ssume	ed to be	e migr	ating	to				
MM			upstr	ean	n spa	awnir	ng ha	bitat.								-												
8																												

							FI	SH (	COLL	ECTIO	N FOR	M							
STF	REAM	alnan	Creek						_			LA	KE X	STREA	١М	WE	ETLAND		
LOC	OITA	N					-				WATE	RSHE		23	5-92770	0			
WA	TERBO		<u>_</u> د				NTS MA	NP	94B/1	3 NIC	NO		SITE	LAKE	ECARD	ATTACH	ED	<b>X</b> Y	N
PR	DJECT	ID	Halfwa	y-Gra	aham Ove	erview	REACH	#		SIT	E#	40	FISH	PERI	MIT # SC	22001-03	2		
DAT	E	2	001/08	/20	to 2	001/08/20	AGENC	YC	Diversifi	ed Envir	onmental	Servic	es C	REW	/	BC/TE		RE-SAN	MPLE
0	SITE	F#				SITE	штм		METH		STREA	M CO	NDITIO	N		COM	MENT	s	
ĮŌĹ	om	L "				ONE	UTW			obino.	TEMP	CON	TUR	В		00111		0	
ΕŢ	40	0				10.46354	6.630455	51	EF	1	6.0		С						
/ M																			
ТЕ																			
S																			
	CITE 4	# N/T					ACE	TOT		MINU	(mm)	MAX	IN (mm			-	COM		2
1	40	# IVI	EE/1	1	BT	ES STAGE	AGE	101	AL NO		N (IIIII) 75	IVIAA	102	) F	Rearing		CON		5
AR	40		/0/1	1	BT	Adult			4	5	00		600		rtearing	approxi	mate l	enath	
ЧМ						,			-							approva		ongan	
SUI																			
ВН																			
Ш																			
ö													NET	/ TR/	AP SPEC		ONS		
ЗРЕ	C SI	ITE #	MD/N	D H/F	DATE	IN TIME	IN DA	TE Ol	UT TIN	IE OUT	NET TY	/PE l	ENGTH	1	DEPTH	MESH	SIZE	SET	HAB
R S																			
βEA	_																		
0								OTD											
	CLC								OFISHE	R SPEC							N.4		MDI
	C SI	11E #						F SEL		250				250	FREG	Fixed		offelt	
(0)	C	40		1	1030		5	005		230	12.44	~	0	250	00	TIXEU	U	Unen	
NTS	0																		
ME	-																		
OMME	F																		
COMME																			
COMME								NDI	VIDUA	AL FISI	H DAT/	4							
COMME	SITE #	# MD/	/NO H/	P SI	PECIES	LENGTH	WEIGH		VIDU/ SEX	AL FISI MATU		4	AGE			C	COMM	ENTS	
COMME	SITE #	# MD/	/NO H/	P SF	PECIES	LENGTH (mm)	WEIGI (gms	NDIN HT )	VIDU/ SEX	AL FISI MATU		A TR S	AGE	#	AGE	C	COMM	ENTS	
COMME	SITE #	# MD/	/NO H/	P SF	PECIES	LENGTH (mm) 175	WEIGI (gms	NDIN HT )	VIDU/ SEX	AL FISI MATU		A TR S ale	AGE AMPLE 1-1	# 4	AGE 3+	C	COMM	ENTS	
COMME	SITE # 40 40	# MD/ EF EF	/NO H/ E/1 1 E/1 1	P SF	PECIES BT BT	LENGTH (mm) 175 192 136	WEIGI (gms	NDIN HT )	VIDUA SEX	AL FISI MATU	H DAT/ JR ST Sc Sc	A TR S ale ale	AGE AMPLE 1-1 1-2	# 4	AGE 3+ 3+ 2+	C	COMM	ENTS	
COMME	SITE # 40 40 40	# MD/ EF EF EF	/NO H/ E/1 1 E/1 1 E/1 1	P SI	PECIES BT BT BT BT	LENGTH (mm) 175 192 136 146	WEIGI (gms	NDIN HT )	VIDU4 SEX	AL FISI MATU	H DAT/ JR ST Sc Sc Sc Sc	A IR S ale ale ale ale	AGE AMPLE 1-1 1-2 1-3 1-4	# 4	AGE 3+ 3+ 2+ 2+	С	COMM	ENTS	
COMME	SITE # 40 40 40 40 40	# MD/ EF EF EF EF	/NO H/ 5/1 1 5/1 1 5/1 1 5/1 1 5/1 1 5/1 1	P SF	PECIES BT BT BT BT BT BT	LENGTH (mm) 175 192 136 146 138	l WEIGI (gms	NDIN HT )	VIDUA SEX	AL FISI MATU	H DAT/ JR ST Sc Sc Sc Sc Sc	A TR S ale ale ale ale ale ale	AGE AMPLE 1-1 1-2 1-3 1-4 1-5	# 4	AGE 3+ 3+ 2+ 2+ 2+ 2+	C	COMM	ENTS	
COMME	SITE # 40 40 40 40 40 40	# MD/ EF EF EF EF EF	/NO H/ 5/1 1 5/1 1 5/1 1 5/1 1 5/1 1 5/1 1 5/1 1	P SI	PECIES BT BT BT BT BT BT BT BT	LENGTH (mm) 175 192 136 146 138 116	WEIGH (gms	NDIN HT )	VIDU/ SEX	AL FISI MATU	H DAT/ JR ST Sc Sc Sc Sc Sc Sc Sc Sc	A IR S ale ale ale ale ale ale ale	AGE AMPLE 1-1 1-2 1-3 1-4 1-5 1-6	# 4	AGE 3+ 3+ 2+ 2+ 2+ 2+ 2+ 1+	C	COMM	ENTS	
COMME	SITE # 40 40 40 40 40 40 40 40	# MD/ EF EF EF EF EF EF	VNO H/ E/1 1 E/1 1 E/1 1 E/1 1 E/1 1 E/1 1 E/1 1 E/1 1	P SF	PECIES BT BT BT BT BT BT BT BT BT	LENGTH (mm) 175 192 136 146 138 116 75	l WEIGI (gms	NDIN HT )	VIDUA SEX	MATU	H DAT/ JR ST Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc	A TR S ale ale ale ale ale ale ale ale	AGE AMPLE 1-1 1-2 1-3 1-4 1-5 1-6 1-7	# #	AGE 3+ 2+ 2+ 2+ 2+ 2+ 1+ 1+	C	COMM	ENTS	
COMME	SITE # 40 40 40 40 40 40 40 40 40	# MD/ EF EF EF EF EF EF EF	/NO H/ 5/1 1 5/1 1 5/1 1 5/1 1 5/1 1 5/1 1 5/1 1 5/1 1 5/1 1 5/1 1	P SF	PECIES BT BT BT BT BT BT BT BT BT BT	LENGTH (mm) 175 192 136 146 138 116 75 91	l WEIGI (gms		VIDUA SEX	AL FISI MATU	H DAT/ JR ST Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc	A IR S ale ale ale ale ale ale ale ale	AGE AMPLE 1-1 1-2 1-3 1-4 1-5 1-6 1-7 1-8	# 4	AGE 3+ 3+ 2+ 2+ 2+ 1+ 1+ 1+ 1+	C	COMM	ENTS	
COMME	SITE # 40 40 40 40 40 40 40 40 40 40 40	# MD/ EF EF EF EF EF EF EF EF	VNO H/ F/1 1 F/1 1 F	P SR	PECIES BT BT BT BT BT BT BT BT BT BT	LENGTH (mm) 175 192 136 146 138 116 75 91 100	l WEIGI (gms	NDIV -TT ) I I I I I I I I I I I I I I I I I I	VIDUA SEX	AL FISI MATU	H DAT/ JR ST Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc	A STATES OF CONTRACTS OF CONTRA	AGE AMPLE 1-1 1-2 1-3 1-4 1-5 1-6 1-7 1-8 1-9	# /	AGE 3+ 2+ 2+ 2+ 1+ 1+ 1+ 1+ 1+	C	COMM	ENTS	
COMME	SITE # 40 40 40 40 40 40 40 40 40 40 40	# MD/ EF EF EF EF EF EF EF	Image: No         H/           5/1         1           5/1         1           5/1         1           5/1         1           5/1         1           5/1         1           5/1         1           5/1         1           5/1         1           5/1         1           5/1         1           5/1         1	P SF	PECIES BT BT BT BT BT BT BT BT BT	LENGTH (mm) 175 192 136 146 138 116 75 91 100	l WEIGI (gms	NDIN HT )	VIDUA SEX	AL FISI MATU	H DAT/ JR ST Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc	A STATES OF CONTRACTS OF CONTRA	AGE AMPLE 1-1 1-2 1-3 1-4 1-5 1-6 1-7 1-8 1-9	# 4	AGE 3+ 3+ 2+ 2+ 2+ 1+ 1+ 1+ 1+	С	COMM	ENTS	
COMME	SITE # 40 40 40 40 40 40 40 40 40 40	# MD/ EF EF EF EF EF EF EF EF	Image: Note of the second se	P SR	PECIES BT BT BT BT BT BT BT BT BT	LENGTH (mm) 175 192 136 146 138 116 75 91 100	l WEIGI (gms		VIDUA	AL FISI MATU	H DATA	A Sale Sale Sale Sale Sale Sale Sale Sale	AGE AMPLE 1-1 1-2 1-3 1-4 1-5 1-6 1-7 1-8 1-9	# / / 	AGE 3+ 3+ 2+ 2+ 2+ 1+ 1+ 1+ 1+	C	COMM	ENTS	
COMME	SITE # 40 40 40 40 40 40 40 40 40	H MD/ EF EF EF EF EF EF EF EF EF	INO         H/           7/1         1           7/1         1           7/1         1           7/1         1           7/1         1           7/1         1           7/1         1           7/1         1           7/1         1           7/1         1           7/1         1           7/1         1	P SI	PECIES BT BT BT BT BT BT BT BT BT	LENGTH (mm) 175 192 136 146 138 116 75 91 100	l WEIGI (gms	NDIV IT ) I I I I I I I I I I I I I I I I I	VIDUA	MATU MATU	H DAT/ JR ST Sc Sc Sc Sc Sc Sc Sc Sc	A TR S ale ale ale ale ale ale ale ale	AGE AMPLE 1-1 1-2 1-3 1-4 1-5 1-6 1-7 1-8 1-9	# 4	AGE 3+ 2+ 2+ 2+ 2+ 1+ 1+ 1+ 1+	C	COMM	ENTS	
COMME	SITE # 40 40 40 40 40 40 40 40 40	H MD/ EF EF EF EF EF EF EF EF EF	INO         H/           7/1         1           7/1         1           7/1         1           7/1         1           7/1         1           7/1         1           7/1         1           7/1         1           7/1         1           7/1         1           7/1         1           7/1         1	P SR	PECIES BT BT BT BT BT BT BT BT BT BT	LENGTH (mm) 175 192 136 146 138 116 75 91 100	l WEIGI (gms		VIDUA		H DATA	A Sale ale ale ale ale ale ale ale ale ale	AGE AMPLE 1-1 1-2 1-3 1-4 1-5 1-6 1-7 1-8 1-9	# / 	AGE 3+ 3+ 2+ 2+ 2+ 1+ 1+ 1+ 1+ 1+	C	COMM	ENTS	
COMME	SITE # 40 40 40 40 40 40 40 40 40	MD/ EF EF EF EF EF EF EF EF EF	INO         H/           7/1         1           7/1         1           7/1         1           7/1         1           7/1         1           7/1         1           7/1         1           7/1         1           7/1         1           7/1         1           7/1         1           7/1         1           7/1         1	P SF	PECIES BT BT BT BT BT BT BT BT BT	LENGTH (mm) 175 192 136 146 138 116 75 91 100	l WEIGI (gms		VIDUA		H DAT/ JR S Sc Sc Sc Sc Sc Sc Sc Sc Sc	A Sale ale ale ale ale ale ale ale ale ale	AGE AMPLE 1-1 1-2 1-3 1-4 1-5 1-6 1-7 1-8 1-9	# A	AGE 3+ 3+ 2+ 2+ 2+ 1+ 1+ 1+ 1+ 1+	C	COMM	ENTS	
COMME	SITE # 40 40 40 40 40 40 40 40 40 40	#     MD/       EF	/NO     H/       5/1     1       5/1     1       5/1     1       5/1     1       5/1     1       5/1     1       5/1     1       5/1     1       5/1     1       5/1     1       5/1     1       5/1     1       5/1     1       5/1     1       5/1     1       5/1     1       5/1     1	P SF	PECIES BT BT BT BT BT BT BT BT BT	LENGTH (mm) 175 192 136 146 138 116 75 91 100	l WEIGI (gms		VIDUA		H DAT/ JR ST Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc	A Second	AGE AMPLE 1-1 1-2 1-3 1-4 1-5 1-6 1-7 1-8 1-9		AGE 3+ 2+ 2+ 2+ 1+ 1+ 1+ 1+ 1+	C	COMM	ENTS	
COMME	SITE # 40 40 40 40 40 40 40 40 40 40	# MD/ EF EF EF EF EF EF EF EF EF EF	VNO         H/           5/1         1           5/1	P SF	PECIES BT BT BT BT BT BT BT BT	LENGTH (mm) 175 192 136 146 138 116 75 91 100	l WEIGH (gms		VIDUA		H DAT/ JR S Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc	A STATES OF CONTRACTS OF CONTRA	AGE AMPLE 1-1 1-2 1-3 1-4 1-5 1-6 1-7 1-8 1-9		AGE 3+ 3+ 2+ 2+ 1+ 1+ 1+ 1+ 1+ 1+ 1+ 1+ 1+ 1	C	COMM	ENTS	
COMME	SITE # 40 40 40 40 40 40 40 40 40 40	#     MD/       EF	Image: Note of the second se	P SF	PECIES BT BT BT BT BT BT BT BT	LENGTH (mm) 175 192 136 146 138 116 75 91 100	l WEIGI (gms		VIDUA		H DAT/ JR ST Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc	A Sale Sale Sale Sale Sale Sale Sale Sale	AGE AMPLE 1-1 1-2 1-3 1-4 1-5 1-6 1-7 1-8 1-9		AGE 3+ 3+ 2+ 2+ 2+ 1+ 1+ 1+ 1+ 1+ 1+ 1+ 1+ 1+ 1	C		ENTS	
COMME	SITE # 40 40 40 40 40 40 40 40 40	# MD/ EF EF EF EF EF EF EF EF EF	/NO         H/           7/1         1           7/1	P SF	PECIES BT BT BT BT BT BT BT BT	LENGTH (mm) 175 192 136 146 138 116 75 91 100	l WEIGI (gms		VIDUA		H DAT/ JR ST Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc	A Sale ale ale ale ale ale ale ale ale ale	AGE AMPLE 1-1 1-2 1-3 1-4 1-5 1-6 1-7 1-8 1-9		AGE 3+ 2+ 2+ 2+ 2+ 1+ 1+ 1+ 1+ 1+ 1+ 1+			ENTS	
COMME	SITE # 40 40 40 40 40 40 40 40 40	<ul> <li>MD/</li> <li>EF</li> <li></li></ul>	/NO         H/           7/1         1           7/1	P SF	PECIES BT BT BT BT BT BT BT BT	LENGTH (mm) 175 192 136 146 138 116 75 91 100	l WEIGI (gms		VIDUA		H DATA	A Sale ale ale ale ale ale ale ale ale ale	AGE AMPLE 1-1 1-2 1-3 1-4 1-5 1-6 1-7 1-8 1-9	# F 	AGE 3+ 3+ 2+ 2+ 2+ 1+ 1+ 1+ 1+ 1+ 1+ 1+	C		ENTS	
COMME	SITE # 40 40 40 40 40 40 40 40 40 40 40	<ul> <li>MD/</li> <li>EF</li> <li></li></ul>	/NO         H/           7/1         1           7/1	P SF	PECIES BT BT BT BT BT BT BT BT	LENGTH (mm) 175 192 136 146 138 116 75 91 100	l WEIGI (gms		VIDUA		H DAT/ JR S Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc	A Sale ale ale ale ale ale ale ale ale ale	AGE AMPLE 1-1 1-2 1-3 1-4 1-5 1-6 1-7 1-8 1-9		AGE 3+ 2+ 2+ 2+ 1+ 1+ 1+ 1+ 1+ 1+ 0 0 0 0 0 0 0 0 0 0			ENTS	



Calnan Creek Site 40: View downstream from top of site (Roll HG1 - Exp 8; CD 2 - Im 163)



Calnan Creek Site 40: Aerial view upstream (Roll HG1 - Exp 9; CD 2 - Im 164)

## **APPENDIX XLI**

## CALNAN CREEK

(235-927700)

### Sample Site 41

												S	SITE	E C	ARI	)											
STF	REA	MNA	AME	Ca	Inan	Cree	:k												FIEL	) (	COORDINA	TES	56°	51.8	6' 123°	37.6	2'
LOO	CAT	ION				_	_																				
NTS	S MA	\P #	94	4B/13		NID	NO		WA	TERSH	ED (		=	235	-927	700											
RE/	ACH	#	0004/	00/00		SIT	E#	41	SIT	EUTM	10	46	5116	5	63	02466	SIT	ELE	ENGT	H	200 M	ETH	RF	ACO	CESS	ŀ	-
DA	E		2001/	08/20		1 IIV	IE	1137	AG	ENCY	D	ivers	ified	Env	ronr	nental S	Service	es	CREV	V	BC/IE	FIS	SHF	JRM	Y X	N	
(	CHA	NNE	L (m)	m	heth	1										avg	GR	ADI	ENT %	6	EMS		-	COI	ND	-	×A
CH/			VIDTH	ŀ	RF	28	.00	26.00	26	6.00 32	2.00	25.	50	23	.00	26.75	meth	1	AL		TEMP (°C)		8.5	TUF	RBIDITY		TE
WE		D W		·		28	.00	26.00	25	00 32	2.00	25.	00	21	.00	26.17	2.	5			Ph				Clear		꼬
RE			DEPT		NS 50	0.	32	0.20	0.	.12 0. Modor	.35 roto	0.3	30 No.)	.0 /io.0	25 Shan	0.26	2.	5 nt		1	FLOOD SI	GNS	0.6	6 m -	RD		
VVD	DEI				.50 tal	0.	00	Abund	anti		ale						Tribe	π.		'	Dep IVIATE		L bble	(64-7	56 mm		
		SV				D		Abunu		(~20 %)		V					THUS	,			Subdom	Bo	uldor	(0 + 2)	.50 mm)	, 	
	type	50					N		יר 2	N		V N		7001			-   [				D95 (cm)	10	5		(m) 45		MC
~	loc			P		P	P		5	P		P		%	%0	%0	%				Morph Rif	fle-n					Ř
VEF	100	LW		No	ne			DIST			- ·		%(	1-20	21-4	11-7 71-9	06				DISTURBA		E INC	OICA <sup>-</sup>	FORS		HO
Ő		IB S	SHAPE	Slo	nina	1		RB SHA	PF	Slopina			0	1	2	3 4	5				O1 B1 B2	B3	D1	D2	D3 C1	C2	6
Ŭ		TEX		Fin	es	,		IEXTUR	RF	Fines			INS		- AM	No	ne				C3 C4 C5	S1	S2	S3	S4		GΥ
		RIP	VEG	Sh	rubs				G	Shrubs			VEC	GET.		N N					PATTERN	Sir			•		
		STA	GF	Sh	rub/ŀ	Herb		STAGE	0.	Shrub/F	lerb										ISLANDS	Irre	aula	r			
		011	.02	011		1010		SINCE		ernabri											BARS	Sic	de/Mi	d-stre	eam		
																					COUPLING	De	coup	led			-
																					CONFINED	Un	confi	ned			
ш	С	NIC	MAP	# NI	ID #	TY	ΈE	HT/LG	(m)	mthd		PHC	DTO				CC	MM	1ENTS	;					JTM		
NR											R		F														
EAT											R		F														
Ш											R		F														
										DIS	TUR	BAN	CEI	NDI	CAT	OR LEO	GEND										
01	Beav	/er Da	m		В3	Avuls	sion			D3 Rec	ent LV	VD jan	n		C3	Elevated	Bar		S	1	Homogenous E	Bed		S4	Extensive	Bars	
B1	Abar	ndone	d Channe	el	D1	Sma	II Wood	ly Debris		C1 Exte	nsive	Riffles			C4	Multiple C	Channel		Sź	2	Sediment Fing	ers		S5	Extensive	Scour	S
B2	Erod	ing Ba	ank		D2	Larg	e Wood	ly Debris		C2 Limi	ted Po	ools			C5	Disturbed	Lines		S	3	Sediment Wed	ges					
		0					1. 14 . 4 6						<b>F</b> /l														
AΤ	Σ	GOC	o seas	onal i	rearii	ng na	iditat t	or resid	ent	BI and J	uven	lle B	I (DC	buide	er co	ver and	side c	nan	neis).								
BIT	ALI																										
HΑ	QU	-																									
F	SZ																										
7	RC	DLL	FRAM	E FC	CAI	L LN	DIRE	CTION									CC	MN	IENTS	;							
0	H	G1	10		wd	1		u	viev	v u/s fror	n bơ	ttom	of si	te													
ΓAΤ	H	G1	11		wd	1		u	viev	v u/s fror	n ce	ntre c	of sit	е													
I.	H	G1	12		wd	1		d	viev	v d/s fror	n top	o of s	ite														
M	H	G1	13		wd	1		u	aeri	ial view u	pstre	eam															
bo																											
Ď																											
DTC																											-
Н				_																							
	~	DO				14							_		~				_	14					0		
H	G			son t	ack		TEDE	ILE OB	SEF	<b>VATIO</b>	13				G	ROUP				VV		53E	κvΆ		3		
DL				5011 (1	auna	5																					
MIL																											
	(	0													I		I										
	C	Х1	Flectro	p-fishi	ina e	effort.	648 s	seconds	0	250 volts	Bu	ll trou	it we	re c	aptu	ed											
TS	C	X2	One a	dult B	Tob	oserve	ed in c	deep po	ol.																		
ЕN	C	21	Also a	signi	fican	nt poc	kets c	of grave	Ι.																		
MM				5				•																			
00																											

							FI	SH (	COLLI	ECTIO	N FOR	RM						
STF	REAMN	Cal	nan C	Creek									LAK	(E <b>X</b>	STREAM	Л	WETLAND	
LOC	CATION	N					-				WATE	RSHE	CODE	235	-927700			
WA	TERBO		)				NTS MA	\P _	94B/1	3 NIC	NO		SITE/L	AKE	CARD A	TTACHE	DX	Y N
PR	DJECT	ID	Halfway	-Grah	nam Ove	rview	REACH	#		SIT	E#	41	FISH F	ERM	IT # SC	2001-032		
DA	ΓE	20	001/08/2	20	to 2	001/08/20	AGENC	Y	Diversifi	ed Enviro	onmental	Service	s CF	REW	E	BC/TE	RE-	SAMPLE
(	SITE	F #		P#	NID #	SITE	штм		метно		STREA	M CON	IDITION			COMM	ENTS	
10L	On	- #		u <i>π</i>		OnL	OTM			DD/NO.	TEMP	CON	TURB			COMIN	LINIO	
Ē	41	1				10.46116	5.630246	6	EF	1	8.5		С					
/ MI																		
ΤE																		
S.																		
		//			00500		105	TOT						EIC				
	SITE #	# MI	D/NO	H/P	SPECI	ES STAGE	AGE	101	AL NO	MIN LI	N (mm)	MAX	<u>N (mm)</u>	FIS	SHACI	(	COMME	NIS
ſRΥ	41		EF/1	1					8	1:		4	201	R	earing	onnrovin	ata lana	th
٩MI	41	V	0/1	1	ы				1	5	0	C	500			approxim	late leng	un
NN.																		
нS																		
FIS														-				
8													NET /	TRAF	P SPECI	FICATIO	NS	
ЪЕ	C SI	TE#	MD/NO	H/P	DATE	IN TIME	IN DA	TE OL		IE OUT	NET TY	PEL	ENGTH	D	EPTH	MESH S	IZE SE	ET HAB
s SI									-				-					
EAF																		
Ð																		
							ELE	CTRC	OFISHE	R SPEC	IFICATIO	ONS						
	C SI	ITE #	MD/NO	H/P	TIME	IN TIME C	DUT E	F SEC	LE	NGTH	WIDT	ΉE	NCL V	OLT	FREQ	PLSE	MAK	e MDL
		41	EF/1	1	1145	5 1210	C	648		200	26.17	7	0 2	250	60	Fixed	Coffe	lt Mk X
ΓS	С																	
EN.	_																	
MM	_																	
CO																		
										I FISI		Δ						
						LENGTH	WEIG	NDI\	/IDUA	L FISI	H DAT	4	AGE					
С	SITE #	# MD/	NO H/P	SP	ECIES	LENGTH (mm)	WEIGI (ams	NDI\ HT )	/IDUA SEX	L FISI MATU			AGE	: A(	<del>J</del> F	CC	DMMEN <sup>-</sup>	TS
С	SITE #	# MD/	NO H/F	SP	ECIES BT	LENGTH (mm) 261	WEIGI (gms	NDIN HT )	/IDUA SEX	L FISI MATU	I DATA	A FR SA ray	AGE AMPLE # 2-1	• A0	GE +	СС	OMMEN <sup>-</sup>	TS
С	SITE # 41 41	# MD/ EF	NO H/P /1 1 /1 1	SP	ECIES BT BT	LENGTH (mm) 261 237	WEIGI (gms	NDIN HT )	/IDUA SEX	L FISI MATU	H DATA	A FR SA ray ray	AGE AMPLE # 2-1 2-2	• AC	GE + +	CC	DMMEN <sup>-</sup>	TS
С	SITE # 41 41 41	# MD/ EF	NO H/P /1 1 /1 1 /1 1	SP	ECIES BT BT BT	LENGTH (mm) 261 237 154	WEIGI (gms	NDI\ HT )	/IDUA SEX	IL FISI MATU	HDATA	TR SA ray ray ale	AGE AMPLE # 2-1 2-2 2-3	: A( 4 4	GE + + +	CC	DMMEN <sup>-</sup>	TS
С	SITE # 41 41 41 41 41	H MD/ EF EF EF	NO H/P /1 1 /1 1 /1 1 /1 1	SP	ECIES BT BT BT BT BT	LENGTH (mm) 261 237 154 190	WEIGI (gms	NDIN HT )	/IDUA SEX	AL FISI MATU	H DATA	TR SA ray ray ale ale	AGE AMPLE # 2-1 2-2 2-3 2-4	• A( 4 4 2 3	GE + + + +	CC	DMMEN <sup>-</sup>	ΓS
С	SITE # 41 41 41 41 41 41	H MD/ EF EF EF	NO H/P /1 1 /1 1 /1 1 /1 1 /1 1 /1 1	SP	ECIES BT BT BT BT BT BT	LENGTH (mm) 261 237 154 190 157	WEIGI (gms	NDIN HT )	/IDUA SEX	IL FISI	H DATA	A TR S/ ray ray ale ale ale	AGE AMPLE # 2-1 2-2 2-3 2-4 2-5	AC	GE + + + + + + +	СС	DMMEN	TS
С	SITE # 41 41 41 41 41 41 41	#     MD/I       EF       EF       EF       EF       EF       EF	NO H/P /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1 1	SP	ECIES BT BT BT BT BT BT BT	LENGTH (mm) 261 237 154 190 157 155	WEIGI (gms	NDIN HT )	/IDUA SEX	L FISI MATU	HDAT/ IR ST Fin Fin Sc Sc Sc Sc	A ray ray ale ale ale ale	AGE <u>AMPLE #</u> 2-1 2-2 2-3 2-4 2-5 2-6	<ul> <li>A(</li> <li>4</li> <li>4</li> <li>4</li> <li>2</li> <li>3</li> <li>2</li> <li>2</li> </ul>	GE +	СС	DMMEN"	IS
С	SITE # 41 41 41 41 41 41 41 41	#         MD/I           EF.         EF.           EF.         EF.           EF.         EF.           EF.         EF.           EF.         EF.           EF.         EF.	NO H/F /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1	SP	ECIES BT BT BT BT BT BT BT	LENGTH (mm) 261 237 154 190 157 155 155 151	l WEIGI (gms	NDIN HT )	/IDUA SEX	L FISI MATU	H DAT/ R ST Fin Fin Sc Sc Sc Sc Sc	A ray ray ale ale ale ale ale ale ale	AGE AMPLE # 2-1 2-2 2-3 2-4 2-5 2-6 2-7	AC	BE +	CC	DMMEN <sup>-</sup>	IS
С	SITE # 41 41 41 41 41 41 41 41 41	# MD/I           EF,	NO H/F /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1	SP	ECIES BT BT BT BT BT BT BT BT	LENGTH (mm) 261 237 154 190 157 155 151 151 152	l WEIGI (gms	NDIX HT )	/IDUA SEX	MATU	H DAT/ IR ST Fin Fin Sc Sc Sc Sc Sc	IR   SA     ray   ray     ray   ale     ale   ale     ale   ale     ale   ale     ale   ale     ale   ale	AGE 2-1 2-2 2-3 2-4 2-5 2-6 2-7 2-8	E AC 4 4 2 3 3 2 2 2 2 2 2 2 2	3E + + + + + + + + + + + + + + +	СС	DMMEN <sup>-</sup>	TS
С	SITE # 41 41 41 41 41 41 41 41	#     MD/I       EF       EF       EF       EF       EF       EF       EF       EF	NO H/F /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1	SP	ECIES BT BT BT BT BT BT BT	LENGTH (mm) 261 237 154 190 157 155 151 151 152	l WEIGI (gms		SEX	MATU	H DAT/ IR SI Fin Fin Sc Sc Sc Sc Sc	A ray ray ale	AGE AMPLE # 2-1 2-2 2-3 2-4 2-5 2-6 2-7 2-8	E AC 4 4 2 3 3 2 2 2 2 2 2	SE +	CC	DMMEN"	TS
С	SITE # 41 41 41 41 41 41 41	# MD/ EF EF EF EF EF EF	NO H/P /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1	SP	ECIES BT BT BT BT BT BT BT BT	LENGTH (mm) 261 237 154 190 157 155 151 152	l WEIGI (gms		SEX	MATU	H DAT/ IR ST Fin Fin Sc Sc Sc Sc Sc	A ray ray ale	AGE AMPLE # 2-1 2-2 2-3 2-4 2-5 2-6 2-7 2-8	A0 4 2 3 3 2 2 2 2 2 2 2	3E       +       -	CC	DMMEN <sup>-</sup>	TS
С	SITE # 41 41 41 41 41 41 41	# MD/ EF EF EF EF EF EF	NO H/F /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1	SP	ECIES BT BT BT BT BT BT BT BT	LENGTH (mm) 261 237 154 190 157 155 151 152	l WEIGI (gms		/IDUA SEX	AL FISI MATU	H DAT/ IR ST Fin Fin Sc Sc Sc Sc Sc	A ray ray ale	AGE AMPLE # 2-1 2-2 2-3 2-4 2-5 2-6 2-7 2-8	<ul> <li>AC</li> <li>4</li> <li>4</li> <li>4</li> <li>4</li> <li>2</li> <li>4</li> <li>4</li></ul>	3E       +       +       +       +       +       +       +       +       +       +       +       +       +       -       +       -    <	CC	DMMEN <sup>-</sup>	TS
С	SITE # 41 41 41 41 41 41 41	# MD/ EF EF EF EF EF EF	NO H/F /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1	SP	ECIES BT BT BT BT BT BT BT	LENGTH (mm) 261 237 154 190 157 155 151 155 151	l WEIGI (gms		SEX	AL FISI MATU	H DAT/ IR ST Fin Fin Sc Sc Sc Sc Sc Sc	A ray ray ale ale ale ale ale ale	AGE MPLE # 2-1 2-2 2-3 2-4 2-5 2-6 2-7 2-8	A0 4 4 2 2 2 2 2 2 2 2 2	3E       +       +       +       +       +       +       +       +       +       +       -       +       -    <		DMMEN	TS
С	SITE # 41 41 41 41 41 41 41 41	# MD/I EF EF EF EF EF EF	NO H/F /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1	SP 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	ECIES BT BT BT BT BT BT BT	LENGTH (mm) 261 237 154 190 157 155 151 155 151	l WEIGI (gms		SEX	MATU	H DAT/ R ST Fin Fin Scc Scc Scc Scc Scc H DAT/ H DAT/	A ray ray ale	AGE AMPLE # 2-1 2-2 2-3 2-4 2-5 2-6 2-7 2-8	<ul> <li>A0</li> <li>4</li> <li>4</li> <li>4</li> <li>2</li> <li>4</li> <li>4</li></ul>	3E       +       +       +       +       +       +       +       +       +       +       +       +       -    <		DMMEN	
С	SITE # 41 41 41 41 41 41 41 41	<ul> <li>MD/I</li> <li>EF</li> </ul>	NO H/F /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1	SP	ECIES BT BT BT BT BT BT BT	LENGTH (mm) 261 237 154 190 157 155 151 151 152	l WEIGI (gms		SEX	AL FISI MATU	H DAT/ R ST Fin Fin Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc	A ray ray ale	AGE AMPLE # 2-1 2-2 2-3 2-4 2-5 2-6 2-7 2-8	A0           4           4           2           4           4           4           4           4           4           4           4           4           4           4	SE + + + + + + + + + + + + + + - - - - -		DMMEN	
С	SITE # 41 41 41 41 41 41 41 41 41	<ul> <li>MD/I</li> <li>EF,</li> <li>EF,</li></ul>	NO H/F /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1	SP	ECIES BT BT BT BT BT BT	LENGTH (mm) 261 237 154 190 157 155 151 151 152	l WEIGI (gms		/IDUA SEX	AL FISI MATU	H DAT/ R ST Fin Fin Scc Scc Scc Scc Scc Scc Scc Sc	A S/ ray ray ale	AGE AMPLE # 2-1 2-2 2-3 2-4 2-5 2-6 2-7 2-8	E A0 4 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	GE + + + + + + + + + + + + + + + + -		DMMEN	
С	SITE # 41 41 41 41 41 41 41 41 41	<ul> <li>MD/I</li> <li>EF.</li> <li>EF.</li></ul>	NO H/F /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1	SP	ECIES BT BT BT BT BT BT BT	LENGTH (mm) 261 237 154 190 157 155 151 152	l WEIGI (gms		/IDUA SEX	AL FISI MATU	H DAT/ IR S1 Fin Fin Sc Sc Sc Sc Sc H DAT/ H DAT	A ray ray ale	AGE AMPLE # 2-1 2-2 2-3 2-4 2-5 2-6 2-7 2-8	E A(4 4 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	GE       +       -       +       -    <		DMMEN	ΓS
С	SITE # 41 41 41 41 41 41 41 41 41	<ul> <li>MD/I</li> <li>EF,</li> <li>EF,</li></ul>	NO H/F /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1	SP	ECIES BT BT BT BT BT BT BT	LENGTH (mm) 261 237 154 190 157 155 151 155 151 152	l WEIGI (gms		/IDUA SEX		H DAT/ IR ST Fin Fin Sc Sc Sc Sc Sc Sc H DAT/	A ray ray ray ale	AGE AMPLE # 2-1 2-2 2-3 2-4 2-5 2-6 2-7 2-8	<ul> <li>A0</li> <li>4</li> <li>4</li> <li>4</li> <li>2</li> <li>4</li> <li>4</li></ul>	3E       +       +       +       +       +       +       +       +       +       +       +       -    <		DMMEN	ΓS
С	SITE # 41 41 41 41 41 41 41 41 41	<ul> <li>MD/I</li> <li>EF,</li> <li>EF,</li> <li>EF,</li> <li>EF,</li> <li>EF,</li> <li>EF,</li> <li>EF,</li> <li>EF,</li> <li>a</li> <li>a<td>NO H/F /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1</td><td>SP</td><td>ECIES BT BT BT BT BT BT BT</td><td>LENGTH (mm) 261 237 154 190 157 155 151 152</td><td>l WEIGI (gms</td><td></td><td>SEX</td><td></td><td>H DAT/ IR ST Fin Fin Sc Sc Sc Sc Sc Sc H DAT/</td><td>A ray ray ray ale ale ale ale ale ale ale ale ale ale</td><td>AGE AMPLE # 2-1 2-2 2-3 2-4 2-5 2-6 2-7 2-8</td><td><ul> <li>A(0)</li> <li>A(0)</li> <li>A(0)</li> <li>A(1)</li> <li< td=""><td>SE + + + + + + + + + + + + + - - - - - -</td><td></td><td>DMMEN</td><td></td></li<></ul></td></li></ul>	NO H/F /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1	SP	ECIES BT BT BT BT BT BT BT	LENGTH (mm) 261 237 154 190 157 155 151 152	l WEIGI (gms		SEX		H DAT/ IR ST Fin Fin Sc Sc Sc Sc Sc Sc H DAT/	A ray ray ray ale	AGE AMPLE # 2-1 2-2 2-3 2-4 2-5 2-6 2-7 2-8	<ul> <li>A(0)</li> <li>A(0)</li> <li>A(0)</li> <li>A(1)</li> <li< td=""><td>SE + + + + + + + + + + + + + - - - - - -</td><td></td><td>DMMEN</td><td></td></li<></ul>	SE + + + + + + + + + + + + + - - - - - -		DMMEN	
С	SITE # 41 41 41 41 41 41 41 41 41 41 41	<ul> <li>MD/I</li> <li>EF</li> <li< th=""><th>NO H/F /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1</th><th>SP</th><th>ECIES BT BT BT BT BT BT BT</th><th>LENGTH (mm) 261 237 154 190 157 155 151 152</th><th>l WEIGI (gms</th><th>NDI/ HT ) I I I I I I I I I I I I I I I I I I</th><th>SEX</th><th></th><th>H DAT/ R ST Fin Fin Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc</th><th>A ray ray ale ale ale ale ale ale ale ale ale ale</th><th>AGE AMPLE # 2-1 2-2 2-3 2-4 2-5 2-6 2-7 2-8</th><th><ul> <li>A(0)</li> <li>A(1)</li> <li< th=""><th>3E       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       -    &lt;</th><th></th><th>DMMEN</th><th></th></li<></ul></th></li<></ul>	NO H/F /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1	SP	ECIES BT BT BT BT BT BT BT	LENGTH (mm) 261 237 154 190 157 155 151 152	l WEIGI (gms	NDI/ HT ) I I I I I I I I I I I I I I I I I I	SEX		H DAT/ R ST Fin Fin Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc	A ray ray ale	AGE AMPLE # 2-1 2-2 2-3 2-4 2-5 2-6 2-7 2-8	<ul> <li>A(0)</li> <li>A(1)</li> <li< th=""><th>3E       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       -    &lt;</th><th></th><th>DMMEN</th><th></th></li<></ul>	3E       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       -    <		DMMEN	
С	SITE # 41 41 41 41 41 41 41 41 41 41 41 41 41	<ul> <li>MD/I</li> <li>EF,</li> <li>EF,</li></ul>	NO H/F /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1 1 /1	SP	ECIES BT BT BT BT BT BT	LENGTH (mm) 261 237 154 190 157 155 151 152	l WEIGI (gms		/IDUA SEX	AL FISI MATU	H DAT/ R ST Fin Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc	A ray ray ale	AGE AMPLE # 2-1 2-2 2-3 2-4 2-5 2-6 2-7 2-8	<ul> <li>A0</li> <li>4</li> <li>4</li> <li>2</li> <li>4</li> <li>4</li></ul>	3E       +       +       +       +       +       +       +       +       +       +       +       +       +       +       +       -    <		DMMEN	



Calnan Creek Site 41: View upstream from bottom of site (Roll HG1 - Exp 10; CD 2 - Im 165)



Calnan Creek Site 41: Aerial view upstream (Roll HG1 - Exp 13; CD 2 - Im 168)

# APPENDIX XLII

# **PHOTODOCUMENTATION INDEX**

Site Photos Features Photos Basin-view photos

SITE	CD	IMAGE	ROLL	FRAME	VIEW	WATERSHED
1	1	1	GC2	18	view u/s from bottom of site	Graham
1	1	2	GC2	19	view u/s from centre of site	Graham
1	1	3	GC2	20	view d/s from top of site	Graham
1	1	4	GC2	21	aerial view upstream	Graham
1	1	5	T1	12	female bull trout - 552 mm	Graham
2	1	9	GC4	14A	aerial view upstream from Graham River confluence	Graham
2	1	6	GC4	15A	view u/s from bottom of site	Graham
2	1	7	GC4	16A	view u/s from centre of site	Graham
2	1	8	GC4	17A	view d/s from top of site	Graham
3	1	14	GC4	10A	view u/s from bottom of site	Graham
3	1	15	GC4	11A	view u/s from centre of site	Graham
3	1	16	GC4	12A	view d/s from top of site	Graham
3	1	17	GC4	13A	aerial view upstream	Graham
4	1	10	GC4	6A	view u/s from bottom of site	Graham
4	1	11	GC4	7A	view u/s from centre of site	Graham
4	1	12	GC4	8A	view d/s from top of site	Graham
4	1	13	GC4	9A	aerial view upstream	Graham
6	1	26	GC3	10A	view u/s from bottom of site	Graham
6	1	27	GC3	11A	view u/s from centre of site	Graham
6	1	28	GC3	12A	view d/s from top of site	Graham
6	1	29	GC3	13A	aerial view upstream	Graham
6	1	30	GC3	14A	aerial view upstream of basin	Graham
7	1	22	GC3	15A	view u/s from bottom of site	Graham
7	1	23	GC3	16A	view u/s from centre of site	Graham
7	1	24	GC3	17A	view d/s from top of site	Graham
7	1	25	GC3	18A	aerial view upstream	Graham
8	1	31	GC3	5A	view u/s from bottom of site	Graham
8	1	32	GC3	6A	view u/s from centre of site	Graham
8	1	33	GC3	7A	view d/s from top of site	Graham
8	1	34	GC3	8A	aerial view upstream	Graham
9	1	35	GC2	22	view u/s from bottom of site	Graham
9	1	36	GC2	23	view u/s from centre of site	Graham
9	1	37	GC2	24	view d/s from top of site	Graham
9	1	38	GC2	25	aerial view upstream	Graham
10	1	39	CF8	21	view u/s from bottom of site	Chowade
10	1	40	CF8	22	view u/s from centre of site	Chowade
10	1	41	CF8	23	view d/s from top of site	Chowade
10	1	42	CF8	24	aerial view upstream	Chowade
11	1	43	CF8	14	view u/s from bottom of site	Chowade
11	1	44	CF8	15	view u/s from centre of site	Chowade
11	1	45	CF8	16	view d/s from top of site	Chowade
11	1	46	CF8	17	aerial view upstream	Chowade
12	1	47	GC1	15	view u/s from bottom of site	Chowade
12	1	48	GC1	16	view u/s from centre of site	Chowade
12	1	49	GC1	17	view d/s from top of site	Chowade
12	1	50	GC1	18	aerial view upstream	Chowade
12	1	51	GC1	19	aerial view upstream from Chowade River confluence	Chowade
12	1	52	T1	7	BT (225 mm) and RB (191 mm)	Chowade

SITE	CD	IMAGE	ROLL	FRAME	VIEW	WATERSHED
12	1	53	T1	8	CCG (121 mm)	Chowade
13	1	54	GC1	21	view u/s from bottom of site	Chowade
13	1	55	GC1	22	view u/s from centre of site	Chowade
13	1	56	GC1	23	aerial view upstream	Chowade
13	1	57	T1	9	BT 418 mm	Chowade
13	1	58	T1	11	juvenile BT and RB	Chowade
14	1	59	GC1	25	view u/s from bottom of site	Chowade
14	1	60	GC2	1	view u/s from centre of site	Chowade
14	1	61	GC2	2	view d/s from top of site	Chowade
14	1	62	GC2	3	aerial view upstream	Chowade
15	1	63	GC2	7	view u/s from bottom of site	Chowade
15	1	64	GC2	8	view u/s from centre of site	Chowade
15	1	65	GC2	9	view d/s from top of site	Chowade
15	1	66	GC2	10	aerial view upstream	Chowade
16	1	67	GC2	4	view u/s from bottom of site	Chowade
16	1	68	GC2	5	view u/s from centre of site	Chowade
16	1	69	GC2	6	aerial view upstream	Chowade
17	1	70	GC1	3	view d/s from top of site	Chowade
17	1	71	GC1	4	view u/s from centre of site	Chowade
17	1	72	GC1	5	view u/s from bottom of site	Chowade
17	1	73	GC1	6	aerial view upstream	Chowade
18	1	74	GC1	7	view u/s from bottom of site	Chowade
18	1	75	GC1	8	view u/s from centre of site	Chowade
18	1	76	GC1	9	view d/s from top of site	Chowade
18	1	77	GC1	10	aerial view upstream	Chowade
18	1	78	GC1	11	aerial basin view upstream	Chowade
19	1	81	CF8	25	view u/s from bottom of site	Chowade
19	1	79	GC1	1	view u/s from centre of site	Chowade
19	1	80	GC1	2	view d/s from top of site	Cypress
20	1	82	HG4	18	view d/s from centre of site	Cypress
20	1	83	HG4	19	view u/s from centre of site	Cypress
20	1	84	HG4	20	view d/s from top of site	Cypress
20	1	85	HG4	21	aerial view upstream	Cypress
21	1	86	HG4	1	view u/s from bottom of site	Cypress
21	1	87	HG4	2	view u/s from centre of site	Cypress
21	1	88	HG4	3	view d/s from top of site	Cypress
21	1	89	HG4	4	aerial view upstream	Cypress
22	1	90	HG5	9	view u/s from bottom of site	Cypress
22	1	91	HG5	10	view u/s from centre of site	Cypress
22	1	92	HG5	11	view d/s from top of site	Cypress
22	1	93	HG5	12	aerial view upstream	Cypress
22	1	94	HG5	13	aerial basin view upstream	Cypress
23	1	95	HG5	1	view u/s from bottom of site	Cypress
23	1	96	HG5	2	view u/s from centre of site	Cypress
23	1	97	HG5	3	view d/s from top of site	Cypress
23	1	98	HG5	4	aerial view upstream	Cypress
24	1	99	HG5	5	view u/s from bottom of site	Cypress
24	1	100	HG5	6	view u/s from centre of site	Cypress

SITE	CD	IMAGE	ROLL	FRAME	VIEW	WATERSHED
24	1	101	HG5	7	view d/s from top of site	Cypress
24	1	102	HG5	8	aerial view upstream	Cypress
25	1	103	HG4	14	view u/s from bottom of site	Cypress
25	1	104	HG4	15	view u/s from centre of site	Cypress
25	1	105	HG4	16	view d/s from top of site	Cypress
25	1	106	HG4	17	aerial view upstream	Cypress
26	2	107	HG4	11	view u/s from bottom of site	Cypress
26	2	108	HG4	12	view u/s from centre of site	Cypress
26	2	109	HG4	13	aerial view upstream	Cypress
27	2	110	HG4	8	view u/s from bottom of site	Cypress
27	2	111	HG4	9	view d/s from top of site	Cypress
27	2	112	HG4	10	aerial view upstream	Cypress
28	2	113	HG4	5	view u/s from bottom of site	Cypress
28	2	114	HG4	6	view u/s from centre of site	Cypress
28	2	115	HG4	7	aerial view upstream	Cypress
29	2	116	HG3	20A	view u/s from bottom of site	Cypress
29	2	117	HG3	21A	view u/s from centre of site	Cypress
29	2	118	HG3	22A	view d/s from top of site	Cypress
29	2	119	HG3	23A	aerial view upstream	Cypress
30	2	123	HG3	3A	aerial view upstream	Halfway
30	2	120	HG3	4A	view u/s from bottom of site	Halfway
30	2	121	HG3	5A	view u/s from centre of secondary channel	Halfway
30	2	122	HG3	6A	view d/s from top of site	Halfway
31	2	124	HG2	1	view u/s from bottom of site	Halfway
31	2	125	HG2	2	view u/s from centre of site	Halfway
31	2	126	HG2	3	view d/s from top of site	Halfway
31	2	127	HG2	4	aerial view upstream	Halfway
32	2	128	HG2	23	view u/s from bottom of site	Halfway
32	2	129	HG2	24	view u/s from centre of site	Halfway
32	2	130	HG2	25	view d/s from top of site	Halfway
32	2	131	HG3	1A	aerial view upstream	Halfway
33	2	132	HG3	7A	view u/s from bottom of site	Halfway
33	2	133	HG3	8A	view u/s from centre of site	Halfway
33	2	134	HG3	9A	view d/s from top of site	Halfway
33	2	135	HG3	10A	aerial view upstream	Halfway
34	2	136	HG3	11A	view u/s from bottom of site	Halfway
34	2	137	HG3	12A	view u/s from centre of site	Halfway
34	2	138	HG3	13A	view d/s from top of site	Halfway
34	2	139	HG3	14A	view of confluence with Halfway river	Halfway
35	2	140	HG2	17	view u/s from bottom of site	Halfway
35	2	141	HG2	18	view u/s from centre of site	Halfway
35	2	142	HG2	19	view d/s from top of site	Haltway
35	2	143	HG2	20	aerial view upstream	Halfway
36	2	144	HG3	15A	view u/s from bottom of site	Halfway
36	2	145	HG3	16A	view u/s from centre of site	Halfway
36	2	146	HG3	17A	view d/s from top of site	Halfway
36	2	147	HG3	19A	aerial view upstream	Halfway
36	2	148	HG3	18A	yearling and 2+ BT captured at site 36	Halfway

SITE	CD	IMAGE	ROLL	FRAME	VIEW	WATERSHED
37	2	149	HG2	10	view u/s from bottom of site	Halfway
37	2	150	HG2	11	view u/s from centre of site	Halfway
37	2	151	HG2	12	view d/s from top of site	Halfway
37	2	152	HG2	13	aerial view upstream	Halfway
38	2	153	HG2	6	view u/s from bottom of site	Halfway
38	2	154	HG2	7	view u/s from centre of site	Halfway
38	2	155	HG2	8	view d/s from top of site	Halfway
38	2	156	HG2	9	aerial view upstream	Halfway
39	2	157	HG1	19	view u/s from bottom of site	Halfway
39	2	158	HG1	20	view u/s from centre of site	Halfway
39	2	159	HG1	21	view d/s from top of site	Halfway
39	2	160	HG1	22	aerial view upstream	Halfway
40	2	161	HG1	6	view u/s from bottom of site	Halfway
40	2	162	HG1	7	view u/s from centre of site	Halfway
40	2	163	HG1	8	view d/s from top of site	Halfway
40	2	164	HG1	9	aerial view upstream	Halfway
41	2	165	HG1	10	view u/s from bottom of site	Halfway
41	2	166	HG1	11	view u/s from centre of site	Halfway
41	2	167	HG1	12	view d/s from top of site	Halfway
41	2	168	HG1	13	aerial view upstream	Halfway

STREAM	CD	IMAGE	ROLL	FRAME	VIEW	WSC	EAST	NORTH
Graham River	2	187	GC4	18A	aerial view u/s from trib 45400	235-304300	498475	6260465
Graham River	2	183	GC4	0A	u/s aerial view of Christina Falls	235-304300	493461	6267093
Graham River	2	182	GC3	25A	aerial view u/s from near Christina Falls	235-304300	491662	6268972
Graham River	2	178	GC3	3A	aerial view u/s from near Justice Cr	235-304300	482825	6271697
Graham River	2	177	GC3	2A	aerial view u/s from near Justice Cr	235-304300	480946	6271816
Graham River	2	175	GC2	15	Red Falls	235-304300	471725	6276737
Graham River	2	174	GC2	14	u/s aerial basin view (upper)	235-304300	468789	6282545
trib to Graham R	2	188	GC4	21A	aerial view u/s from mouth	235-304300-45400	498978	6259566
Needham Creek	2	184	GC4	2A	aerial view u/s from mouth	235-304300-51900	494374	6263773
Needham Creek	2	185	GC4	3A	u/s aerial view of barrier	235-304300-51900	489154	6261039
Needham Creek	2	186	GC4	5A	u/s aerial basin view (upper)	235-304300-51900	484399	6262423
trib to Graham R	2	181	GC3	20A	aerial view u/s from mouth	235-304300-60600	489532	6270784
trib to Graham R	2	180	GC3	19A	aerial view u/s from mouth	235-304300-64500	485484	6271942
Justice Creek	2	179	GC3	4A	aerial view u/s from mouth	235-304300-66400	483883	6271274
Poutang Creek	2	176	GC2	16	aerial view u/s from mouth	235-304300-78200	473789	6275348
Horn Creek	2	172	GC2	12	u/s aerial basin view	235-304300-81100	466910	6280971
Chowade River	2	170	GC1	13	aerial view u/s from trib 56400	235-430800	496543	6283630
Chowade River	2	190	CF8	14	u/s aerial view of cascade	235-430800	481303	6284913
Chowade River	2	189	CF8	12	u/s aerial basin view (upper)	235-430800	475205	6284410
trib to Chowade R	2	171	GC1	14	aerial basin view u/s from mouth	235-430800-47100	501690	6282889
trib to Chowade R	2	169	GC1	12	aerial view u/s from mouth	235-430800-56400	496411	6283669
trib to Chowade R	2	192	CF8	20	u/s aerial basin view	235-430800-72800	486211	6285826
trib to Chowade R	2	191	CF8	19	u/s aerial basin view	235-430800-79500	480192	6286553
trib to Cypress Cr	2	213	HG3	25A	u/s aerial view of falls (lower)	235-492500-74500	485008	6300312
trib to Cypress Cr	2	212	HG3	24A	u/s aerial view of falls	235-492500-74500	484545	6300312
Halfway River	2	201	HG1	18	u/s aerial view of falls (lower)	235	471051	6313448
Halfway River	2	200	HG1	17	u/s aerial view of falls	235	470455	6313329
Halfway River	2	197	HG1	14	u/s aerial basin view (upper)	235	459436	6307826
trib to Headstone Cr	2	211	HG3	2A	aerial view u/s from mouth	235-754400-42300	489135	6322021
trib to Halfway R	2	210	HG2	22	aerial view u/s from mouth	235-78000	488579	6316544
trib to Halfway R	2	209	HG2	21	aerial view u/s from mouth	235-801600	485365	6316240
Turnoff Creek	2	206	HG2	14	aerial view u/s from mouth	235-821300	480523	6316412
Turnoff Creek	2	207	HG2	15	u/s aerial basin view (mid)	235-821300	479438	6322034
Turnoff Creek	2	208	HG2	16	u/s aerial basin view (upper)	235-821300	476342	6325513

STREAM	CD	IMAGE	ROLL	FRAME	VIEW	WSC	EAST	NORTH
trib to Halfway R	2	205	HG2	5	u/s aerial basin view (upper)	235-841200	472136	6319785
trib to Halfway R	2	202	HG1	23	u/s aerial view of falls	235-879200	470667	6314096
trib to Halfway R	2	203	HG1	24	u/s aerial basin view above falls	235-879200	469106	6314268
trib to Halfway trib	2	204	HG1	25	aerial view u/s from mouth	235-879200-14400	469887	6314387
trib to Halfway R	2	199	HG1	16	aerial view u/s from mouth	235-906000	467955	6309228
Calnan Creek	2	193	HG1	1	u/s aerial view of falls	235-927700	457094	6301595
Calnan Creek	2	194	HG1	3	u/s aerial basin view above falls	235-927700	455903	6300722
Calnan Creek	2	195	HG1	4	u/s aerial view of cascades	235-927700	462584	6303235
trib to Calnan Cr	2	196	HG1	5	aerial view u/s from mouth	235-927700-24800	463391	6303248
trib to Halfway R	2	198	HG1	15	aerial view u/s from mouth	235-939500	462253	6307032

# APPENDIX XLIII INTERPRETIVE MAPS

1:80,000 SCALE