

**1998 Reconnaissance (1:20,000) Fish and Fish Habitat Inventory/
Stream Classification of Selected Areas (C, E, F, G, H) within the
Isle-Pierre Study Area.**

Submitted to:

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PROJECT REFERENCE INFORMATION

MELP Project Number	F7(1998)03
FRBC Project Number	98-IP-FRBC-10228
FDIS Project Number	07-NECR-110000113-1998
FRBC Region	Omineca-Peace
MELP Region	Omineca-Peace
MELP District	Prince George
FW Management Unit	7-12 and 7-11
Forest Region	Prince George
Forest District	Vanderhoof
Forest Licensee and Tenure #	Canadian Forest Products Ltd. License A40873; Prince George TSA #24
First Nations Claim Area	Sai'Kuz and Lheidli T'enneh Bands

Watershed Information

Watershed Group	CHIL	NECR
Watershed Name	Chilako River	Cluculz Lake
Watershed Code	180-069000	180-191300
UTM at Mouth (NAD 83)	10.5970888.501435	10.5972928.461284
Watershed Areas	20358.55 Ha	
Total of All Stream Lengths	375096 m	
Stream Order	Ranges from 1-4	
NTS Maps	93F/09, 93G/12, 93G/13	
TRIM Maps	93G.051, 93G.052, 93G.053, 93G.054, 93G.082, 93G.083, 93F.050, 93F.060	
BGC Zone	Sub-Boreal Spruce (SBS)	

Sampling Design Summary

Total Number of Reaches	497
Random Sampling Sites	135
Discretionary Sampling Sites	45
Total Sample Sites	180
Field Sampling Dates	June 29 to July 27, 1998

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DISCLAIMER

This product has been accepted as being in accordance with approved standards within the limits of Ministry quality assurance procedures. Users are cautioned that interpreted information on this product developed for the purposes of the Forest Practices Code Act and Regulations, for example stream classifications, is subject to review by a statutory decision-maker for the purposes of determining whether or not to approve an operational plan.

ACKNOWLEDGEMENTS

Forests Renewal British Columbia (FRBC) provided funding for this inventory. Carmanah Research Ltd., Prince George, BC, on behalf of Canadian Forest Products Ltd., Isle-Pierre Division, completed this project. Fisheries/Habitat Inventory Specialist Lynn Blouw from the Ministry of Water, Land and Air Protection provided support.

Thanks to Joe Kavanagh and Don Roy of Canadian Forest Products Ltd. and Rein Kahlke of Forest Dynamics for their support in completing the 1998 Reconnaissance (1:20,000) Fish and Fish Habitat Inventory of the Isle-Pierre study area.

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APPENDIX I – FDIS SUMMARY AND PHOTOGRAPHS

APPENDIX II – HARDCOPY PROJECT MAPS

LIST OF ATTACHMENTS AVAILABLE AT WLAP, PRINCE GEORGE

Attachment I: Planning Document

- i. Phase I-III Completion Report
- ii. Hardcopy and Digital Reach Table
- iii. Field Maps

Attachments II: Field Notes

- i. Binder Containing Field Notes, Field Site Cards and Field Fish Cards

Attachments III: Photodocumentation

- i. Binder Containing:
 - a) Photo Summary Report from FDIS
 - b) Thumbnail Photo Reference
- ii. Photo CD Set

Attachments IV: Digital Data

- i. Digital Report
- ii. FDIS (version 7.6), Reach, Site and Fish Data
 - a) Fdisdat.mdb and waterbody.exp
- iii. GIS Data Files with Hardcopy and Digital Summary Table of Meta-Data
- iv. Digital FISS Update Forms

Attachments V: Hardcopy FISS Update Forms and Maps

- i. Hardcopy FISS Update Forms
- ii. Updated Hardcopy 1:50,000 FISS Maps

1.0 INTRODUCTION

1.1 Project Scope and Objectives

This Reconnaissance (1:20,000) Level Fish and Fish Habitat Inventory/Stream Classification provides information on fish species and their respective distributions within the specified areas identified in the Canadian Forest Products Ltd. Isle-Pierre Division study area. (Westworth, 1997) The study area consists of sub-basins to the Chilako River (180-069000), Butcherflats Creek (180-069000-58000) and two sub-basins of Cluculz Creek (180-191300). Stream biophysical data describing the sampled reaches were collected during Phase IV of the inventory. This data was combined with existing data in order to assist in establishing the areas of fish distribution within the study area. This information can also assist with interpretation of fish habitat sensitivity and the capability for fish production within some watersheds of the study area.

This reconnaissance level stream inventory provides fisheries resource information to user groups including the Ministry of Water, Land and Air Protection (WLAP), Ministry of Forests (MoF), Department of Fisheries and Oceans (DFO) and forest licensees. The inventory program increases the quality and quantity of fisheries information available for studied watersheds. This information facilitates the management of existing resources by WLAP and DFO. Forest licensees can incorporate information presented in this inventory into forest development plans.

1.2 Location

The Isle-Pierre Division study area is located west of Prince George and east of Vanderhoof, British Columbia. The study area is located south of Cluculz Lake (180-191300), west of Naltesby Lake (180-069000-58000) and east of Tatuk Lake (180-069000). The Isle Pierre study area was divided into sub-basins of

which Westworth, Brusnyk & Associates Ltd identified five as a priority for study. A Reconnaissance (1:20,000) Fish and Fish Habitat Inventory/Stream Classification was performed by Carmanah Research Ltd. in 1998 within these five sub-basins. The Isle-Pierre study area is shown below in Figure 1.

Figure 1. Overview Maps of the Five Study Area (C, E, F, G, H) Located in the Canadian Forest Products Isle-Pierre Division Study Area.

Canadian Forests Products Ltd. identified the following five sub-basins for study within the larger Isle-Pierre study area:

- **Area C**
- **Area E**
- **Area F**
- **Area G**
- **Area H**

Sub-basins C, E and F are parts of an unnamed fifth order watershed (180-069000-75200) that flows south into the Chilako River (180-069000).

A detailed description of these five priority areas is provided below.

Area C

Area C is outlined on 1:20,000 TRIM maps 93G.051, 93G.052, 93G.061 and 93G.062 and 1:50,000 NTS map 93G/12. The area consists of the Tasa Lake (WBID 00001CHIL) drainage, which is a fourth order sub-basin that is part of an unnamed fifth order tributary (180-069000-75200) to the Chilako River (180-069000). The area that was sampled also includes the lower reaches of the unnamed fifth order mainstem and some of its associated first and second order tributaries. This area is located north of Chilako River (180-069000), west of Grizzly Lake (01078LCHL) and east of Tatuk Lake (00712CHIL).

Area E

Area E is outlined on 1:20,000 TRIM map 93G.061 and 1:50,000 NTS map 93G/12. The area is located west of Tasa Lake (00001CHIL), east of Tatuk Lake (00712CHIL) and north of the Chilako River (180-069000). This area consists of an unnamed third order watershed (180-069000-75200-48800) that is part of an

unnamed fifth order tributary (180-069000-75200) to the Chilako River (180-069000).

Area F

Area F is outlined on 1:20,000 TRIM maps 93F.070 and 93G.061 and 1:50,000 NTS maps 93F/09 and 93G/12. The area is located southeast of Frank Lake (local name), west of Tasa Lake (00001CHIL) and north of the Chilako River (180-069000). This area consists of the upper end of a fifth order watershed (180-069000-75200) that flows south into the Chilako River (180-069000).

Area G

Area G is outlined on 1:20,000 TRIM maps 93G.072 and 93G.082 and 1:50,000 NTS map 93G/13. The area is located southwest of Cluculz Lake (01091NECR) and northwest of Eulatazella Lake (02068NECR). This unnamed watershed is a third order tributary to Cluculz Creek (180-191300) and the average gradients, of all streams, are below 20%.

Area H

Area H is outlined on 1:20,000 TRIM maps 93G.072 and 93G.082 and 1:50,000 NTS map 93G/13. Sub-basin H is located approximately 7.5 km southeast of sub-basin G. The area is located southwest of Cluculz Lake (01091NECR) and northwest of Eulatazella Lake (02068NECR). This unnamed watershed is a third order tributary to Cluculz Creek (180-191300) and the average gradients, of all streams, are below 20%.

1.2.1 Access

Access into the Canadian Forest Products Ltd. Isle-Pierre Division study area from Prince George is as follows:

- From Prince George, drive west on B.C. Highway 16.
- Turn left onto the Bobtail Forest Service Road (FSR), which is located approximately 700m past the Bednesti Lake Resort.
- All of the sub-basins can be accessed from this road or from sub roads of the Bobtail FSR such as the 200, 400, 800 and 900 FSR's

2.0 RESOURCE INFORMATION

- The Sai’Kuz and Lheidli T’enneh Bands represent first Nations presence and interests in the Isle-Pierre Division study area.
- Land use within the study area includes timber harvesting, agricultural activities, recreational properties, guiding and trapping.
- Recreational activities include fishing, hunting, hiking, backcountry skiing and the use of off-road vehicles.
- A variety of wildlife is found within the Isle-Pierre Division study area. Some types of large, common wildlife known to occur within the area are deer, moose, black bears and grizzly bears. Some birds that were observed were the raven, crow, osprey, bald eagle, sandhill crane, winter wren and American dipper.
- FISS (1998) map and database records indicate the following fish species occurring within the Canadian Forest Products Ltd. Isle-Pierre Division study area as shown below in Table 1.

Table 1. Fish Species Found in the Isle-Pierre Study Area (FISS 1998).

Code	Species	Scientific Name
C	minnows	many, all cyprinids
DV	Dolly Varden	<i>Salvelinus malma</i>
KO	kokanee	<i>Oncorhynchus nerka</i>
LT	lake trout	<i>Salvelinus namaycush</i>
CSU	largescale sucker	<i>Catostomus macrocheilus</i>
LSU	longnose sucker	<i>Catostomus catostomus</i>
MW	mountain whitefish	<i>Prosopium williamsoni</i>
NSC	northern squawfish	<i>Ptycheilus oregonensis</i>
PCC	peamouth chub	<i>Mylocheilus caurinus</i>
CAS	prickly sculpin	<i>Cottus asper</i>
RB	rainbow trout	<i>Oncorhynchus mykiss</i>
RSC	reidside shiner	<i>Richardsonius balteatus</i>
SU	suckers, general	<i>Catostomus sp.</i>

3.0 METHODS

Sampling was carried out in accordance with the Isle-Pierre Phase III Planning Report (Westworth, 1997)

Sampling of the Isle-Pierre study area was conducted using methods outlined in the *Reconnaissance (1:20,000) Fish and Fish Habitat Inventory Standards and Procedures (FRIM)* (April 1998) and the *Fish Stream Identification Guidebook*, 2nd edition (FSID) (August 1998).

Watershed Codes were used where available; streams with no known watershed code were assigned a five digit Interim Locational Point (ILP). These ILP's have been submitted to Sean Cheesman, of Sustainable Resource Management, for watershed code generation.

Within areas C and E, reaches were planned that were determined to be outside the delineated study area during Phase IV of this inventory. For the sake of clarity, these reaches were removed from the map, but remain on the original field maps. These reaches were not removed from the FDIS database in case they needed to be referenced in the future. As a result of this, QA of maps and FDIS show a discrepancy in the number of reaches between planning and mapping.

Photodocumentation during Phases IV – VI of the inventory was carried out as specified in *A Guide to Photodocumentation* (1996).

Salt was not added to any survey lengths prior to electroshocking as all conductivities were found to be above the required 30 $\mu\text{S}/\text{cm}$.

A total of 11 sites were sampled for fish. Six sites were sampled using the electroshocker, four using minnow traps and one site was sampled using both

minnow traps and angling. Sites were not sampled using the standard two methods due to access issues and problems associated with returning to a site twice.

Some of the equipment used during the survey was:

- Smith–Root Electro-Shocker, Model 12-B
- Ohaus, Scout Electronic Balance
- Trimble GeoExplorer II, GPS Unit
- Pentax Zoom-90 WR-Date Cameras
- Oakton pH Testr3 Waterproof pH Meter
- Oakton TDS Testr3 Conductivity Meter
- Hand-Held Alcohol Thermometer
- Meter Stick
- Hip Chain
- Survey Tape Measure
- Standard (Gee) Minnow Traps
- Gullywhompers Shrimp Bait
- Dip Nets
- Abney Level

4.0 RESULTS AND DISCUSSION

4.1 Logistics

Phases I-III of this inventory were completed by Westworth, Brusnyk & Associates Ltd. in 1997 while, Phases IV-VI were completed in 1998 by Carmanah Research Ltd. The Westworth reach plan was reviewed and any problems (i.e. missing reaches and incorrect watershed codes) were fixed. Carmanah recreated the maps for this study area and any streams and any stream that did not have a watershed code was assigned a five digit ILP. The reach planning, received from Westworth was originally done in Excel rather than FDIS. Therefore, the planning was imported into FDIS (version 4.2) from Excel. This version of FDIS (v4.2) was imported into FDIS (v6.5) and later converted to FDIS (v7.6) for the final delivery.

At the time of sampling, all sites had low flows with water temperatures ranging from 8°C to 22°C. During the 1998 field sampling, abnormally dry weather conditions were encountered resulting in low levels of precipitation and mild temperatures during the summer. Low amounts of snowfall and milder temperatures in the winter prior to the field sampling may also have affected sampling results. These changes to water flows and temperatures may have affected fish distributions within the planned study areas.

Various fish capture techniques were used to effectively sample specific stream reaches within Areas C, E, F, G and H. The majority of sites were sampled for greater than 200 meters in order to determine fish-stream classifications. Field crews, in some cases, were unable to sample for more than 100 meters due to poor sampling conditions.

Some sites requiring helicopter access were deemed inaccessible due to the lack of landing sites within close proximity, 2km, to the sample site. In these cases a visual survey was conducted from the helicopter to determine if a channel was present. If a channel was present, re-sampling was recommended when access into the area improved, to determine if fish habitat exists within the reach. At sites where visual observations of the stream were not possible, follow-up sampling was also recommended.

Under the Forest Practices Code (FPC) a stream is classified as fish bearing if it contains any of the following species or subspecies at any time of the year; anadromous salmonids, freshwater game fish, threatened or endangered fish and regionally important fish. These terms are important in determining the classification of streams, with regards to the *Forest Practices Code of British Columbia Act*, and the definitions of these latter terms are discussed in detail in the *Fish-stream Identification Guidebook*, 2nd edition (August 1998).

Three rolls of film, Roll 25 (E05), Roll 32 (E02) and Roll 44 (L04), were damaged during Phase IV of the inventory and therefore a few frames from each are missing. As a result of this damage, some site cards list photographs that simply do not exist. These photographs remain on the site cards but have been removed from the FDIS photodocumentation database.

4.2 AREA C

4.2.1 Sample Plan Modifications

The planning that was completed by Westworth was reviewed and determined to have a sampling percentage of approximately 60% compared to the required 15 to 30% identified in the 1998 FRIM standards. Therefore some of the reach sample sites identified in Area C were eliminated using the following criteria. If the selected sample site had existing FISS (1998) information or if the reach was located in between two other suggested sample sites where there were no known barriers in the area. These criteria led to fifteen sites being eliminated from the plan and another 15 sites added as biased sites. These adjustments were completed prior to the 1998 Phase IV and were then submitted and approved by the WLAP contract monitor.

Further changes made to the sampling plan during Phase IV are summarized below in Table 2. A majority of these sites were excluded because they were determined to be outside the delineated study area.

Table 2. Changes Made to Area C Planning.

Watershed Code/ILP	Reach	Type (Biased or Random)	Action (Deleted or Added)
180-069000-75200-10395-4856	1	R	D
180-069000-75200-12100-1688	1	B	D
180-069000-75200-12100-1688	2	R	D
180-069000-75200-16600-1450-0180-4450	1	R	D
180-069000-75200-21700-3188	2	R	D
180-069000-75200-16600-3221	4	R	D
180-069000-75200-16600-3221	5	R	D
180-069000-75200-16600-2200-1760	1	R	D

Watershed Code/ILP	Reach	Type (Biased or Random)	Action (Deleted or Added)
180-069000-75200-16600-2200-1760	3	R	D
180-069000-75200-16600-2200-6030	3	R	D
180-069000-75200-16600-2200-7400	2	B	D
180-069000-75200-16600-2200-7400- 2450	1	R	D
180-069000-75200-16600-2200-7400- 2450	3	R	D
180-069000-75200-16600-4230-5440- 178-144	1	R	D
180-069000-75200-16600-8240	1	B	D
180-069000-75200-16600-8260	1	R	D
180-069000-75200-16600-8260-1238	1	R	D
180-069000-75200-16600-9440	1	R	D
180-069000-75200-16600-9823	2	R	D
180-069000-75200-16600-9825	1	R	D
180-069000-75200-16600-9821	1	R	D
180-069000-75200-16600-9546	1	R	D
180-069000-75200-16600-9546	1	R	D
180-069000-75200-16600-9397	1	R	D
180-069000-75200-16600-9344	1	R	D
180-069000-75200-16600-4230-7460	2	R	D
180-069000-75200-40203-1567	1	R	D
180-069000-75200-40203-3352	1	R	D
180-069000-75200	10	R	D
180-069000-75200	11	R	D
180-069000-75200	13	R	D
180-069000-75200	15	B	D
180-069000-75200	16	R	D
180-069000-75200-16600	1	B	D
180-069000-75200-1600	9	B	D
180-069000-75200-16600	16	R	D
180-069000-75200-16600	17	R	D
180-069000-75200-16600	19	R	D
180-069000-75200-21700	15	B	A

Watershed Code/ILP	Reach	Type (Biased or Random)	Action (Deleted or Added)
180-069000-75200-21700	17	R	D
180-069000-75200-21700-5660	1	R	D
180-069000-75200-21700-5660	2	R	D

4.2.2 Habitat and Fish Distribution

Area C consists of a fourth order watershed (180-069000-75200-16600) that flows south into an unnamed fifth order watershed (180-069000-75200), which in turn flows south into the Chilako River (180-069000). The headwaters of this fourth order sub-basin originate at Tasa Lake (00001CHIL), locally known as Arctic Lake. Area C also contains some of the lower reaches of the unnamed fifth order mainstem, as well as some small first and second order streams to the mainstem.

Many first order tributaries sampled within Area C during Phase IV were found to have No Visible Channel (NVC). These first order tributaries contain either wetland vegetation, graminoids, mature conifers, deciduous or shrub vegetation. Rainbow trout were the only game fish caught during Phase IV within Area C. The low water levels and high temperatures encountered led us to assume that any flowing or intermittent creeks may contain fish during normal or high flows. Follow-up sampling is required during such times to further confirm fish presence/absence.

4.2.3 Fish Age, Size and Life History

Six fish species were captured in Area C during the 1998 field sampling, none of which were known to be anadromous. The majority of sites, where fish were captured, were located in third, fourth and fifth order mainstems. Most first order

streams were completely vegetated and consisted of NVC. There were no previous FISS map or database records for Area C. The nearest FISS (1998) record was for chinook salmon, which occurs in the Chilako River (180-069000). Table 3 below shows fish species captured during Phase IV in Area C.

Table 3. Fish Species Captured in Area C During Phase IV of the 1998 Isle-Pierre Fish and Fish Habitat Inventory/Stream Classification.

Code	Common Name	Scientific Name	Watershed Code
PCC	peamouth chub	<i>Mylocheilus caurinus</i>	180-069000-75200-21700
LSU	longnose sucker	<i>Catostomus catostomus</i>	180-069000-75200 180-069000-75200-16600 180-069000-75200-21700
LKC	lake chub	<i>Couesius plumbeus</i>	180-069000-75200
RSC	reidside shiner	<i>Richardsonius balteatus</i>	180-069000-75200 180-069000-75200-16600 180-069000-75200-21700
BB	burbot	<i>Lota lota</i>	180-069000-75200
RB	rainbow trout	<i>Oncorhynchus mykiss</i>	180-069000-75200 180-069000-75200-16600 180-069000-75200-21700

A total of 120 rainbow trout were captured in Area C. Measurements of 20-70mm, 71-130mm and greater than 130mm were used to determine fry, juvenile and adults for rainbow trout (Scott and Crossman, 1973). The summary of estimated length-to-age data, as age structures were not collected, from rainbow trout captured in Area C during July and August, 1998. These results are presented below in Table 4.

Table 4. Summary of Length-to-Age Data of Fish Captured in Area C During the 1998 Isle-Pierre Fish and Fish Habitat Inventory/Stream Classification.

Stream Names	Watershed Codes	Species	Age	# of Fish	Mean Length (mm)	Range of Lengths (mm)
Unnamed Creeks	180-069000-75200	RB	0+	47	55.4	40 – 70
	180-069000-75200-16600		1+	68	89.7	71 – 125
	180-069000-75200-21700		2+	5	153.4	137 - 210

Figure 2 below shows the length frequency histogram for the 120 rainbow trout captured in Area C.

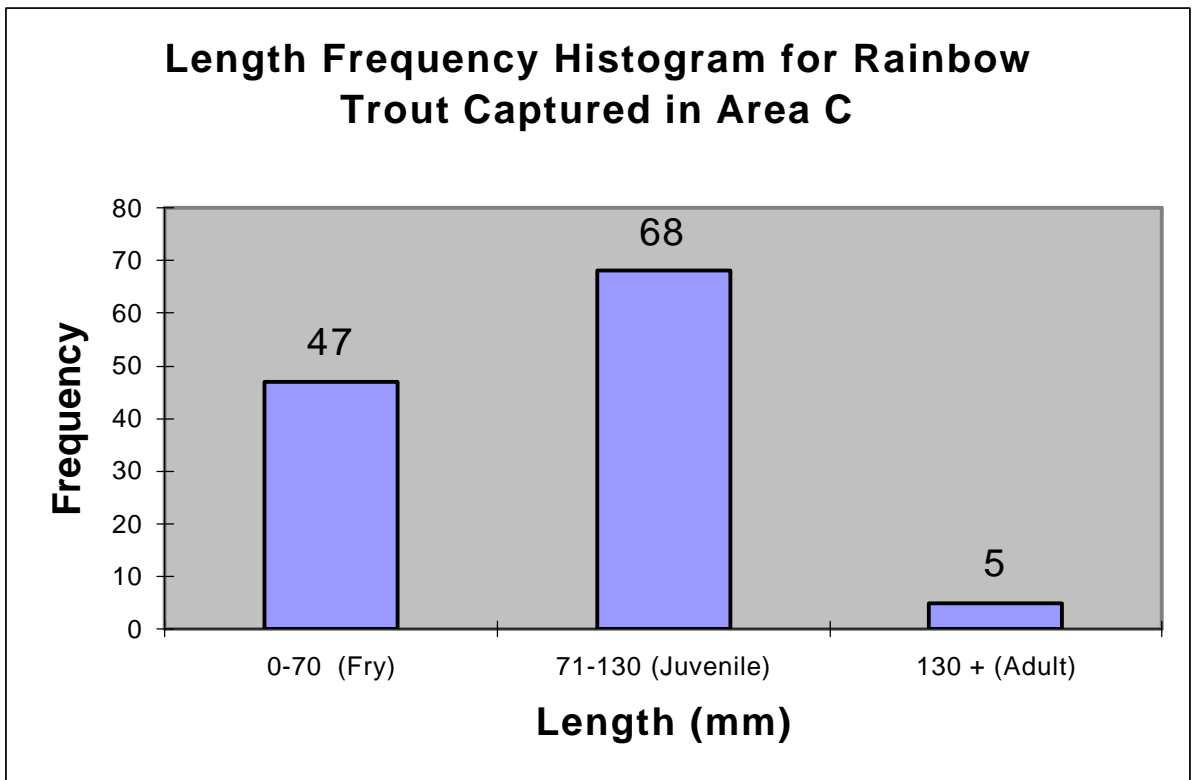


Figure 2. Frequency Length Histogram for Rainbow Trout Captured in Area C.

4.2.4 Significant Features and Fisheries Observations

4.2.4.1 Fish and Fish Habitat

There were no critical habitats, spawning grounds, rare species of fish or sport fishing opportunities identified within Area C.

4.2.4.2 Habitat Protection Concerns

4.2.4.2.1 Fisheries Sensitive Zones

No Fisheries Sensitive Zones (FSZ's) were found within Area C during Phase IV of this inventory.

4.2.4.2.2 Fish Above 20% Gradients

There were no sampled reaches, in Area C, with gradients greater than 20%.

4.2.4.2.3 Restoration and Rehabilitation Opportunities

Eleven features were identified in Area C during field sampling. Most of the features encountered within this area consisted of culverts and beaver dams and many were not considered barriers to fish passage.

- Site 36, located in Reach 3 of Unnamed Creek (180-069000-75200-16600-8240), was accessed using a two-wheel drive vehicle. The culvert located at the road crossing is not considered a barrier to fish passage because the stream was classified as NVC.
- Site 37, in Reach 17 of Unnamed Creek (180-069000-75200-21700) was accessed using a two-wheel drive vehicle. The culvert located at the road crossing had a 0.2m drop from the bottom of the culvert to the top of the culvert outlet pool. The stream was known to contain fish upstream and downstream of the sampled site and the culvert may pose a barrier to fish passage. This culvert should be re-assessed and possibly reinstalled.
- Site 41, in Reach 2 of Unnamed Creek (180-069000-75200-16600-7510) was accessed using a two-wheel drive vehicle. The culvert located at the road crossing was not considered a barrier to fish passage because the stream was classified as NVC.
- Site 61, in Reach 3 of Unnamed Creek (180-069000-75200-16600-4230) was accessed by helicopter. No fish were captured at this site and the site should be re-sampled to confirm fish presence/absence. The beaver dams in this reach may act as a temporary natural barrier to fish passage.
- Site 74 is located in Reach 11 of Unnamed Creek (180-069000-75200-21700). There was a bridge located at the road crossing that did not appear to restrict any fish passage.

- Site 100, in Reach 1 of Unnamed Creek (180-069000-75200-16600-7427), was a first order stream that was accessed using a four-wheel drive vehicle. The culvert located at the road crossing is partially filled with sand and silt but it does not act as a barrier to fish passage because the stream was classified as NCV.
- Site 700 is located in Reach 1 of Unnamed Creek (180-069000-75200). There was a general crossing located on private land and is used by a farmer to move his tractors across the stream. This crossing may cause some sediment loading and should be reassessed due to the presence of game fish in this stream and downstream in the Chilako River.
- Site 735, in Reach 2 of Unnamed Creek (180-069000-75200-16600-1794) was accessed using a two-wheel drive vehicle. The culvert at the road crossing does not act as a barrier to fish passage because the stream was classified as NVC.
- Site 737, in Reach 1 of Unnamed Creek (180-069000-75200-16600-1918) was accessed using a two-wheel drive vehicle. The culvert located at the road crossing does not act as a barrier to fish passage because the stream was classified as NVC.
- Site 742, in Reach 3 of Unnamed Creek (180-069000-75200-16600-1450) was accessed using a two-wheel drive vehicle. This reach had no fish captured and should be re-sampled to determine fish presence or absence. If fish are present the beaver dam located within the reach may present a temporary natural barrier to fish passage.
- Site 743, in Reach 4 of Unnamed Creek (ILP 180-069000-75200-16600-1450) was accessed using a two-wheel drive vehicle. No fish were captured in the beaver pond and there was no scoured bed material in the area above the beaver dam. This beaver dam in this reach is a potential barrier to fish passage and should be re-evaluated.

Table 5. Summary of Possible Rehabilitation Opportunities within Area C.

ILP/WSC	Site	Reach	Feature NID	Feature	Height
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					(m)
180-069000-75200	700	1	900	ford	0
180-069000-75200-16600-1450	742	3	904	beaver dam	-
180-069000-75200-16600-1450	743	4	901	beaver dam	2.0
180-069000-75200-21700	74	11	806	bridge	3.5
180-069000-75200-21700	37	17	801	culvert	0.2
180-069000-75200-16600-1794	735	2	902	culvert	0
180-069000-75200-16600-1918	737	1	903	culvert	0
180-069000-75200-16600-4230	61	3	804	beaver dam	1.6
180-069000-75200-16600-7427	100	1	807	culvert	0
180-069000-75200-16600-7510	41	2	802	culvert	0.5
180-069000-75200-16600-8240	36	3	800	culvert	-

4.2.5 Fish Bearing Status

4.2.5.1 Fish Bearing Reaches

The following reaches were sampled in June and July of 1998 and were subsequently classified as fish bearing. Criteria taken into consideration for this classification were the absence of barriers to fish passage and fish presence. Some sites were defaulted to fish bearing even though the habitat appeared inadequate and/or no fish were captured. This assumption was made due to low water flows encountered during Phase IV of this 1998 inventory and the possibility that fish may use these reaches at other times of the year or, if other more favorable conditions exist in other years. These sites will be defaulted to fish bearing until follow-up sampling can confirm the presence or absence of fish. Table 6 below summarizes all sites classified as fish bearing in Area C.

Table 6. Summary of Data from Fish Bearing Reaches in Area C.

Site	Watershed Code/ILP	Reach	Species	Channel		Proposed Riparian Class	Follow-up Sampling (Y or N)	Comments
				Width (m)	Site Gradient (%)			
700	180-069000-75200	1	RSC, BB, LSU, LKC	7.8	0.8	S2	N	Lots of cover and habitat.
712	180-069000-75200	3	RB	6.6	1.5	S2	N	Good cover and fish habitat.
717	180-069000-75200	5	RB	4.5	0.6	S3	N	Good rainbow trout rearing habitat.
724	180-069000-75200	7	RB, RSC,	5.9	2.0	S2	N	Good rearing habitat.

Site	Watershed Code/ILP	Reach	Species	Channel		Proposed Riparian Class	Follow-up Sampling (Y or N)	Comments
				Width (m)	Site Gradient (%)			
			LSU					
720	180-069000-75200-16600	2	RB, LSU, RSC	2.9	2.3	S3	N	Good rearing habitat.
723	180-069000-75200-16600	3	DNS	-	0.5	S3	Y	No channel was found during the initial survey but there was a scoured channel that supported fish.
739	180-069000-75200-16600	10	RB	4.3	2.0	S3	N	Good rainbow trout rearing habitat.
83	180-069000-75200-16600	13	RB	3.1	0.8	S3	N	Rainbow trout and juvenile salamanders captured.
79	180-069000-75200-16600	19	NFC	0.8	1.0	S4	Y	No fish captured, difficult to sample.
742	180-069000-75200-16600-1450	3	DNS	1.4	5.3	S4	Y	Assumed fish bearing until the reach can be re-sampled.
725	180-069000-75200-21700	2	RB, PCC, LSU	2.8	1.4	S3	N	Good rearing habitat with some spawning habitat.
732	180-069000-75200-21700	7	LSU, PCC	2.6	0.5	S3	N	Assumed rainbow trout presence due to upstream and downstream presence.
74	180-069000-75200-21700	11	RB	2.2	2.0	S3	N	Rainbow trout captured in good habitat.
75	180-069000-75200-21700	13	RB, RSC	3.8	2.3	S3	N	Good habitat.
76	180-069000-75200-21700	15	NFC	17.9	0	S2	N	Difficult to sample due to floating vegetation. Fish captured upstream and downstream from this site.
37	180-069000-75200-21700	17	RB	1.6	1.0	S3	N	Rainbow trout captured in good fish habitat.
740	180-069000-75200-16600-2200-1350	1	NFC	1.6	6.8	S3	Y	Assumed fish bearing until the site can be re-sampled.
92	180-069000-75200-16600-2200-1470	1	DNS	1.5	1.0	S3	Y	Not enough water to sample.
61	180-069000-75200-16600-4230	3	NFC	0.6	0.9	S4	Y	No fish captured, poor habitat.
102	180-069000-75200-16600-4230-5440	5	NFC	1.2	2.4	S4	Y	Difficult to sample due to the low amount of water.

Fish Codes		
PCC-peamouth chub	LSU-longnose sucker	RB-rainbow trout
BB-burbot	RSC-redside shiner	LKC-lake chub
DNS-did not sample	NFC-no fish caught	

4.2.5.2 Non-Fish-Bearing Reaches

The following reaches in Area C of the Isle-Pierre study area have been classified as non-fish bearing. All of the following sites were designated as non-fish bearing as they all exhibited NVC. These NVC reaches were well vegetated, and lacked a scoured bed. Table 7 below summarizes all non-fish bearing reaches in Area C.

Table 7. Summary of Data from Non-Fish Bearing Reaches in Area C.

Site	Watershed Code/ILP	Reach	Site Gradient (%)	No Visible Channel (Y or N)	Comments
714	180-069000-75200-12100	3	0.9	Y	No scoured bed material and no visible channel.
745	180-069000-75200-12100	5	4.0	Y	Completely vegetated with no scoured bed material.
718	180-069000-75200-16600-0490	2	0.8	Y	Wetland with no visible channel.
719	180-069000-75200-16600-0490	3	0.7	Y	Completely vegetated with no visible channel.
722	180-069000-75200-16600-0590	1	0.8	Y	Vegetated depression with no scoured bed material.
743	180-069000-75200-16600-1450	4	0.3	Y	Wetland with no visible channel.
744	180-069000-75200-16600-1450	6	9.8	Y	No visible channel with no scoured bed material.
702	180-069000-75200-01797	4	-	Y	Completely vegetated with no scoured bed material.
701	180-069000-75200-01800	2	15.0	Y	Completely vegetated with no visible channel.
703	180-069000-75200-01800	3	1.6	Y	No scoured bed material and no visible channel.
704	180-069000-75200-03624	1	4.9	Y	No visible channel.
705	180-069000-75200-03624	3	0.8	Y	Treed wetland with no visible channel.

Site	Watershed Code/ILP	Reach	Site Gradient (%)	No Visible Channel (Y or N)	Comments
706	180-069000-75200-06035	1	20	Y	No visible channel.
707	180-069000-75200-09686	2	-	Y	No visible channel.
708	180-069000-75200-10023	1	-	Y	No visible channel.
709	180-069000-75200-10395	1	1.6	Y	Wetland with water pockets.
710	180-069000-75200-10395	2	1.1	Y	No visible channel and no scoured bed material.
711	180-069000-75200-11960	1	-	Y	Completely vegetated with no visible channel.
713	180-069000-75200-13069	1	0.8	Y	Wetland with no visible channel.
716	180-069000-75200-15048	2	-	Y	Completely vegetated with no scoured bed material.
715	180-069000-75200-15048-3630	1	-	Y	Dry area with no visible channel.
721	180-069000-75200-16600-0490-0408	1	1.8	Y	No visible channel.
741	180-069000-75200-16600-1450-0180-4450	1	-	Y	No visible channel.
736	180-069000-75200-16600-1794	1	2.0	Y	No visible channel.
735	180-069000-75200-16600-1794	2	6.5	Y	Completely vegetated with no scoured bed material.
737	180-069000-75200-16600-1918	1	-	Y	Vegetated gully with no visible channel.
738	180-069000-75200-16600-2259	2	0.9	Y	Completely vegetated with no scoured bed material.
728	180-069000-75200-21700-3188-7619	1	-	Y	No visible channel.
726	180-069000-75200-21700-3188-1549	1	-	Y	Completely vegetated with no visible channel.
730	180-069000-75200-21700-5660	1	-	Y	No scoured bed material.
729	180-069000-75200-21700-5660	2	-	Y	Completely vegetated.

Site	Watershed Code/ILP	Reach	Site Gradient (%)	No Visible Channel (Y or N)	Comments
733	180-069000-75200-16600-3629	1	-	Y	Completely vegetated.
734	180-069000-75200-16600-3620	1	-	Y	No visible channel.
94	180-069000-75200-16600-2200-1760	2	2.0	Y	Treed drainage.
96	180-069000-75200-16600-2200-1760	5	1.0	Y	Wetland area with no visible channel.
91	180-069000-75200-16600-2200-2128	1	3.0	Y	Treed gully with no scoured bed material.
90	180-069000-75200-16600-2200-3770	1	2.0	Y	Treed drainage with no visible channel.
89	180-069000-75200-16600-2200-5256	2	-	Y	Completely vegetated with no visible channel.
85	180-069000-75200-16600-2200-6030	2	2.1	Y	Completely vegetated depression with no scoured bed material.
84	180-069000-75200-16600-2200-6030-307	1	1.9	Y	No visible channel with a completely vegetated depression.
87	180-069000-75200-16600-2200-7400	2	-	Y	No visible channel.
97	180-069000-75200-16600-3598	1	1.0	Y	Completely vegetated with no visible channel.
57	180-069000-75200-16600-4230	1	-	Y	Completely vegetated with no visible channel.
77	180-069000-75200-16600-6540	1	1.0	Y	Vegetated gully with no scoured bed material.
113	180-069000-75200-16600-6540-8958	1	2.0	Y	Vegetated gully with no visible channel.
78	180-069000-75200-16600-6540-9542	1	-	Y	No visible channel.
58	180-069000-75200-16600-4230	5	-	Y	Completely vegetated with no scoured bed material.
64	180-069000-75200-16600-4230-5440-178-518	1	-	Y	No scoured bed material and no visible channel.

Site	Watershed Code/ILP	Reach	Site Gradient (%)	No Visible Channel (Y or N)	Comments
72	180-069000-75200-16600-4230-0990	1	-	Y	Completely vegetated with no visible channel.
66	180-069000-75200-16600-4230-0990-482	1	-	Y	No scoured bed material and completely vegetated.
65	180-069000-75200-16600-4230-0990-622-755	1	-	Y	Completely vegetated with no visible channel.
104	180-069000-75200-16600-4070-7948-580	1	0.1	Y	Treed drainage with no scoured bed material.
70	180-069000-75200-16600-4070-7948-498	1	3.7	Y	Completely vegetated with no scoured bed material.
71	180-069000-75200-16600-4070-5338	1	0	Y	Treed drainage with no visible channel.
100	180-069000-75200-16600-7427	1	0	Y	Wetland area with no visible channel.
36	180-069000-75200-16600-8240	3	-	Y	Depression with no visible channel.
38	180-069000-75200-16600-8260-1238	1	-	Y	Stream runs through a cutblock with no visible channel.
34	180-069000-75200-16600-9688	1	-	Y	Entrenched gully with no visible channel
55	180-069000-75200-16600-4230-7460	1	-	Y	Completely vegetated with no visible channel.
41	180-069000-75200-16600-7510	2	1.8	Y	Vegetated depression with no visible channel.

- Site 34 (180-069000-75200-16600-9688) was located in Reach 1 of a first order stream that was accessed using a two-wheel drive vehicle. This reach was not a stream but an entrenched gully that collects snowmelt. The gully is completely vegetated with spruce, grass, horsetail and moss. There are some areas that collect water in the spring but there was no water at the time of sampling. There was also no scoured bed material and no visible channel.
- Site 36 (180-069000-75200-16600-8240) was located in Reach 3 of a first order stream that was accessed using a two-wheel drive vehicle. This reach was characterized by a depression with a few small pockets of water. Water quality readings were taken within these pockets. The area appeared to be completely vegetated with wetland vegetation and there was not enough water to sample for fish and none were visually observed. There was no fish habitat within this reach and no scoured bed material connected the isolated pockets of water. This reach was therefore classified as NVC.
- Site 38 (180-069000-75200-16600-8260-1238) was located in Reach 1 of a first order stream that was accessed using a two-wheel drive vehicle. This reach was a depression located within a cutblock. There was no scoured bed material and the depression was completely vegetated. This reach was classified as NVC.
- Site 41 (180-069000-75200-16600-7510) was located in Reach 2 of a first order stream that was accessed by helicopter. The only standing water in this reach was located at the culvert outlet of the road crossing where the water quality measurements were taken. The reach consisted of a depression that was completely vegetated with no scoured bed material and no visible channel.
- Site 55 in Reach 1 of (180-069000-75200-16600-4230-7460), Site 57 in Reach 1 of (180-069000-75200-16600-4230), Site 58 in Reach 5 of (180-069000-75200-16600-4230), Site 64 in Reach 1 of (180-069000-75200-16600-4230-5440-178-518), Site 65 in Reach 1 of (180-069000-75200-16600-4230-0990-622-755) and Site 66 in Reach 1 of (180-069000-75200-

16600-4230-0990-482) were all surveyed by helicopter as sites were not accessible by land vehicle and no landing spots were within 2km of the reaches. All of the sites surveyed were located in small first or second order streams with no headwater source. All streams were flown in their entirety and no flowing water was noted. All sites appeared to be completely vegetated and had no scoured bed material and no visible channel.

- Site 70 (180-069000-75200-16600-4070-7948-498) was located in Reach 1 of a first order stream that was accessed using a four-wheel drive vehicle. This reach was completely vegetated with aspen and grasses. This area had no scoured bed material and no visible channel.
- Site 71 (180-069000-75200-16600-4070-5338) was located in Reach 1 of a first order stream that was accessed using a two-wheel drive vehicle. This reach consisted of a treed depression with no water present and was completely vegetated with scrub birch, willow, moss and horsetails. This reach had no scoured bed material and no visible channel.
- Site 72 (180-069000-75200-16600-4230-0990) was located in Reach 1 of a first order stream that was accessed by helicopter. This reach was completely vegetated with no scoured bed material and no visible channel.
- Site 77 (180-069000-75200-16600-6540) was located in Reach 1 of a second order stream that was accessed using a two-wheel drive vehicle. This reach was a gully that was completely vegetated with spruce, fern and grasses. This reach had no scoured bed material and no visible channel.
- Site 78 (180-069000-75200-16600-6540-9542) was located in Reach 1 of a first order stream that was accessed using a two-wheel drive vehicle. This reach was completely vegetated with no scoured bed material and no visible channel.
- Site 84 (180-069000-75200-16600-2200-6030-3070) was located in Reach 1 of a first order stream that was accessed by helicopter. There were mature conifers growing throughout the area as well as some wetland vegetation, but there was no scoured bed material and no visible channel. Beaver cuttings were also present within the area.

- Site 85 (180-069000-75200-16600-2200-6030) was located in Reach 2 of a first order stream that was accessed by helicopter. This reach was completely vegetated with no scoured bed material and no visible channel.
- Site 87 in Reach 2 of (180-069000-75200-16600-2200-7400) and Site 89 in Reach 2 of (180-069000-75200-16600-2200-5256) were both first order streams that were surveyed by helicopter. There were no landing sites in the area and therefore the streams were flown in their entirety at low altitude. There was no flowing water and no visible channel observed for both of the streams.
- Site 90 (180-069000-75200-16600-2200-3770) was located in Reach 1 of a first order stream that was accessed using a two-wheel drive vehicle. This reach consisted of a treed drainage that was dominated by shrubs and moss. There was no evidence of water, no scoured bed material and no visible channel.
- Site 91 (180-069000-75200-16600-2200-2128) was located in Reach 1 of a second order stream that was accessed using a four-wheel drive vehicle. The site consisted of a treed gully that contained horsetails, willow, moss and shrubs. This depression had no scoured bed material and no visible channel.
- Site 94 (180-069000-75200-16600-2200-1760) was located in Reach 2 of a second order stream that was accessed using a four-wheel drive vehicle. This area consisted of a treed drainage that was completely vegetated. The reach collects some snowmelt in the spring but there is no scoured bed material and no visible channel.
- Site 96 (180-069000-75200-16600-2200-1760) was located in Reach 5 of a second order stream that was accessed by using a two-wheel drive vehicle. This area consisted of a wetland with an approximate width of 20m. The wetland was completely vegetated, with no scoured bed material and no visible channel.
- Site 97 (180-069000-75200-16600-3598) was located in Reach 1 of a second order stream that was accessed using a two-wheel drive vehicle. This reach

was characterized as a treed drainage. There was no standing water, no scoured bed material and no visible channel.

- Site 100 (180-069000-75200-16600-7427) was located in Reach 1 of a first order stream that was accessed using a four-wheel drive vehicle. The reach consisted of a wetland area vegetated with horsetails and alder with no scoured bed material and no visible channel.
- Site 104 (180-069000-75200-16600-4070-7948-580) was located in Reach 1 of a first order stream that was accessed by two-wheel drive vehicle. This reach consisted of a gully, which was vegetated with aspen. There was no scoured bed material and no visible channel.
- Site 113 (180-069000-75200-16600-6540-8958) was located in Reach 1 of a first order stream that was accessed using a two-wheel drive vehicle. This site contained a treed depression with spruce and pine trees growing throughout and no scoured bed material or visible channel.
- Site 701 (180-069000-75200-01800) was located in Reach 2 of a first order stream that was accessed using a two-wheel drive vehicle. The reach consisted of a depression that was completely vegetated. There were some dry pockets that appear to collect water during the spring melt, however, the scoured bed material was not continuous over 100m. The channel widths on the site card refer to the measurements taken at the bottom of the depression. This reach is classified as NVC.
- Site 702 (180-069000-75200-01797) was located in Reach 4 of a first order stream that was surveyed by helicopter. There were no landing sites within the area and therefore the entire stream was flown at low altitude. During the survey, there was no flowing water and no visible channel observed.
- Site 703 (180-069000-75200-01800) was located in Reach 3 of a first order stream that was accessed using a four-wheel drive vehicle. The reach was completely vegetated with no scoured bed material and no visible channel.
- Site 704 (180-069000-75200-03624) was located in Reach 1 of a second order stream that was accessed using a four-wheel drive vehicle. The reach

was a vegetated depression consisting of a conifer dominated mature forest. There was no scoured bed material and no visible channel.

- Site 705 (180-069000-75200-03624) was located in Reach 3 of a second order stream that was accessed using a four-wheel drive vehicle. The reach consisted of a treed wetland dominated by sedge and bog birch. Water was present at the soil/vegetation interface, but there was no scoured bed and no visible channel.
- Site 706 (180-069000-75200-06035) was located in Reach 1 of a first order stream that was accessed using a four-wheel drive vehicle. The reach was an entrenched gully with a treed wetland dominating the bottom of the gully. There was no scoured bed material and no visible channel.
- Site 707 in Reach 2 of (180-069000-75200-09686) and Site 708 in Reach 1 of (180-069000-75200-10023) were located in first order streams that were surveyed from a helicopter. There were no landing sites within the area and therefore the streams were flown in their entirety at a low altitude. There was no flowing water and no visible channel observed for both streams.
- Site 709 (180-069000-75200-10395) was located in Reach 1 of a second order stream that was accessed by foot from the nearest FSR. The reach consisted of a wetland that was completely vegetated with sedge, moss, willow and bog birch. There was no scoured bed material and no visible channel found within the area.
- Site 710 (180-069000-75200-10395) was located in Reach 2 of a first order stream that was accessed using a four-wheel drive vehicle. The area had a small depression that was completely vegetated with a mature mixed forest. There was no scoured bed material and no visible channel found at this site.
- Site 711 (180-069000-75200-11960) was located in Reach 1 of a first order stream that was accessed by foot from the nearest FSR. This reach was a completely vegetated depression that appeared no different from the surrounding forest.
- Site 713 (180-069000-75200-13069) was located in Reach 1 of a second order stream that was accessed by foot from the nearest FSR. This reach

consisted of wetland vegetation with no exposed bed materials and was classified as NVC.

- Site 714 was located in Reach 3 of (180-069000-75200-12100), a first order stream that was accessed using a two-wheel drive vehicle. This reach was a vegetated wetland area with no fish habitat. This area was classified as NVC.
- Site 715 in Reach 1 of (180-069000-75200-15048-3630) and Site 716 in Reach 2 of (180-069000-75200-15048) were located in first order streams that were surveyed from a helicopter. There were no landing sites within close proximity to the area and both streams were flown in their entirety at low altitude. There was no flowing water and no visible channel.
- Site 718 in Reach 2 of (180-069000-75200-16600-0490) was a first order stream that was accessed using a two-wheel drive vehicle. The site consisted of a large wetland area vegetated with willow, bog birch, sedge, alder and horsetail. There were some small shallow pockets of water that did not contain any fish. The pockets of water were not connected by a scoured channel and subsequently this reach was classified NVC.
- Site 719 in Reach 3 of (180-069000-75200-16600-0490) was a first order stream that was accessed by foot from the nearest FSR. The reach was completely vegetated and did not contain a visible channel.
- Site 722 in Reach 1 of (180-069000-75200-16600-0590) was a first order stream that was accessed by foot from the nearest FSR. This site consisted of a vegetated depression of grass, sedge and moss. This reach had no scoured bed material and no visible channel.
- Site 726 in Reach 1 of (180-069000-75200-21700-3188-1549), Site 728 in Reach 1 of (180-069000-75200-21700-3188-7619), Site 729 in Reach 2 of (180-069000-75200-21700-5660), Site 730 in Reach 1 of (180-069000-75200-21700-5660), 733 in Reach 1 (180-069000-75200-16600-3629) and 734 in Reach 1 of (180-069000-75200-16600-3620) were all located in first order streams that were surveyed from a helicopter. There were no landing sites in any of the areas and therefore the streams were flown in their entirety

at low altitude. There was no flowing water and no visible channel observed for any of the streams.

- Site 735 (180-069000-75200-16600-1794) was located in Reach 2 of a first order stream that was accessed using a two-wheel drive vehicle. The reach consisted of a completely vegetated depression with spruce, moss and honeysuckle. This area had no scoured bed material and no visible channel.
- Site 736 (180-069000-75200-16600-1794) was located in Reach 1 of a first order stream that was accessed using a two-wheel drive vehicle. The reach was characterized as a treed wetland that was completely vegetated with Labrador tea, willow, spruce, bog birch and horsetails. This site had no scoured bed material and no visible channel.
- Site 737 (180-069000-75200-16600-1918) was located in Reach 1 of a first order stream that was accessed using a two-wheel drive vehicle. This reach had a vegetated gully with no scoured bed and no visible channel.
- Site 738 (180-069000-75200-16600-2259) was located in Reach 2 of a first order stream that was accessed using a two-wheel drive vehicle. This reach was completely vegetated with no scoured bed material and no visible channel.
- Site 741 (180-069000-75200-16600-1450-0180-4450) was located in Reach 1 of a first order stream that was surveyed from a helicopter. There were no landing sites in the area and therefore the entire stream was flown at a low altitude. During the flight, there was no flowing water and no visible channel observed.
- Site 743 in Reach 4 of (180-069000-75200-16600-1450) was a first order stream that was accessed using a two-wheel drive vehicle. This reach was characterized as a sedge dominated wetland that had no scoured bed material and no visible channel.
- Site 744 in Reach 6 of (180-069000-75200-16600-1450) was a first order stream that was accessed using a two-wheel drive vehicle. This reach was described as a small depression with no scoured bed material and no visible channel.

- Site 745 in Reach 5 of (180-069000-75200-12100) was a first order stream that was accessed using a four-wheel drive vehicle. The reach did not have any scoured bed material, no visible channel and the depression was completely vegetated.

4.2.5.3 Follow-Up Sampling

The following sites, identified below in Table 8, were identified for follow-up sampling due to biophysical conditions that existed during Phase IV. These conditions included the presence of water, or scoured bed material and the possibility that fish may be present upon further sampling. This sampling should be conducted in early summer when water levels are sufficient to sample with an electroshocker or by using other methods such as minnow traps and seine nets.

Table 8. Sites Within Area C Requiring Follow-Up Sampling to Verify Fish Presence/Absence.

Site	Watershed Code/ILP	Reach	Timing	Suggested Methods	Comments
723	180-069000-75200-16600	3	June-July	EF and MT	No channel was found during initial sampling but should be re-sampled to determine if there is a channel.
79	180-069000-75200-16600	19	June -July	EF and MT	Poor habitat but should be re-sampled during higher flows.
742	180-069000-75200-16600-1450	3	June-July	EF and MT	Not sampled for fish during 1998 field survey.
743	180-069000-75200-16600-1450	4	June-July	EF and MT	Not sampled for fish during 1998 field survey.
103	180-069000-75200-12100-1688	1	June-July	EF and MT	Not visited during 1998 field survey.
740	180-069000-75200-16600-2200-1350	1	June-July	EF and MT	No fish captured during initial sampling.
92	180-069000-75200-16600-2200-1470	1	June -July	EF and MT	Very little habitat, re-sample during high flows.
61	180-069000-75200-16600-4230	3	June -July	EF and MT	Poor habitat but should be re-sampled.
102	180-069000-75200-16600-4230-5440	5	June-July	EF and MT	Poor fish habitat but should be re-sampled.
63	180-069000-75200-16600-4230-5440-178-144	1	June-July	EF and MT	Not visited during 1998 field survey.

- Site 61 (180-069000-75200-16600-4230) was located in Reach 3 of a third order stream that was accessed by helicopter. This reach appeared to consist of anoxic, stagnant water around the beaver dams. During the initial sampling sessions, no fish were captured. The site should be re-sampled to determine fish presence/absence.
- Site 79 (180-069000-75200-16600) was located in Reach 19 of a third order stream that was accessed using a four-wheel drive vehicle. This stream was

too small to electroshock effectively and should be re-sampled during higher flows. Fish were captured downstream of this site and this reach should therefore be re-sampled to determine if fish are able to utilize upper reaches.

- Site 92 (180-069000-75200-16600-2200-1470) was located in Reach 1 of a first order stream that was accessed using a four-wheel drive vehicle. This reach was unable to be sampled for fish due to low flows encountered during field sampling. This reach should be re-sampled during higher flows to determine fish presence/absence.
- Site 102 (180-069000-75200-16600-4230-5440) was located in Reach 5 of a second order stream that was accessed by helicopter. This reach consisted of a stagnant swamp area that should be re-sampled to determine fish presence/absence.
- Site 723 (180-069000-75200-16600) was located in Reach 3 of a third order stream that was accessed by foot from the nearest FSR. During sampling of this reach, no visible channel was found, but fish were captured upstream and downstream of this site. The reach should be re-sampled to determine if a channel can be found or if this reach presents a barrier to fish passage.
- Site 740 (180-069000-75200-16600-2200-1350) was located in Reach 1 of a first order stream that was accessed by helicopter. This reach, due to the depth of the water, should be re-sampled using minnow traps to determine fish presence/absence.
- Site 63 in Reach 1 of (180-069000-75200-16600-4230-5440-178-144) and Site 103 in Reach 1 of (180-069000-75200-12100-1688) were not visited during the 1998 field survey. These sites were not surveyed because they were deemed inaccessible and should be re-sampled when access into the area improves.
- Site 742 in Reach 3 of (180-069000-75200-16600-1450) and Site 743 in Reach 4 of (180-069000-75200-16600-1450) were not sampled for fish during this 1998 field surveyed and need to be re-visited to sample when conditions are suitable.

4.3 AREA E

4.3.1 Sample-Plan Modifications

There were no modifications to the Westworth (1997) planning document for Area E prior to the 1998 field survey. There were several changes however made during the field portion of this inventory and are summarized below in Table 9.

Table 9. Changes Made to Area E Planning.

Watershed Code	Reach	Type (Biased or Random)	Action (Deleted or Added)
180-069000-75200-48100	1	R	D
180-069000-75200-48800	1	R	D
180-069000-75200-48800-1570	1	B	A
180-069000-75200-48800-1570	2	R	D
180-069000-75200-48800	1	R	D

4.3.2 Habitat and Fish Distribution

Area E consists of one third order stream, a second order stream and three small first order streams. All of these flow south into Unnamed Creek (180-069000-75200), the mainstem fifth order tributary to the Chilako River (180-069000). These small streams are located approximately halfway up Unnamed Creek (180-069000-75200). During Phase IV of this inventory, no fish were captured at any of the sample sites.

Water conditions encountered during Phase IV led us to believe that any flowing or intermittent creeks may contain fish during times of normal or higher flows. To

confirm fish presence or absence, further sampling is required in these identified areas. These sites are further discussed in Section 4.3.5.3.

4.3.3 Fish Age, Size and Life History

No fish were captured in Area E during this 1998 field survey and there were no FISS data records for this area. The closest known FISS (1998) information for the area was for chinook salmon, which occurs in the Chilako River near Area E. Areas C and F are also sub-basins of this unnamed fifth order tributary (180-069000-75200) to the Chilako River. Rainbow trout were captured in these two sub-basins during the 1998 field survey.

4.3.4 Significant Features and Fisheries Observations

4.3.4.1 Fish and Fish Habitat

There were no critical habitats, spawning grounds, rare species of fish or sport fishing opportunities found within Area E.

4.3.4.2 Habitat Protection Concerns

4.3.4.2.1 Fisheries Sensitive Zones

No Fisheries Sensitive Zones (FSZ's) were found within Area E during Phase IV of this inventory.

4.3.4.2.2 Fish Above 20% Gradients

There were no reaches in Area E with gradients greater than 20%.

4.3.4.2.3 Restoration and Rehabilitation Opportunities

Only one feature was noted in Area E during field sampling that may possibly need rehabilitation. The possible barrier is a culvert located in Reach 2 of Unnamed Creek (180-069000-75200-48100-1220) at Site 53. No fish were captured in this reach and therefore, follow up sampling will help determine if this culvert is a barrier to fish passage.

4.3.5 Fish-Bearing Status

4.3.5.1 Fish-Bearing Reaches

The following reaches were sampled in June and July of 1998 and were subsequently classified as fish bearing. Criteria taken into consideration for this classification were the absence of barriers to fish passage and fish presence. Some sites were assumed to contain fish even though the habitat appeared inadequate and/or no fish were captured. This assumption was made due to low water flows encountered during Phase IV in 1998 and the possibility that fish may use these reaches at other times of the year or if more favorable conditions exist in other years. These sites will be assumed to contain fish until follow-up sampling can confirm the presence or absence of fish.

Table 10. Summary of Data from Fish Bearing Reaches in Area E.

Site	Watershed Code/ILP	Reach	Species	Channel		Proposed Riparian Class	Follow-up Sampling (Y or N)	Comments
				Width (m)	Site Gradient (%)			
101	180-069000-75200-48100	4	DNS	1.0	2.5	S4	Y	Dry, intermittent channel that should be sampled during the spring or early summer to determine fish presence or absence.
53	180-069000-75200-48100-1220	2	NFC	1.2	0.5	S4	Y	No fish captured but water with adequate flows to sustain fish were noted. This site should be re-sampled to determine fish presence/absence.
43	180-069000-75200-48800	5	DNS	0.6	2.5	S4	Y	Dry, intermittent channel that should be re-sampled during higher flows.

Site	Watershed Code/ILP	Reach	Species	Channel		Proposed Riparian Class	Follow-up Sampling (Y or N)	Comments
				Width (m)	Site Gradient (%)			
98	180-069000-75200-48800-2590	1	NFC	0.7	1.0	S4	Y	No fish captured and should be re-sampled.
46	180-069000-75200-48800-7950	2	DNS	1.6	2.5	S3	Y	Dry, intermittent channel that should be re-sampled during higher flows.

Fish Codes	
DNS-did not sample	NFC-no fish caught

4.3.5.2 Non-Fish-Bearing Reaches

The following reaches in Area E of the Isle-Pierre study area have been classified as non-fish bearing. The reason for this classification was that No Visible Channel (NVC) was designated for all of these sites. These NVC reaches were well vegetated, and lacked scoured bed material. Other sites had no available fish habitat in the reach and there was no permanent source of water upstream from the reach that could support fish. In these instances it was determined that fish would be unable to access and utilize these sections of stream.

Table 11. Summary of Data from Non-Fish Bearing Reaches in Area E.

Site	Watershed Code/ILP	Reach	Site Gradient (%)	No Visible Channel (Y or N)	Comments
42	180-069000-75200-48800	6	2.5	Y	Pockets of water, however, there was no scoured bed material connecting the pockets.
50	180-069000-75200-48800-1570	1	-	Y	No visible channel.
54	180-069000-75200-43758	2	-	Y	No visible channel.
99	180-069000-75200-48100-7524	1	-	Y	No scoured bed material.
45	180-069000-75200-48800-7833-8845	1	-	Y	Depression with no scoured bed material.
44	180-069000-75200-48800-7332	2	0.7	Y	Black spruce bog with no visible channel.
47	180-069000-75200-48800-4890-5775	1	2	Y	No visible channel located in cutblock.
48	180-069000-75200-48800-4169	1	4.7	Y	Treed drainage with no scoured bed material.
49	180-069000-75200-48800-2171	1	-	Y	No scoured bed material and no visible channel.

- Site 42 was located in Reach 6 of Unnamed Creek (180-069000-75200-48800), first order stream that was accessed using a two-wheel drive vehicle. The reach was located in a 15-year-old clearcut that had been replanted with pine, although some willows were present. This area had some dry pockets where water collected during snowmelt, but there was no scoured bed material that connected these pockets. The area did not contain any fish habitat and was classified NVC.
- Site 44 (180-069000-75200-48800-7332) was located in Reach 2 of a first order stream that was accessed using a two-wheel drive vehicle. This reach was dominated by a black spruce wetland that contained black spruce, Labrador tea and some scrub birch. There was no scoured bed material and no visible channel found throughout the wetland.
- Site 47 (180-069000-75200-48800-4890-5775) was located in Reach 1 of a first order stream and was accessed using a two-wheel drive vehicle. The reach was located in a cutblock and contained no scoured bed material and no visible channel.
- Site 48 (180-069000-75200-48800-4169) was located in Reach 1 of a second order stream that was accessed using a four-wheel drive vehicle. The reach consisted of a treed depression that had no scoured bed material and no visible channel.
- Sites 49 in Reach 1 of (180-069000-75200-48800-2171), 50 in Reach 1 of Unnamed Creek (180-069000-75200-48800-1570) and 54 in Reach 2 of (180-069000-75200-43758) were all located in first order streams. All of these streams were surveyed from a helicopter because there were no available landing sites within the areas and therefore the streams were flown in their entirety at low altitude. During the flight, none of these streams had any flowing or standing water and no visible channel.
- Site 99 (180-069000-75200-48100-7524) was located in Reach 1 of a first order stream and was accessed by foot from the nearest FSR. The reach contained a wetland that was approximately 20m wide by 200m in length.

There was no visible channel that connected any of the shallow pockets of water.

4.3.5.3 Follow-Up Sampling

The following sites, outlined below in Table 12, were identified for follow-up sampling due to biophysical conditions that existed during Phase IV. These conditions included the presence of water or scoured bed material and the possibility that fish may be present upon further sampling. This follow-up sampling should be conducted in early summer when water levels are sufficient to sample with an electroshocker or by using other methods of fish capture such as minnow traps and seine nets.

Table 12. Sites within Area E Requiring Follow-Up Sampling to Verify Fish Presence/Absence.

Site	Watershed Code/ILP	Reach	Timing	Suggested Methods	Comments
101	180-069000-75200-48100	4	June-July	EF and MT	Dry, intermittent channel.
53	180-069000-75200-48100-1220	2	June -July	EF and MT	Water present but there were no fish captured while electroshocking.
43	180-069000-75200-48800	5	June –July	EF and MT	Dry, intermittent channel.
98	180-069000-75200-48800-2590	1	June -July	EF and MT	No fish captured while electroshocking.
46	180-069000-75200-48800-7950	2	June –July	EF and MT	Dry, intermittent channel.

- Site 43 was located in Reach 5 of Unnamed Creek (180-069000-75200-48800), a second order stream that was accessed using a four-wheel drive vehicle. This reach was located in a cutblock and contained some wetland vegetation. There was a small dry channel that should be sampled during the spring or early summer to determine fish presence or absence.
- Site 46 was located in Reach 2 of Unnamed Creek (180-069000-75200-48800-7950), a first order stream that was accessed using a two-wheel drive vehicle. This reach was a dry, intermittent channel that should be re-sampled during the spring or early summer to determine fish presence or absence.

- Site 53 (180-069000-75200-48100-1220) was located in Reach 2 of a first order stream that was accessed using a four-wheel drive vehicle. No fish were captured while electrofishing and the site should be re-sampled to determine fish presence or absence.
- Site 98 (180-069000-75200-48800-2590) was located in Reach 1 of a first order stream that was accessed using a four-wheel drive vehicle. No fish were captured while electrofishing and there was not enough water to use minnow traps. This reach should be re-sampled during higher flows to determine if there are fish present.
- Site 101 (180-069000-75200-48100) was located in Reach 4 of a first order stream that was accessed using a two-wheel drive vehicle. This site should be re-sampled during higher flows to determine if fish are able to utilize this stream.

4.4 AREA F

4.4.1 Sample-Plan Modifications

There were no modifications to the Westworth (1997) planning document for Area F prior to the 1998 field survey. There were several changes however made during the field portion of this inventory and they are summarized below in Table 13.

Table 13. Changes Made to Area F Planning.

Watershed Code/ILP	Reach	Type (Biased or Random)	Action (Deleted or Added)
180-069000-75200-72000	1	R	D
180-069000-75200-72000	2	R	D

4.4.2 Habitat and Fish Distribution

Study Area F consists of the upper end of an unnamed fifth order stream (180-069000-75200) that flows south into the Chilako River (180-069000) and a third order sub-basin (180-069000-75200-72000), which flows into the unnamed fifth order stream. Fish were only captured at three sites, two in Unnamed Creek (180-069000-75200) and one in the first reach of a tributary to this mainstem.

The water conditions in the study area led us to assume that any flowing or intermittent creeks may contain fish during times of normal or higher flows. Further sampling is required in these areas to confirm fish presence or absence.

4.4.3 Fish Age, Size and Life History

Rainbow trout were the only fish species captured during the field sampling of Area F. All of the fish were captured either in the mainstem or in the first reach of a tributary to the mainstem.

There were no specific FISS references for Area F. The closest known FISS (1998) reference for the area was that chinook salmon were known to occur in the Chilako River. Areas C and E are also sub-basins of Unnamed Creek (180-069000-75200). Rainbow trout were captured in Area C and no fish were captured within Area E.

A total of 25 rainbow trout were captured in Area F. Measurements of 20-70mm, 71-130mm and greater than 130mm were used to determine fry(0+), juvenile(1+) and adults(2+) for rainbow trout (Scott and Crossman, 1973). The summary of estimated length-age data, as age structures were not collected, from rainbow trout captured in Area F during June and July, 1998. These results are presented below in Table 14.

Table 14. Summary of Length-to-Age Data from Fish Captured in Area F During the 1998 Isle-Pierre Fish and Fish Habitat Inventory/Stream Classification.

Stream Name	Watershed Code/ILP	Species	Age	# of Fish	Mean Length (mm)	Range of Lengths (mm)
Unnamed	180-069000-75200	RB	0+	6	61.7	57 – 67
			1+	14	100.9	75 – 140
			2+	5	148.2	140 – 162

Figure 3 below is a histogram of rainbow trout captured within Area F during the 1998 field sampling.

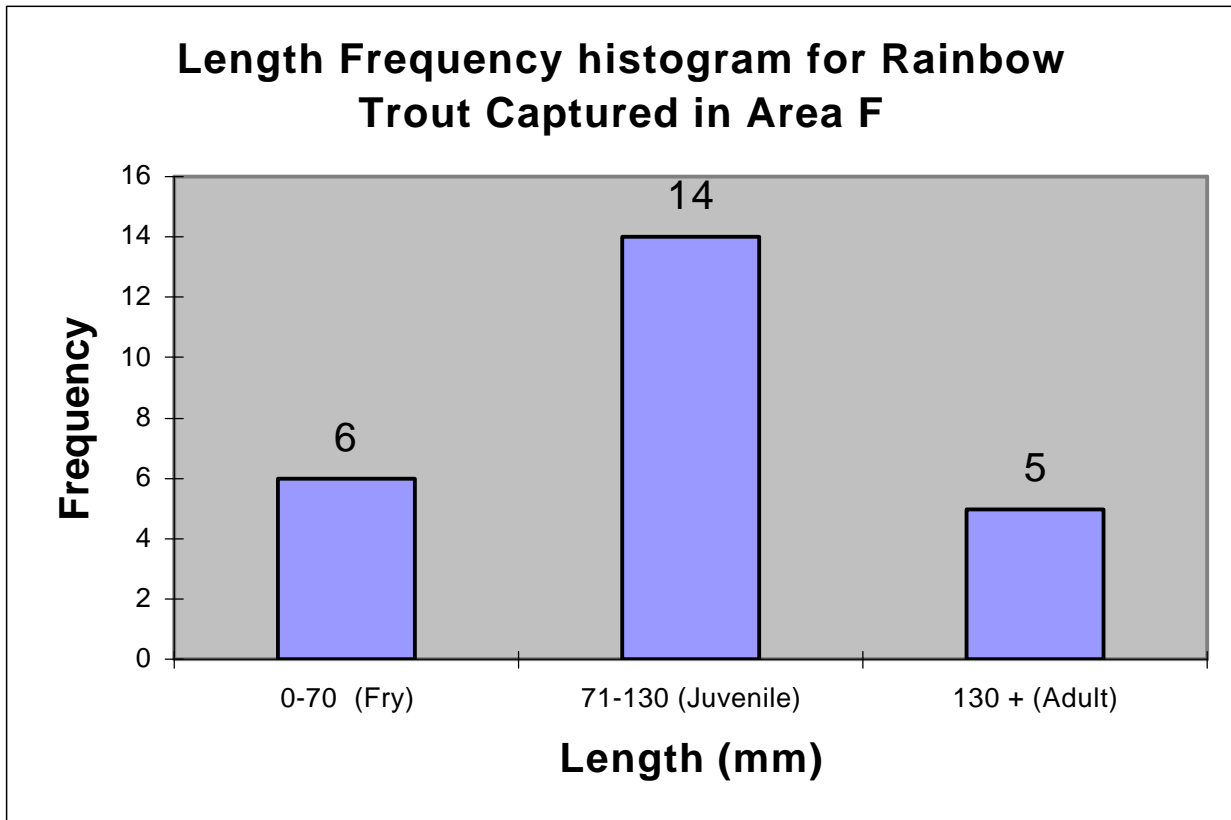


Figure 3. Frequency Length Histogram for Rainbow Trout Captured in Area F.

4.4.4 Significant Features and Fisheries Observations

4.4.4.1 Fish and Fish Habitat

There were no critical habitats, spawning grounds, rare species of fish or sport fishing opportunities identified within Area F.

4.4.4.2 Habitat Protection Concerns

4.4.4.2.1 Fisheries Sensitive Zones

No Fisheries Sensitive Zones (FSZ's) were found within Area F during Phase IV of this inventory.

4.4.4.2.2 Fish above 20% Gradients

There were no sampled reaches in Area F, with gradients greater than 20%.

4.4.4.2.3 Restoration and Rehabilitation Opportunities

There were three culverts noted in Area F during the 1998 field sampling. During the initial sampling of these sites, no fish were captured. Two of the culverts should be re-assessed if fish are found during follow-up sampling at each site.

- Site 620 (180-069000-75200-83403) was located in Reach 1 of a second order stream. The culvert at the road crossing should be re-assessed when the stream is re-sampled. During initial sampling, no fish were captured.

- Site 640 (180-069000-75200-80494) was located in Reach 1 of a first order stream. This reach had no scoured bed material and no visible channel. Therefore, the culvert located at the road crossing does not present a barrier to fish passage.
- Site 647 (180-069000-75200-72000) was located in Reach 3 of a third order stream. There was a beaver dam upstream from the culvert but no fish were captured within this reach. The site should be re-sampled to determine if fish are able to utilize this stream. If fish are captured during subsequent sampling, then the culvert should be re-assessed to determine if it is a barrier to fish passage.

These features are summarized below in Table 15.

Table 15. Summary of Possible Barriers/Obstructions to Fish Passage in Area F.

Watershed Code	Site	Reach	Feature NID	Feature	Height (m)
180-069000-75200-83403	620	1	600	culvert	-
180-069000-75200-80494	640	1	601	culvert	-
180-069000-75200-72000	647	3	702	culvert	-

4.4.5 Fish-Bearing Status

4.4.5.1 Fish-Bearing Reaches

The following reaches, outlined below in Table 16, were sampled in June and July of 1998 and were subsequently classified as fish bearing. Criteria taken into consideration for this classification were the absence of barriers to fish passage and fish presence. Some sites were assumed to contain fish even though the habitat appeared inadequate and/or no fish were captured. This assumption was made due to low water flows encountered during Phase IV in 1998 and the possibility that fish may use these reaches at other times of the year or if other more favorable conditions exist in other years. These sites will be assumed to contain fish until follow-up sampling can confirm the presence or absence of fish.

Table 16. Summary of Data from Fish Bearing Reaches in Area F.

Site	Watershed Code/ILP	Reach	Species	Channel		Proposed Riparian Class	Follow-Up Sampling (Y or N)	Comments
				Width (m)	Site Gradient (%)			
641	180-069000-75200	20	RB	3.3	1.0	S3	N	Rainbow trout captured in good quality habitat.
621	180-069000-75200	21	RB	2.0	1	S3	N	Rainbow trout captured, good habitat.
622	180-069000-75200	25	NFC	0.9	1.1	S4	Y	Rainbow trout captured downstream.
647	180-069000-75200-72000	3	NFC	3.3	0.5	S3	Y	Assumed fish bearing due to downstream presence of rainbow trout in mainstem.

Site	Watershed Code/ILP	Reach	Species	Channel		Proposed Riparian Class	Follow-Up Sampling (Y or N)	Comments
				Width (m)	Site Gradient (%)			
642	180-069000-75200-78900	1	RB	1.6	1.8	S3	N	Rainbow trout captured in good habitat.
620	180-069000-75200-83403	1	NFC	1.1	1	S4	Y	Assumed fish bearing but should be re-sampled in spring.
637	180-069000-75200-82006-4202	1	NFC	1.0	0.8	S4	Y	Assumed fish bearing but no fish captured during sampling.
648	180-069000-75200-72000-1080	1	NFC	1.3	1.0	S4	Y	Fish assumed in this reach due to the proximity to the mainstem.

Fish Codes	
NFC-no fish caught	RB-rainbow trout

4.4.5.2 Non-Fish-Bearing Reaches

The following reaches, surveyed in June and July of 1998, in Area F have been classified as non-fish bearing. These reaches were designated as non-fish bearing as they all exhibited No Visible Channel and were generally well vegetated, with no scoured bed material. Table 17 below summarizes all reaches classified as non-fish bearing.

Table 17. Summary of Data from Non-Fish Bearing Reaches in Area F.

Site	Watershed Code	Reach	Site Gradient (%)	No Visible Channel (Y or N)	Comments
625	180-069000-75200	27	0.9	Y	No scoured bed material, no visible channel.
636	180-069000-75200-85700	2	-	Y	Wetland with no visible channel.
623	180-069000-75200-87545	1	2.4	Y	No scoured bed material, completely vegetated.
638	180-069000-75200-82006-4202	3	-	Y	Helicopter survey, no visible channel.
639	180-069000-75200-81661	2	-	Y	Helicopter survey, no visible channel.
645	180-069000-75200-72000-2918	2	-	Y	No visible channel with no scoured bed.
646	180-069000-75200-72000-3850	1	-	Y	No visible channel, completely vegetated.
644	180-069000-75200-72000-2918-5926	1	-	Y	No scoured bed material and no visible channel.
643	180-069000-75200-72000-5120	1	-	Y	Completely vegetated with no visible channel.
640	180-069000-75200-80494	1	-	Y	No visible channel, bog drainage.

- Site 623 (180-069000-75200-87545) was located in Reach 1 of a first order stream that was accessed by helicopter. The reach had no scoured bed and was completely vegetated and exhibited no visible channel.
- Site 625 in Reach 27 of Unnamed Creek (180-069000-75200). This reach was accessed using a helicopter. This reach was completely vegetated, with no scoured bed material and no visible channel.
- Site 636 in Reach 2 of Unnamed Creek (180-069000-75200-85700) was accessed using a two-wheel drive vehicle. This reach consisted of wetland vegetation with no scoured bed materials and no visible channel.
- Site 638 (180-069000-75200-82006-4202) was located in Reach 3, which is part of a first order section of a second order stream. This entire stream was surveyed from a helicopter, as there were no landing sites in the area. The entire stream was completely vegetated with no visible channel.
- Site 639 (180-069000-75200-81661) was located in Reach 2 of a first order stream. The entire stream was surveyed by helicopter, as there were no available landing sites in the area. This reach was completely vegetated with no visible channel.
- Site 640 (180-069000-75200-80494) was located in Reach 1 of a first order stream that was accessed using a two-wheel drive vehicle. This stream had willow and spruce growing throughout the channel. Some pools of water appear to collect in the depression but there was no scoured bed connecting the shallow pools and the reach was classified as NVC.
- Site 643 (180-069000-75200-72000-5120) was located in Reach 1 of a first order stream that was accessed using a two-wheel drive vehicle. This reach was characterized as a wetland with some shallow pockets of standing water. There was no evidence of any flowing water and there was no scoured bed material. The area was completely vegetated with sedge and grass and was classified as NVC.
- Site 644 (180-069000-75200-72000-2918-5926) was located in Reach 1 of a first order stream that was accessed by foot from the nearest FSR. This

reach was vegetated with no scoured bed material and was classified as NVC.

- Site 645 (180-069000-75200-72000-2918) was located in Reach 2 of a first order stream that was accessed using a two-wheel drive vehicle. This site was located in a cutblock and was described as a depression with some water at the soil/vegetation interface. This depression had no scoured bed material and was classified as NVC.
- Site 646 (180-069000-75200-72000-3850) was located in Reach 1 of a first order stream that was accessed using a two-wheel drive vehicle. The depression was vegetated with willow and black spruce. There was no scoured bed materials and was classified as NVC.

4.4.5.3 Follow-Up Sampling

The following sites were identified for follow-up sampling due to biophysical conditions that existed during Phase IV. These conditions included the presence of water or scoured bed material and the possibility that fish may be present upon further sampling. This sampling should be conducted in spring or early summer when water levels are sufficient to sample with an electroshocker or by using other methods such as minnow traps and seine nets.

Table 18. Sites Within Area F Requiring Follow-Up Sampling to Verify Fish Presence/Absence.

Site	Watershed Code	Reach	Timing	Suggested Methods	Comments
622	180-069000-75200	25	June – July	EF and MT	No fish captured during initial sampling but rainbow trout were captured in a downstream reach.
647	180-069000-75200-72000	3	June-July	EF and MT	No fish caught during initial sampling.
620	180-069000-75200-83403	1	June – July	EF and MT	No fish captured during initial sampling.
637	180-069000-75200-82006-4202	1	June – July	EF and MT	No fish captured during initial sampling.
648	180-069000-75200-72000-1080	1	June-July	EF and MT	No fish captured during initial sampling.

- Site 620 (180-069000-75200-83403) was located in Reach 1 of a third order stream that was accessed using a two-wheel drive vehicle. This reach appeared to contain adequate habitat to support fish. No fish were captured using minnow traps or electroshocking. The site should be re-sampled in spring or early summer to determine if fish utilize this reach.
- Site 622 located Reach 25 of Unnamed Creek (180-069000-75200). There were no fish captured while using two-pass electrofishing. Rainbow trout were captured in reaches downstream and this site should be re-sampled to determine if fish are able to utilize the upper reaches. The site should be re-sampled during spring or early summer when flows are higher.
- Site 637 (180-069000-75200-82006-4202) was located in Reach 1 of a second order stream that was accessed by helicopter. This reach had moderate fish cover although no fish were captured within the reach. This site should be re-sampled to determine possible fish utilization.
- Site 647 located in Reach 3 of Unnamed Creek (180-069000-75200-72000) was accessed using a two-wheel drive vehicle. This reach was located between two wetland areas and no fish were captured using minnow traps or electroshocking. This site should be re-sampled to determine fish presence or absence.
- Site 648 (180-069000-75200-72000-1080) was located in Reach 1 of a second order stream that was accessed using a two-wheel drive vehicle. This reach did not have any water deep enough to use minnow traps and no fish were captured while electroshocking. This site should be re-sampled in the spring or early summer to determine if fish are present or absent in this reach.

4.5 AREA G

4.5.1 Sample Plan Modifications

There were no modifications to the Westworth (1997) planning document for Area G prior to the 1998 field survey. There was one change however made during the field portion of this inventory and it is summarized below in Table 19.

Table 19. Changes Made to Area G Planning.

Watershed Code	Reach	Type (Biased or Random)	Action (Deleted or Added)
180-191300-40100- 77100-2373-6279	1	B	D

4.5.2 Habitat and Fish Distribution

Area G consisted of an unnamed third order sub-basin to Cluculz Creek (180-191300); the confluence was located near the southwest corner of Cluculz Lake (01091NECR). During field sampling, the entire sub-basin was noted to have a low gradient with some small wetland areas. First order tributaries to the mainstem of this watershed, all consisted of no visible channel (NVC). During Phase IV, the mainstem (180-191300-40100) was noted to have some flowing water in the lower reaches, while some of the upper reaches consisted of NVC. The sites that consisted of NVC were completely vegetated with graminoids, conifers, and deciduous shrub vegetation.

The only fish species captured in Area G was peamouth chub. Lower reaches of the mainstem should be re-sampled to determine if any other types of fish utilize this stream. Other fish species may be present in this watershed because Cluculz Creek and Cluculz Lake are known to contain game fish species, such as rainbow trout. There were no permanent fish migration barriers noted during

sampling between Cluculz Creek and the lower reaches of the mainstem (180-191300-40100).

4.5.3 Fish Age, Size and Life History

Peamouth chub (*Mylocheilus caurinus*) were the only fish captured during the field sampling of Area G and no FISS (1998) records existed for this sub-basin. This area is a tributary to Cluculz Creek and is located in close proximity to Cluculz Lake. The lake contains FISS (1998) data indicating the presence of rainbow trout, kokanee, lake trout and a variety of other non-game fish found in Cluculz Lake. FISS (1998) database records also report that Cluculz Lake was last stocked with rainbow trout on June 8, 1998. FISS (1998) information is summarized below in Table 20.

Table 20. Fish Species Found in Cluculz Lake (WBID 01091NECR). (FISS, 1998)

<u>Code</u>	<u>Common Name</u>	<u>Scientific Name</u>
C	minnows	many, all cyprinids
CAS	prickly sculpin	<i>Cottus asper</i>
CSU	largescale sucker	<i>Catostomus macrocheilus</i>
DV	Dolly Varden	<i>Salvelinus malma</i>
KO	kokanee	<i>Oncorhynchus nerka</i>
LSU	longnose sucker	<i>Catostomus catostomus</i>
LT	lake trout	<i>Salvelinus namaycush</i>
MW	mountain whitefish	<i>Prosopium williamsoni</i>
NSC	northern squawfish	<i>Ptycheilus oregonensis</i>
PCC	peamouth chub	<i>Mylocheilus caurinus</i>
RB	rainbow trout	<i>Oncorhynchus mykiss</i>
RSC	reidside shiner	<i>Richardsonius balteatus</i>
SU	suckers, general	<i>Catostomus sp.</i>

4.5.4 Significant Features and Fisheries Observations

4.5.4.1 Fish and Fish Habitat

No critical habitats, spawning grounds, rare species of fish or sport fishing opportunities were identified in Area G.

4.5.4.2 Habitat Protection Concerns

4.5.4.2.1 Fisheries Sensitive Zones

No Fisheries Sensitive Zones (FSZs) were found within Area G during Phase IV of this inventory.

4.5.4.2.2 Fish above 20% Gradients

There were no reaches in Area G with gradients greater than 20%.

4.5.4.2.3 Restoration and Rehabilitation Opportunities

There were three features noted in Area G during the 1998 field sampling, none of which appeared to need any immediate rehabilitation.

- Site 600 (180-191300-40100) had a natural beaver dam with a height of 1.5m that was a potential barrier to fish passage. The beaver pond that results from this dam is approximately 150m in diameter. The beaver dams that are located throughout this area may prevent some fish passage but the beaver ponds also provide some good rearing habitat for fish. Electrofishing and

minnow traps were used during the initial fish sampling, but no fish were captured. Some unidentified fry were noted in the beaver ponds, but were neither captured nor identified.

- Site 601 (180-191300-40100) also had a beaver dam with a height of 1.5m that appeared to be a natural potential barrier to fish passage. This site is located in Reach 4 of the mainstem and was noted to contain many beaver dams that may restrict fish passage. These areas also provide some overwinter habitat because of the depth of the beaver ponds. Some peamouth chub were captured in minnow traps that were placed in the beaver ponds.
- Site 604 (180-191300-40100-64100) had a culvert at the road crossing but did not present a barrier to fish passage. This area did not contain enough water to sustain any fish and the depression was completely vegetated. The area was determined to be a wetland with a very shallow scoured channel around some of the vegetation.

Table 21 below summarizes the features found within Area G.

Table 21. Summary of Features found Within Area G.

Watershed Code	Site	Reach	Feature NID	Possible Obstruction	Height (m)
180-191300-40100	600	2	700	beaver dam	1.5
180-191300-40100	601	4	701	beaver dam	1.5
180-191300-40100-64100	604	3	702	culvert	0

4.5.5 Fish-Bearing Status

4.5.5.1 Fish-Bearing Reaches

The following reaches were sampled in June and July of 1998 and were subsequently classified as fish bearing. Criteria taken into consideration for this classification were the absence of barriers to fish passage and fish presence. Four of the five sampled reaches classified as fish bearing, were located on the mainstem. One reach, located on ILP 00006, was assumed to contain fish even though the reach contained little or no fish habitat. This site was recommended for follow-up sampling to determine fish presence or absence.

Table 22. Summary of Data from Fish Bearing Reaches in Area G.

Site	Watershed Code	Reach	Species	Channel		Proposed Riparian Class	Follow-Up Sampling (Y or N)	Comments
				Width (m)	Site Gradient (%)			
600	180-191300-40100	2	NFC	~50	1	S1	N	Fish were assumed in this reach due to the close proximity of Cluculz Creek. The average channel width and subsequent classification is due to the beaver dams in this reach.
601	180-191300-40100	4	PCC	1.2	1	S4	N	Mainstem stream with fish present. Rainbow trout known to occur in Cluculz Creek to which this stream is a tributary.
602	180-191300-40100	8	NFC	2.1	1	S3	N	Fish assumed due to the amount of water and fish found downstream at Site 601.
603	180-191300-40100	9	NFC	2.3	1.6	S3	N	Fish assumed due to the presence of water and fish found downstream.

Site	Watershed Code	Reach	Species	Channel		Proposed Riparian Class	Follow-Up Sampling (Y or N)	Comments
				Width (m)	Site Gradient (%)			
604	180-191300-40100-64100	3	DNS	1.1	0.9	S4	Y	Fish assumed but should be sampled due to lack of quality fish habitat.
Fish Codes								
PCC-peamouth chub			NFC-no fish caught			DNS-did not sample		

- Sites 600, 601, 602 and 603 were all located on the mainstem (180-191300-40100). These sites were assumed to be fish bearing even though peamouth chub were the only fish captured. All of these reaches are assumed to be fish bearing because rainbow trout are present in Cluculz Creek and there were no known permanent barriers between Cluculz Creek and Unnamed Creek (180-191300-40100). This mainstem has a lot of beaver activity, creating dams and ponds and it is possible that rainbow trout are able to access and utilize this stream for rearing or other activities.

4.5.5.2 Non-Fish-Bearing Reaches

The following reaches in Area G of the Isle-Pierre study area have been classified as non-fish bearing. All of these sites have been classified as non-fish bearing because they consisted of no scoured bed material, no visible channel and were completely vegetated. A summary of non-fish bearing reaches is presented below in Table 23.

Table 23. Summary of Data from Non-Fish Bearing Reaches in Area G.

Site	Watershed Code	Reach	Site Gradient (%)	No Visible Channel (Y or N)	Comments
607	180-191300-40100	15	-	Y	Sedge marsh area with no scoured bed material.
608	180-191300-40100	16	-	Y	Wetland with no pond or scoured bed material.
605	180-191300-40100-64100-7025	1	-	Y	Depression with some wetland vegetation.
609	180-191300-40100-77100-2373	1	-	Y	Some standing pools of water but no scoured bed material.
606	180-191300-40100-75796	1	-	Y	Wooded gully with no fish habitat.

- Site 605 (180-191300-40100-64100-7025) was located in Reach 1 of a first-order stream that was accessed using a two-wheel drive vehicle. This reach consisted of a depression, vegetated with sedge, alder and willow. Free-range cows browsing throughout the area have impacted this reach. There was no fish habitat, no scoured bed material and no visible channel.
- Site 606 (180-191300-40100-75796) was located in Reach 1 of a first order stream that was accessed by foot from the nearest FSR. The reach was a dry wooded gully that did not have evidence of any past water flows. There was no scoured bed material and no visible channel found at this site.
- Site 607 located in Reach 15 of Unnamed Creek (180-191300-40100) accessed using a two-wheel drive vehicle. The reach was characterized as a sedge-marsh with some standing water at the soil/vegetation interface. There was no scoured bed material and no visible channel.
- Site 608 located in Reach 16 of Unnamed Creek (180-191300-40100) was accessed using a two-wheel drive vehicle. This reach consisted of a depression that collects snowmelt, however there was no scoured bed material and no fish habitat.
- Site 609 (180-191300-40100-77100-2373) was in Reach 1 of a second order stream that was accessed using a two-wheel drive vehicle. This reach had some small, shallow pools of water but there was no visible channel or scoured bed material that joined the pools. Many frogs, algae, and invertebrates were found in some of the shallow water pockets. This reach was classified as NVC.

4.5.5.3 Follow-Up Sampling

The following sites were identified for follow-up sampling due to biophysical conditions that existed during Phase IV. These conditions included the presence of water, scoured bed materials and the possibility that fish may be present upon

further sampling. This sampling should be conducted in early summer when water levels are sufficient to sample with an electroshocker or with other methods including minnow traps and seine nets. Follow-up sampling is summarized below in Table 24.

Table 24. Sites Within Area G Requiring Follow-Up Sampling to Verify Fish Presence/Absence.

Site	Watershed Code	Reach	Timing	Suggested Methods	Comments
604	180-191300-40100-64100	3	June –July	EF and MT	Small shallow channel with poor fish habitat.

- Site 604 (180-191300-40100-64100) had poor fish habitat but was identified for follow-up sampling due to the presence of water at the site and the presence of fish downstream. There was not enough water to electroshock or use other fish sampling methods during the initial survey. The area also contained some mature conifers and aspen growing throughout the channel. Some puddles of water were present, but there was a general lack of fish habitat. This area should be re-sampled during higher flows, to determine if there is enough water to sustain any fish.

4.6 AREA H

4.6.1 Sample-Plan Modifications

There were no modifications to the Westworth (1997) planning document for Area G prior to the 1998 field survey. There was one change however made during Phase IV of this inventory. A site was done on Reach 1 of WSC 180-191300-49300-18135 but the site was intended for Reach 1 of the adjacent stream WSC 180-191300-49300-21100. These changes are summarized below in Table 25.

Table 25. Changes Made to Area J Planning.

Watershed Code	Reach	Type (Biased or Random)	Action (Deleted or Added)
180-191300-49300-21100	1	R	D
180-191300-49300-18135	1	B	A

4.6.2 Habitat and Fish Distribution

Area H consisted of a third order sub-basin to Cluculz Creek (180-191300) with the confluence located near the southwest corner of Cluculz Lake (01091NECR). The confluence with Cluculz Creek is located approximately 7.5 km southeast of the confluence of the Area G mainstem and Cluculz Creek. During field sampling, the entire sub-basin was noted to have low gradients with small wetland areas. All first order tributaries to the mainstem consisted of no visible channel (NVC) or had poor fish habitat. All of the sites in Area H had a low amount of flowing water or no visible channel (NVC). The areas that consisted of

NVC were completely vegetated with either wetland vegetation, mature conifers, deciduous or shrub vegetation.

Rainbow trout were the only fish species captured in Area H. These fish were captured at both sites 634 and 635, which were both located in close proximity to Cluculz Creek (180-191300). All other sample sites in Area H contained no fish habitat.

4.6.3 Fish Age, Size and Life History

Rainbow trout were the only fish captured during field sampling and no FISS (1998) records existed for this particular sub-basin. This area is a tributary to Cluculz Creek and is located in moderate proximity to Cluculz Lake; the latter of which has FISS (1998) references. Historical FISS data (1998) documents rainbow trout, kokanee, lake trout and a variety of other non-game fish as occurring in Cluculz Lake. FISS (1998) also reports that the lake was last stocked with rainbow trout on 8 June 1998. FISS (1998) data is summarized below in Table 26.

Table 26. Known Fish Species Found Near Area H. (FISS, 1998)

<u>Code</u>	<u>Common Name</u>	<u>Scientific Name</u>
C	minnows	many, all cyprinids
CAS	prickly sculpin	<i>Cottus asper</i>
CSU	largescale sucker	<i>Catostomus macrocheilus</i>
DV	Dolly Varden	<i>Salvelinus malma</i>
KO	kokanee	<i>Oncorhynchus nerka</i>
LSU	longnose sucker	<i>Catostomus catostomus</i>
LT	lake trout	<i>Salvelinus namaycush</i>
MW	mountain whitefish	<i>Prosopium williamsoni</i>
NSC	northern squawfish	<i>Ptycheilus oregonensis</i>
PCC	peamouth chub	<i>Mylocheilus caurinus</i>
RB	rainbow trout	<i>Oncorhynchus mykiss</i>
RSC	redside shiner	<i>Richardsonius balteatus</i>

SU	suckers, general	<i>Catostomus sp.</i>
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A total of seven rainbow trout were captured in Area H. Measurements of 20-70mm, 71-130mm and greater than 130mm were used to determine fry(0+), juvenile(1+) and adults(2+) for rainbow trout (Scott and Crossman, 1973). The summary of estimated length-age data, as age structures were not collected, from rainbow trout captured in Area H during June and July of 1998. These results are presented below in Table 27.

Table 27. Summary of Length-to-Age Data from Fish Captured in Area H During the 1998 Isle-Pierre Fish and Fish Habitat Inventory/Stream Classification.

Stream Name	Watershed Code	Species	Age	# of Fish	Mean Length (mm)	Range of Lengths (mm)
Unnamed Creek	180-191300-49300-14664	RB	0+	2	59	56 – 62
	180-191300-49300		1+	5	101.4	82 – 123
			2+	0	-	-

Figure 4 below shows a length frequency histogram of rainbow trout captured within Area H.

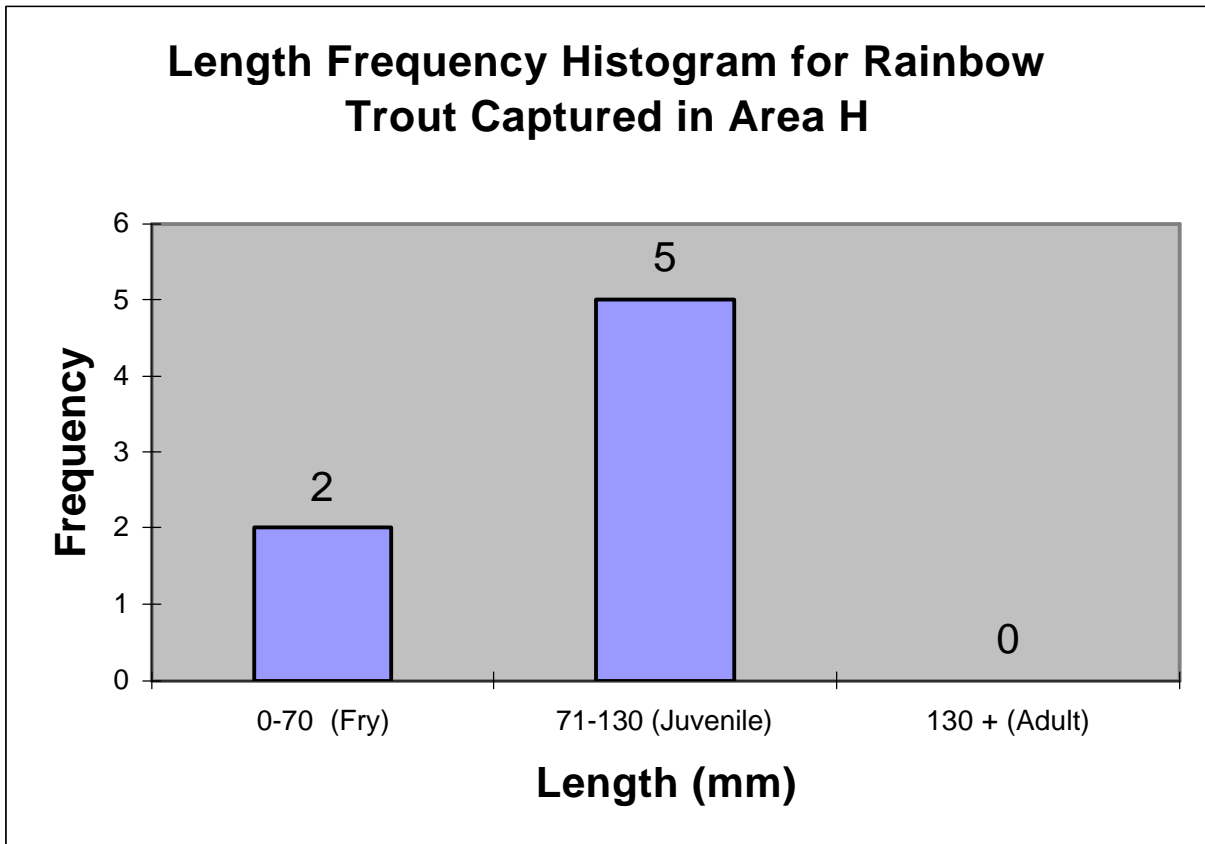


Figure 4. Frequency Length Histogram for Rainbow Trout Captured in Area H.

4.6.4 Significant Features and Fisheries Observations

4.6.4.1 Fish and Fish Habitat

There were no critical habitats, spawning grounds, rare species of fish or sport fishing opportunities found within Area H.

4.6.4.2 Habitat Protection Concerns

4.6.4.2.1 Fisheries Sensitive Zones

No Fisheries Sensitive Zones (FSZs) were found within Area H during Phase IV of this inventory.

4.6.4.2.2 Fish Above 20% Gradients

There were no reaches in Area H with gradients greater than 20%.

4.6.4.2.3 Restoration and Rehabilitation Opportunities

There were no features for possible restoration and rehabilitation noted in Area H during the 1998 field sampling.

4.6.5 Fish-Bearing Status

4.6.5.1 Fish-Bearing Reaches

The following reaches were sampled in June and July of 1998 and were subsequently classified as fish bearing. Criteria taken into consideration for this classification were the absence of barriers to fish passage and fish presence. Some sites were assumed to contain fish even though the habitat appeared inadequate and/or no fish were captured. This assumption was made due to low water flows encountered during Phase IV in 1998 and the possibility that fish may use these reaches at other times of the year or if more favorable conditions exist. These sites are assumed to contain fish until follow-up sampling can confirm the presence or absence of fish. All fish bearing sites are summarized below in Table 28.

Table 28. Summary of Data from Fish Bearing Reaches in Area H.

Site	Watershed Code	Reach	Species	Channel		Proposed Riparian Class	Follow-Up Sampling (Y or N)	Comments
				Width (m)	Site Gradient (%)			
635	180-191300-49300	1	RB	2.2	1.3	S3	N	Classified as S3 due to presence of RB and large amount of beaver activity.
613	180-191300-49300	11	NFC	-	-	S3	N	Not sampled due to the wetland but it is assumed that fish are present due to downstream presence of RB. Re-sample in better habitat at site 615.
615	180-191300-49300	12	NFC	1.8	2.8	S3	Y	Fish assumed due to downstream presence of RB. Classified as S3 due to beaver activity in the area.

Site	Watershed Code	Reach	Species	Channel		Proposed Riparian Class	Follow-Up Sampling (Y or N)	Comments
				Width (m)	Site Gradient (%)			
619	180-191300-49300	14	NFC	2.3	0.1	S3	Y	Difficult to electroshock due to wetland conditions. Fish assumed due to downstream presence of RB.
612	180-191300-49300-15700	2	DNS	1.1	-	S4	Y	Dry/intermittent channel with a gravel substrate.
618	180-191300-49300-60300	1	DNS	2.2	0.5	S3	Y	No fish were captured but was classified as fish bearing until follow-up sampling can occur.
634	180-191300-49300-14664	1	RB	1.5	1.0	S3	N	Rainbow trout captured in good rearing habitat.

Fish Codes		
DNS-did not sample	NFC-no fish caught	RB-rainbow trout

- Site 613 located in Reach 11 of Unnamed Creek (180-191300-49300) was accessed using a two-wheel drive vehicle. This was a wetland area with fines as the dominant substrate. There was a lot of beaver activity in this mainstem and the pond contained abundant instream vegetation, such as duckweed and water logged pine and alder. No fish were captured using minnow traps and this reach should not be re-sampled because upstream from this reach, Site 615, contained better habitat. This subsequent site should be re-sampled to determine if fish are able to utilize these upper reaches. Until this reach can be re-sampled it is assumed that fish are able to access this reach due to the downstream presence of rainbow trout.

4.6.5.2 Non-Fish-Bearing Reaches

The following reaches, surveyed in June and July of 1998, in Area H have been classified as non-fish bearing. The reason for this classification is due to the no visible channel (NVC) designation all of the sites, which were generally well vegetated, with no scoured bed material. All non-fish bearing reaches are summarized below in Table 29.

Table 29. Summary of Data from Non-Fish Bearing Reaches in Area H.

Site	Watershed Code	Reach	Site Gradient (%)	No Visible Channel (Y or N)	Comments
614	180-191300-49300-15700	4	-	Y	Open grassland with no water. Completely vegetated with no visible channel.
616	180-191300-49300-29766	1	-	Y	No visible channel and no fish habitat.
611	180-191300-49300-18135	1	-	Y	Grassland/marsh area with no scoured bed and no visible channel.
617	180-191300-49300-14664	3	-	Y	Vegetated marsh area with no scoured bed material and no visible channel.

- Site 611 (180-191300-49300-18135) was located in Reach 1 of a first order stream that was accessed using a two-wheel drive vehicle. The reach consisted of a grassland area that contained some willow and sedge. On either side of this wetland/grassland, was a young pine forest. There was no scoured bed material and no visible channel found throughout this area.
- Site 614 was located in Reach 4 of Unnamed Creek (180-191300-49300-15700) a first order section of a second order stream that was accessed using a two-wheel drive vehicle. This area consisted of open grassland with willow, sedge and scrub brush. There was no scoured bed material and no visible channel found at this site.
- Site 616 (180-191300-49300-29766) was located in Reach 1 of a first order stream that was accessed by two-wheel drive vehicle. This reach was characterized by a vegetated gully that had detritus in the bottom of the gully. This reach had no scoured bed material and was classified as NVC.
- Site 617 (180-191300-49300-14664) was located in Reach 3 of a second order stream and was accessed using a two-wheel drive vehicle. This reach was a wetland area restricted within an entrenched gully. There was some water at the soil/vegetation interface but there were no scoured bed materials and no visible channel.

4.6.5.3 Follow-Up Sampling

The sites listed in Table 30 require follow-up sampling due to biophysical conditions such as the presence of water or scoured bed material and the possible presence of fish upon further sampling. This sampling should be conducted in early summer when water levels are sufficient to sample with either electrofishing or other methods such as minnow traps.

Table 30. Sites Within Area H Requiring Follow-Up Sampling to Verify Fish Presence/Absence.

Site	Watershed Code	Reach	Timing	Suggested Methods	Comments
615	180-191300-49300	12	June -July	EF and MT	Appears to have good fish habitat but no fish were captured using minnow traps or electrofishing.
619	180-191300-49300	14	June-July	EF and MT	Wetland area with poor fish habitat.
612	180-191300-49300-15700	2	June -July	EF and MT	Dry channel that should be sampled in spring or early summer to determine if seasonal water conditions exist.
618	180-191300-49300-60300	1	June-July	EF and MT	Wetland area with poor fish habitat.

- Site 612 was located in Reach 2 of Unnamed Creek (180-191300-49300-15700) and was accessed using a two-wheel drive vehicle. This site had a dry channel at the time of sampling and should be re-sampled during higher flows in the spring or early summer, to determine fish presence or absence.
- Site 615 was located in Reach 12 of Unnamed Creek (180-191300-49300) and was accessed using a two-wheel drive vehicle. There was some beaver activity throughout the mainstem, which may provide some fish habitat in the ponds although no fish were captured using minnow traps or electroshocking along the banks. This reach should be re-sampled to determine if fish are able to access and utilize this upper part of the mainstem.
- Site 618 (180-191300-49300-60300) was located in Reach 1 of a first order stream near the headwaters of the mainstem. This reach consisted of a wetland area with poor fish habitat. This reach should be re-sampled to determine fish presence or absence. The dominant substrate consisted of fines and some detritus. No fish were captured using electroshocking or minnow traps, but two water shrews were captured in one of the minnow traps.
- Site 619 was located in Reach 14 of Unnamed Creek (180-191300-49300) and was accessed using a two-wheel drive vehicle. No fish were captured in minnow traps or while electroshocking. The reach was located in a wetland

area with poor fish habitat and beaver ponds. There was a lot of instream vegetation, including sedge and duckweed.

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