

Acknowledgments

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Executive Summary

In the summer of 1996, Triton Environmental Consultants Ltd. was contracted by West Fraser Mills Ltd., Skeena Sawmills Division to perform reconnaissance level stream inventories of 17 watersheds within TFL 41 and FL A16820. This report describes the findings of the reconnaissance level stream inventory of the Dahlaks watershed.

Dahlaks Creek flows northwest to join the Dala River approximately 4 km upstream from the ocean at Kildala Arm. Five reaches on Dahlaks Creek mainstem and four major tributaries were surveyed for this report. Dahlaks Creek provides anadromous fish habitat to a 6m waterfall barrier at ~800m upstream from the Dala River confluence. Pink, coho and chum salmon and Dolly Varden char were found in Reach 1 of the Dahlaks mainstem. Rainbow and cutthroat trout are likely in this reach as well. Upstream of Reach 1 Dolly Varden are found in the mainstem Reaches 2 - 4. A 6m waterfall barrier at the Reach 4 - 5 break is the upstream limit of fish use on the Dahlaks mainstem. Dolly Varden are found in the lower portion of each tributary stream, typically to the first impassable barrier.

Forest Practices Code RMA classification for the Dahlaks mainstem is S1 for Reaches 1 - 4 and S5 upstream. The lower portion of tributaries at 7 and 14 km are classified as S1, tributaries at 11 and 6.3 km are classified as S3 to the end of survey.

Readers should consult the accompanying photographs, SISS cards, fish catch data, and TRIM maps located in the appendices while reviewing the report.

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1. INTRODUCTION

Triton Environmental Consultants Ltd. (Terrace) was contracted by Skeena Sawmills in the summer of 1996 to inventory fish and fish habitat within 17 watershed areas of TFL 41 and FL A16820 (Table 1).

Table 1: Watersheds Assessed in this Study

Tree Farm Licence 41	Forest Licence A16820
1996	
Emsley Creek	West Hawkesbury (3 watersheds)
Wachwas Creek	Fraser Reach (4 watersheds)
Dahlaks	
Caribou Creek	
Upper Kemano River	
Eagle Creek	
Barrie Creek	
1997	
Davies	Kwinimass
Horetzky	Stagoo
Kowesas	
Wahoo	
1998	
Chist	
Wathl	

This report outlines the fish and fish habitat inventory of Dahlaks Creek.

1.1 Background

The *Forest Practices Code* (FPC) requires that extensive planning be undertaken to determine the present physical and biological characteristics of our forest ecosystems. Reconnaissance level stream inventories form an integral part of the planning process and guide the establishment of Riparian Management Areas.

Development planning is guided by the stream classification process, through which streams are assigned Riparian Management Areas based on fish presence and stream width. This can be a simple process, as only fish presence and stream width need to be known. However, a reconnaissance level stream inventory must provide more detailed information, such as relative abundance, species diversity and habitat descriptions at a watershed scale, that will not only aid in forest development planning, but be a valuable tool to resource planners in other fields.

1.2 Objectives

The objectives of this study were to:

- inventory and describe existing fish habitat conditions at a watershed level,
- provide classifications of all streams and major tributaries within the areas of the current or proposed 5 year development plan.

This study was a reconnaissance level inventory and is not intended to be the definitive study of fish and fish habitat. Habitat information and stream classifications will guide the development planning process. More detailed studies of fish habitat may be required at an operational level, to ensure that proposed harvesting and road building does not impact small streams and sensitive habitats.

1.3 Location

Dahlaks Creek mainstem is a 19 km long tributary to the Dala River, approximately 28 km southeast of Kitimat. Dahlaks Creek flows northwest and joins the Dala River approximately 4 km upstream from the ocean at Kildala Arm (Fig. 1).

The Dahlaks watershed contains 3 biogeoclimatic zones. These zones occur according to elevation and timber type and appear from the mouth of the creek to the headwaters as follows (MoF, 1988):

- Coastal Western Hemlock zone
 - Very wet maritime subzone (CWHvm)
 - Wet submaritime montane subzone(CWHws2)
- Mountain Hemlock zone
 - Maritime forested subzone(MHa)
- Alpine Tundra Zone (AT)

1.4 Study Area Description

Dahlaks Creek is an entrenched, low to moderate gradient coastal stream that drains 104 km² of the Kitimat Range in the Coast Mountains. The mountains that form the watershed boundary are capped by small glaciers and are up to 1600m high. The study area includes the Dahlaks mainstem and two major left bank tributaries (looking downstream) at 7 km and 14 km upstream of the mouth.

1.5 Access

Access into Reaches 1 - 3 on Dahlaks Creek is by logging road from Kildala Arm. Upper reaches in the Dahlaks are accessible by helicopter only.

1.6 Resource Use

The north side of the Lower Dahlaks has been partially logged into Reach 4, 9 km upstream of the mouth. A 50 ha cut block on the south side of Dahlaks Creek is near the confluence with the Dala River. The harvested area is comprised of 6 cut blocks, totaling ~ 370 ha which were harvested from 1993-1996. Seven cut blocks are planned for 1996 - 1999 totaling approximately 245 ha. These blocks (4 north, 3 south) are adjacent to Reaches 4 and 5, between 9 and 14 km upstream of the mouth (Skeena Sawmills, 1996). A logging road bridge crosses the Dahlaks in Reach 1, about 500m upstream of the Dala River.

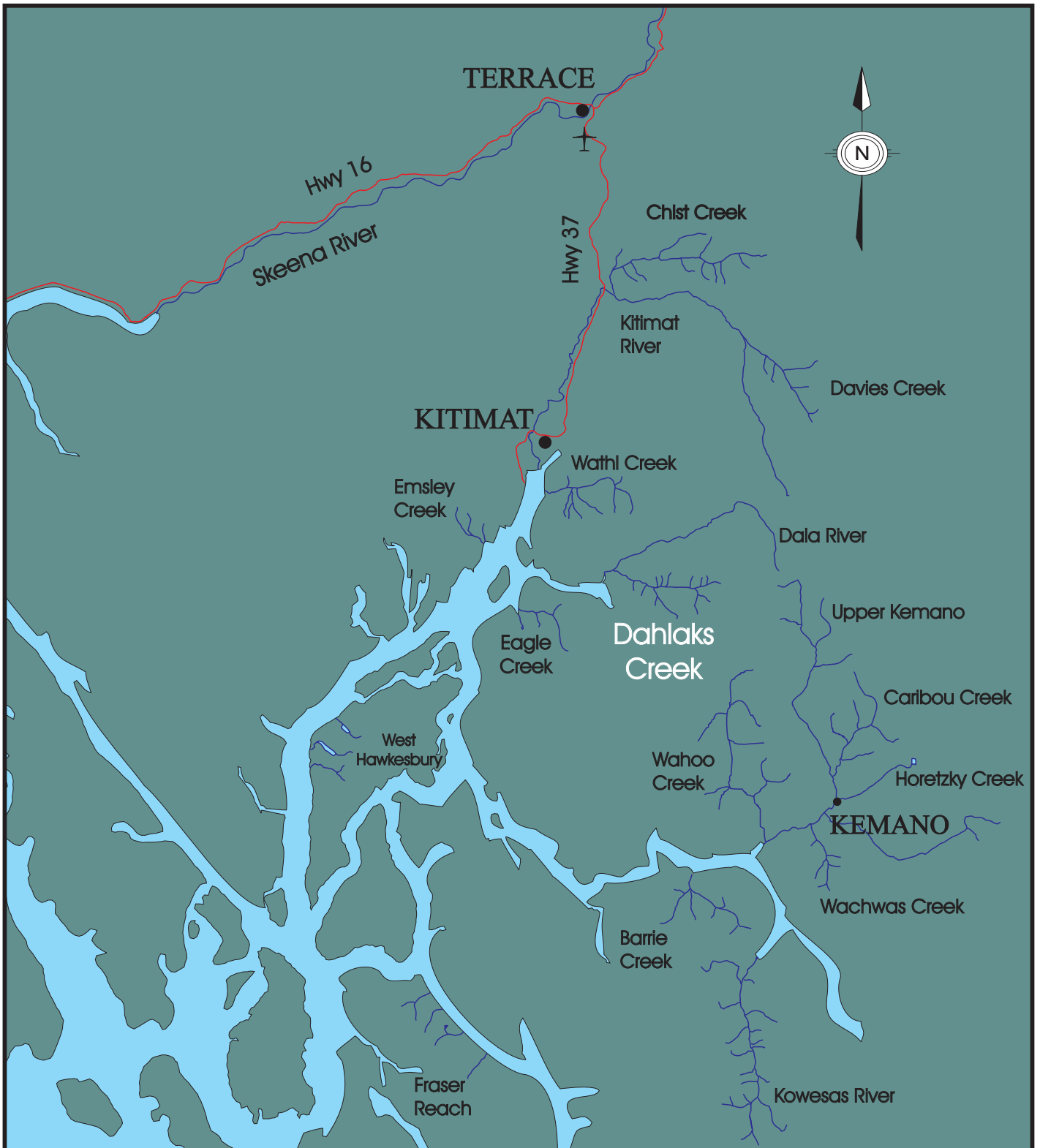


Figure 1: Study Area Map: Dahlaks Creek

0 30 km

Fish and Fish Habitat Inventory Project: TFL 41, FL A16820

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Environmental Consultants Ltd.

2. METHODS

2.1 Background Review

Prior to commencement of field work, available background information was reviewed. The purpose of this exercise was to review existing fish and fish habitat information and adjust the level of field work required to complete a reconnaissance level fish inventory.

2.2 Reach Break Analysis

All surveyed mainstem streams and tributaries were partitioned into reaches. Reaches were assigned during the background review and are based on fish access, gradient, stream confinement or other significant riparian, morphological or hydrological conditions. Reach breaks denote a significant change in one or more of these conditions. Locations of reach breaks were confirmed or modified based on ground or aerial surveys.

2.3 Field Assessments

The Dahlaks River was surveyed on June 21, September 9, October 8 and 16, 1996. Fish and fish habitat was assessed in the field using the stream inventory standards and procedures (MELP, 1995). Generally, the process we followed in the field was to:

- assess the watershed during a helicopter overflight to confirm reach boundaries, identify access points, and photograph reaches at a watershed scale.
- assess each reach on the ground by completing a SISS card, sampling for fish presence, and photographing representative habitats and reach breaks.

Stream widths were determined by measuring the channel width with a tape measure, or by visual estimate. At least 6 measurements were made within each reach, each one at least one channel width distance apart. These measurements were averaged to determine the average stream width.

2.4 SISS Cards

Standard DFO/MELP Stream Inventory Summary System Cards (SISS) cards were completed for each reach sampled, and entered into the MS Access database program supplied by MELP. A hardcopy printout of these cards is in Appendix II. These digital data are on file with MELP and Triton.

2.5 Fish Sampling

Fish presence, species diversity and size range (fork length) were determined by electrofishing at least 100m² of habitat in each reach using either a Smith Root Type VII electroshocker, or a Smith Root Model 12 electroshocker. Captured fish were keyed out to species (if necessary) using the *Field Key to the Freshwater Fishes of British Columbia* (RIC, 1994). Our ability to assess relative abundance of fish present in the Dahlaks was limited by difficult electrofishing conditions. Opportunities for safe access

into the stream channel for the electroshocker operator were limited (swift, deep water, canyons), and many fish shocked were immediately swept away or darted away from the operator. However, the water was absolutely clear, so these fish were readily seen if not captured. Gee-trapping was not a practical method of capturing fish due to weather constraints (poor weather limited our ability to fly into some reaches, and we chose not to set traps when it appeared weather would not allow us to retrieve them). As such, the data collected in fish sampling in Dahlaks Creek is limited to species diversity and size range.

2.6 RMA Classification

The field surveys and subsequent classifications are based on the following publications:

- FPC Regulations (MoF, 1995);
- Riparian Management Area Guidebook (MoF, 1995);
- Fish Stream Identification Guidebook (MoF, 1995).

RMA classification is determined through the procedure outlined in Figure 2 (RMA Guidebook).

No ←	Fish Stream or Community Watershed		→ Yes
↓			↓
Stream Width	Stream/Riparian Class	Stream Width	Stream/Riparian Class
> 3m	S5	> 20m	S1
≤ 3m	S6	> 5 - ≤ 20m	S2
		1.5 - ≤ 5m	S3
		< 1.5m	S4

Figure 2: Process for Stream and Riparian Management Area Classification.

Specific Riparian Management Areas (RMA) are designated for each stream class. The RMA adjacent to streams extends from the top of the stream bank to:

1. a slope distance as specified in Table 1, or;
2. the top of the inner gorge, or;
3. the outer edge of the active floodplain, or;
4. the outer edge of non classified wetlands or ponds contiguous with the RMA, whichever is greatest.

Table 2: Specified minimum RMA slope distances for stream riparian classes.

Riparian Class	Channel Width (m)	Reserve Zone Width (m)	Management Zone Width (m)	Total RMA Width (m)
S1 Large Rivers	> 100	0	100	100
S1	≥ 20	50	20	70
S2	> 5 - 20	30	20	50
S3	1.5 - 5	20	20	40
S4	< 1.5	0	30	30
S5	≥ 3	0	30	30
S6	< 3	0	20	20

2.7 Photography

Photography was used extensively to document existing conditions in the watershed. Two types of cameras were used: a Nikon N90, with a 20-40mm zoom lens, or a Ricoh ff-9 with a fixed 35mm lens. Film media was either Sensia 100ASA slide or Kodak Royal Gold 100 ASA print. All images were scanned onto CD ROM and have been forwarded to MELP.

2.8 Water Quality Testing

Water quality testing for this project was limited to measuring pH (with a LaMotte waterproof pH Tester 2) and conductivity (with a LaMotte TDS Tester 3). Results of measurements are noted on the SISS cards in Appendix II. Each meter was calibrated prior to use at each site with standard manufacturer issued calibration solutions.

2.9 Wildlife Observations

Amphibians observed or captured during the fish sampling process were identified and other wildlife signs or observations were noted. However, the focus of this survey was to inventory fish and fish habitat and no special efforts were made to inventory wildlife or wildlife habitat.

2.10 Mapping

Mapping base is 1:20,000 scale Terrain Resources Information Management (TRIM). A PC based version of Arc View was used to label fish distribution, important habitat, sampling sites, reach breaks, barriers and stream classification. A hardcopy map is in Appendix IV, and digital TRIM maps are on file with Triton and MELP.

3. RESULTS

3.1 Background Review

Data or data sources identified in our review of background information are shown in Table 2.

Table 3: Data and data sources identified in the background review.

Stream Name:	Dahlaks Creek	Watershed Code	910 6612 0980
1:50,000 NTS Maps	103H/16	1:20,000 TRIM Maps	103H.089,.088
Aquatic biophysical maps	Yes - 103H/16 PK, DV	5 year development plan	West Fraser Ltd. TFL 41 1996 - 2001 Update: Dala, Dahlaks, Falls
AES stations	2: Kildala, Kildala Arm	SEDS database¹	
SISS review	1987: CO, PK, CM: Spawning to 0 - 0.8 km U/S DV: Observed at 12.9 km U/S		
FISS review	Same as SISS.		

¹ Salmon Escapement Data System (DFO)

Fish Species Codes: CO = coho, CH = chinook, CM = chum, PK = pink, SK = sockeye,
DV = Dolly Varden, RB = rainbow trout, CT = cutthroat trout, ST = steelhead, CC = Sculpins.

3.2 Assessment of Stream Reaches

Our survey identified:

- 6 reaches in the Dahlaks mainstem,
- 1 reach in an un-named right bank tributary at 6.3 km,
- 2 reaches in an un-named tributary at 7 km,
- 1 reach in an un-named tributary at 11 km,
- 1 reach in an un-named tributary at 14 km.

The results of our surveys of these reaches are described below.

3.2.1 Reach 1

Site #	Photos	Reach Length (km)	Gradient (%)	Average Channel Width (m)	Fish Presence	RMA Class
1	1,2,3,4,5	0.8	3	33.5	PK, CO, CM, DV, (CT, RB)	S1

Reach 1 of the Dahlaks River is fully accessible to salmon from the Dala River, up to a ~8m high waterfall barrier ~800m upstream of the Dala. Pink salmon were observed spawning (Sept. 19) downstream of the logging bridge, and SISS documents coho, chum and pink salmon in this reach. Fish presence sampling by electrofishing was not done due to the presence of spawning fish, and the known fish use of this reach (SISS). Abundant spawning gravel is present downstream of the logging bridge, but the channel is not stable, and bedload movement likely limits the spawning potential of this area.

Upstream of the logging bridge, deep pools and a stream substrate of boulders and large cobble provide excellent rearing habitat, but no spawning habitat.

3.2.2 Reach 2

Site #	Photos	Reach Length (km)	Gradient (%)	Average Channel Width (m)	Fish Presence	RMA Class
N/A	6	4.2	5	25 (est)	DV (CO)	S1

Reach 2 is not accessible to anadromous fish due to the 8m waterfall barrier at its downstream end. The reach is entrenched and has numerous small cascades, and plunge pools. The reach was not sampled for fish presence as the stream channel was not accessible. Dolly Varden were confirmed upstream and would be present in this reach, coho could potentially access this reach.

3.2.3 Reach 3

Site #	Photos	Reach Length (km)	Gradient (%)	Average Channel Width (m)	Fish Presence	RMA Class
2	9,10	2.5	5	21	DV	S1

Reach 3 is similar to Reach 2, but is less confined. Water velocity is fast, limiting habitat for fish. Electrofishing opportunities were limited to occasional accessible locations along the margins of the river. While no fish were captured, 4 fish (assumed Dolly Varden) were seen. Dolly Varden were caught and identified in Reach 4 upstream and in a tributary to Reach 3 at 6.3 km.

3.2.4 Reach 4

Site #	Photos	Reach Length (km)	Gradient (%)	Average Channel Width (m)	Fish Presence	RMA Class
4	7,8	7.0	2.5	30	DV	S1

Reach 4 is low gradient and provides good habitat for fish throughout. Dolly Varden were the only species caught.

3.2.5 Reach 5

Site #	Photos	Reach Length (km)	Gradient (%)	Average Channel Width (m)	Fish Presence	RMA Class
N/A	15	1.0	18	(est) 20	(NF)	S5

Reach 5 was not sampled for fish presence as the stream channel was not accessible. A 6m waterfall at the downstream end of the reach blocks fish access into the reach, and the rest of the reach is entrenched, steep and provides no habitat for fish. Another 6m waterfall occurs in the upper section of the reach. This reach is assumed to be a non-fish bearing reach due to lack of habitat capability, and documented fish absence upstream.

3.2.6 Reach 6

Site #	Photos	Reach Length (km)	Gradient (%)	Average Channel Width (m)	Fish Presence	RMA Class
10		4.5	3	(est)7.4	NF	S5

Reach 6 is in the headwaters of the Dahlaks (elevation ~ 800m) and does not appear to support fish. Fish access from downstream is blocked by waterfall barriers in Reach 5, and habitat capability is limited by relatively steep gradient and high elevation (shorter growing season, colder water, extreme snow falls). 500m² of habitat was electroshocked (300 seconds of effort) at a water temperature of 7°C.

3.2.7 km 6.3 tributary

3.2.7.1 Reach 1

Site #	Photos	Reach Length (km)	Gradient (%)	Average Channel Width (m)	Fish Presence	RMA Class
3		1.4	4	3	DV	S3

This tributary enters the right bank of the Dahlaks, and provides good refuge habitat from the mainstem Dahlaks, though a 3m falls 30m upstream of the Dahlaks somewhat limits access for fish into the trib. The lower 150m of this tributary was surveyed on the ground, the remainder of the reach was assessed by low level aerial survey.

3.2.8 km 7 tributary

This tributary enters the left bank of the Dahlaks River 7 km upstream of the Dala. The channel is entrenched and quite active. We identified 2 reaches.

3.2.8.1 Reach 1

Site #	Photos	Reach Length (km)	Gradient (%)	Average Est. Channel Width (m)	Fish Presence	RMA Class
N/S		.15	16	25	DV	(S1)

This reach was not sampled for fish presence because of lack of access to the stream channel. Fish are assumed present up to a series of 2m and 5m waterfalls, about 150m upstream of the Reach 4 of the Dahlaks (where fish presence was documented). Stream width was estimated from the air and should be measured to confirm RMA class if timber harvesting is proposed near this short stream channel.

3.2.8.2 Reach 2

Site #	Photos	Reach Length (km)	Gradient (%)	Average Channel Width (m)	Fish Presence	RMA Class
11		1.0	12	23	(NF)	(S5)

This entrenched reach was assessed on October 6 during poor sampling conditions (heavy snowfall, 3°C water temperature). No fish were caught in a electroshocking effort of 341 seconds over 300 m² of

habitat at settings of (G),7 Hz, 600 volts and (K),11 Hz-900 volts. Fish are likely not present in this reach due to barriers downstream, steep cascade habitat (12%), and relatively high elevation (600m). If timber harvesting is planned near the stream channel, further sampling should be conducted to confirm fish absence.

3.2.9 km 11 tributary

Site #	Photos	Reach Length (km)	Gradient (%)	Average Channel Width (m)	Fish Presence	RMA Class
5	17	0.3	2	1.9	DV	S3

This stream enters the right bank of the Dahlaks approximately 11 km upstream of the mouth. It flows in an old channel of the Dahlaks from the toe of slope to the confluence. This reach provides good rearing habitat for Dolly Varden.

3.2.10 km 14 tributary

This reach enters the left bank of the Dahlaks just downstream of the waterfall barrier at Reach 4 - Reach 5 break. We identified 1 reach (Reach 1, sites 7 and 8), and 1 tributary to the reach (un-named tributary at UTM 9.547400.5965700, Site 9)). Site 6 is an *unmapped* distributary channel that leaves the left bank of Reach 1 and flows to the Dahlaks. Each of these reaches are described below.

3.2.10.1 *Reach 1*

Site #	Photos	Reach Length (km)	Gradient (%)	Average Channel Width (m)	Fish Presence	RMA Class
7- 8	11,12	1.5	4-5	25	DV	S1

Reach 1 is fully accessible from the Dahlaks. Its lower 500m consists of an active fluvial channel while upstream of this it is more confined. Fish can access the reach upstream for at least 1.5 km, upstream of this the channel rises quickly and fish habitat quality declines. We were not able sample for fish presence upstream of this point as poor weather restricted flying conditions.

3.2.10.2 *Site 6, un-mapped channel*

Site #	Photos	Reach Length (km)	Gradient (%)	Average Channel Width (m)	Fish Presence	RMA Class
6	18-22	1.2	1.5	3.4	DV	S3

This stable stream is a distributary channel that exits the left bank of Reach 1 of the Km 14 tributary. It is un-mapped, and the stream course we noted on the TRIM map is approximate only. It provides excellent stable habitat for Dolly Varden.

3.2.10.3 Un-named tributary at 9.547400.5965700 (Right bank trib of trib at Km 14).

Site #	Photos	Reach Length (km)	Gradient (%)	Average Channel Width (m)	Fish Presence	RMA Class
9	13,14	.2	22	9.1	DV	S2

This steep tributary provides good step pool habitat for Dolly Varden. It was surveyed up to a gradient barrier (200m upstream) above which it is too steep to support fish.

3.3 Fish Sampling

Specific fish catch data for Dahlaks Creek is in Appendix III. The following points summarize the fish populations of the watershed:

- Anadromous fish have access up to a waterfall barrier 800m upstream from the Dala, with pink, chum and coho salmon know to use the system for spawning.
- Dolly Varden are present throughout the system, up to a waterfall barrier 13km upstream from the Dala, and in tributaries up to the first main barriers.
- Dolly Varden are small, with a fork length range of 25mm to 135mm.

3.4 Wildlife Observations

No concerted effort was made to evaluate the wildlife values of the Dahlaks watershed. However, the following observations were made:

- An adult black bear was observed in Reach 3.
- Mountain goats were observed along the ridges of the watershed.
- Black bear and grizzly bear use of the riparian zone in Reach 1 is probably high due to the presence of anadromous salmon, though no direct observations were made.

Amphibians were not captured or observed during our survey, however no concerted effort was made to document amphibian presence.

4. SUMMARY

Dahlaks Creek provides anadromous fish habitat up to a waterfall barrier ~800m upstream from the Dala River confluence. Upstream of this, Dolly Varden were the only fish species found, and occurred in the mainstem up to a waterfall barrier ~14.2 km upstream from the Dala, and in the lower sections of tributary streams at 6.3, 7.0, 11.0 and 14.0 km.

Forest Practices Code RMA classification for the Dahlaks mainstem is S1 for Reaches 1 - 4 and S5 upstream. The lower portion of tributaries at 7 and 14 km are classified as S1; tributaries at 11 and 6.3 km are classified as S3 to the end of survey. A right bank tributary of the Km 14 tributary is classified as S2 and an unmapped distributary channel to the Km 14 tributary is classified as S3.

A minimum slope distance reserve zone of 50m and a management zone of 20m are required adjacent to S1 stream classifications, a 30m reserve zone and a 20m management zone are required adjacent to S2 classifications, a 20m reserve zone and a 20m management zone are required adjacent to S3 classifications, and a 30m management zone is required adjacent to S5 stream classifications.

4.1 Recommendations for Future Assessments

The Fish Stream Identification Guidebook indicates two fish sampling trials are required to establish fish absence. Follow-up sampling may be required in stream reaches where fish were not found, but have the potential to support fish. As well, future assessments may be needed for small streams that may not appear on 1:20,000 maps or were not assessed in this study, and for fisheries sensitive zones. The following table outlines the options for future assessments.

Table 4: Recommendations for Future Assessments

Stream Reach	Habitat Quality	Future Assessments	Priority	Comments
Km 6.3 trib.	Good low gradient stream for ~1400m.	Ground confirmation of upstream limit of fish distribution. Aerial assessment noted accessible habitat for 1400m.	Low	No timber harvest plans near this creek
Km 7.0 trib. Reach 2	Steep cascade habitat with downstream barriers.	Initial electroshocking done under adverse conditions for fish capture. Overnight Gee trapping recommended.	Low	No timber harvest plans near this creek
Km 14 trib., unmapped distributary.	Good low gradient stream with Dolly Varden present.	Mapping needed to locate this stream course. Existing development plans indicate a road and cutblock in the immediate vicinity.	High	Existing development plans indicate a road and cutblock in the immediate vicinity.

Table 4 (Cont'd).

Stream Reach	Habitat Quality	Future Assessments	Priority	Comments
Km 14 trib. Reach 1.	Steep cascade habitat	Dolly Varden caught, but upstream limit of distribution not confirmed. Stream quickly steepens past sample site (photo 12), and was not accessible during the field days due to poor weather. Development plans indicate harvesting planned on both banks of this tributary.	High	Existing development plans indicate a road and cutblock in the immediate vicinity.
Dahlaks mainstem, Reach 6	Low gradient habitat, but downstream barriers and high elevation limit the potential for fish.	Overnight Gee trapping to confirm fish absence.	High	Timber harvesting planned adjacent to the stream.

These future assessments could be accomplished in 2 field days. Further time may be required pending the level of detail required to map the Km 14 distributary channel.

5. DISCLAIMER

The Province and West Fraser Mills Ltd. have not accepted the contents of this product for the purposes of the Forest Practices Code, and reserve the right to dispute the validity of summarized results. The Province and Skeena Sawmills Ltd. do not necessarily agree with the classification, assigned to any individual stream reach, for use in logging plans, silviculture prescriptions or any other application.

6. REFERENCES

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Appendix I: Photographs

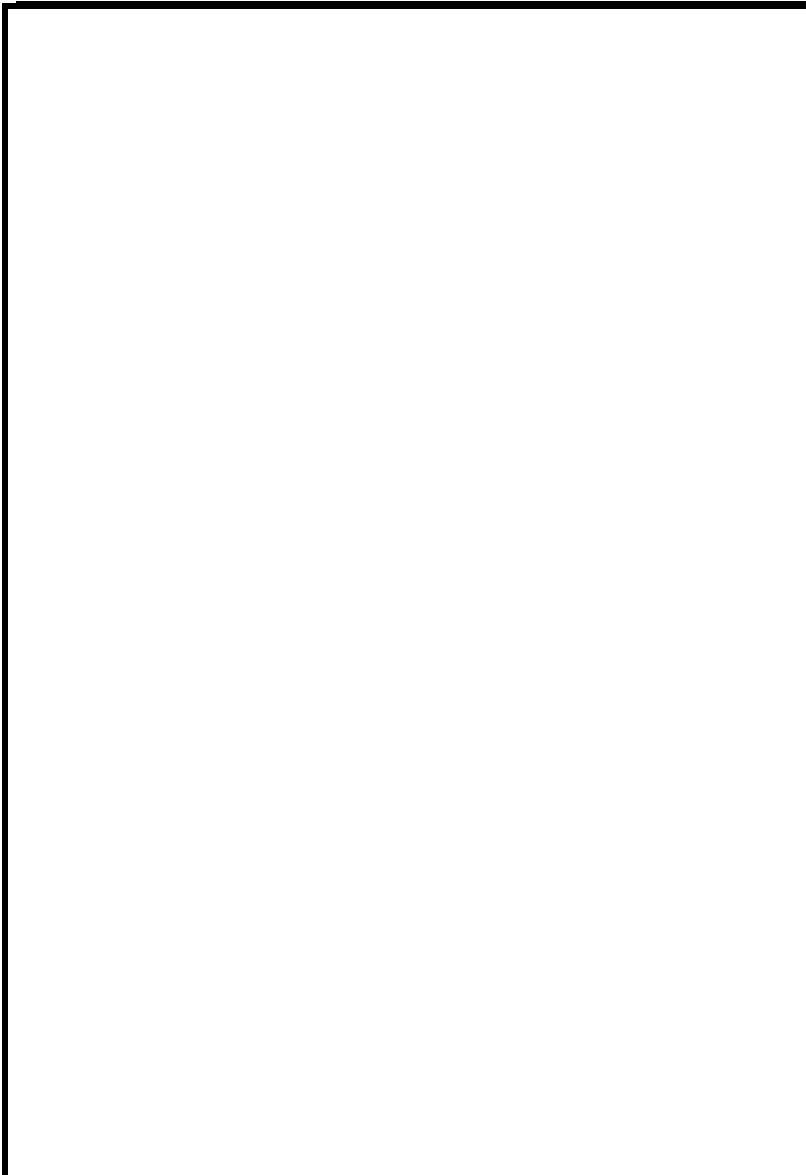


Photo 1: Reach 1, Site 1 Dahlaks Creek. D/S view from the logging bridge. Note the failing clay bank on the left. (CD 2295 #2)

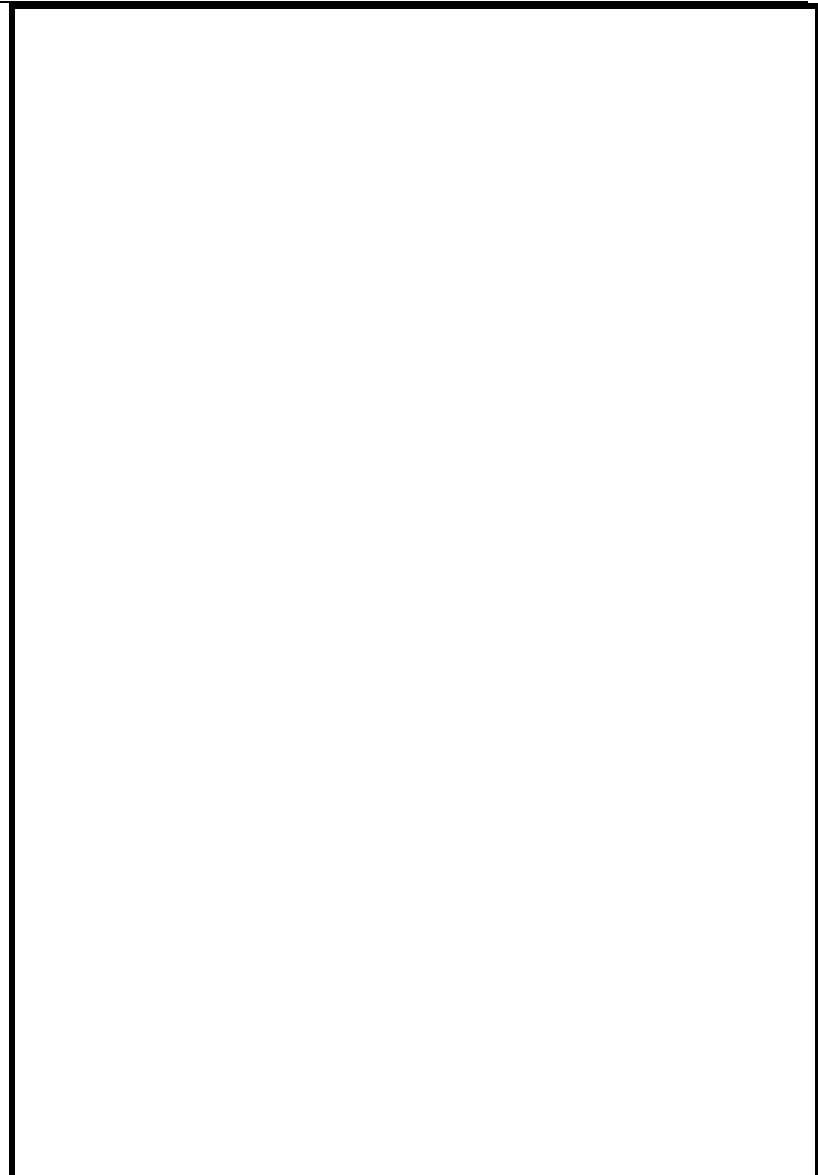


Photo 2: Reach 1, Site 1, Dahlaks mainstem. Upstream view from the logging bridge. (CD 2295 #3)

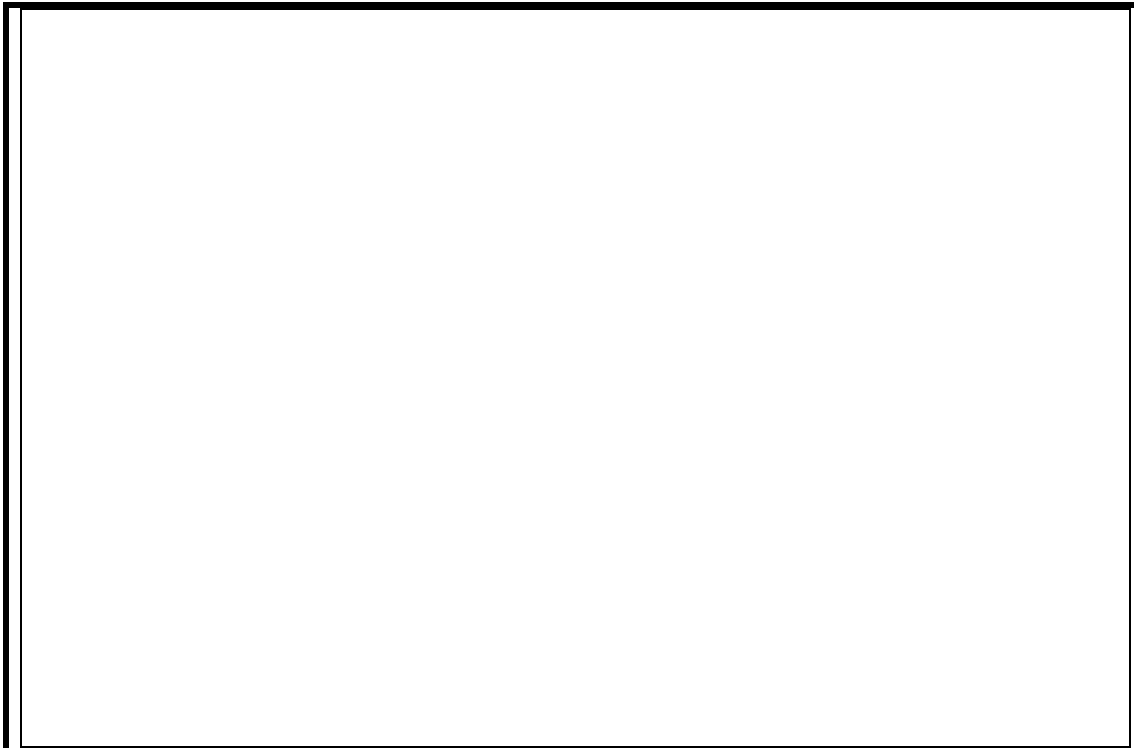


Photo 3: Reach 1 Site 1. Upstream view of boulder/ cobble habitat. (CD 2295 #4)



Photo 4: Reach 1 Site 1. Downstream view of pool habitat. (CD 2295 #5)

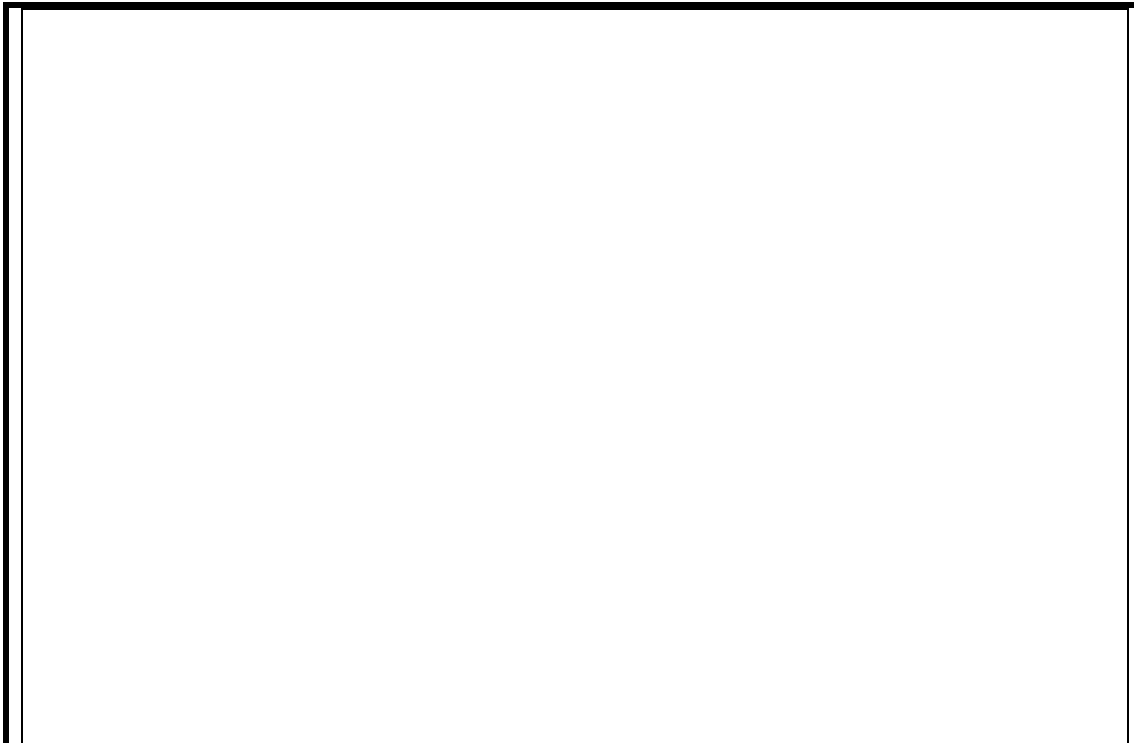


Photo 5: Reach 1-2 break. This 6m waterfall marks the upstream limit of anadromous fish use.(CD 2295 #1)



Photo 6: Reach 2. This entrenched reach was not sampled for fish presence due to poor access, but would support Dolly Varden based on their presence upstream. (CD 2295 #19)

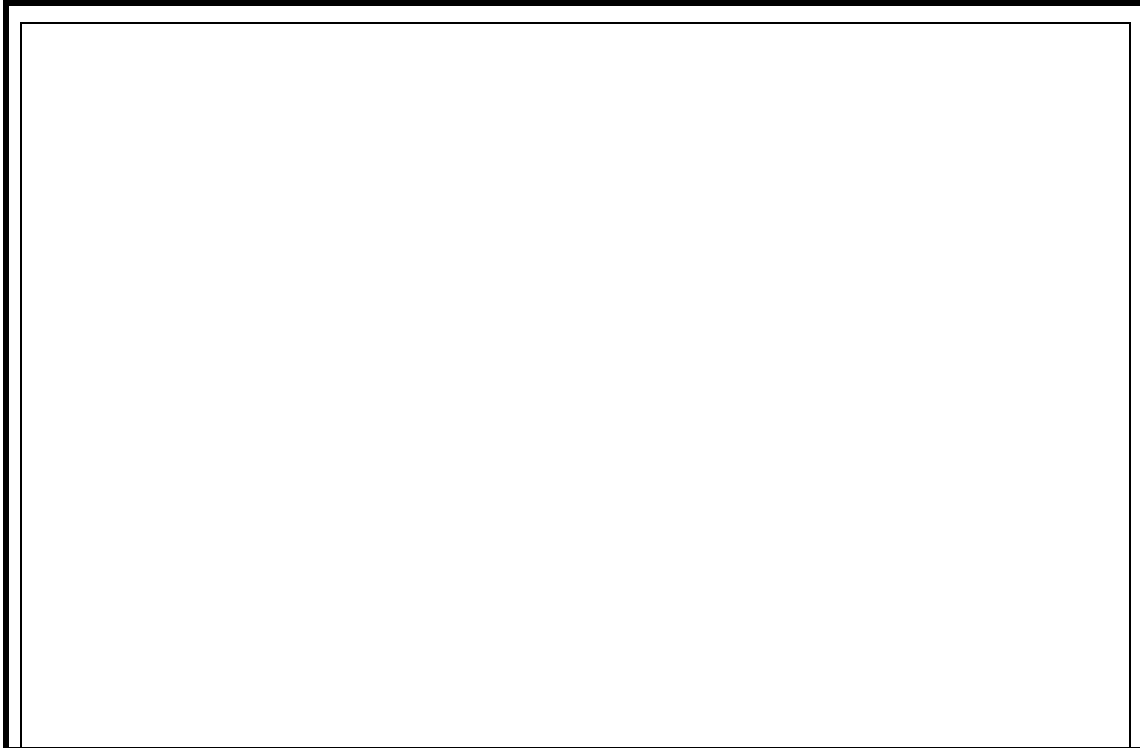


Photo 7: Reach 4. Aerial view (CD 2295 #10).



Photo 8: Aerial upstream view of waterfall barriers at Reach 4/5. Km 14 trib enters on the right. (CD 2295, #6)

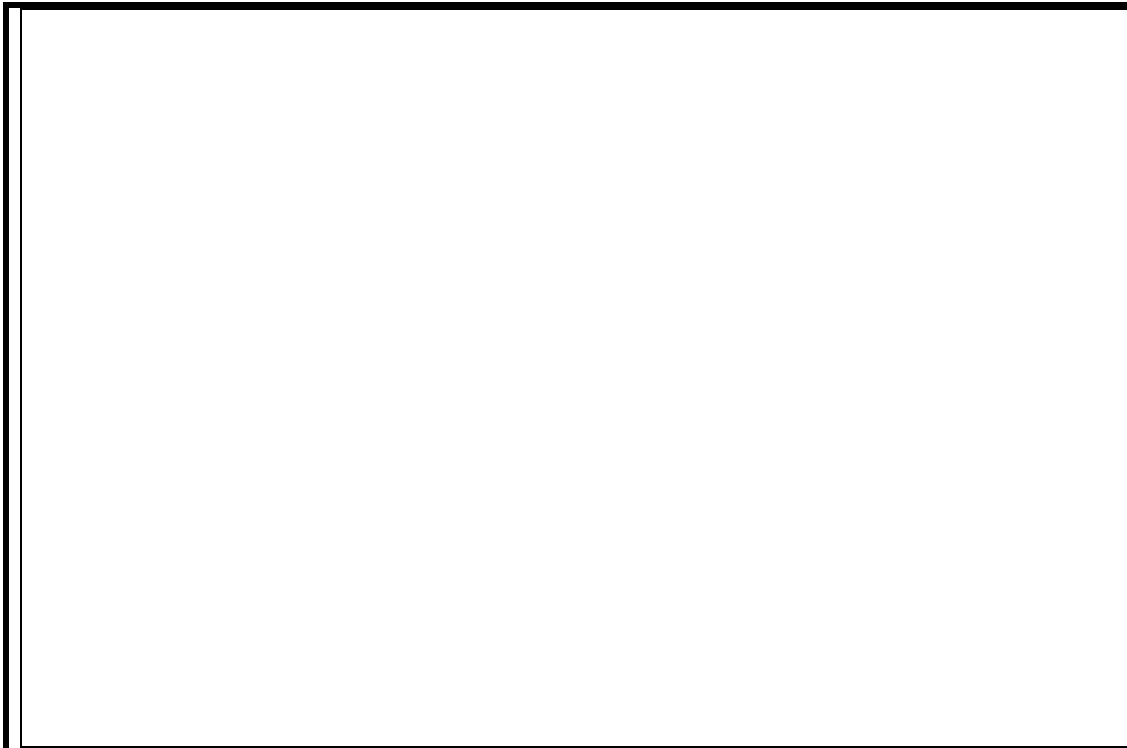


Photo 9: Dahlaks, Reach 4, Site 4. Downstream view. (CD 2295 #21)



Photo 10: Dahlaks, Reach 4, Site 4. Upstream view. (CD 2295 #22)

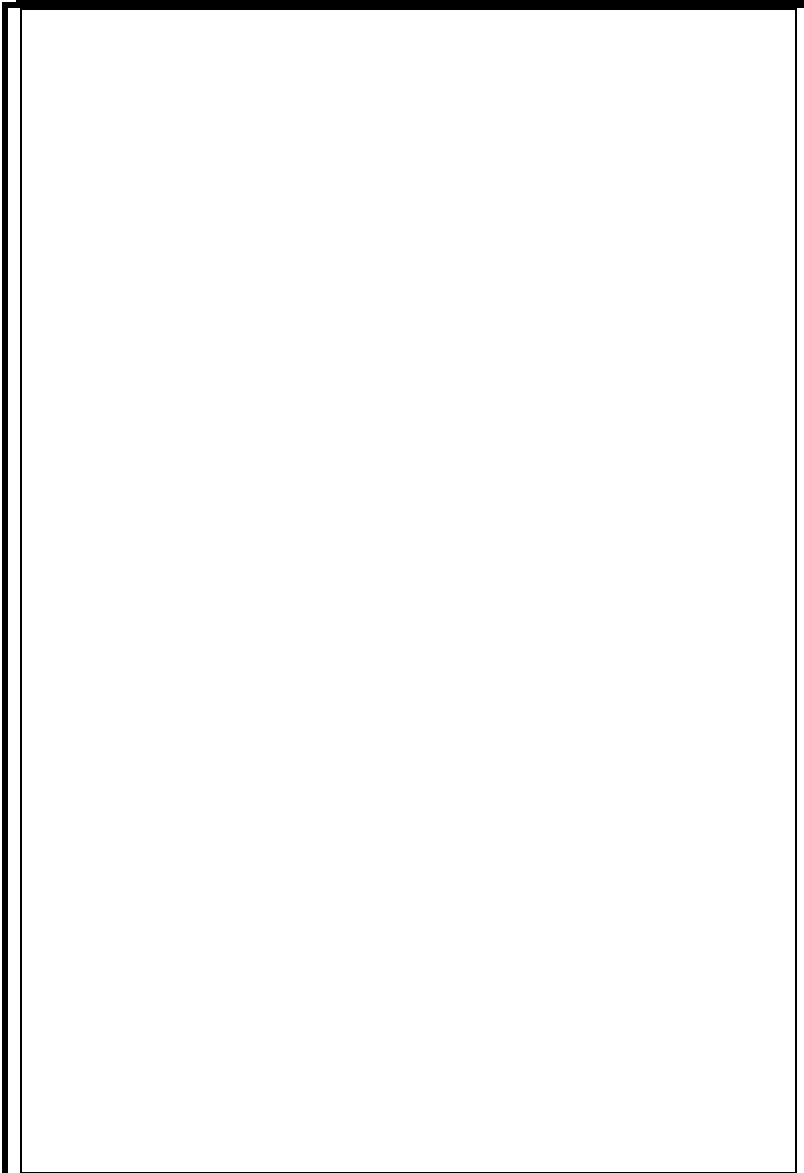


Photo 11: Km 14 Trib. Aerial upstream view of lower section (Site 7), just upstream of the Dahlaks. (CD 2295 #17)

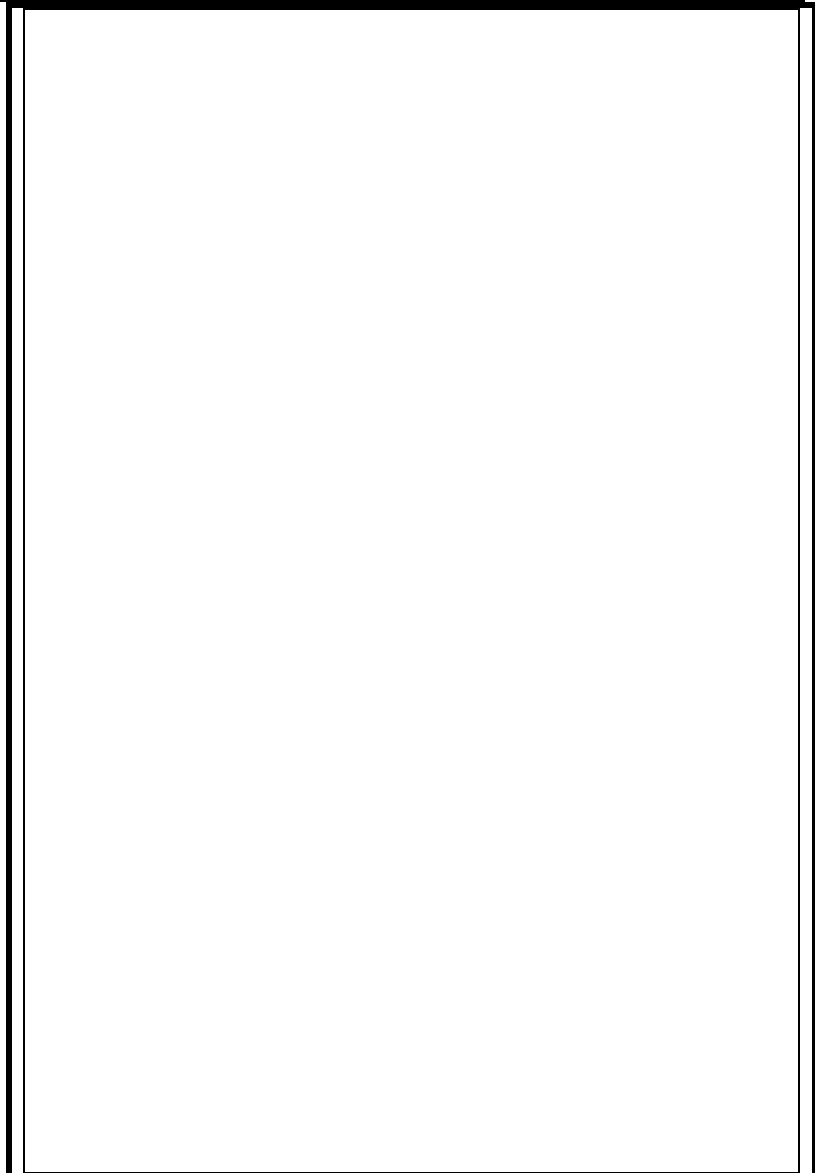


Photo 12: Km 14 Trib. Aerial upstream view of upper section, just upstream of Site 8. (CD 2295 #16)

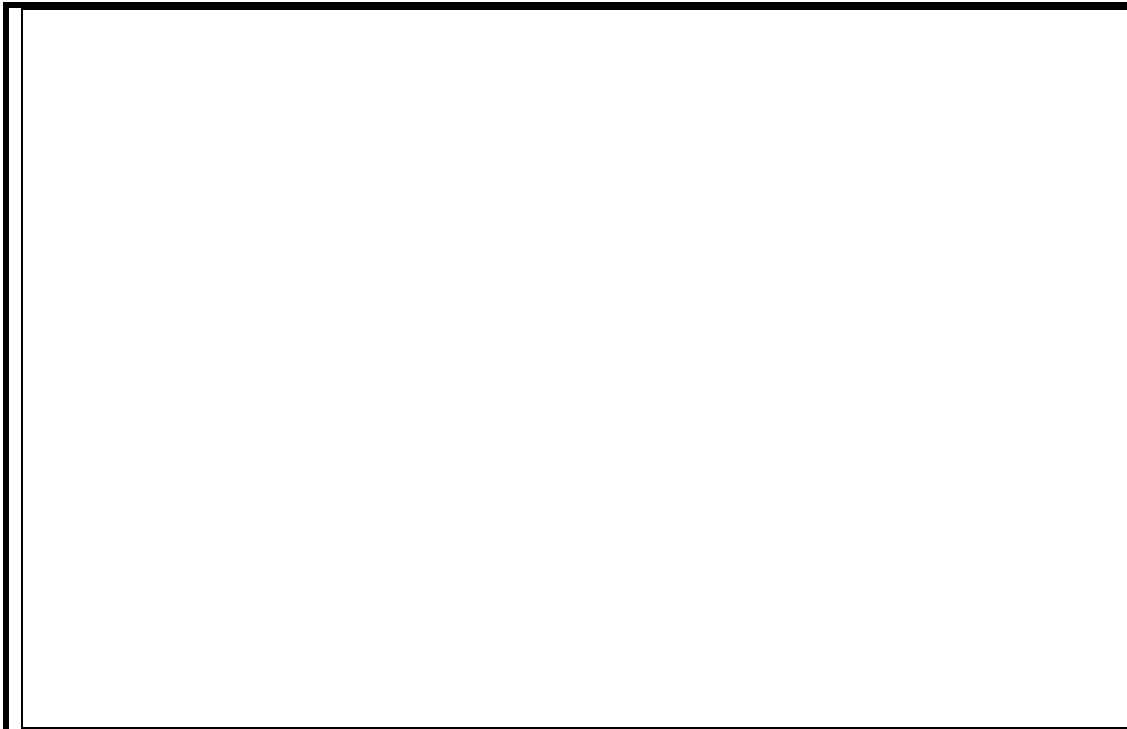


Photo 13: Right bank trib to Km 14 trib. Site 9. Upstream view. (CD 2295#14)



Photo 14: Right bank trib to Km 14 trib. Site 9. Downstream view. (CD 2295 #15)



Photo 15: Dahlaks, Reach 5. Aerial upstream view of waterfalls at upper end of Reach. (CD2295 #11)

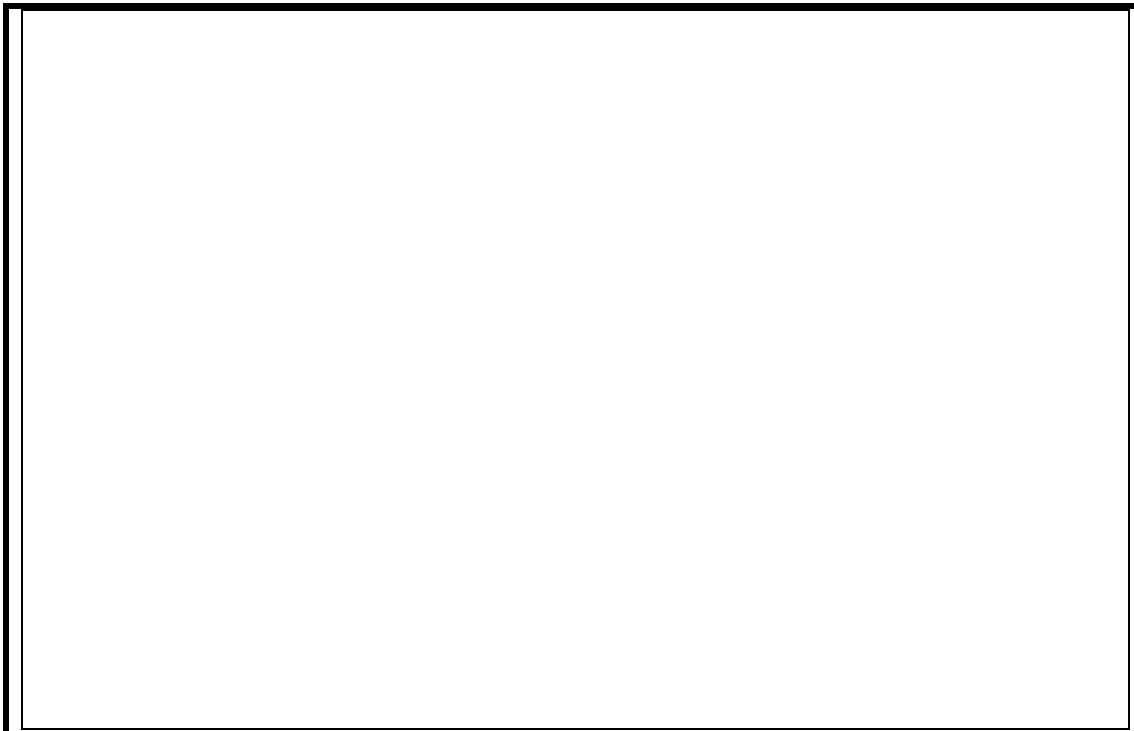


Photo 16: Dahlaks. Downstream view of headwater reach (upstream of study area). (CD2295 #12)

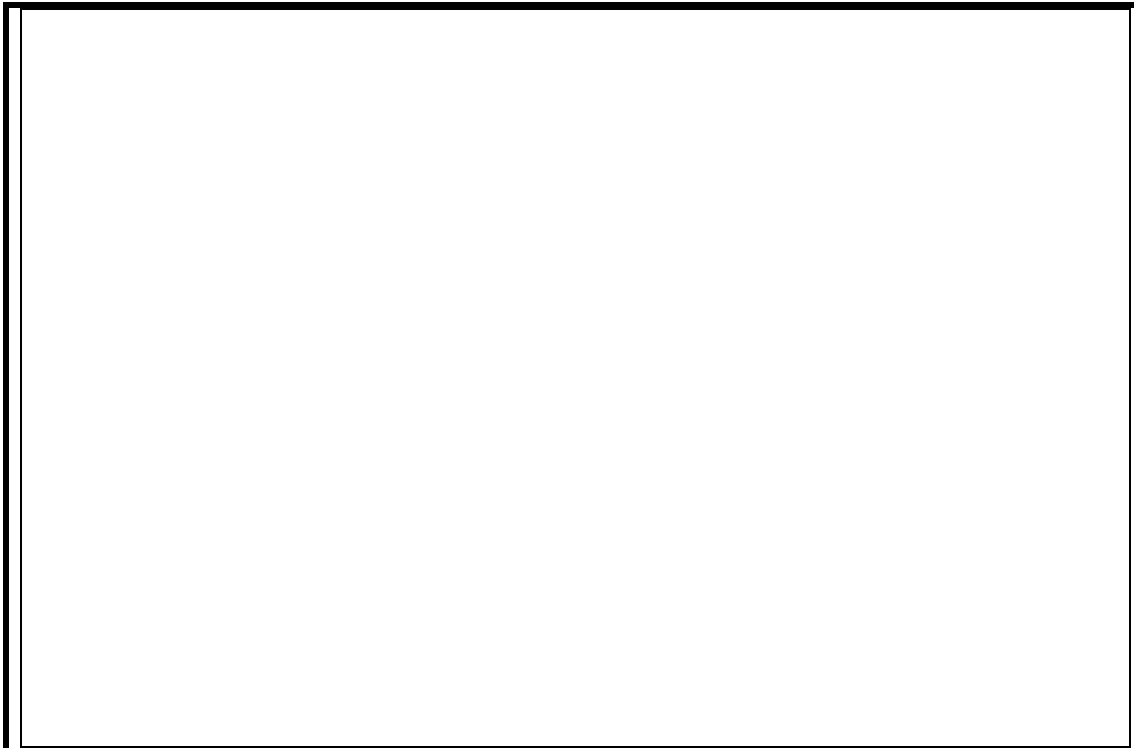


Photo 17: Km 11 trib, Site 5. D/S view of small channel flowing in an old channel of the Dahlaks. (CD2295 #20)

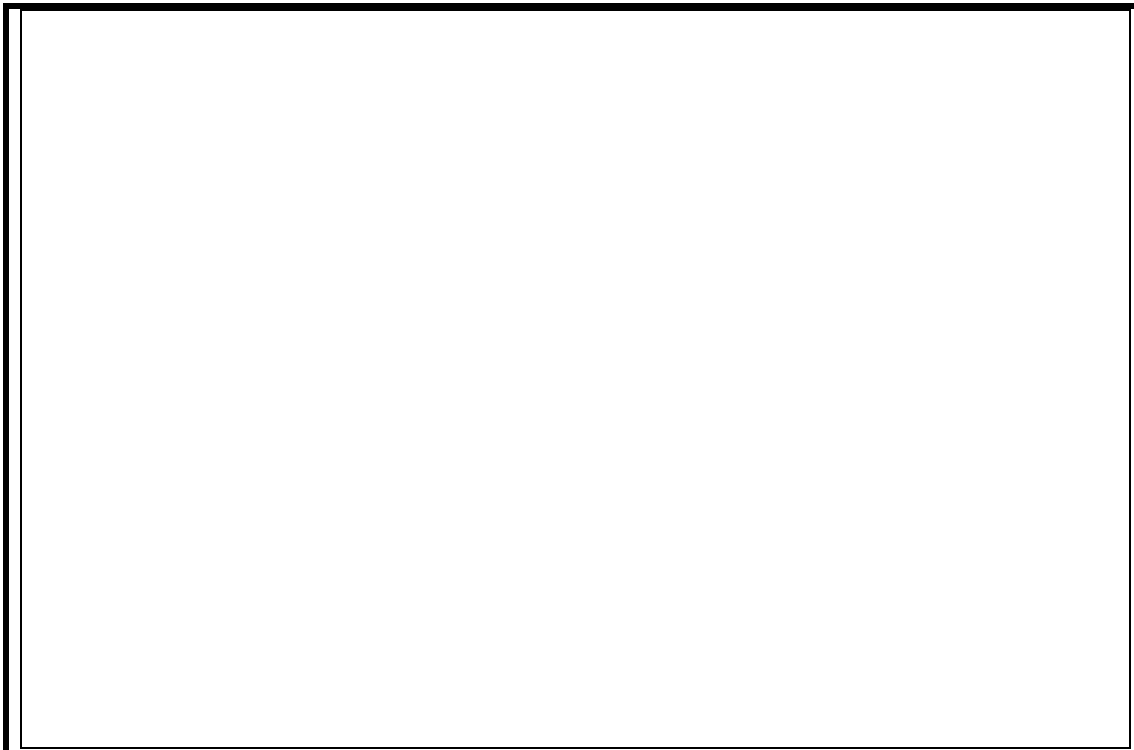


Photo 18: Km 14 trib, Site 6. D/S view to confluence with the Dahlaks. This trib does not appear on the TRIM map. (CD2295 #25)

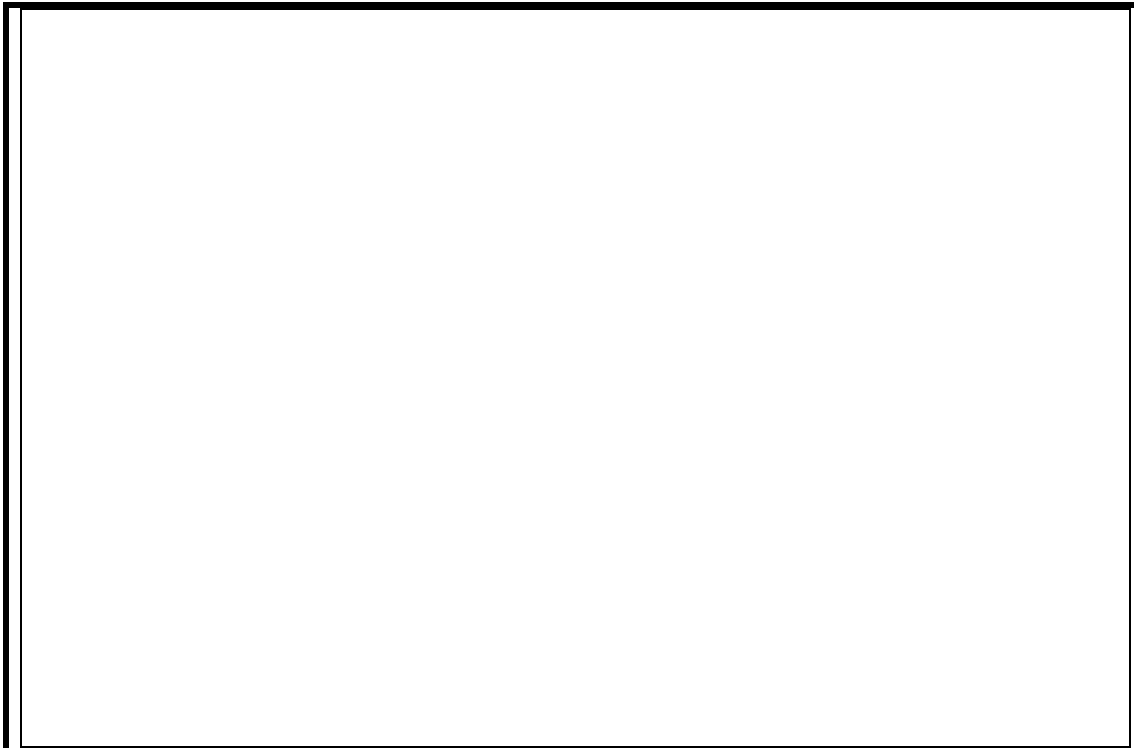


Photo 19: Km 14 trib, Site 6. U/S view . This trib provides good refuge habitat from the mainstem Dahlaks. (CD2295 #26)



Photo 20: Km 14 trib, Site 6. U/S view of typical habitat. (CD2295 #27)

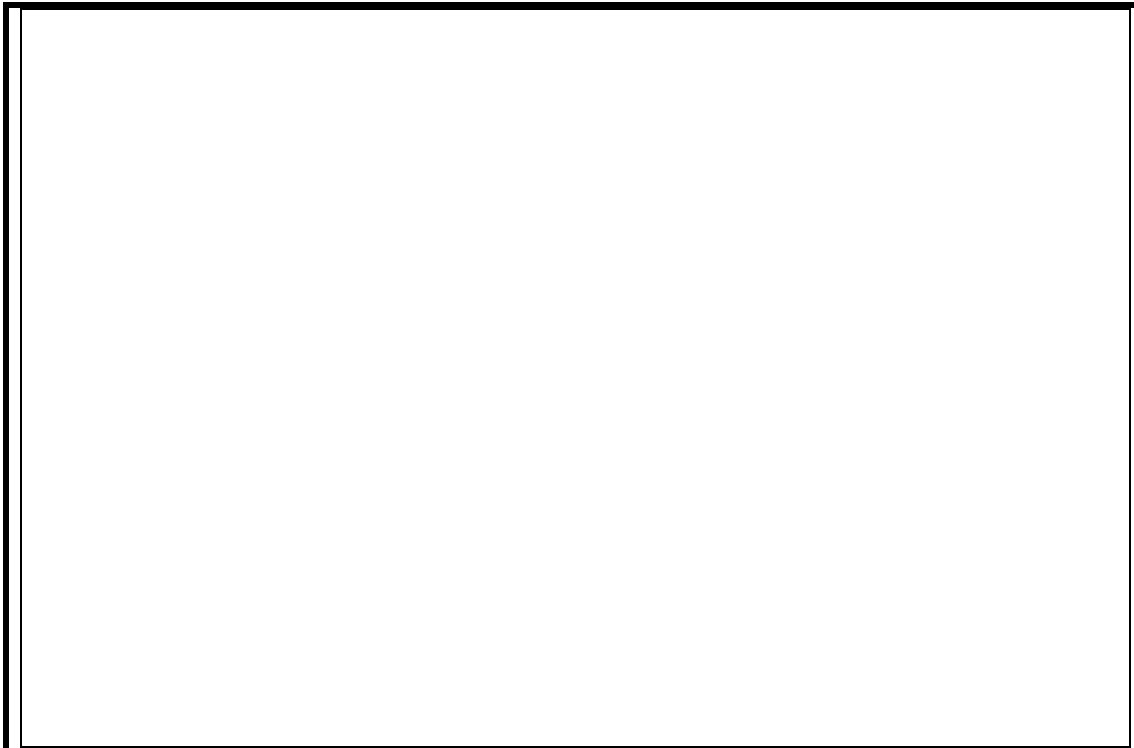


Photo 21: (CD2295 #28) Km 14 trib., Site 6. Upstream view of distributary (left) and tributary (right). Un-mapped on TRIM.

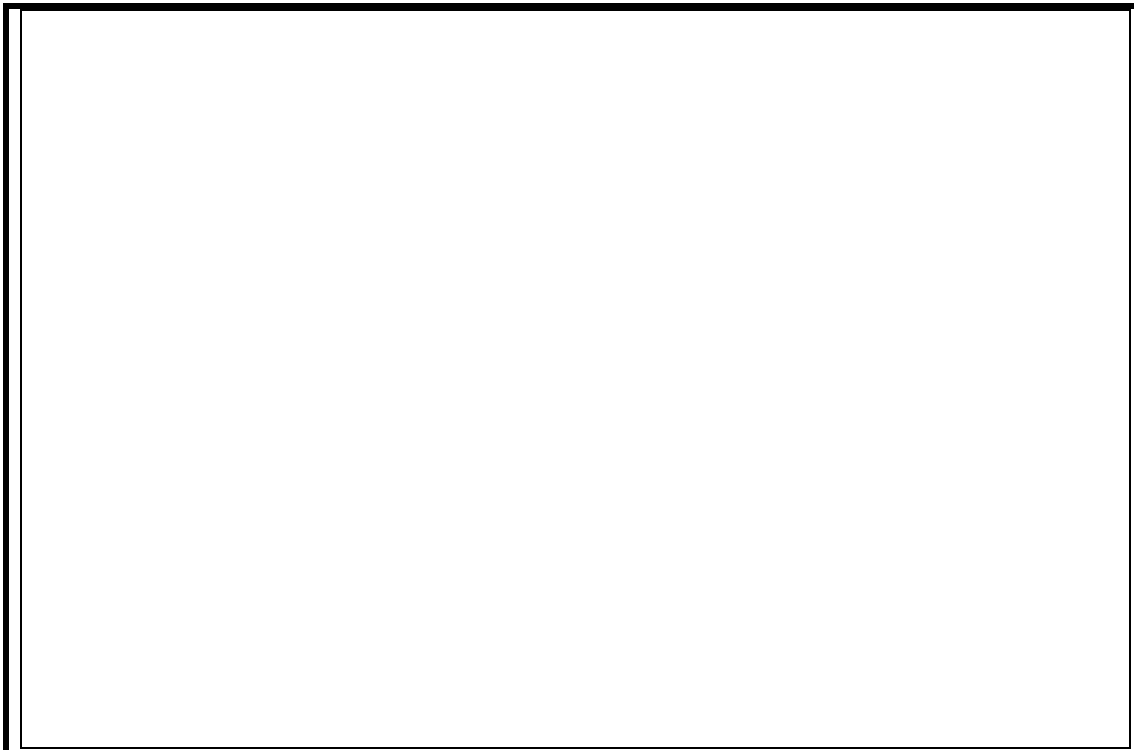


Photo 22: (CD2295 #29) Km 14 trib. Site N/A. Upstream view of tributary to distributary channel.

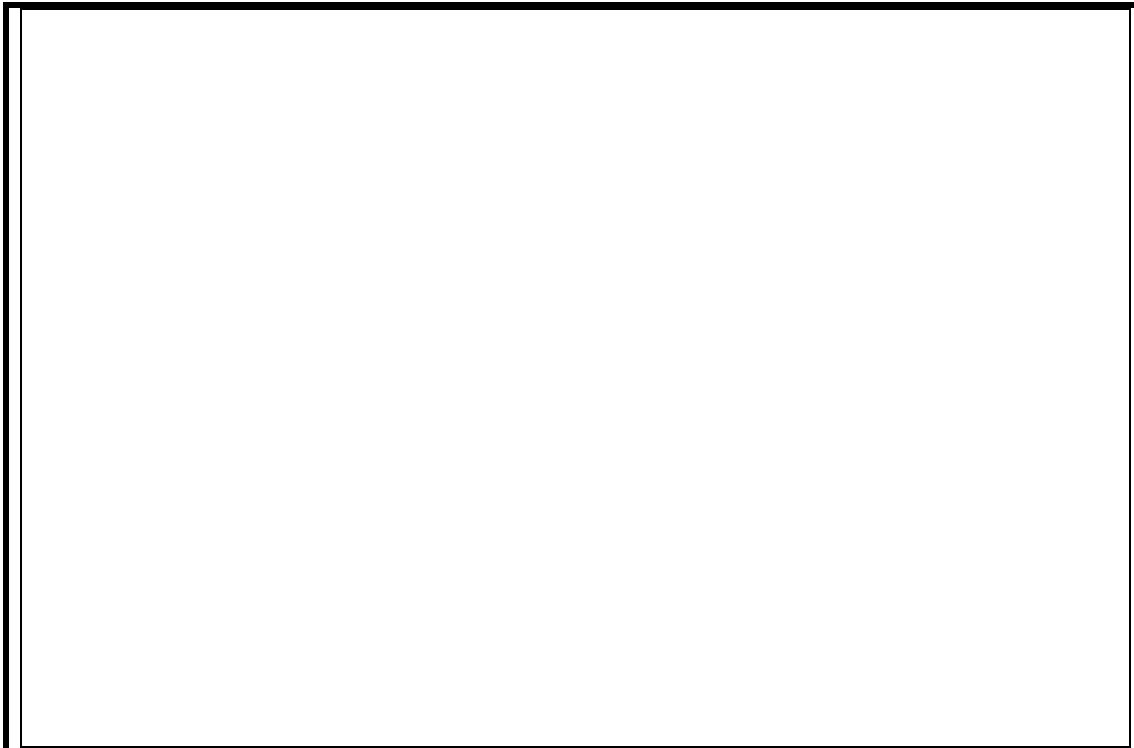


Photo 23: (CD2295 #30) Km 14 trib. Reach 1. Site 7. Upstream view, riffle habitat.



Photo 24: (CD2295 #31) Reach 3. Site 2. Upstream view.



Photo 25: (CD2295 #33) Reach 6. Site 10. Downstream view.

Report photo #	CD #	Image #	Watershed Code	Stream	Site	Reach	Caption	Date	Map #	Zone	Easting	Northing	UTM Method	Lense Type	Picture Type	Photo Direction
Date: Jun 21, Sept 19, Oct 8 & 16, 1996			Agency: Triton Environmental Consultants Ltd.													
Gaz: Dahlaks Creek			Crew: DSG, SNP, AKL, SKB													
Local: Dahlaks Creek			Reach Cards: Y Fish Cards: Y													
1	CD #2295	2	910-6612-098	Dahlaks Creek	S1	R1	D/S view from the logging bridge. Note the failing clay bank on the left.	Sep-19-96	103H.088	9	534700	5968900	map	wide	see caption	see caption
2	CD #2295	3	910-6612-098	Dahlaks Creek	S1	R1	Dahlaks mainstem. Upstream view from the logging bridge	Sep-19-96	103H.088	9	534700	5968900	map	wide	see caption	see caption
3	CD #2295	4	910-6612-098	Dahlaks Creek	S1	R1	Upstream view of boulder/ cobble habitat	Sep-19-96	103H.088	9	534700	5968900	map	wide	see caption	see caption
4	CD #2295	5	910-6612-098	Dahlaks Creek	S1	R1	Downstream view of pool habitat	Sep-19-96	103H.088	9	534700	5968900	map	wide	see caption	see caption
5	CD #2295	1	910-6612-098	Dahlaks Creek	S1	R1	Reach 1-2 break. This 6m waterfall marks the upstream limit of anadromous fish use	Sep-19-96	103H.088	9	534700	5968900	map	wide	see caption	see caption
6	CD #2295	19	910-6612-098	Dahlaks Creek		R2	Aerial view of entrenched reach	Sep-19-96	103H.088	9	536500	5967900	map	wide	see caption	see caption
7	CD #2295	10	910-6612-098	Dahlaks Creek		R4	Aerial view of reach 4	Sep-19-96	103H.089	9	543700	5966600	map	wide	see caption	see caption
8	CD #2295	6	910-6612-098	Dahlaks and Km 14 Trib	S2	R3	Aerial upstream view of waterfall barriers at Reach 4/5. Km 14 trib enters on the right.	Oct-16-96	103H.089	9	539700	5966700	map	wide	see caption	see caption
9	CD #2295	21	910-6612-098	Dahlaks Creek	S4	R4	Downstream view	Jun-21-96	103H.089	9	544000	5966600	map	wide	see caption	see caption
10	CD #2295	22	910-6612-098	Dahlaks Creek	S4	R4	Upstream view	Jun-21-96	103H.089	9	544000	5966600	map	wide	see caption	see caption
11	CD #2295	17	910-6612-098	Km 14 Trib	S7	R1	Aerial upstream view of lower section (Site 7), just upstream of the Dahlaks	Jun-21-96	103H.089	9	547200	5966400	map	wide	see caption	see caption
12	CD #2295	16	910-6612-098	Km 14 Trib	S8	R1	Aerial upstream view of upper section, just upstream of Site 8.	Nov-21-96	103H.089	9	547300	5965800	map	wide	see caption	see caption
13	CD #2295	14	910-6612-098	RB trib on Km 14 Trib	S9	R1	Upstream view	Oct-08-96	103H.089	9	547400	5965700	map	wide	see caption	see caption
14	CD #2295	15	910-6612-098	RB trib on Km 14 Trib	S9	R1	Downstream view	Oct-08-96	103H.089	9	547400	5965700	map	wide	see caption	see caption
15	CD #2295	11	910-6612-098	Dahlaks Creek		R5	Aerial upstream view of waterfalls at upper end of Reach	Sep-19-96	103H.089	9	547000	5966600	map	wide	see caption	see caption
16	CD #2295	12	910-6612-098	Dahlaks Creek			Downstream view of headwater reach (upstream of Site 8).	Sep-19-96	103H.089	9	549600	5967600	map	wide	see caption	see caption
17	CD #2295	20	910-6612-098	Km 11 Trib	S5	R1	D/S view of small channel flowing in an old channel of the Dahlaks	Jun-21-96	103H.089	9	544000	5966600	map	wide	see caption	see caption
18	CD #2295	25	910-6612-098	Km 14 Trib	S6	R1	D/S view to confluence with the Dahlaks. This trib does not appear on the TRIM map	Jun-21-96	103H.089	9	547000	5966500	map	wide	see caption	see caption
19	CD #2295	26	910-6612-098	Km 14 Trib	S6	R1	U/S view	Jun-21-96	103H.089	9	547000	5966500	map	wide	see caption	see caption
20	CD #2295	27	910-6612-098	Km 14 Trib	S6	R1	U/S view of typical habitat	Jun-21-96	103H.089	9	547000	5966500	map	wide	see caption	see caption
21	CD #2295	28	910-6612-098	Km 14 Trib	S6	R1	Upstream view of distributary (left) and tributary (right). Un-mapped on TRIM.	Jun-21-96	103H.089	9	547000	5966500	map	wide	see caption	see caption
22	CD #2295	29	910-6612-098	Km 14 Trib			Site N/A. Upstream view of tributary to distributary channel.	Jun-21-96	103H.089	9	547000	5966500	map	wide	see caption	see caption
23	CD #2295	30	910-6612-098	Km 14 Trib	S7	R1	Upstream view, riffle habitat	Jun-21-96	103H.089	9	547200	5966400	map	wide	see caption	see caption
24	CD #2295	31	910-6612-098	Dahlaks Creek	S2	R3	Upstream view.	Oct-16-96	103H.089	9	539700	5966700	map	wide	see caption	see caption
25	CD #2295	33	910-6612-098	Dahlaks Creek	S10	R6	Downstream view.	Oct-08-96	103H.089	9	548900	5966700	map	wide	see caption	see caption
	CD #2295	7	910-6612-098													
	CD #2295	8	910-6612-098													
	CD #2295	9	910-6612-098													
	CD #2295	13	910-6612-098													
	CD #2295	18	910-6612-098													
	CD #2295	23	910-6612-098													
	CD #2295	24	910-6612-098													
	CD #2295	32	910-6612-098													

Appendix II: SISS Habitat Data (hard copy stream cards)

Appendix III: Fish Catch Data

Fish Species Summary: Dahlaks Creek

Site	Reach	Species	Number	Length (mm)	Method	Comments
1	1	DV	1	200 - 300	VO	partial carcass recovery along the stream bank.
1	1	PK	30	adults	VO	
2	3	DV	1	*	VO	
3	1	DV	1	85	EL	Trib
4	4	DV	3	25 - 90	EL	
4	4	DV	1	110	MT	
5	1	DV	2	25	EL	Trib
6	1	DV	1	60	VO	Trib
7	1	(DV)	*	*	*	
8	1	DV	4	115	EL	Trib
8	1	DV	1	135	EL	Trib
8	1	DV	2	120	EL	Trib
8	1	DV	4	95	EL	Trib
9	1	DV	3	100 - 120	EL	Trib
10	6	N/F	*	*	*	
11	1	N/F	*	*	*	Trib

Sampling Methods: VO = Visual Observation MT = Minnow Trapping
EL = Electrofishing

Appendix IV: 1:20,000 Maps

Paper and digital copies of the 1:20,000 TRIM maps are on file with:

West Fraser Mills Ltd., Skeena Sawmills Division	(250) 635-6336
Ministry of Environment, Lands and Parks	(250) 847-7591
Triton Environmental Consultants Ltd.	(250) 635-1494