

# 2002 Tailed Frog Wildlife Habitat Area Proposals, Merritt Forest District

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## ABSTRACT

The purpose of this project was to set out Wildlife Habitat Areas (WHAs) for the Tailed Frog (*Ascaphus truei*) in the Merritt Forest District under the procedure outlined in the Identified Wildlife Management Strategy of the British Columbia Forest Practices Code. Six drainages were selected within the core range of Tailed Frogs in the Merritt Forest District: Prospect Creek, Upper Spius Creek, Juliet Creek, and the Upper Coldwater River in Region 3 of the B.C. Ministry of Water, Land and Air Protection (MWLAP), and Britton Creek and Podunk Creek in Region 8 of MWLAP.

Each potential stream that Tailed Frogs might inhabit in each drainage was examined for known occurrences based on previous inventory, on known fish presence from various fish-stream inventories or from Forest Development Plans, and any known stream characteristics (width >2.0 m, gradient >2.5%) that might make the stream suitable for Tailed Frog populations.

19 sites on 13 stream reaches were inventoried from October 25-28, 2002, in addition to the 241 sites that had already been inventoried in previous studies. Tailed Frog larvae were found at 13 of those 19 sites. Based on this new information, 6 WHAs are proposed. Based on previous information, 8 WHAs are proposed. 18 potential WHA sites remain to be examined in these drainages.

Drainage	Existing WHAs	Potential stream reaches	Known suitable for WHA	Checked in 2002	Unsuitable for WHA	Total WHA proposals	Remain to be checked
Prospect	1	4	0	0	NA	0	4
Upper Spius	1	13	0	7	1	3*	6
Juliet/July/Mine	0	8	2	4	1	5	1
Upper Coldwater	0	3	0	0	NA	0	3
Britton/Illal	0	7	2	3	3	2	2
Podunk	<u>0</u>	<u>6</u>	<u>4</u>	<u>0</u>	<u>NA</u>	<u>4</u>	<u>2</u>
<b>Total</b>	<b>2</b>	<b>41</b>	<b>8</b>	<b>13</b>	<b>5</b>	<b>14</b>	<b>18</b>

\*6 reaches were suitable, but 4 of these were combined into one WHA

Other drainages that still need to be examined for Tailed Frog WHA suitability in the Merritt Forest District are subdrainages of the Tulameen River (e.g. Lawless, Railroad, Sutter, Amberty, Vuich, Champion, and others) and subdrainages of the Similkameen River (e.g. Copper, Whipsaw, Arrastra, Pasayten and others).

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## **INTRODUCTION{tc \l 1 " INTRODUCTION "}**

The Tailed Frog (*Ascaphus truei*) is a primitive stream-breeding amphibian limited to the wet mountain areas of western North America, that has been designated as "Identified Wildlife" under the Forest Practices Code of British Columbia because of concerns for the effects of forestry practices on the habitat and populations of this species. Okanagan Wildlife Consulting was contracted by the B.C. Ministry of Water, Land and Air Protection (MWLAP) in 2002 to nominate candidates for Wildlife Habitat Areas for Tailed Frogs in selected drainages in the Merritt Forest District based on the recommendations made by Gyug (2001) and on existing information or information gathered in 2002.

## **Acknowledgements{tc \l 2 " Acknowledgements "}**

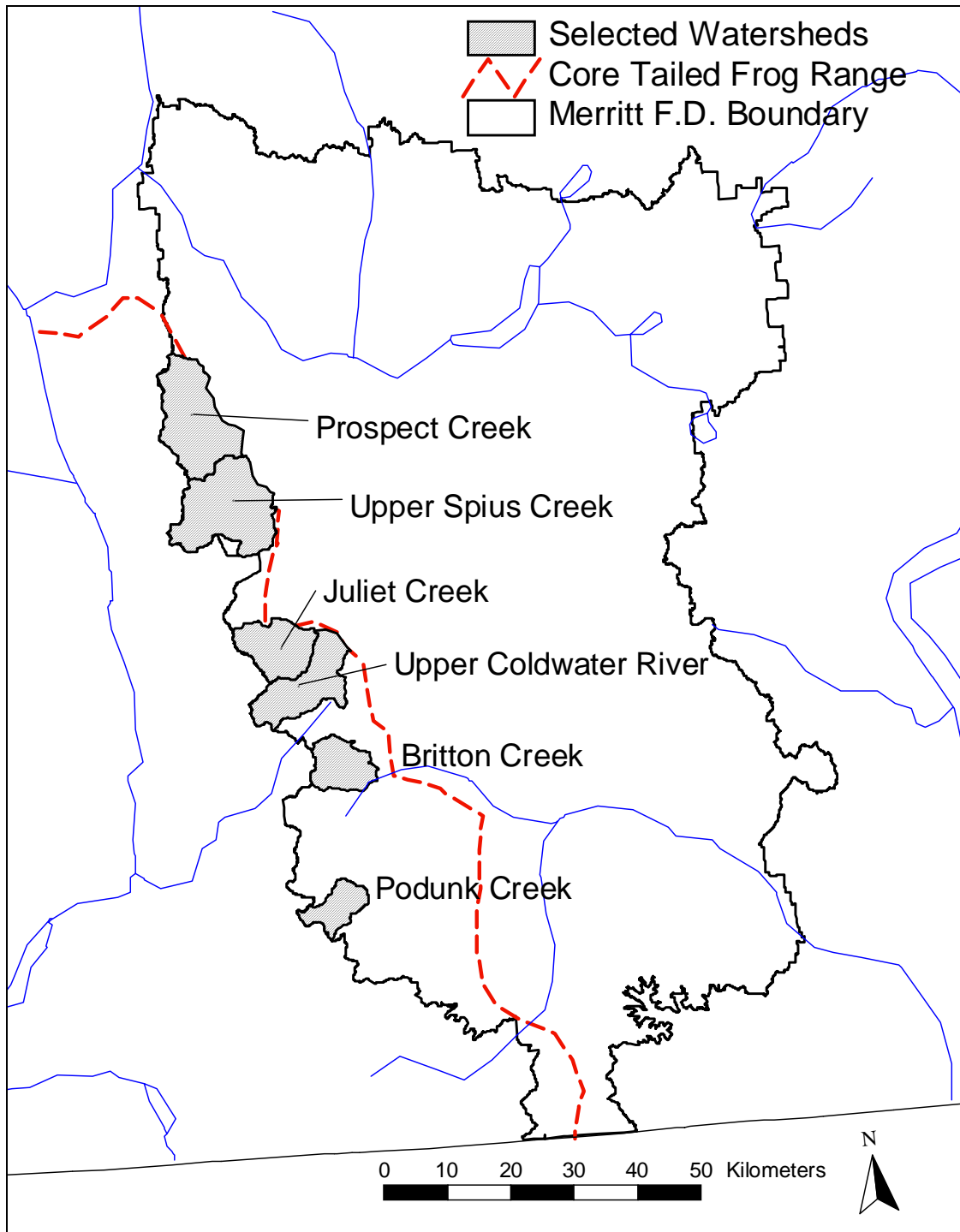
Funding for this project was provided by the B.C. Ministry of Water, Land and Air Protection, Southern Interior Region (Region 3), Kamloops, B.C., and the Okanagan Region (Region 8), Penticton, B.C. John Surgenor, MWKAP, Kamloops, served as contract monitor.

## **STUDY AREA and METHODS{tc \l 1 " STUDY AREA and METHODS "}**

The study area was within the range of the Tailed Frog in the Merritt Forest District which is south and west of Merritt and south and west of Princeton, B.C. as previously determined by Gyug (2000) and Gyug (2001). Drainages selected for WHA selection in 2002 were Prospect, Spius, Juliet, and Upper Coldwater in Region 3 of MWLAP, and Britton/Illal and Podunk in Region 8 of MWLAP (Figure 1).

Fish and/or stream inventories and the stream classifications on the current (2001) Forest Development Plans were viewed in the Merritt Forest District office or Tolko Industries offices in Merritt. Based on the GIS stream layer from TRIM mapping, and the lack of fish (i.e. S5 or S6 streams), probable stream bank-full widths between 2 and 10 m, gradients >2.5%, >1 km downstream of large wetlands, intact forest buffers of at least 50 m on each side of the stream based on August 2002 Landsat imagery or TRIM orthophoto mosaics, no severe topographical constraints to logging (i.e. slopes <60%) or without severe gullies based on examination of stereo colour 1:15,000 aerial photographs (Year 2000), potential stream reaches were chosen. These were at least 500 m in length, but over 1 km in length where conditions permitted. There are no Old Growth Management Areas in the Merritt Forest District, and the process is currently on hold (Rich Hodson, MOF, Merritt, pers. comm.), so overlap with OGMAs was not considered.

Following the RIC standards for Tailed Frog inventory (RIC 2000) at the presence/not detected level, 30-minute Time Constrained Search (TCS) samples were the primary data collection method. The total search time at each TCS site was 30 minutes, i.e., usually 15 minutes each by two people but 30 minutes by one person if one person was sampling alone. The streambed was visually searched and cobbles or rocks not embedded in the streambed were turned over to search under the rocks, or for larvae clinging to the bottom.



**Figure 1.** Drainages selected for Tailed Frog inventory and Wildlife Habitat Area proposals in the Merritt Forest District, 2002.

At the downstream end of each TCS, the location was recorded in UTM coordinates (NAD83, Zone 10) using a handheld consumer-grade GPS unit (Garmin GPS 12XL) capable of 15-m accuracy 99% of the time in good satellite tracking conditions. Also recorded near the center of each TCS area were: BEC zone, elevation, tree species adjacent to the stream, air temperature, stream temperature, stream gradient and aspect, average bank width and wetted width from 6 points, stream depth at breaks and residual pool depth, the relative abundance and distribution of Large Woody Debris, the dominant and subdominant substrate composition, the diameter of the largest 5% of substrate (D95) and the largest substrate elements that move at flood stage (D), and whether any fish were seen at, or near, the site. Standards for most of these measurements are outlined in the Reconnaissance Fish and Fish Habitat Inventory: Site Card Field Guide (RIC 1999).

At each TCS site, the number of Tailed Frog larvae and adults seen were recorded. The approximate size of all adults and tadpoles were estimated. Measurements of Snout-vent length (SVL) for adults and Total Length (TL) to the nearest mm for larvae were made for most adults and for the few larvae caught and measured at each site. Tailed Frog larvae were classified as Small (20-31 mm TL), Medium (32-41 mm TL) and Large (42-54 mm TL). This was the limit of what could be discerned quickly by eye without actually capturing and measuring all the larvae. Young-of-the-year larvae hatch in mid- to late-summer and are white in colour, rather than dark brown or green. Only one was seen during this study and was 15 mm TL.

The location of each survey site and all other data for these Tailed Frog surveys from 2002 were combined with Tailed Frog observations and surveys from 1996 to 2001 and put into one GIS shapefile set called *ASTR\_Merritt\_1996-2002*. The database file (.dbf) in this shapefile set can be opened and manipulated in Excel. Photos are available in digital format for all the 19 sites surveyed in 2002, as well as all of the 2001 sites and many of the 2000 sites and have been provided on CD to the B.C. Ministry of Water, Land and Air Protection in Kamloops. All UTM coordinates reported in those files or in this report are Zone 10, NAD83.

Potential WHAs were constructed in a separate GIS layer by buffering the sides of selected stream reaches by 30-m for the core areas and 50-m for the buffer areas of the WHAs. These were assigned a temporary WHA\_TAG (e.g. 8-00A, instead of the final 8-000 with a 3 digit number). The Tailed Frog observation data and potential stream reach data were combined to form a Wildlife Feature shapefile that has both stream data and observation data in it, as well as the Wildlife Feature data that conform to RIC data standards for Wildlife Feature coverages.

## RESULTS{tc \l 1 " RESULTS "}

During initial examinations of fish stream identification studies, it became clear that most streams that contain fish were S3 streams, and therefore would have a reserve on them anyway. Streams that would be classified as S4 streams and have no reserve zone on them, were fish-bearing but smaller than 1.5-m in bank full width. Streams that small would also form poor Tailed Frog habitat. Therefore choices for potential Tailed Frog WHAs would mostly be S5 and S6 streams that had known fish barriers, and streams that were provisionally classified as fish-bearing (S3/4), but which actually would have very low fish capability because of steep gradients and low seasonal flows.

Based on initial examination of stream reaches in the selected drainages against the stated criteria, 38 stream reaches with potential WHAs were identified. 4 days of sampling did not allow us to sample each drainage, or each reach in each drainage. Two days were spent in the Upper Spius, 1 day in the Juliet drainage, and 1 day in the Illal drainage (Table 1). 4 potential WHAs remain to be checked in the Prospect Creek drainage, 6 in Upper Spius Creek drainage, 2 in Juliet Creek drainage (and 1 which should probably be rechecked due to ice and snow on October 2002 check), 2 in Upper Coldwater, 1 in Britton Creek, and 2 in Podunk Creek drainage.

**Table 1.** Numbers of existing Tailed Frog Wildlife Habitat Areas (WHAs), potential stream reaches for WHAs, reaches already known to be suitable, number checked in 2002, number of those considered unsuitable, and numbers newly proposed for WHAs in selected drainages of the Merritt Forest District, November, 2002.

Drainage	Existing Tailed Frog WHAs	Potential stream reaches	Known suitable for WHA	Checked in 2002	Unsuitable for WHA	Total WHA proposals
Prospect	1	4	0	0	NA	0
Upper Spius	1	13	0	7	1	3*
Juliet/July/Mine	0	8	2	4	1	5
Upper Coldwater	0	3	0	0	NA	0
Britton/Illal	0	7	2	3	3	2
Podunk	<u>0</u>	<u>6</u>	<u>4</u>	<u>0</u>	<u>NA</u>	<u>4</u>
<b>Total</b>	<b>2</b>	<b>41</b>	<b>8</b>	<b>13</b>	<b>5</b>	<b>14</b>

\*6 reaches were suitable, but 4 of these were combined into one large WHA

Only 4 days of inventory were undertaken in 2002. 30-minute Time-Constrained Searches were undertaken at 19 sites on 13 stream reaches between October 25 and 28, 2002, with Tailed Frog larvae found at 13 of those sites. No adults were found in late October 2002 searches. One young-of-the-year was found that was only 15 mm in length. This is the only such larvae found in the 3 years of inventory in the Merritt Forest District with the examination of 260 sites in total. Data from the 19 sites are presented in Table 2.

Information was available from 5 other 30-minute Time Constrained Searches on 5 previously unsampled stream reaches in the Podunk drainage from October 5, 2002, from the proposed gas pipeline project. The data from those searches were also used in the WHA selection process for Podunk Creek, one of which was used to propose a WHA and is included in Table 2.

**Table 2.** Summary of data collected during Tailed Frog Inventories, Merritt Forest District, October 25-28, 2002, and previously collected data on stream reaches proposed for Wildlife Habitat Areas.

Figure - Location	DATE YYYY MM DD	UTM (Zone 10, NAD83)		Number Seen		Elevation (m)	Grad- ient (%)	Width (m)		Substrate		ID No. (From entire dataset)
		Eastings	Northing	Ad- ults	Lar- vae			Bank full	Wet	Dom- inant	Subdom- inant	
<b><u>Spius</u></b>												
3-A	2002 10 26	628361	5536516	0	3	1680	8	2.6	1.5	C	G	221
3-A	2002 10 26	628356	5535942	0	6	1600	9	2.0	1.4	C	B	222
3-B	2002 10 26	626518	5535469	0	35	1540	8	5.4	3.9	C	B	223
3-B	2002 10 26	626340	5535869	0	7	1580	8	4.3	3.6	C	B	224
3-C	2002 10 27	625201	5532660	0	13	1380	8	4.2	2.5	C	B	225
3-C	2002 10 27	624725	5532398	0	20	1400	2	3.8	2.4	G	C	226
3-C	2002 10 27	624818	5532520	0	0	1400	7	1.8	0.7	C	G	227
3-C	2002 10 27	624504	5534094	0	4	1500	8	2.3	1.7	C	G	228
3-C	2002 10 27	624556	5534215	0	4	1480	12	2.9	1.8	C	B	229
3-C	2002 10 27	624803	5534097	0	5	1460	11	4.1	3.3	B	C	230
3-C	2000 09 05	625736	5533167	0	0	1300	14	5.7	2.2	C	G	25
<b><u>Juliet</u></b>												
4-D	2002 10 28	633740	5512404	0	4	1460	14	4.8	2.2	C	B	231
4-D	2002 10 28	633546	5512900	0	6	1500	3	3.2	1.6	C	G	232
4-E	2002 10 28	636598	5511323	0	8	1240	29	2.9	1.3	C	B	233
4-F	2002 10 28	637815	5511840	0	5	1200	21	5.6	2.6	B	C	234
4-G	2000 09 12	636849	5510883	0	14	1200	23	4.2	2.2	B	C	61
4-H	1996 09 18	638780	5506025	0	10	1550	9	6.8	NA	C		257
<b><u>Britton</u></b>												
5-A	2000 08 28	644792	5494398	0	21	1360	13	8.2	3.5	C	B	3
5-B	2000 08 28	648080	5491842	3	3	1260	17	4.9	0.7	B	C	4
5-X	2002 10 25	644408	5489449	0	0	1300	5	7.1	5.0	C	G	236
5-X	2002 10 25	643684	5489861	0	0	1340	2	17.2	2.8	C	G	237
5-X	2002 10 25	643847	5489951	0	0	1340	5	9.1	2.4	C	B	238
5-Y	2002 10 25	645552	5489913	0	0	1440	5	2.0	1.1	G	B	239
<b><u>Podunk</u></b>												
6-C	2000 08 30	642987	5467159	0	8	1400	5	3.6	2.9	C	G	14
6-D	2000 08 30	645518	5468088	0	39	1340	7	5.8	1.5	C	G	13
6-E	2002 10 06	647155	5468566	1	7	1383	18	2.5	0.8	B	C	252
6-F	2000 08 30	647795	5469565	1	1	1320	20	2.3	1.0	B	G	12

Five WHAs for Tailed Frogs have already been established in the Merritt Forest District. On the basis of this information gathered in late October 2002, 6 WHAs were recommended for



establishment. On the basis of previously gathered information, 8 WHAs were recommended for establishment. Table 3 summarizes the stream reach characteristics for each WHA. Step 1 WHA forms have been filled out for each proposed WHA. Following is a summary of the reasoning behind the choice of stream reaches and WHAs in each watershed.

### **Prospect Creek{tc \l 2 " Prospect Creek "}**

Fish occupy almost every drainage system in the Prospect Creek range of the Tailed Frog. The exception is the creek where there is an existing WHA (Figure 2) where fish barriers on the lower end of this stream prevent upward migration of fish from Prospect Creek. No more WHAs were proposed on this creek system because of clearcuts, wetlands, inoperability, and a proposed Protected Area at the very upper end of the area that might protect some of the stream above the existing WHA anyway.

The other 4 reaches identified in this process are considered lower priority for Tailed Frog WHAs, and were therefore not sampled in the limited time available in 2002. The 2 reaches at the north end of the area may contain fish, or may be too small to contain Tailed Frogs, but would need to be checked in the future. The two southern reaches are on steep ground, the western stream of which is considered to have potentially unstable slopes around it.

### **Upper Spius Creek{tc \l 2 " Upper Spius Creek "}**

A number of stream reaches for potential Tailed Frog WHAs were identified in the Upper Spius Creek drainage that were non fish-bearing according to the current FDP (Figure 3). Only the northernmost reaches were sampled in 2002 (A, B and C on Figure 3). These all contained Tailed Frogs and have been proposed for new WHAs. One of the stream reaches (B on Figure 3) contained theoretically inoperable ground for the lower 2/3 of the stream reach, but was included in the WHA because it was found to contain Tailed Frogs, and cutblocks have been proposed close to this reach despite its theoretical inoperability. Some of the stream reaches examined were combined into one large WHA (C on Figure 3). One short tributary that was sampled (the one just to the east of the C in Figure 3) contained no Tailed Frogs, and was too small to be suitable habitat and was not included in the proposed WHA.

The 3 streams on the south side of Spius Creek were not sampled in 2002, and have never been sampled. These may be too small or ephemeral to contain Tailed Frogs, but would need to be examined in the future. The 3 streams to the south end of the drainage were not sampled in 2002 but should be sampled in the future. This stream system contains both Tailed Frogs and fish at its lowest reaches (Gyug 2000) but is considered non-fish bearing at its upper reaches. Much of the upper basin has already been clearcut, putting a higher priority on the remaining reaches for Tailed Frog inventory and potential WHAs.

**Table 3.** Stream reach characteristics for streams in proposed Tailed Frog Wildlife Habitat Areas, and Wildlife Habitat Area sizes, Merritt Forest District, 2002.

Temp. WHA_TAG	WHA size (ha)		Length (m)	Elevation (m)		Mean Gradient (%)	Bank full width as measured (m)	Number Tailed Frogs Seen		FPC Stream Class	FDP Block Status, 2002	Comments
	Core	Buffer		Upstream m end	Downstream m End			Larvae	Adults			
<b>Spius</b>												
3-00A	22.2	14.1	3751	1780	1390	10	2.6	9	0	Unk	CP	CP approved on middle 500 m section only where buffer reduced to accommodate block.
3-00B			1297	1635	1550	7	4.3	7	0	S5	Info	CP 610-7
3-00B			<u>2792</u>	1550	1200	13	5	35	0	S5	Info	Theoretically Inoperable, but CP 64-1,2,3 on stream
Total 3-00B	24.5	16.2	4090									
3-00C			937	1590	1475	12	2.3	4	0	S5	Info	
3-00C			1701	1475	1290	11	5.7	5	0	S5	Info	Theoretically Inoperable, but CP 610-7 on stream
3-00C			1216	1680	1475	17	2.9	4	0	S5	Info	
3-00C			<u>2042</u>	1460	1295	8	4	33	0	S5	A-near	Headwaters in Category A block outside of WHA
Total 3-00C	35.5	23.0	5896									
<b>Juliet</b>												
3-00D	9.1	6.07	1512	1565	1420	10	3.2-4.8	10	0	S5	Info	Ideal habitat, logging proposed
3-00E	10.3	6.9	1725	1840	1540	15	2.9	8	0	S6	Info	Ideal habitat, logging proposed
3-00F	9.6	6.4	1608	1780	1600	11	5.6	5	0	S6	Info	Ideal habitat, logging proposed
3-00G	6.7	4.4	1108	1540	1200	31	4.2	14	0	S3/S4	None	Probably too steep for fish-really a S5
3-00H	19.2	12.7	3199	1665	1355	10	6.8	10	0	S5	A-near	Category A block further than 50-m away.
<b>Britton</b>												
8-00A	8.4	5.6	1396	1550	1350	14	8.2	21	0	S3	None	Assumed S3, but may actually be S5
8-00B	5.8	3.8	950	1410	1240	18	4.9	3	3	S3	None	Assumed S3, but may actually be S5
<b>Podunk</b>												
8-00C	9.5	6.2	1555	1480	1400	5	3.6	8	0	Unk	None	
8-00D	8.8	5.9	1470	1500	1360	10	5.8	39	0	S5	None	
8-00E	4.8	3.2	792	1560	1380	23	2.5	7	1	S6	None	
8-00F	5.12	3.41	856	1480	1380	12	2.3	1	1	S5	None	

## **Juliet Creek{tc \l 2 " Juliet Creek "}**

A number of stream reaches for potential Tailed Frog WHAs were identified in the Juliet Creek drainage that were non fish-bearing according to current studies from Tolko and Small Business (Figure 4). July Creek is a major creek that drains into Juliet Creek before Juliet Creek drains into the Coquihall River. July Creek has a falls that forms a barrier to upward fish migration, and the remainder of the creek from the barrier upward has been proposed for a WHA (H on Figure 4). Tailed Frogs were found there in 1996 (Gyug 1996). The side tributaries of July Creek are mostly too small to support Tailed Frogs (personal observations) and are therefore not proposed for WHAs at this time.

On Juliet Creek, the main southern fork (just west of G on Figure 4) is fish bearing and no WHAs were considered in that area.

Tailed Frogs were previously known in a small creek (G on Figure 4) for which a WHA was proposed. This creek is potentially fish bearing according to fish studies, but based on its >30% gradient, and the examination during the Tailed Frog inventories (Gyug 2000), it is probably not fish-bearing, and a WHA is therefore proposed there.

The four major tributaries (D, E, F, X on Figure 4) are currently considered non-fish-bearing in their upper reaches because of steep falls and cascades just above Juliet Creek. Tailed Frogs were found in streams D, E and F, and these are proposed for WHAs. Tailed Frogs were not found in the single sample on X in the upper reach, but this was the last sample in the 4-day sampling session in 2002, and weather conditions were deteriorating ice and snow covered much of the stream. It appears to be suitable Tailed Frog habitat, and should be sampled again in the future in better weather conditions.

The two reaches at the westernmost end of Juliet Creek need to be sampled in the future. Some of the other small tributaries on the south side of Juliet Creek between "G" and the end of the valley also may contain Tailed Frogs, are probably non-fish-bearing, and would need to be sampled in the future.

## **Upper Coldwater River{tc \l 2 " Upper Coldwater River "}**

Bull trout occupy the Coldwater River drainage (and indeed, the previous 3 drainages as well although they are lacking from the Similkameen drainages considered next), and occupy almost all side streams in the drainage. There are few major fish barriers in the area, and therefore very few potential WHAs for Tailed Frogs that are >2-m width and are non-fish bearing (Figure 4). The upper reaches of Mine Creek has never been examined for fish, and there may be potential WHAs there, if it is found to be non-fish-bearing. The small stream at the western end of the Upper Coldwater River is very steep, has a deep incised gully, and therefore may not be high priority for a Tailed Frog WHA at any rate. The two streams (Y on Figure 4) east of the Coquihally Highway were considered for WHAs. The south stream of the two contains Tailed Frogs (Gyug 2001) but

also contains fish (Gyug 2001). Therefore these streams are not immediate candidates for Tailed Frog WHAs. However, because of steep gradients, these streams are not likely fish-bearing right to their headwaters, and should be examined for potential Tailed Frog WHAs in the future.

## **Britton Creek**

Illal Creek is the major stream occupying the south end of the Britton Creek drainage (Figure 5). While Tailed Frogs had been previously found in the Illal drainage (Gyug 2000), no Tailed Frogs were found in the 3 streams examined in the Illal drainage in 2002. Therefore no Tailed Frog WHAs were proposed in the Illal drainage. The only stream in the Illal drainage on which Tailed Frogs were known to occur has a clearcut adjacent to it, so it would not qualify for WHA status.

Part of the reason for the absence of Tailed Frogs from the upper reaches of Illal Creek may be the 1938 fires which completely denuded the upper drainage of Illal Creek west of point X on Figure 5. The stream drains the main summit of Coquihalla Mountain, and appears to be subject to spring torrents that cause major bed movements at the points sampled. Tailed Frogs can recover quickly in a stream system if lower parts of a stream are cleared of vegetation, but only if the upper headwaters remain forested (Hawkins et al 1988, Hawkins and Sedell 1990 for Mt. St. Helens). By contrast, the headwaters of some northern streams on Britton Creek (ZZ on Figure 5) were not burned in 1938, and contain large populations of Tailed Frogs.

Two WHAs were proposed in the Britton drainage based on information from 2000 (Gyug 2000). Both streams are classified as potential fish-bearing streams, but no fish were actually found during electroshocking studies (B on Figure 5) and it may not actually be fish bearing since it is probably too ephemeral to contain fish. However, the lower reach is known to contain Tailed Frogs, and was proposed for a WHA. The upper reach of B is separated from the lower reach by a clearcut, and the upper reach was not examined separately in 2002, but should be examined in the future for potential as a Tailed Frog WHA. The WHA proposed at stream A was also potentially fish-bearing, but probably has low fish suitability because of generally steep gradients

No WHA is currently proposed at stream reaches ZZ on Figure 5. The mainstem of this stream is known to contain a large population of Tailed Frog downstream of this point, but the stream also contains fish downstream. This section of stream was not examined during any fish stream identification studies, but the branch immediately to the west was examined and did contain Rainbow Trout even where the stream was very narrow and steep. While the main stream at ZZ probably contains fish, the smaller sidestreams probably are too small, steep and/or ephemeral to sustain fish populations. However, all these streams together that drain this subbasin might be considered for a WHA if the area was examined in the future. This small basin might also be considered for a Old-Growth Management Area since it is part of only a small remaining intact Old Growth forest in the area that escaped the 1938 fires, and has not been roaded or logged since then either.

## **Podunk Creek**

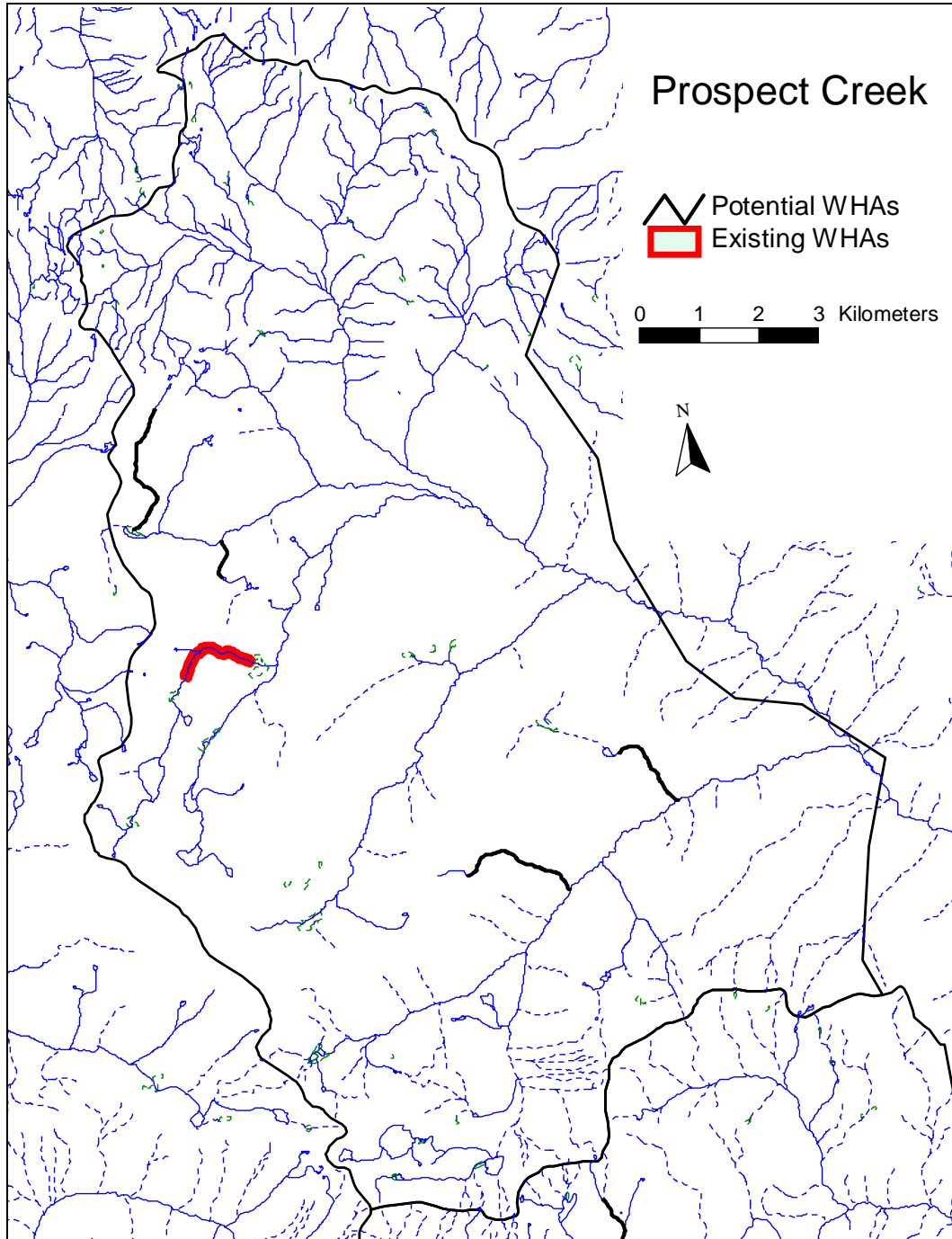
Podunk Creek is a major tributary of the upper Tulameen River. Two major study areas for Tailed Frogs are on Cunningham and Chisholm Creeks (X and Y respectively on Figure 6). Tailed Frogs are abundant on both streams, however, both streams are fish-bearing and have reserve zones on them, so are not considered here for Tailed Frog WHAs.

The streams on the south side of Podunk Creek have fish barriers near their confluences with Podunk Creek, and are not fish-bearing for most of their lengths. Four WHAs are proposed on four of these streams (C, D, E and F on Figure 6). In general, the WHAs are proposed above (i.e. south of) the actual Tailed Frog sampling points because of clearcuts at these locations on the streams and because of the route of the proposed interior natural gas pipeline that would parallel the Tulameen Road at the south edge of the road. All other streams were examined on the south side of Podunk Creek but all proved too small to support Tailed Frog populations.

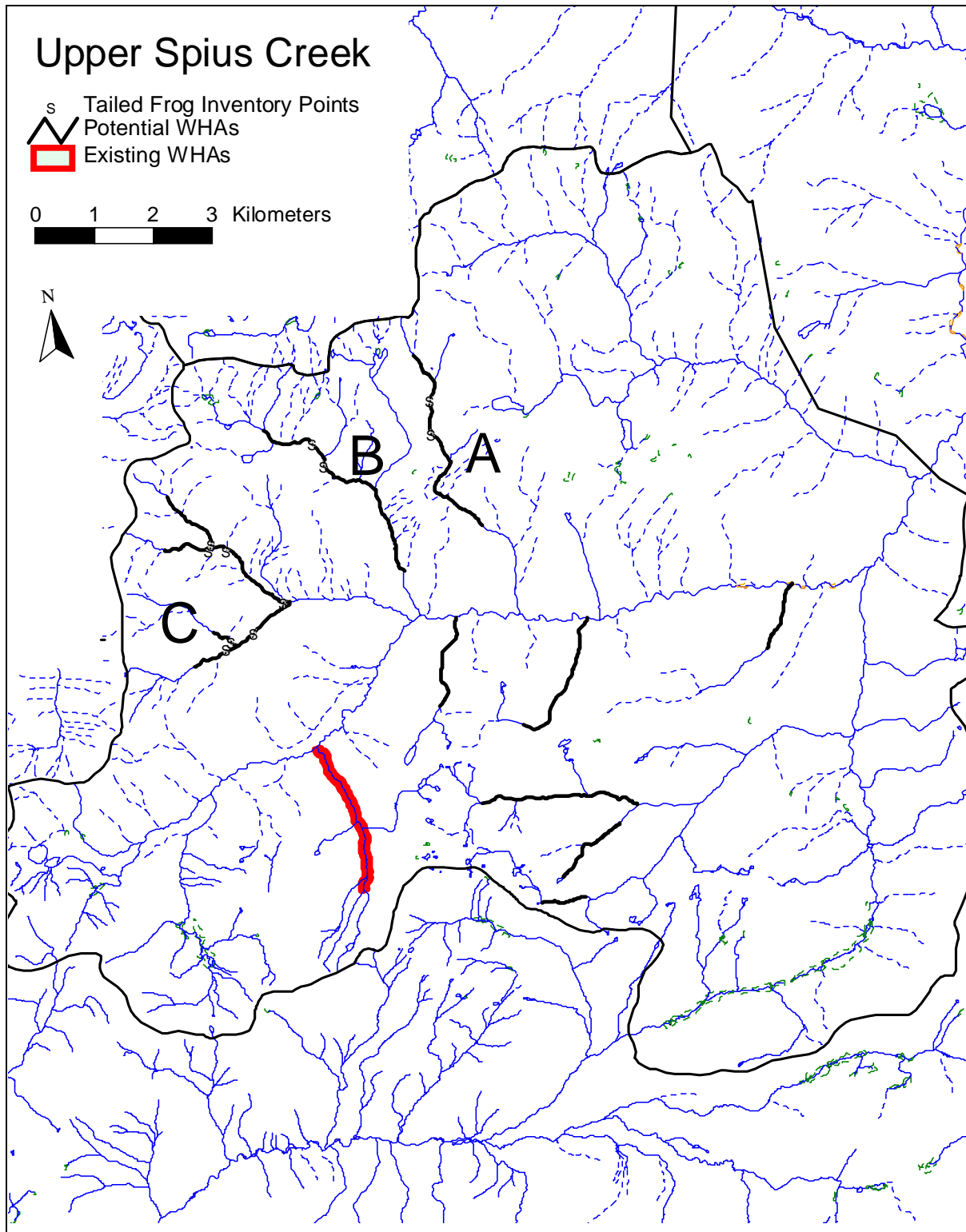
Other streams that flow southward into Podunk Creek (i.e. are on the south-facing aspects) are too small and ephemeral to maintain Tailed Frog populations. The streams at the upper (west) end of Podunk Creek (Z on Figure 6) may be suitable for WHAs. The two streams proposed are likely suitable for Tailed Frogs and need to be examined in the future. The stream branch extending southward (just right of the Z on Figure 6) is not proposed for a WHA because it is not considered operable forest, although Tailed Frogs have been found there. If the operability should change in that area, then a WHA should be placed on that stream.

## **LITERATURE CITED**

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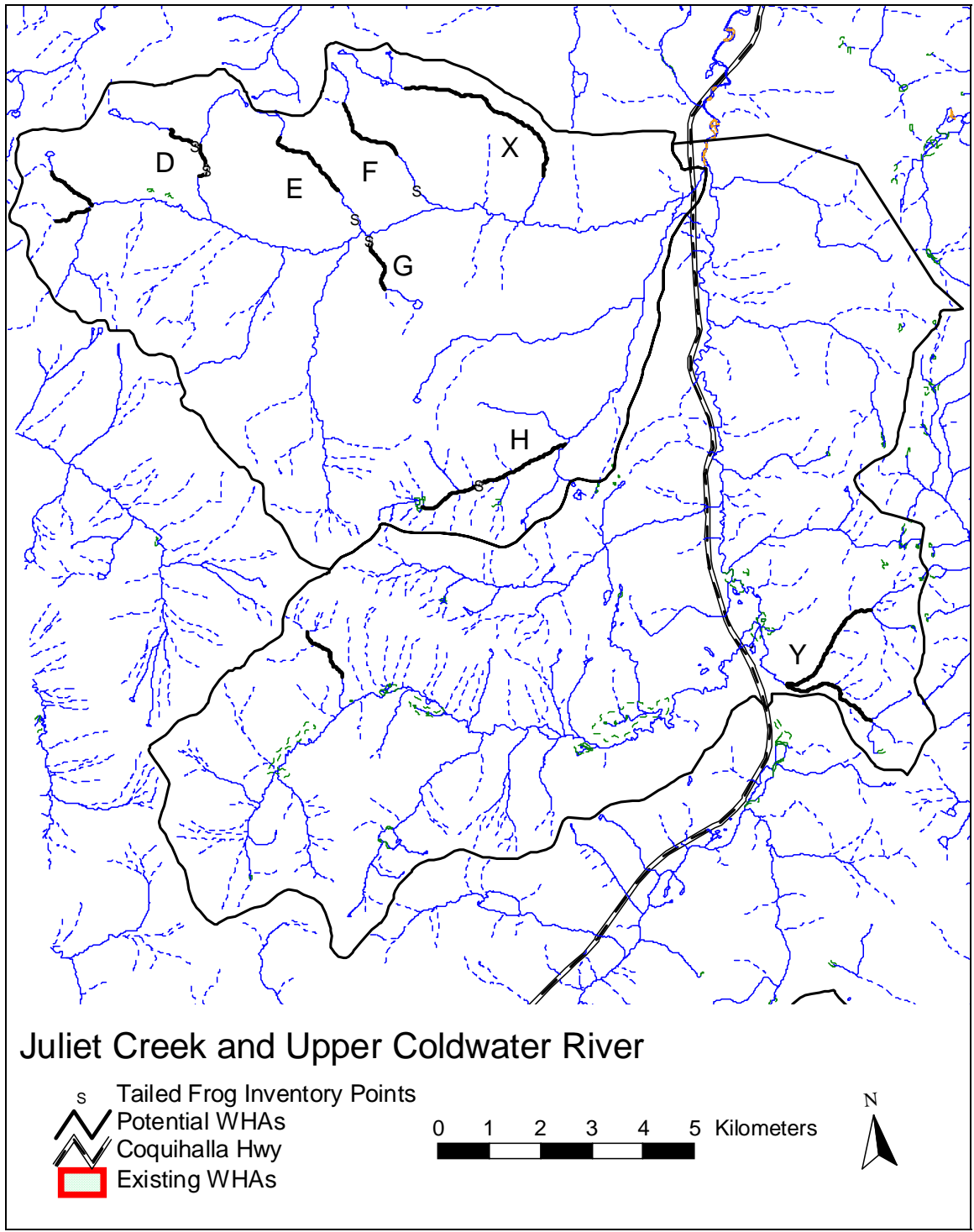
**Figure 2.** Existing and potential Tailed Frog Wildlife Habitat Areas in the Prospect Creek drainage, Merritt Forest District, October 2002. No sites were recommended for WHAs.



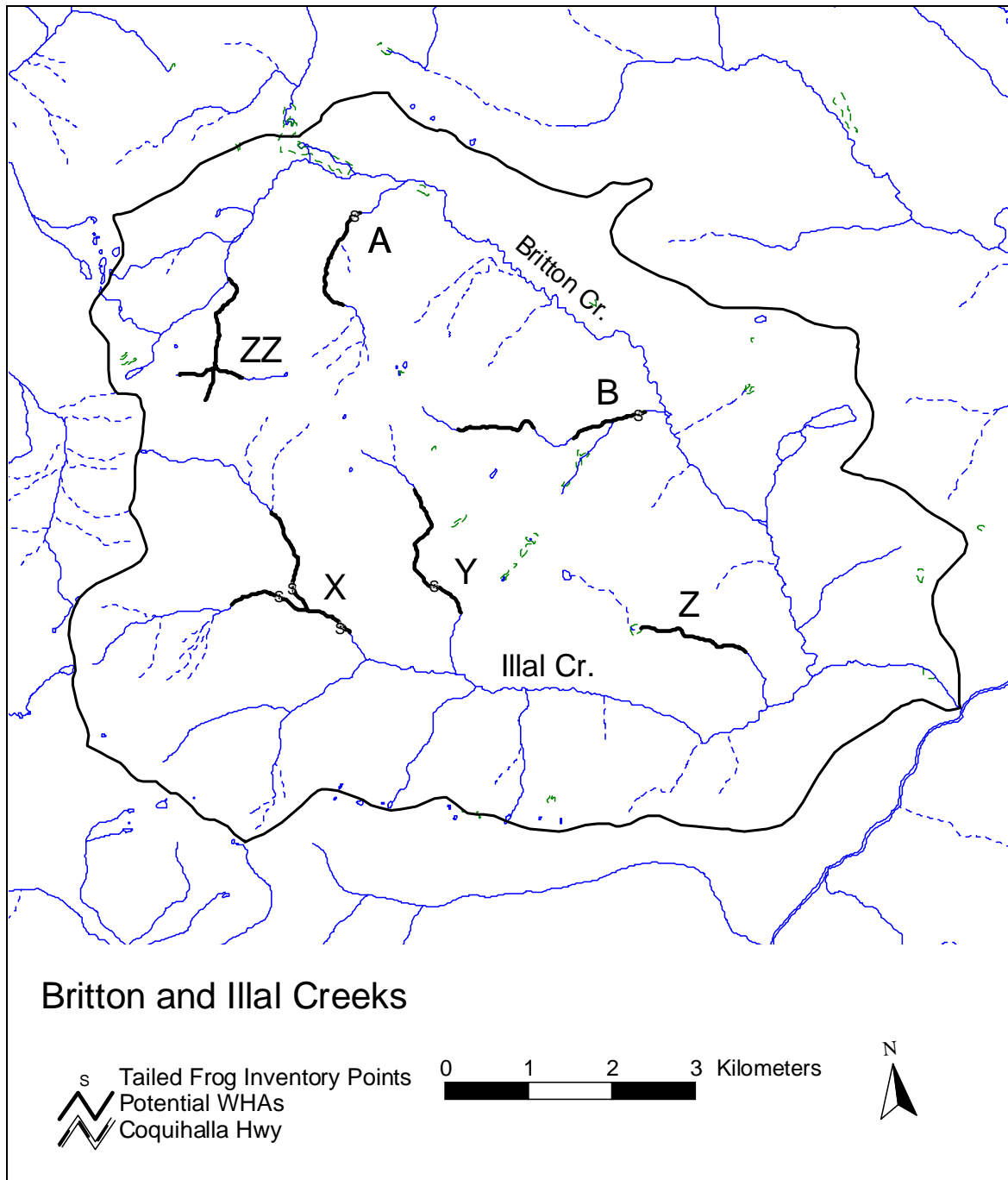
**Figure 3.** Existing and potential Tailed Frog Wildlife Habitat Areas in the Upper Spius Creek drainage, Merritt Forest District, October 2002. WHAs recommended at Sites A,B, and C.



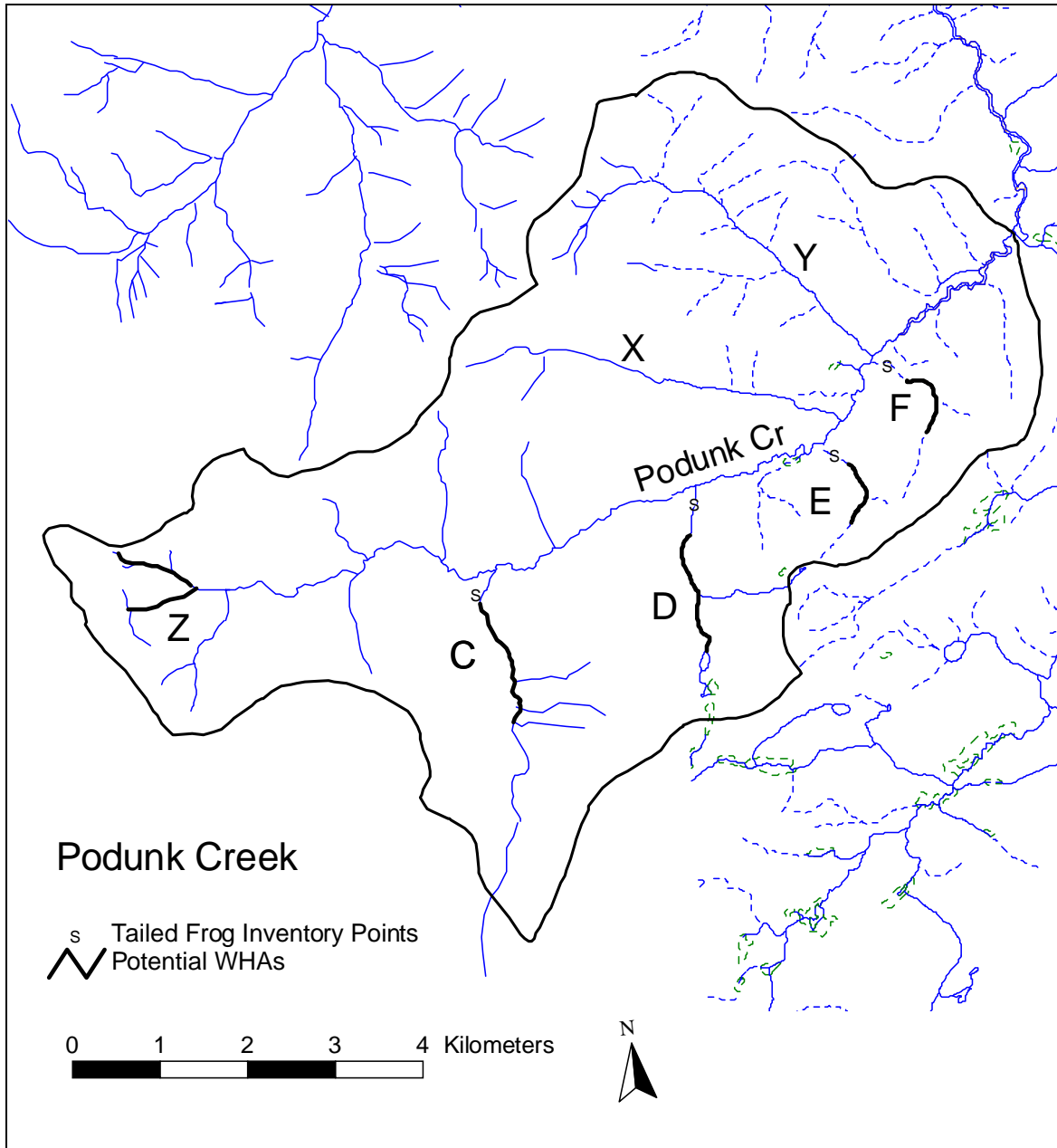




**Figure 4.** Potential Tailed Frog Wildlife Habitat Areas in the Juliet Creek and Upper Coldwater drainages, Merritt Forest District, October 2002. WHAs recommended at sites D, E, F, G, and H.



**Figure 5.** Potential Tailed Frog Wildlife Habitat Areas in the Britton Creek drainage, Merritt Forest District, October 2002. WHAs recommended at Sites A and B.



**Figure 6.** Potential Tailed Frog Wildlife Habitat Areas in the Podunk Creek drainage, Merritt Forest District, October 2002. WHAs recommended at Sites C, D, E and F.