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February 20, 2009

COMMENTS RE FISH HABITAT AT FOUR ENBRIDGE CROSSINGS IN MAXAN, GOSNELL, AND CLORE WATERSHEDS

Dear Mr Whelen:

As requested I have looked at the four proposed stream crossings that you identified and have prepared some comments concerning critical habitats in these systems that might assist you in identifying stream crossing concerns at these locations. It should be noted that these comments are made without the benefit of specific field observations, air photo analyses, or the results of your field sampling results at these sites.

Location 1 - Upper Maxan Creek – Site 1020

This crossing site is located on Maxan Creek approximately 4 km upstream from Maxan Lake. We have conducted studies on Maxan Creek downstream from the lake and on Foxy Creek a major spawning tributary in lower Maxan Creek as well as the lake itself. Life history information and fish strategies from these studies may be helpful in your assessment. We also worked on a PNG pipeline crossing in lower Maxan Creek during February 1999.

As you are probably aware, there have also been several 1:20,000 reconnaissance inventories in upper Maxan Creek prepared for Babine Forest Products (FINS 1999 and 2000) that concentrate more on the smaller tributaries and not the mainstem creek.

The key species of concern in upper Maxan Creek is rainbow trout with the possibility of some longnose suckers in the stream section of concern (FINS 1999). Rainbow trout in Maxan Lake can exceed 30 cm fork length (Hatfield 2003) and support a local sport fishery.

Studies in lower Maxan/Foxy as well as adjacent similar systems such as upper Buck Creek (located upstream from nearby Goosly Lake), suggest that rainbow trout from the lake move into spawning tributaries in mid-May during the snowmelt freshet with the peak of spawning in late May and into early June (Bustard 1993). Maxan rainbow trout definitely move into the outlet and spawn in the mainstem of Maxan and the lower reaches of Foxy Creek.

We assume there is also a portion of the population that uses the inlet and key tributaries of the mainstem inlet. This is definitely the pattern in Goosly Lake where rainbow are able to move up past beaver dams through the slow-flowing section to the lake inlet and find pockets of gravel in the mainstem creek several kms upstream. Data in FINS 1999 and 2000 suggest that the tributaries in the upper watershed are definitely used for spawning rainbow but that spawning in the mainstem itself may be limited. Any gravel riffle section in the mainstem in the vicinity of the pipeline crossing could be spawning areas for rainbow trout from Maxan Lake.

Fry emergence should be complete by early August. Our annual September surveys indicate that juvenile rainbow rear in the tributaries for up to two years prior to moving back to the lake[1]. These fish must overwinter in the stream sections that they are rearing in and we presume this occurs throughout the sections where we find them in the fall surveys. Your fish survey results at the crossing sites should provide you with some indication of what to expect during the winter.

Efforts to salvage fish at a pipeline crossing in Maxan Creek in February 1999 resulted in low densities of primarily lake chub and largescale suckers[2]. A letter summarizing this salvage and showing winter conditions in lower Maxan Creek has been attached to report to show typical winter conditions and creek conditions that might be anticipated in Maxan Creek during the winter. The lower sections of Maxan where the PNG crossing is located may have summer water temperatures that are too high to support rainbow year-round. This is presumably not the case above the lake.

A small number of chinook salmon utilize Maxan Creek for spawning and rearing. This appears to be mainly in the vicinity of Foxy Creek and the Maxan Lake outlet. Similarly there have been historical escapements of sockeye salmon in Maxan Creek in the vicinity of the lake outlet. Sockeye have been noted during recent surveys[3]. There is a high priority to maintaining these distinct and nearly extinct stocks (Gottsfeld and Rabnett 2008).

Gosnell Creek Crossing – Site 1111

We have conducted a largescale inventory of the Gosnell Watershed in 1998 (Bustard 1999). This 1:20,000 reconnaissance included ground and snorkel surveys of much of the mainstem creek identifying coho, bull trout, and Dolly Varden spawning locations for that year, and these locations were added to the 1:20,000 mapping for this project. I have scanned the mapsheet (93L012) that includes the crossing of interest.

Gosnell is a major coho spawning tributary to the Morice with spawning occurring in both the mainstem and some key tributaries (Bustard 1999). The proposed crossing site is in the middle of some of the better coho spawning habitat, and redds were identified in the immediate vicinity of the crossing site in 1998. Most coho spawning occurs during October

[1] Fish index site sampling has been conducted annually in Foxy Creek from the 1980's to present. The most current summary is in Bustard (2008).
[2] Letter dated February 23, 1999 from D. Bustard to Pacific Northern Gas Ltd. summarizing results of construction monitoring at PNG's Maxan creek crossing.
[3] 30 sockeye were observed at the outlet of Maxan Lake in 2007 (Barry Finnigan, DFO, pers. comm.)

and November with fry emergence in May and June. Coho rearing (two age classes) occurs throughout this reach and overwintering areas will be typically associated with cutbanks, debris cover and sidechannels fed by groundwater seepages.

Some bull trout redds were also noted in this section of the Gosnell, although the key spawning areas are mostly located upstream from this reach (Bustard 1999; Bahr 2002). A key staging/holding area for bull trout moving into the headwaters of Gosnell to spawn is located at the base of a canyon and 1.9 m falls (passable to steelhead and bull trout and possibly coho during some years) located approximately 2 km upstream from the crossing site Bustard, D. and C. Schell 2002). Bull trout juveniles (several age classes) were present at a mainstem fish index site located 500 m downstream from the crossing site in late September (Bustard 1999) and it should be assumed that juvenile bull trout overwinter in this section of Gosnell Creek.

Stream resident Dolly Varden spawning also was noted along the mainstem edge 1.5 km downstream from the crossing site during late September surveys (Bustard 1999).

Steelhead are present in the Gosnell, but specific spawning locations have not been identified in this reach. Based on abundance of steelhead fry at index sites and adult telemetry studies, most steelhead use in the Gosnell probably occurs downstream in the mainstem and tributaries, particularly in Shea Creek (Bustard 1999; Envirocon Ltd. 1984). Steelhead fry and parr were present at low densities in the vicinity (500 m downstream) of the crossing site. Steelhead spawn from mid-May to mid-June and emergence would be complete by mid-August.

You may have difficulty with this crossing site based on your proposed winter works given the coho and possibly bull trout spawning taking place in the vicinity of the site. I would expect that site specific information confirming whether or not coho or bull trout redds are present would be needed prior to undertaking work at this site during the year of construction. An alternative date that avoids dealing with spawning fish in the immediate vicinity of the work site may need to be considered. This would have to be after coho and bull trout emergence in May/June and prior to mid-August when bull trout are present in the area and initiating spawning.

Maintaining water quality at this site will be critical given the extensive important fish habitat downstream and the world-class sport fishery occurring in the Morice River downstream.

Note: I don't have your alignment sheets for Crystal Creek in the Gosnell, but this is a bull trout spawning tributary.

Clore River Crossings – Sites 1129 and 1126

Several fish inventory studies have been conducted in the Clore Watershed, but these studies have primarily focused on tributary streams related to forest harvesting activity (Bustard 1996; Triton Environmental Consultants Ltd. 1999) and most of the sampling has occurred downstream from the Clore/Burnie River confluence.

Telemetry studies of adult steelhead in the Clore did not document any adult steelhead more than 40 km upstream (Pillar Canyon), but did not identify a conclusive barrier for steelhead upstream of this location (Lough 1983). Triton Environmental Consultants (1999) focused on tributary streams downstream from the Burnie River confluence and were unable to provide clarity to the question of how far upstream steelhead are present in the Clore. Juvenile sampling in a sidechannel of the Burnie River 500 m upstream from the Clore River confluence indicated four age classes of juvenile rainbow trout were present, as well as a juvenile cutthroat (assume resident), mountain whitefish and char juveniles (Bustard 1996). No juvenile salmon were sampled in this area, but chinook juveniles were sampled at a location approximately 12 km downstream (Bustard 1996). Coho are present in tributaries farther downstream in the Clore Watershed

I would suggest that due to the lack of a definite barrier and the documented presence of steelhead downstream it should be assumed that the juvenile rainbow in the lower Burnie River are progeny of summer steelhead. Your summer sampling at crossing sites 1129 and 1126 should provide you with an indication of whether juvenile rainbow (steelhead) and bull trout juveniles are present on this fan, and whether the habitat in this section would support spawning.

Although the char sampled at the site in the Burnie River in 1991 were referred to as Dolly Varden (Bustard 1996), it is probable that they were bull trout. Subsequent sampling in other sections of the Zymoetz indicated that most mainstem char were bull trout while Dolly Varden were more common in smaller tributaries typically downstream from barriers (Bustard 1995). The Clore/Burnie River confluence appears to be a logical staging area for bull trout adults, and the upper Clore River has the attributes of a bull trout spawning and rearing system (cold and glacial).

The extensive canyon sections in the Clore River downstream from the Burnie River provide holding and over-wintering areas for steelhead and bull trout adults.

The crossing sites at crossing sites 1129 and 1126 should be examined in early September to ensure that bull trout spawning is not occurring in these sections. The habitat information that you already have at these sites may rule out spawning potential at these locations. Any cobble/boulder sections on the Clore River fan and upstream tributary crossing site probably offer rearing habitat year-round for juvenile bull trout and steelhead. A pipeline crossing in the middle of what appears to be an unstable fan on the Clore River upstream from an important steelhead and chinook fishery should be of considerable concern.

Respectfully submitted,

Dave Bustard RP Bio.

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