

COMMENT – RESPONDING TO INDUSTRY CANADA DGRB-005-09

OVERVIEW – 2.5 GHz INCUMBENT LICENSEES, MANITOBA SCHOOL DIVISIONS

Historically, Manitoba schools have been very active consumers of 2.5 GHz radio spectrum since 1968. After 40 consecutive years, Manitoba schools continue to occupy this spectrum very actively in a number of ways, originally to distribute 1-way analog instructional TV but now moving exclusively to a bi-directional all-digital and all-IP content. At present, there are 5 grandfathered incumbent school divisions participating in the Spectrum Proposal Development (SPD) process, managed by Industry Canada. The incumbent school operators in this spectrum (listed alphabetically) are: Border Land, Hanover, Prairie Rose, Prairie Spirit and St. James-Assiniboia School Divisions. *Refer to the two maps later in this document, Appendices B and C, for the geographic distribution of Manitoba's school division licensees (shaded).*

Comment 1: Today's educational digital wireless applications are absolutely essential parts of the school curriculum delivery and must be protected and strengthened. Our schools face a double-barreled dilemma in attempting to discharge our legal responsibilities to educate our students (with demands for digital connectivity increasing rapidly) at the same time that funding for public education is under severe constraints. The existing "grandfathering protection" provided by Industry Canada is vital to the incumbents' network operation and must continue although we recognize that frequency re-alignments within the 2500-2690 MHz band are necessary to be able to implement BRS services and to "return" a portion of the band to Industry Canada for purposes of competitive auction.

Comment 2: There is a distinct difference in the format requirements for Prairie Spirit School Division, whereby their current and continued operation does not suit migration to the TDD portion of the band. We recommend that the PSSD incumbent be accommodated with paired spectrum in the lower and upper FDD portions of the band. And all other school incumbents reserve the right to use FDD systems. Nothing in this document specifically recommends exclusive use of either TDD or FDD systems. Manitoba's incumbent school systems require both frequency and mode agility to accommodate our very demanding network requirements.

Comment 3: Manitoba School Divisions cannot afford on their own, from current provincial and local rate payer funding sources, to make the types of technological investments required by this SPD process... although we support the evolution of mobile broadband services in principle and stand to benefit by its implementation. We will require regulatory, financial and technical assistance to adjust our operations.

Comment 4: Manitoba's incumbent schools have a history of accommodating business interests in the 2.5 GHz band, with substantial channel realignment in 2000-2001. Refer to the SkyCable (Craig Wireless) proposal of that era (a copy is available on file at Interamics® in Winnipeg). During that exercise, the MERLIN IITV schools and TTCM (Tele-Teaching Consortium of Manitoba) ITV schools underwent an extensive consultation. Following that process, several of the 6 MHz MCS channels were adjusted to accommodate Craig's digital services. The current incumbent schools are active participants in the 2009 SPD process and anticipate negotiating arrangements with Industry Canada, with the business incumbents, and with any new business interests – subsequent to an anticipated spectrum auction.

Comment 5: The incumbent school divisions (5 SDs in number; refer to the chart attached, Appendix A) have consulted extensively to reach consensus on a number of issues within this Spectrum Proposal Development (SPD) process. Not all Manitoba SDs have precisely the same needs nor are all SDs at exactly the same point in their evolution from frequency-specific ITV operation. At least 3 of the SDs (BLSD, HSD and SJASD) have urgent and specific plans for upgrading and expanding wireless digital services among their respective schools. Those schools require point-to-multipoint connections with backhaul links of a minimum of 50 Mbps (with near future growth expected to 150+ Mbps) and individual school drops of 10 to 25+ Mbps (with near future growth projected at up to 40+ Mbps for the largest schools).

Comment 6: The incumbents are following current global BRS developments and recognize that 4G WiMax and the more global LTE are emerging spectrum models that will have to be accommodated after a lengthy period (3 to 5 years projected) of frequency and mode adjustments by all incumbents. We also acknowledge that there is a growing movement in Canada to adopt the ITU band plan (FDD70-TDD50-FFD70 MHz) between 2500 and 2690 MHz. To that ultimate end, BLSD and SJASD are willing to concentrate their operations in the TDD portion – with suitable assistance from regulators and business incumbents. Prairie Spirit SD should be supported in its use of FDD technology, consistent with its current operation. However, as new equipment emerges, the incumbent schools require the option to us either FDD or TDD apparatus. This is a complex process that will require extensive discussion both within the school incumbent group and between the schools and Industry Canada and the business incumbents. We also acknowledge Industry Canada's efforts to expedite the SPD consultation but are concerned that we may not be able to adhere to the current schedule.

Comment 7: To meet the large enterprise-type IP-bandwidth requirements of our schools, we need type approval ASAP from Industry Canada to enable the use of data radios similar to the Motorola PTP-25600 series, with frequencies adjusted into the central 50 MHz TDD portion of the ITU band plan. It must be emphasized that our schools are not profit centres, do not have expandable budgets, and must reuse as much of our current wireless infrastructure as possible (including towers, antennas, cables, power centres, path profiles, ERP levels, etc). We do expect to install new

radios in most cases, at both the hub and remote sites. With the expected rapid growth in BRS, we anticipate that FDD equipment may be more suitable to school requirements in future.

Comment 8: As more wireless broadband consumers become active across Canada and across the RF spectrum, some serious issues of high RF noise threshold and interference have emerged. In Manitoba, these noise and interference issues are particularly apparent in unlicensed spectrum in dense urban centres like Winnipeg, Steinbach and Altona. To ensure sustainable wireless connectivity for our schools, we need to concentrate our operations in licensed spectrum, very specifically the 2.5 GHz band. Our lengthy experience with that spectrum (stable links over long distances with minimal line of sight and with relative immunity from fades, snow/dust/smoke path loss, etc.), gives ample reason for not moving from this beneficial band.

Comment 9: There is an emerging format-challenge underway, between WiMax and LTE models, with LTE appearing to have an edge globally. In Canada, WiMax radios tend to be unsuited to our requirements, since we must aggregate large bandwidths into a small number of specific sites, as opposed to the WiMax model of widely dispersed, sectorized links to much larger numbers of subscribers, each with lower bandwidth links. Within the 50 MHz of TDD operation, we need flexibility to use RF bandwidths in increments of 10 MHz and often in blocks of 30 or more MHz.

Comment 10: Some may suggest that Manitoba's incumbent schools migrate completely out of the 2500-2596 MHz spectrum but there is very little appetite for such a gross adjustment to our operation. Doing so will incur huge costs and significant disruption to our current links – links that are stable and sustainable. *Our research to date suggests that no other band suits our existing, urgent needs.*

Comment 11: Some may suggest that Manitoba's incumbent schools not only move out of the 2.5 GHz spectrum but that we also change from a self-operated IP-service mode to a "fee-for-service" mode provided by a commercial ISP. Such a move is unacceptable and archaic, particularly given the global move by consumers to an all-IP suite of services wherein bandwidth consumers expect even basic telephony to be provided within an all-IP environment. To remain viable, our non-profit, public schools have to reduce every possible recurring expense and eliminate as many fee-for-service applications as technically possible.

Comment 12: We invite constructive responses to these DGRB comments and hope to achieve a wide consensus both within the incumbent school licensee group and beyond that group, with Industry Canada and the business incumbents. We need assistance to help move Canada's digital services into the next era of nation-wide accessibility – and we invite offers of assistance from all interested parties.

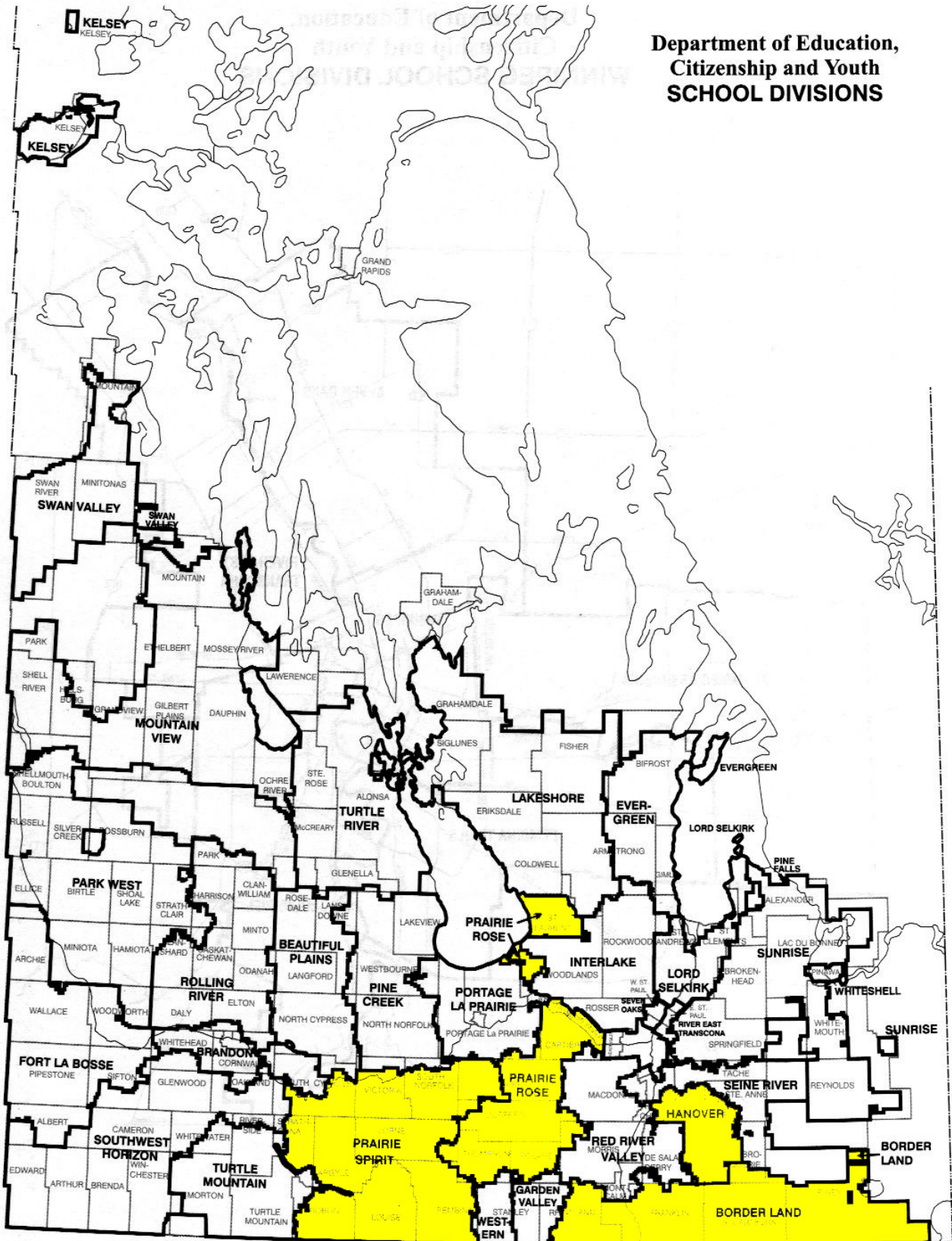
Appendix A

CHART OF SCHOOL DIVISION INCUMBENTS – MANITOBA (Basis 2004)

Manitoba School Division	Sites	Student Population	Current Licensed Spectrum	Notes
Border Land	16 schools	2,463	3x6 MHz plus 5x1.5 MHz	2.5 GHz point-to-multipoint upgrade ASAP
Hanover	17 schools (2 more under construction)	6,585 (now 7,500 in 2009)	3x6 MHz plus 5 x 1.5 MHz	2.5 GHz point-to-multipoint upgrade ASAP
Prairie Rose	27 schools	2,421	Xx6 MHz, plus Xx1.5 MHz	
Prairie Spirit	29 schools	2,620	~80 MHz	<i>Existing operation maintained!</i>
St. James-Assiniboia	27 schools (1 closed in 2008)	9,326	3x6 MHz	2.5 GHz point-to-multipoint needed ASAP
totals	116 schools plus other SD centres	23,415		

Appendix B - 2009 Incumbent Rural School Divisions Licensed at 2.5 GHz

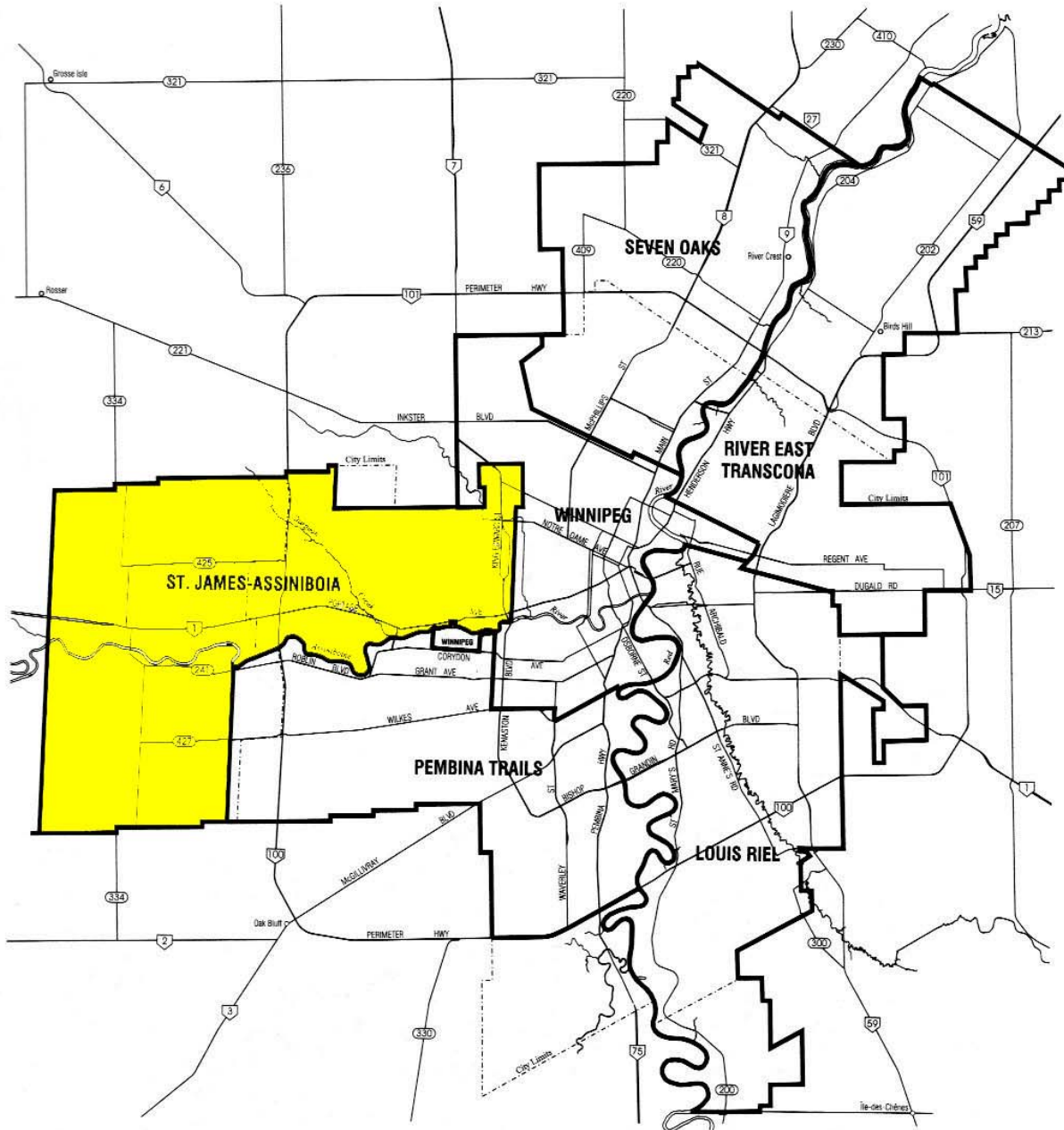
Department of Education,
Citizenship and Youth
SCHOOL DIVISIONS



Cartography by: Manitoba Conservation,
Product Distribution, 2004.

Appendix C - 2009 Incumbent Urban School Divisions Licensed at 2.5 GHz

**Department of Education,
Citizenship and Youth
WINNIPEG SCHOOL DIVISIONS**



Appendix D

CONSENSUS TO DATE – MANITOBA SCHOOL 2.5 GHz INCUMBENT LICENSEES

1. Our mandate is to provide quality education for the children of Manitoba now and into the future. We rely on our spectrum grandfathering to enable us to do so.
2. To fulfill our mandate we must enhance and expand our current data systems.
3. To accomplish this (2) we need regulatory protection and financial and technical assistance.
4. We've examined the European and FCC plans and, of the two plans presented, we're inclined toward the European plan.

This document prepared as a collaborative effort between Wayne R. Warren (ICT Consultant at Intermatics® on behalf of: Anne Malyon and Jason Driedger/Border Land and Rob Carnegie/St. James-Assiniboia School Divisions), Ed Friesen (Hanover School Division), Bruce Wood (Prairie Rose School Division), and Craig Cuddy (Prairie Spirit School Divisions).

There may be additional concerns not addressed in this document but which we will address in the "reply comments" opportunity that has been scheduled.

June 2009