

## **1. Inbound Traffic Data Development - Community Resupply (WP A1a)**

This chapter summarizes the findings of the Yukon and northern British Columbia inbound community resupply traffic data development work completed as part of work package A1a.

### ***1.1 Yukon Freight Flows***

#### **1.1.1 Net Alaska Highway Freight Flows**

Net Alaska Highway Freight Flows were calculated using the *Weigh Scale Database* provided by the Yukon Department of Highways and Public Works, Transportation Planning Branch for the years 2000, 2001, 2002 and 2003. The *Weigh Scale Database* is a refinement of the raw weigh scale log data collected at the Yukon's only two weigh scales which are located in Watson Lake and Whitehorse. The *Weigh Scale Database* combines log data from both the Watson Lake and Whitehorse weigh scales.

The *Weigh Scale Database* does not identify the origin of goods outside of the Yukon. For example, the data do not indicate if a load originated in Edmonton or Toronto. Truck traffic traveling the South Klondike Highway from Skagway is required to report at the Whitehorse weigh scale. As such, commodity tonnages arriving in the Yukon via Skagway are included in the Net Alaska Highway freight flows.

Petroleum products hauled in b-trains from Skagway to Whitehorse are not included in the Whitehorse weigh scale log data files. As the b-trains are overweight for Yukon highways, they are subject to additional haulage fees under provisions of the Yukon Bulk Commodity Haul Regulations. Petroleum product tonnages (GVW) and trip counts were extracted from bulk haul fee invoices on location at the Whitehorse weigh scale.

As only one company currently hauls overweight loads under authority of the Bulk Commodity Haul Regulations, the data extracted from the invoice files relate to a single firm. As reporting of the bulk haul data on its own would allow identification of market share held by the single firm in question, the bulk haul data has been blended with the weigh scale data to ensure confidentiality. An average payload proxy of 75% was used to convert GVW to commodity weight. As complete data was available for only the years 2003 and 2004, the same two-year average of bulk haul petroleum product commodity weights and trip counts were applied to all four years of the Weigh Scale Database data.

The primary purpose of the *Weigh Scale Database* is to estimate the total tonnage traveling over various segments of Yukon highways. In contrast, the Net Alaska Highway Freight flows analysis considers commodity tonnages from a market perspective. Thus, the analysis seeks to answer the question "what is the volume of commodities being delivered into the Yukon and Alaska markets?".

Database query results were further refined to indicate the volume of commodities (by commodity type) delivered to Whitehorse and Alaska (northbound) and delivered to Whitehorse and points South of 60 (southbound). Microsoft Access queries designed Yukon Highways and Public Works were modified with the assistance of Maltby Systems Ltd. in order to extract the full range of commodity types. Draft findings were reviewed with Wally Hiding (Manager) and Vern Janz (Transportation Analyst) from Yukon Highways and Public Works on December 12, 2005 who confirmed the reasonableness of the approach and findings. The complete list of commodity-type fields specified in the weigh scale log database is shown in Table 1.1.

**Table 1.1 Weigh Scale Database Commodity Types**

Agricultural Products	Garbage	Petroleum Products
Bus and Taxi service	Household Goods	Timber
Construction Materials	Iron, Pipe & Steel	Vehicles, Machinery & Equip.
Delivery Service	Livestock	Tractor service
Empty	Mobile Homes - Residential	Not specified
Expediting services	Mobile Homes	
General Merchandise	Mine Ore	

Yukon weigh scales measure only gross vehicle weights (GVWs); data on the actual weight of *commodities* is not collected. Commodity tonnages were calculated as fractions of GVWs according to the type of commodity using the following proxies for average payload:

- o Construction Materials - 60%
- o Iron, Pipe & Steel - 60%
- o Mine Ore - 60%
- o Petroleum Products - 70%
- o Vehicles, Machinery & Equipment - 60%
- o All Others - 50%

By way of example, a truck with a GVW of 50 tonnes carrying petroleum products would have been deemed to have a payload (commodity volume) of 35 tonnes (50 tonnes x .70).

Table 1.2 (following page) presents a summary of net Alaska Highway freight flows for the years 2000, 2001, 2002 and 2003, northbound and southbound.

Over the 2000 to 2003 period, an annual average of 47,232 tonnes of commodities which originated south of 60 were delivered to Whitehorse. Those 47,232 tonnes were delivered with an average of 1,873 truck trips per year and an associated annual average gross vehicle weight of 77,442 tonnes.

**Table 1.2 Summary of Net Alaska Highway Freight Flows**

<b>ALASKA HIGHWAY NORTHBOUND</b>											
	Commodity volumes delivered to Whitehorse originating Sof60 (tonnes)	Commodity volumes delivered to Alaska originating Sof60 (tonnes)	Commodity volumes delivered to Alaska originating in Yukon (tonnes)		Associated GVW for commodity volumes delivered to Whitehorse originating Sof60 (tonnes)	Associated GVW for commodity volumes delivered to Alaska originating Sof60 (tonnes)	Associated GVW for commodity volumes delivered to Alaska originating in Yukon (tonnes)		Associated trip counts for commodity volumes delivered to Whitehorse originating Sof60 (number of trips)	Associated trip counts for commodity volumes delivered to Alaska originating Sof60 (number of trips)	Associated trip counts for commodity volumes delivered to Alaska originating in Yukon (number of trips)
<b>Total for Year 2000</b>	27,449	63,908	1,760		46,370	122,506	163		1,482	6,949	163
<b>Total for Year 2001</b>	37,754	106,470	2,734		63,610	205,774	4,955		1,936	5,255	348
<b>Total for Year 2002</b>	79,484	96,138	5,169		124,567	183,589	9,660		2,039	6,150	347
<b>Total for Year 2003</b>	44,240	101,204	5,810		75,219	193,414	10,603		2,035	6,078	335
<b>Average</b>	47,232	91,930	3,868		77,442	176,321	6,345		1,873	6,108	298

<b>ALASKA HIGHWAY SOUTHBOUND</b>											
	Commodity volumes delivered to Whitehorse originating in Alaska (tonnes)	Commodity volumes delivered to Sof60 originating in Alaska (tonnes)	Commodity volumes delivered to Sof60 originating in Yukon (tonnes)		Associated GVW for commodity volumes delivered to Whitehorse originating in Alaska (tonnes)	Associated GVW for commodity volumes delivered to Sof60 originating in Alaska (tonnes)	Associated GVW for commodity volumes delivered to Sof60 originating in Yukon (tonnes)		Associated trip counts for commodity volumes delivered to Whitehorse originating in Alaska (number of trips)	Associated trip counts for commodity volumes delivered to Sof60 originating in Alaska (number of trips)	Associated trip counts for commodity volumes delivered to Sof60 originating in Yukon (number of trips)
<b>Total for Year 2000</b>	8,584	53,657	4,250		12,851	103,824	7,580		355	2,927	369
<b>Total for Year 2001</b>	6,650	35,747	30,425		9,982	68,264	59,190		332	2,753	499
<b>Total for Year 2002</b>	8,671	42,472	11,661		13,311	80,716	20,666		352	3,176	777
<b>Total for Year 2003</b>	5,935	46,748	13,781		9,241	89,024	24,119		252	3,287	833
<b>Average</b>	7,460	44,656	15,029		11,346	85,457	27,889		323	3,036	620

Table 1.3 shows the top 5 commodity types delivered to Whitehorse originating south of 60 (based on a four year average over the 2000 to 2003 period).

**Table 1.3 Top 5 Commodity Types Alaska Highway Northbound  
-- Delivered to Whitehorse Originating South of 60 --**

Average tonnage	Share (%)	Commodity Type
22,221	47.0	Petroleum Products
11,505	24.4	General Merchandise
4,947	10.5	Vehicles, Machinery & Equip.
4,391	9.3	Construction Materials
2,160	4.6	Iron, Pipe & Steel
45,223	95.7	

Over the 2000 to 2003 period, an annual average of 91,930 tonnes of commodities which originated south of 60 were delivered into the Alaskan market. Those 91,930 tonnes were delivered with an average of 6,108 truck trips per year and an associated annual average gross vehicle weight of 176,321 tonnes.

Table 1.4 shows the top 5 commodity types delivered to Alaska originating south of 60 (based on a four year average over the 2000 to 2003 period).

**Table 1.4 Top 5 Commodity Types Alaska Highway Northbound  
-- Delivered to Alaska Originating South of 60 --**

Average tonnage	Share (%)	Commodity Type
64,477	70.1	General Merchandise
12,050	13.1	Vehicles, Machinery & Equip.
4,669	5.1	Iron, Pipe & Steel
3,731	4.1	Construction Materials
2,351	2.6	Household Goods
87,277	94.9	

Over the 2000 to 2003 period, an annual average of 3,868 tonnes of commodities which originated in Whitehorse were delivered into the Alaskan market. Those 3,868 tonnes were delivered with an average of 298 truck trips per year and an associated annual average gross vehicle weight of 6,345 tonnes.

Table 1.5 shows the top 5 commodity types delivered to Alaska originating in Yukon (based on a four year average over the 2000 to 2003 period).

**Table 1.5 Top 5 Commodity Types Alaska Highway Northbound  
-- Delivered to Alaska Originating in Yukon --**

Average tonnage	Share (%)	Commodity Type
1,798	46.5	General Merchandise
894	23.1	Vehicles, Machinery & Equip.
355	9.2	Petroleum Products
269	6.9	Construction Materials
223	5.8	Bus and Taxi Service
3,538	91.5	

Chart 1.1 presents a summary of northbound commodity volumes delivered to Whitehorse and Alaska for the years 2000, 2001, 2002 and 2003.

Over the 2000 to 2003 period, an annual average of 7,460 tonnes of commodities which originated in Alaska were delivered to Whitehorse. Those 7,460

tonnes were delivered with an average of 323 truck trips per year and an associated annual average gross vehicle weight of 11,346 tonnes.

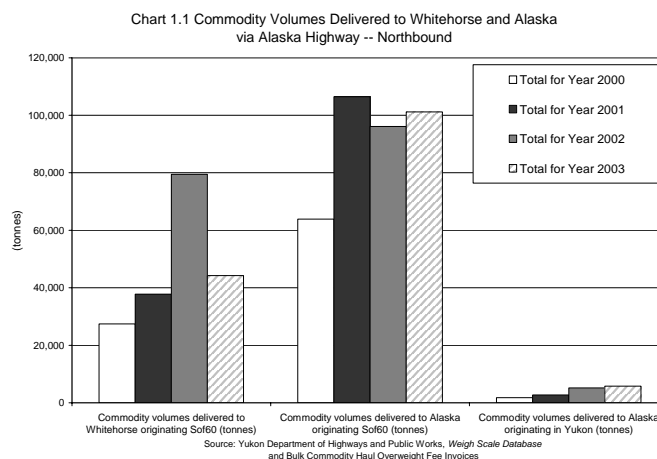


Table 1.6 shows the top 5 commodity types delivered to Whitehorse originating in Alaska (based on a four year average over the 2000 to 2003 period).

**Table 1.6 Top 5 Commodity Types Alaska Highway Southbound -- Delivered to Whitehorse Originating in Alaska --**

Average tonnage	Share (%)	Commodity Type
5,928	79.5	Petroleum Products
694	9.3	General Merchandise
489	6.5	Vehicles, Machinery & Equip.
177	2.4	Iron, Pipe & Steel
148	2.0	Bus and Taxi Service
7,434	99.7	

Over the 2000 to 2003 period, an annual average of 44,656 tonnes of commodities which originated in Alaska were delivered to points south of 60. Those 44,656 tonnes were delivered with an average of 3,036 truck trips per year and an associated annual average gross vehicle weight of 85,457 tonnes.

Table 1.7 shows the top 5 commodity types delivered to markets south of 60 originating in Alaska (based on a four year average over the 2000 to 2003 period).

**Table 1.7 Top 5 Commodity Types Alaska Highway Southbound -- Delivered to South of 60 Originating in Alaska --**

Average tonnage	Share (%)	Commodity Type
25,131	56.3	General Merchandise
7,722	17.3	Vehicles, Machinery & Equip.
7,341	16.4	Household Goods
3,779	8.5	Iron, Pipe & Steel
266	0.6	Petroleum Products
44,237	99.1	

Over the 2000 to 2003 period, an annual average of 15,029 tonnes of commodities which originated in the Yukon were delivered into markets south of 60. Those 15,029 tonnes were delivered with an average of 620 truck trips per year and an associated annual average gross vehicle weight of 27,889 tonnes.

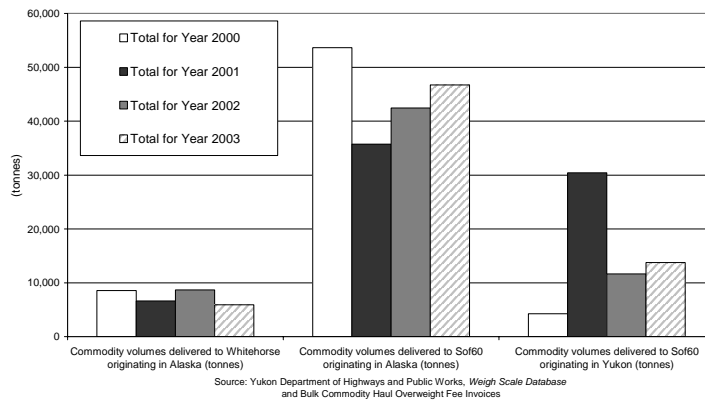
Table 1.8 shows the top 5 commodity types delivered to markets south of 60 originating in Yukon (based on a four year average over the 2000 to 2003 period).

**Table 1.8 Top 5 Commodity Types Alaska Highway Southbound  
-- Delivered to South of 60 Originating in Yukon --**

Average tonnage	Share (%)	
8,323	55.1	General Merchandise
4,854	32.2	Vehicles, Machinery & Equip.
611	4.0	Petroleum Products
420	2.8	Iron, Pipe & Steel
283	1.9	Construction Materials
14,491	96.0	

Chart 1.2 presents a summary of southbound commodity volumes delivered to Whitehorse and Alaska for the years 2000, 2001, 2002 and 2003.

Chart 1.2 Commodity Volumes Delivered to Whitehorse and South of 60 via Alaska Highway -- Southbound



### 1.1.2 South Klondike Highway Freight Flows

South Klondike Highway freight flows were calculated using additional *Weigh Scale Database* information for the years 2000, 2001, 2002, 2003 and 2004 supplied by the Yukon Department of Highways and Public Works. The South Klondike Highway data provides an indication of commodity tonnages arriving in Whitehorse (northbound) and Skagway (southbound).

Over the 2000 to 2004 period, commodity volumes delivered to Whitehorse via the Inside Passage averaged 29,450 tonnes per year. Those 29,450 tonnes were delivered with an average of 949 truck trips per year and an associated annual average gross vehicle weight of 46,113 tonnes.

Petroleum products and the Government of Yukon liquor haul constituted the majority of the Skagway to Whitehorse freight flows over the 2000 to 2004 period. Petroleum products accounted for approximately 70% of total tonnages trucked over the White Pass.<sup>1</sup> General merchandise accounted for an additional 24% (with the Government of Yukon Liquor haul accounting for the bulk of the general merchandise tonnage).<sup>2</sup> Exceptionally large volumes of petroleum products appear to have been trucked over the White Pass in 2003 in 2004; these figures were confirmed by Yukon Highways and Public Works on 24 January, 2006.

Over the 2000 to 2004 period, commodity volumes delivered to Skagway via Whitehorse averaged 1,402 tonnes per year. Those 1,402 tonnes were delivered with an average of 184 truck trips per year and an associated annual average gross vehicle weight of 2,403 tonnes. Machinery and equipment accounted for 35% of total volumes traveling south over the White Pass with petroleum products accounting for an additional 28% of average tonnages.

Table 1.9 presents a summary of South Klondike Highway freight flows for the years 2000, 2001, 2002, 2003 and 2004, northbound and southbound.

**Table 1.9 Summary of South Klondike Highway Freight Flows**

<b>NORTHBOUND</b>				<b>SOUTHBOUND</b>			
	Commodity volumes delivered to Whitehorse via Inside Passage (tonnes)	Associated GVW for commodity volumes delivered to Whitehorse via Inside Passage (tonnes)	Associated trip counts for commodity volumes delivered to Whitehorse via Inside Passage (number of trips)		Commodity volumes delivered to Skagway via Whitehorse (tonnes)	Associated GVW for commodity volumes delivered to Skagway, Alaska via Whitehorse (tonnes)	Associated trip counts for commodity volumes delivered to Skagway, Alaska via Whitehorse (number of trips)
<b>2000</b>	12,803	24,299	706	<b>2000</b>	2,282	3,649	176
<b>2001</b>	9,981	19,022	575	<b>2001</b>	1,629	2,715	277
<b>2002</b>	16,317	29,054	729	<b>2002</b>	1,264	2,298	169
<b>2003</b>	76,091	114,820	1,997	<b>2003</b>	1,528	2,810	242
<b>2004</b>	32,059	43,368	736	<b>2004</b>	307	540	57
<b>Average</b>	29,450	46,113	949	<b>Average</b>	1,402	2,403	184

<sup>1</sup> Figures for 2003 and 2004 include commodity tonnages hauled under authority of Yukon Highways and Public Works bulk haul permits; figures for 2000, 2001 and 2002 do not include commodity tonnages hauled under authority of Highways and Public Works bulk haul permits.

<sup>2</sup> According to the Yukon Liquor Corporation, 6,459 tonnes of liquor and related goods were hauled from Vancouver to Whitehorse during the April 1, 2003 to March 31, 2004 period and 6,130 tonnes of liquor and related goods were hauled during the period April 1, 2004 to March 31, 2005.

### 1.1.3 Haines Highway Freight Flows

Vehicular traffic traveling north on the Haines Highway between Haines, Alaska and Haines Junction, Yukon are counted by Canada Customs personnel as they pass through the Pleasant Camp border crossing. Table 10.1 shows the number of trucks which passed through Pleasant Camp northbound during the years 1999 to 2004 inclusive. According to Canada Customs personnel, 75% to 80% of total truck counts are Lynden Transport Inc./Alaska Marine Lines. On the basis of information collected by Don Dean (November 5, 2005 discussion with Fred Gray, Manager, Delta Western in Haines Alaska), some of the remaining tonnage is believed to include Delta Western fuel distributed by Imperial Oil to points on the North Alaska Highway.<sup>3</sup>

**Table 1.10 Haines Highway Truck Counts**

	Number of trucks
<b>1999</b>	1,248
<b>2000</b>	909
<b>2001</b>	775
<b>2002</b>	743
<b>2003</b>	602
<b>2004</b>	536
Average	802

### 1.2 Northern British Columbia Freight Flows

Weigh scale data which might describe commodity tonnages delivered into northern British Columbia communities is not collected by the Government of British Columbia. In order to garner some measure of potential tonnages, commodity tonnages were calculated on a proxy basis by applying Yukon per capita commodity tonnages to northern British Columbia population estimates. The Yukon per capita commodity tonnages were calculated, on a commodity by commodity basis, for the years 2001, 2002 and 2003.<sup>4</sup> The per capita tonnages were then averaged over the three year period and applied to the population of the Stikine region. As shown by the figures in Table 1.11 below, it is estimated that only scant tonnage of commodities are trucked into northern British Columbia communities, with total tonnages (all commodities) in the range of 1,800 per year.

**Table 1.11 Estimated Northern British Columbia Community Resupply Tonnages**

	2001	2002	2003
<b>Stikine* Region Annual Population Estimates</b>	1,374	1,330	1,376
<b>Estimated Annual Commodity Tonnages</b>	1,844	1,785	1,846

\* Covers an area of 132,496 square kilometres and includes the unincorporated communities of Atlin, Cassiar, Dease Lake, Good Hope Lake and Lower Post.

<sup>3</sup> Note that tonnages trucked as far east as the junction of the North Klondike and Alaska Highways are captured in the Net Alaska Highway analysis as trucks passing through that junction are required to report at the Whitehorse Weigh Scale.

<sup>4</sup> The total population of the Yukon was 29,967 in 2003, 30,063 in 2002 and 29,967 in 2001. Yukon population estimates were found in the *2003 Yukon Statistical Review*. Stikine Region population figures were found at [www.bcstats.gov.bc.ca](http://www.bcstats.gov.bc.ca).



### ***1.3 Freight Rates***

As of December 2005, there were five "major" trucking firms hauling freight between Whitehorse and Edmonton. They include Byers Transportation System Inc., Canadian Freightways Ltd., MATCO Transportation Systems, Northwest Transport Ltd. and Pacific Northwest Freight Systems. Byers Transportation System Inc., Canadian Freightways Ltd. and Northwest Transport Ltd. Haul between Vancouver and Whitehorse as well as between Edmonton and Whitehorse. Byers Transportation System Inc. charges the same rate whether traveling northbound or southbound.

On the basis of estimates obtained, cost quotes for a hypothetical full truck load (TL) shipment originating in Edmonton for delivery to Whitehorse averaged \$CDN 6,364. This cost estimate figure is for an enclosed van, including the fuel surcharge and federal goods and services tax. Cost estimates for the same shipment originating in Vancouver for delivery to Whitehorse averaged \$CDN 8,909 (includes the fuel surcharge and federal goods and services tax). A similar sized shipment, shipped by barge from Vancouver to Skagway and then by truck from Skagway to Whitehorse, was quoted at \$CDN 3,076 (exclusive of the 18% fuel surcharge and federal goods and services tax).

Less than full truckload (LTL) estimates for shipments originating in Edmonton for delivery to Whitehorse averaged \$CDN 25.08 per hundred weight (cwt) for a 10,000 pound load. Specifications for the Yukon Liquor Corporation liquor haul contract indicate that current rates in effect until March 31, 2006 for liquor and related goods from Vancouver to Whitehorse are \$CDN 7.75 per cwt.