

YUKON SNOW SURVEY BULLETIN & WATER SUPPLY FORECAST

March 1, 2014

Prepared and issued by:
Water Resources Branch
Environment Yukon



PREFACE

The Yukon Snow Survey Bulletin and Water Supply Forecast is prepared and issued three times annually – after March 1st, April 1st and May 1st – by Environment Yukon’s Water Resources Branch. The bulletin provides a summary of winter meteorological and streamflow conditions for Yukon, as well as current snow depth and snow water equivalent observations for 56 locations. This information is used to make projections of total volume runoff for the summer period and an estimate of peak flow for the main river basins and sub-basins including the upper and lower Yukon, Pelly, Stewart, Liard, Alsek, Porcupine and Peel Rivers. Information about the bulletin, snowpack conditions or streamflow projections can be obtained by contacting:

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WATER NETWORK CHANGES for 2014

There were no water network changes in 2014. This bulletin, as well as earlier editions, is available online at: www.env.gov.yk.ca/snowbulletin

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Other agencies that contribute significantly to the Snow Survey Program by providing data, assistance and information for the bulletin are:

Data Collection Officer, Natural Resources Conservation Service, United States Department of Agriculture

Meteorologist, Wildland Fire Management, Yukon Department of Community Services, Whitehorse

Officer in Charge, Water Survey of Canada, Whitehorse

Water Management Engineer, Yukon Energy Corporation

Agencies cooperating with Environment Yukon in the Snow Survey Program are:

B.C. Ministry of Environment, Water Stewardship Division,

Parks Canada

Yukon Department of Energy Mines and Resources, Compliance Monitoring and Inspections Branch

Yukon Department of Environment, Information Management and Technology Branch

Yukon Department of Highways and Public Works

YUKON TERRITORY SNOWPACK CONDITIONS AND RUNOFF PROJECTION

WEATHER

In contrast to the winter of 2012-13, the current winter started off mild with above-normal temperatures in October and near-normal temperatures in November. December saw widespread snowfall throughout much of the territory followed by an unusually mild January that broke daily temperature records in many locations. February brought variable weather but could be characterized overall as cold and dry.

October

A series of upper ridges brought warm air to the territory and kept temperatures slightly above seasonal normals, especially during the latter half of the month. Mean daily temperatures for the month were above 0°C for the southern two thirds of the territory and precipitation, mostly in the form of rain, was near or slightly below normal for the month.

November

The warm, dry conditions of October continued into November until mid-month when a cold air mass moved down from the far North. Late in the month, an upper ridge moderated temperatures throughout most of the territory, with northern sections ending the month slightly warmer than normal and central and southern sections slightly cooler. Precipitation was variable with most of southern Yukon experiencing below-normal levels while some areas in central and northern Yukon received up to 150% of normal precipitation.

December

A deep low over the Northwest Territories brought a steady supply of cold air into Yukon for much of December. A mid-month collision between this cold air mass and warm, moist air driven up from southern latitudes brought widespread heavy snowfall to most of central and southern Yukon, breaking several records in what is typically a dry month. Monthly mean temperatures were several degrees cooler than normal except for Watson Lake, which was near-normal.

January

January was marked by a series of upper ridges bringing warm air into Yukon, including the uncharacteristically late arrival of warm air from tropical latitudes. All meteorological stations ended the month with well-above normal temperatures. Precipitation was once again variable, with most of the north and southeast receiving slightly above-average snowfall while central and southern areas received slightly below-normal levels.

February

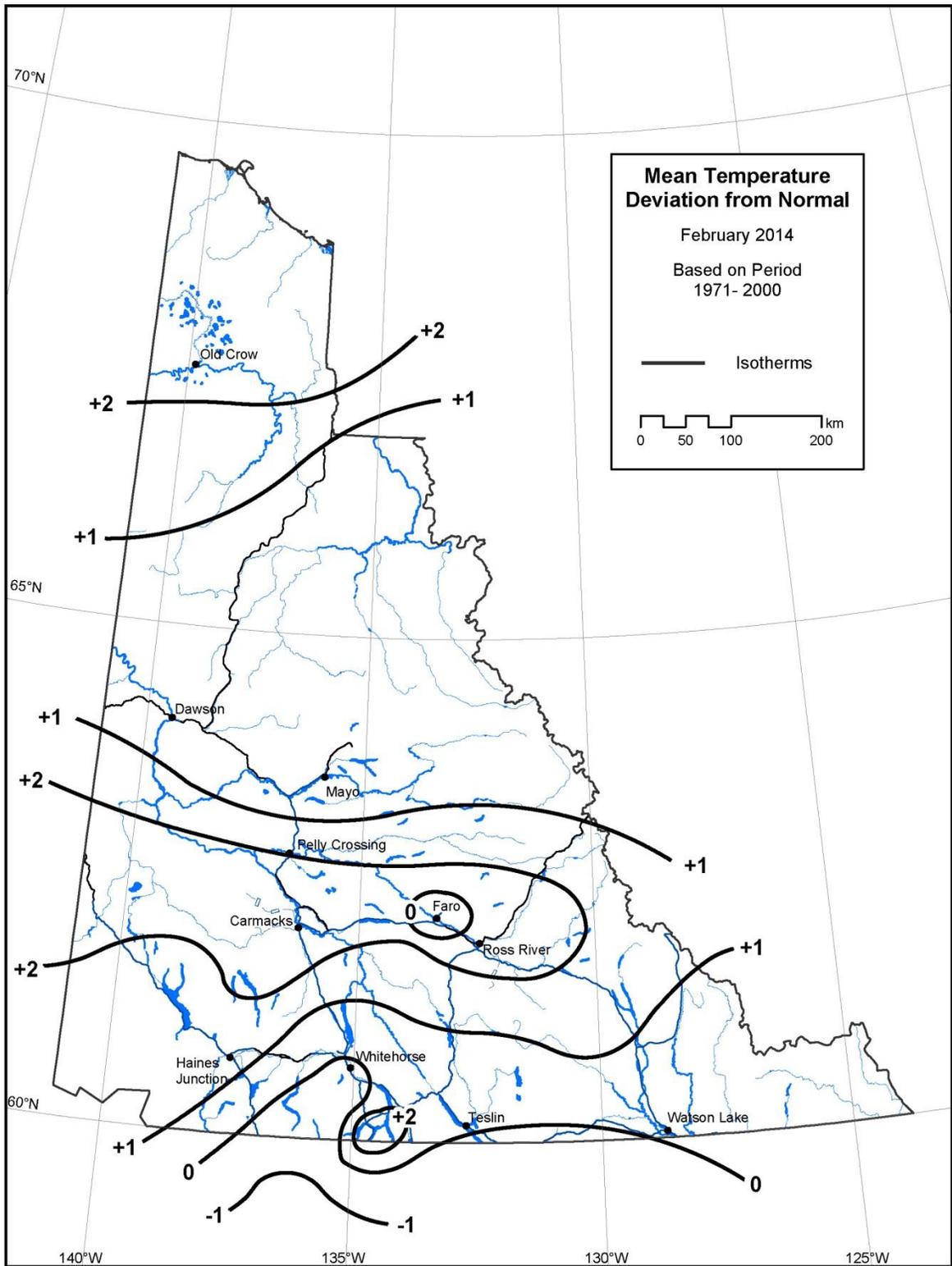
Cooler temperatures ushered in the start of February with an upper ridge bringing brief warming to southern and central Yukon mid-month. This was followed by a persistent upper ridge that brought sunny days and cold, clear nights to most of the territory. Temperatures throughout Yukon were slightly cooler than normal for the month and the whole territory was exceptionally dry, with all stations reporting between 25% and 50% of normal precipitation.

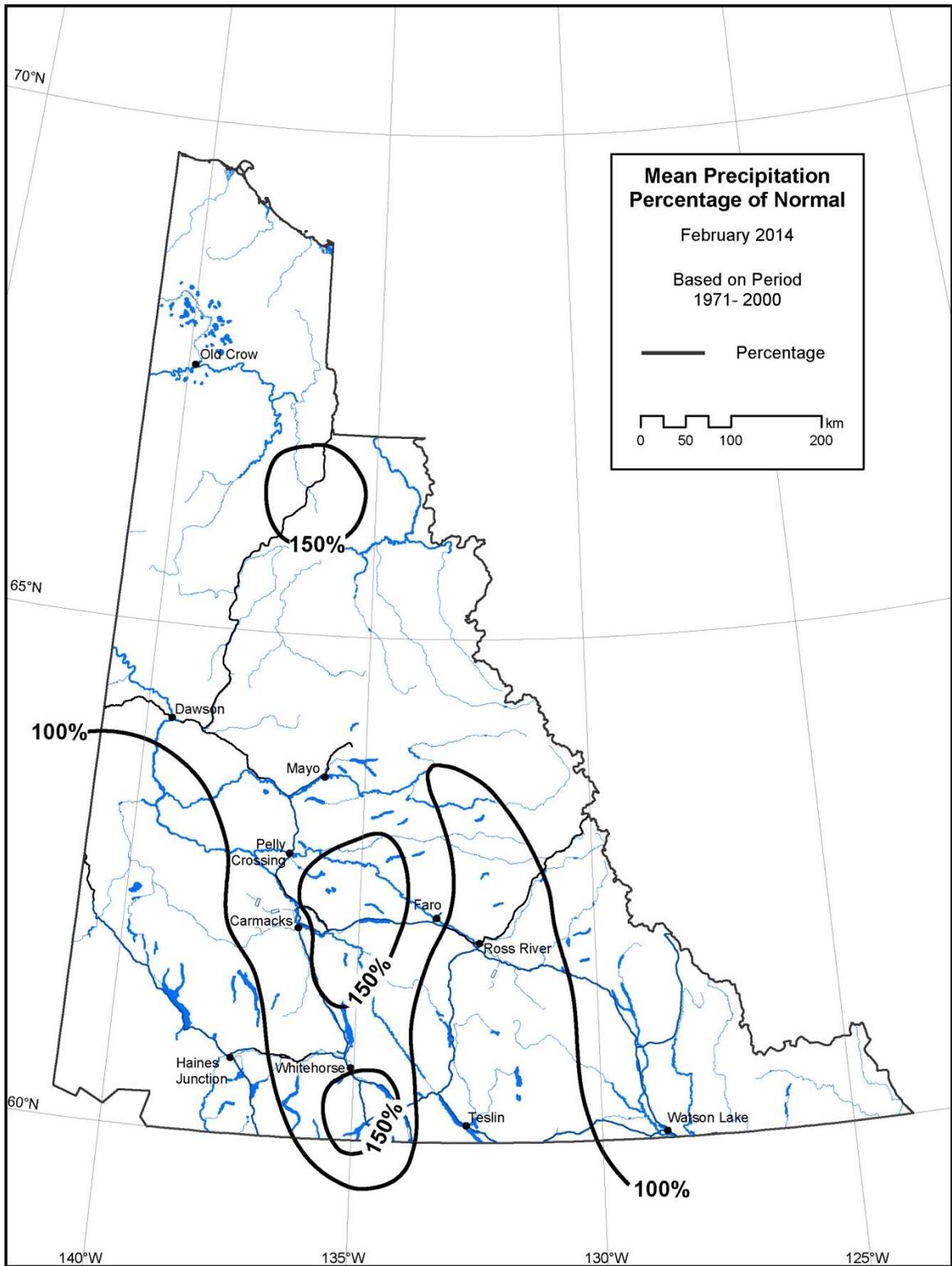
SNOWPACK

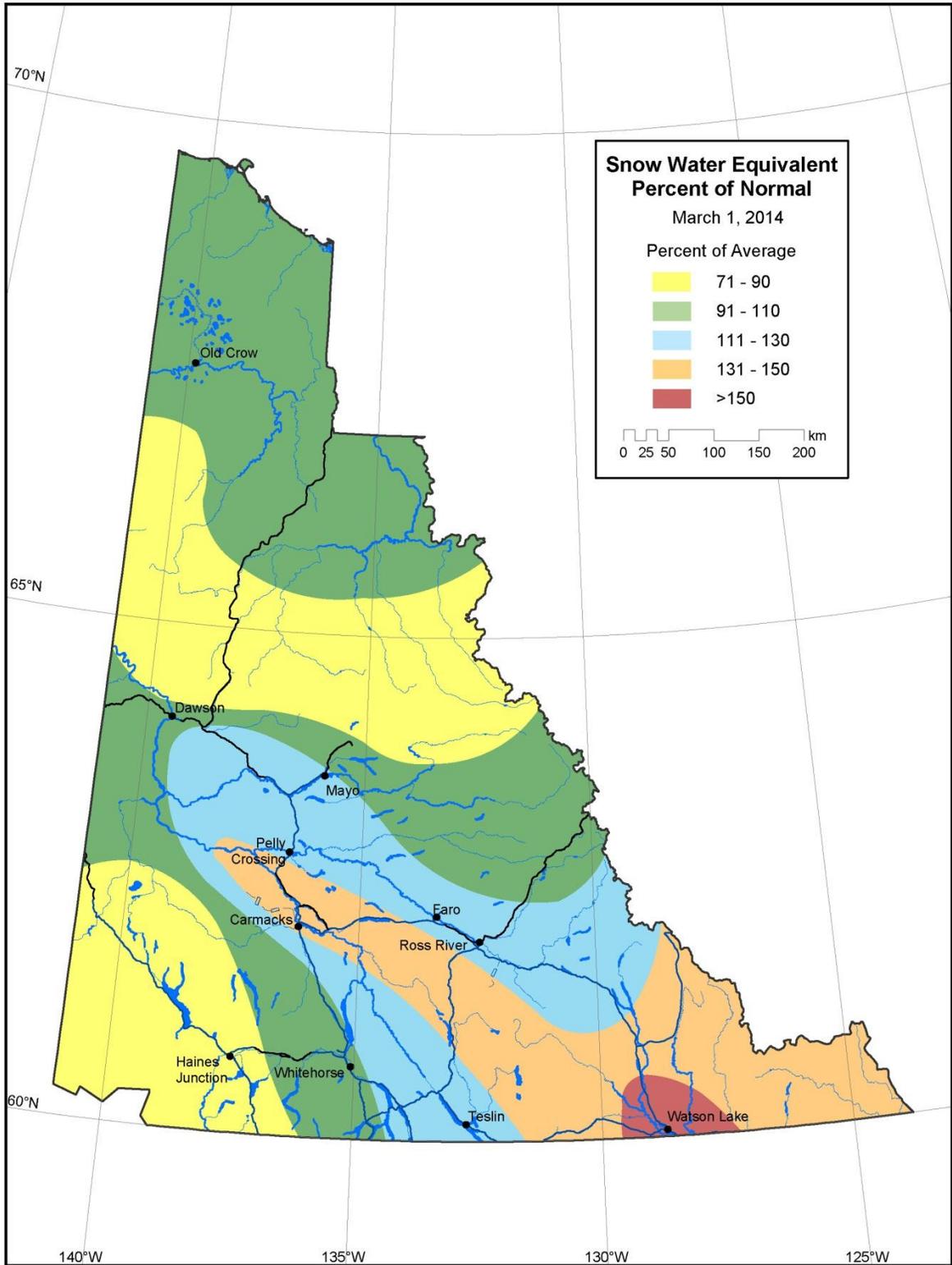
Generally, the March 1st Yukon snowpack is close to normal. Above average snowfall in December was tempered by relatively dry weather in January and February, resulting in levels only somewhat above normal. Southwestern and northern Yukon are exceptions with below-average snowpack. By contrast, there is an above-normal snowpack in much of southeastern Yukon with well-above-normal values in the Watson Lake area and above-normal values in an area extending north and west through to the Carmacks area.

STREAMFLOW

Streamflow conditions throughout Yukon are generally above normal. The upper Yukon River is just above normal while the Stewart, Pelly, Liard, Peel and Alsek Rivers are all well above normal. The Porcupine River is running somewhat above normal for the time or year. Streamflow during this period represents winter baseflow, which provides an indication of winter groundwater contributions.





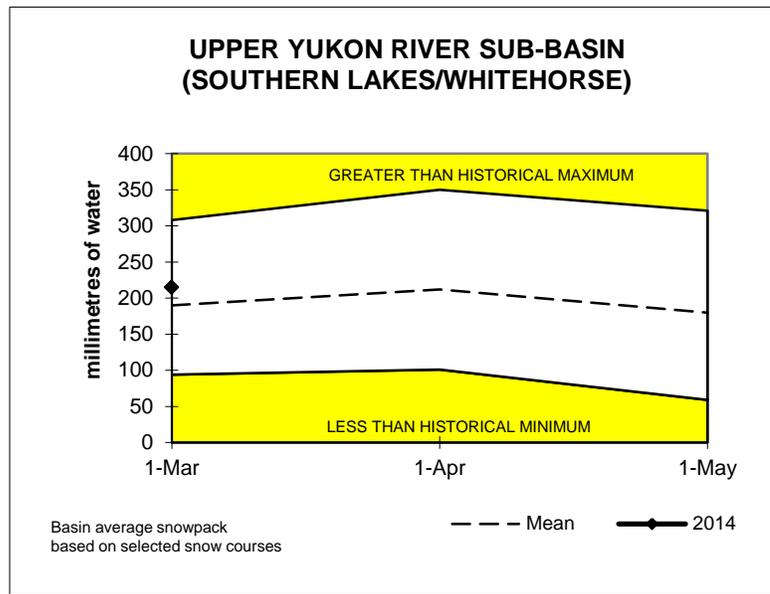


YUKON RIVER BASIN

Snowpack conditions in the Yukon River basin range from above normal in the southeastern and central portion of the basin to normal in the northern regions. Overall conditions for the Yukon River basin are somewhat above normal.

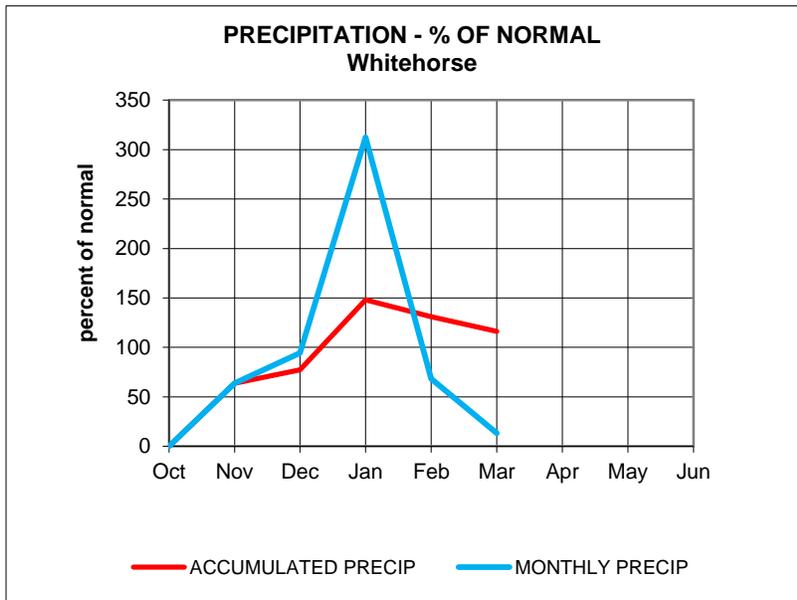
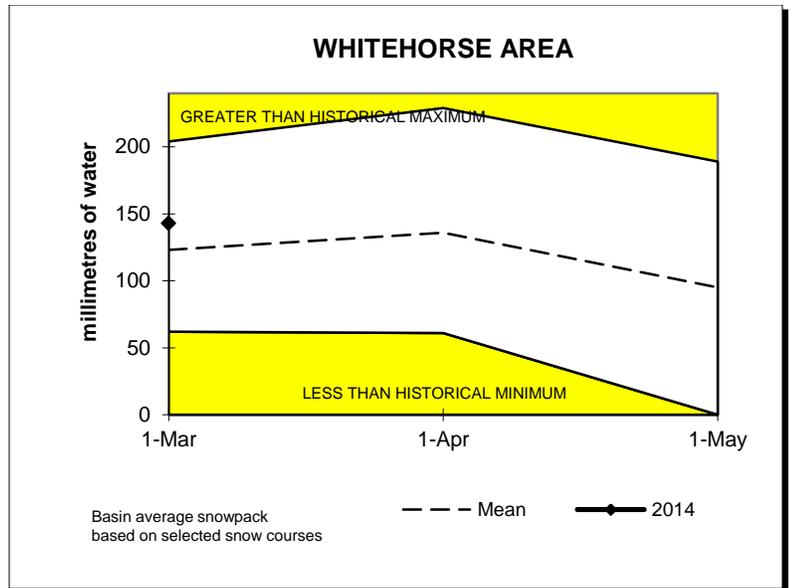
UPPER YUKON RIVER SUB-BASIN (SOUTHERN LAKES)

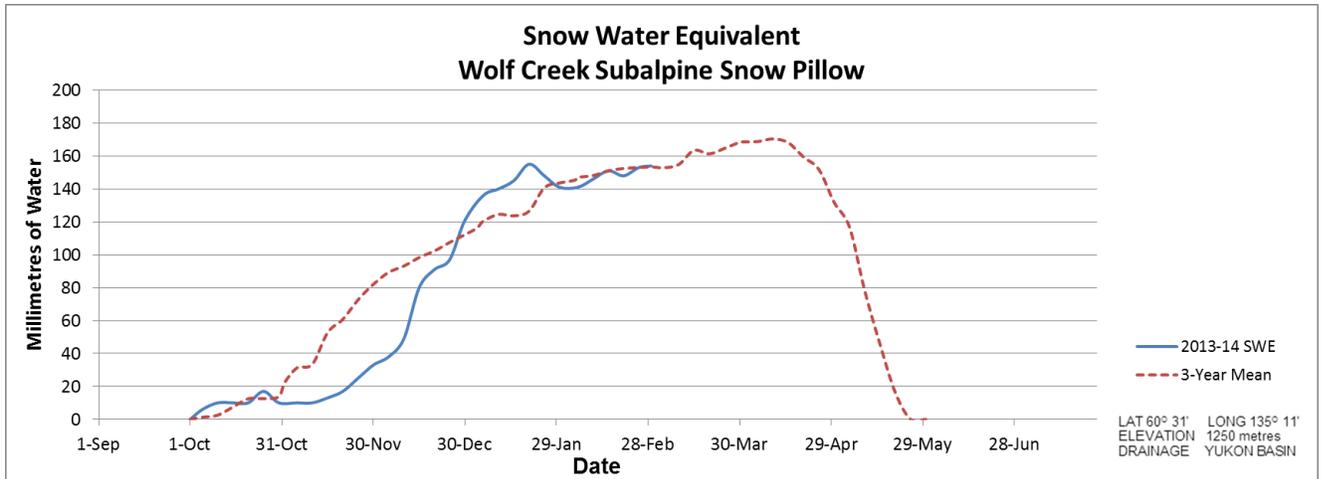
Snowpack conditions in the upper Yukon River watershed are slightly above normal. Values range from 106 percent of normal at Montana Mountain to 132 percent of normal at Meadow Creek. The basin-wide average has been estimated to be 113 percent of normal.



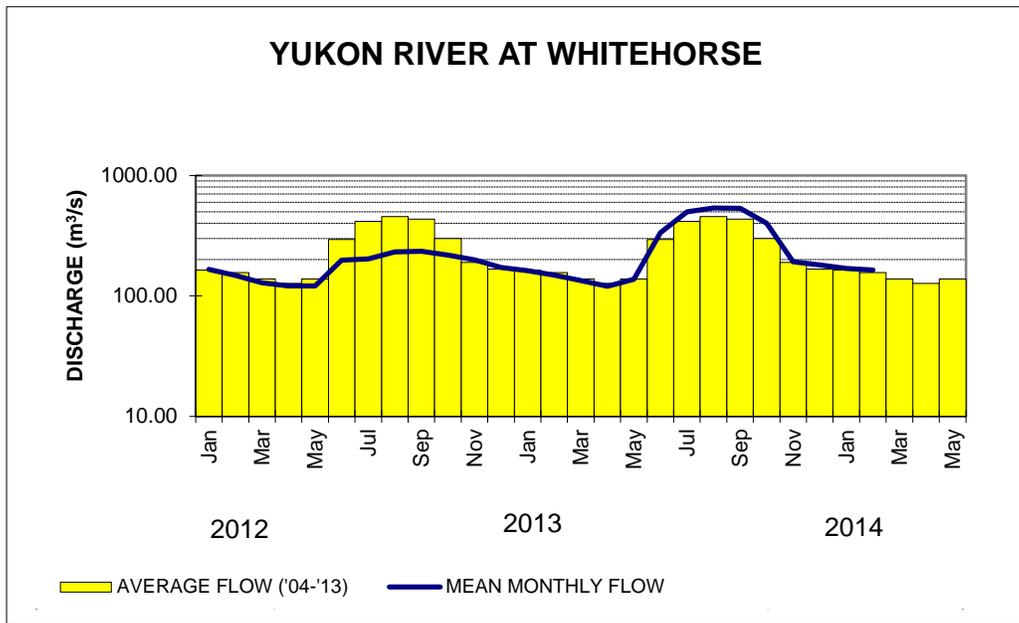
WHITEHORSE AREA

Snowpack conditions in the Whitehorse area are somewhat above normal for March 1st. Values range from 106 percent of normal at Montana Mountain to 124 percent of normal at Mt. McIntyre. An area-wide average is estimated to be 116 percent of normal.



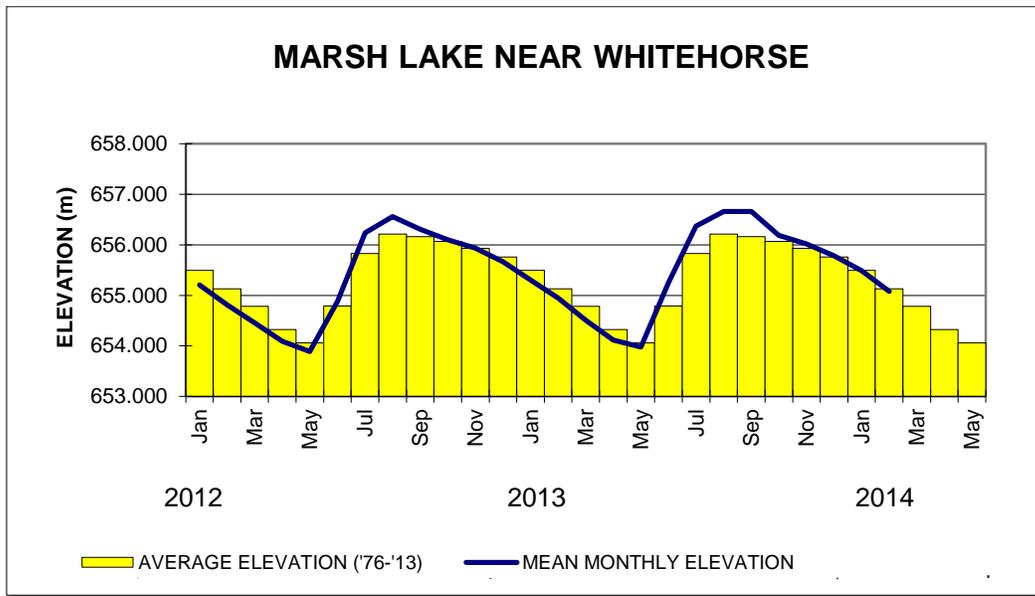


Note: The slight drops in measured Snow Water Equivalent toward the end of both October and January are attributed to unusually high daily temperatures causing liquid water to precipitate out of the snow pack.



YUKON RIVER and MARSH LAKE

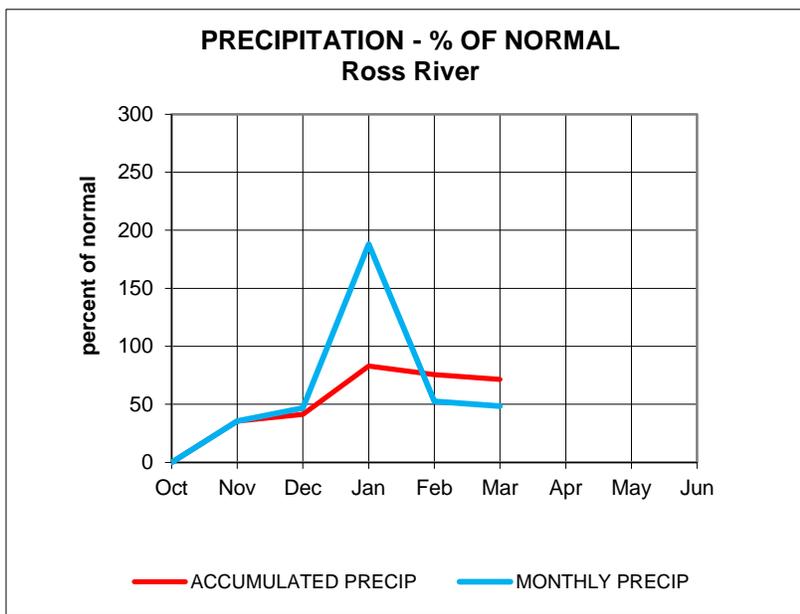
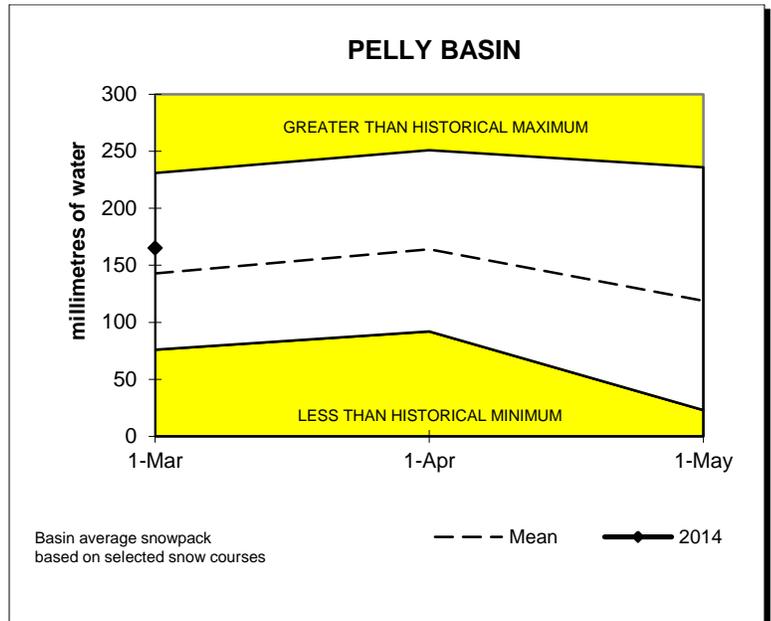
The mean elevation of Marsh Lake during February was 655.077m or 0.055m below normal. Yukon River at Whitehorse mean discharge during February was 105 percent of normal. Given normal summer meteorological conditions, volume runoff and peak flows for the season are each expected to be 120 and 115 percent of normal, respectively.



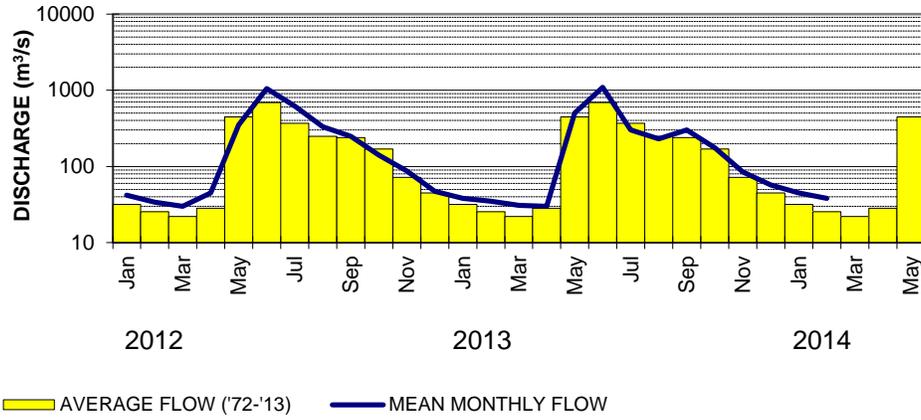
PELLY RIVER SUB-BASIN

Snowpack conditions in the Pelly River watershed are just above normal. Values of snow water equivalent range from 109 percent of normal at Twin Creeks to 123 percent of normal at Hoole River. A basin-wide average has been estimated to be 115 percent of normal.

Mean February streamflow for the watershed was 150 percent of normal as indicated by the Pelly River below Vangorda Creek. Given normal summer meteorological conditions, volume runoff and peak flows are expected to be 115 percent and 110 percent of normal, respectively.



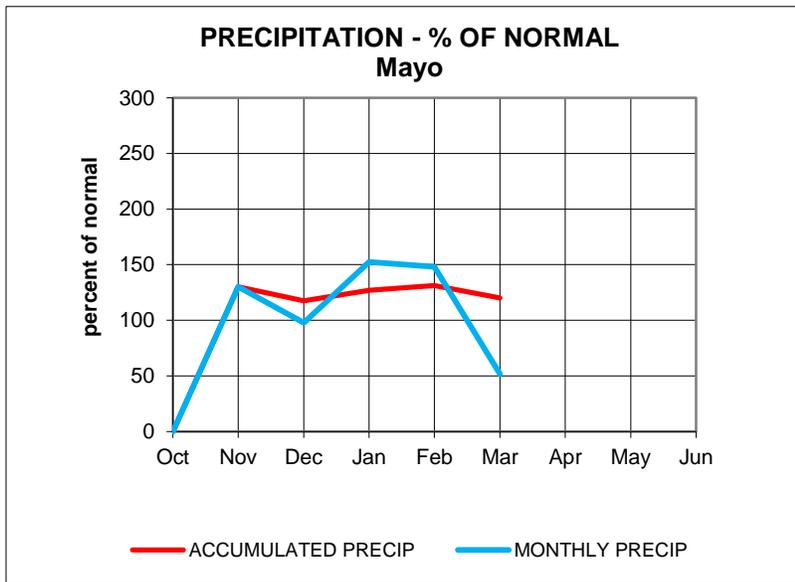
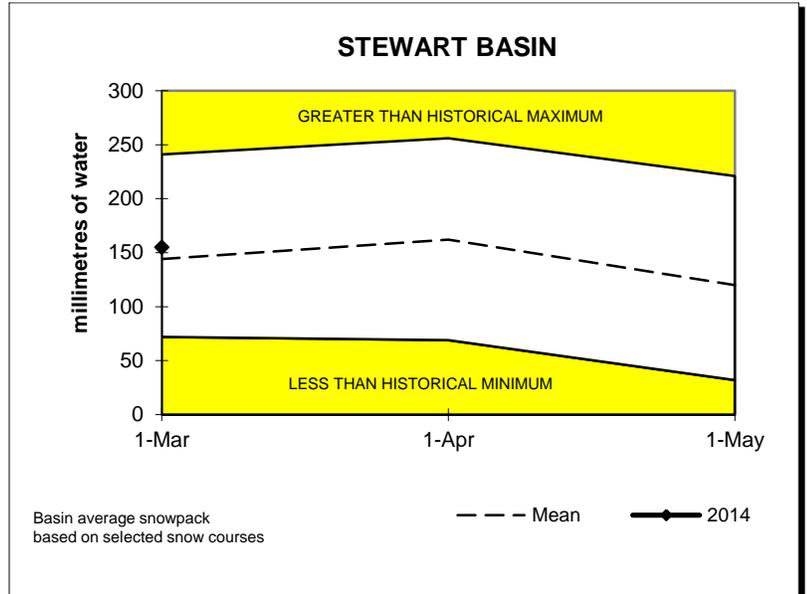
PELLY RIVER BELOW VANGORDA CREEK

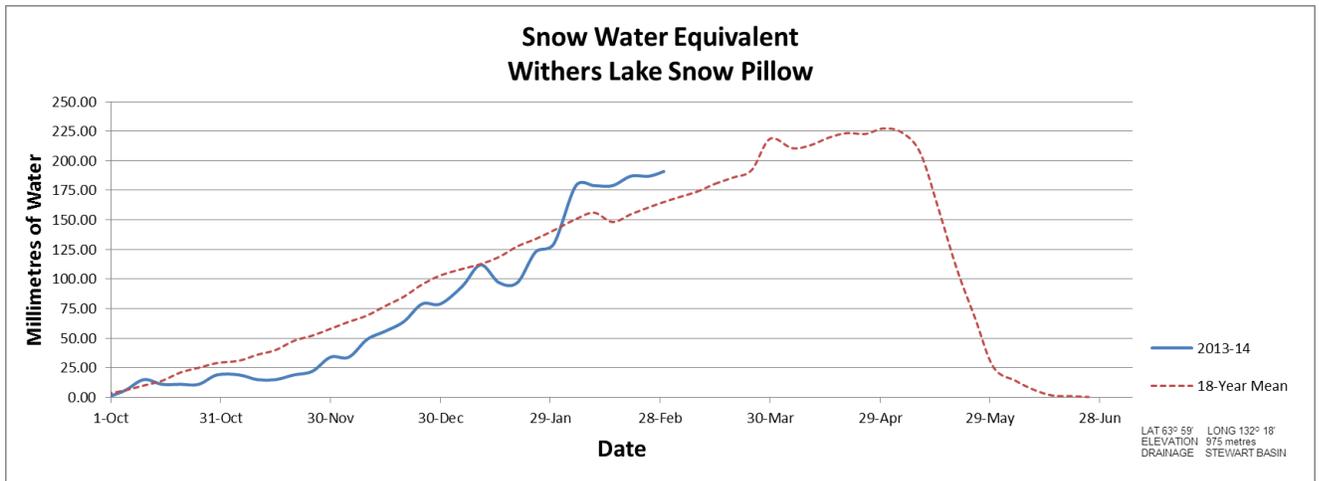


STEWART RIVER SUB-BASIN

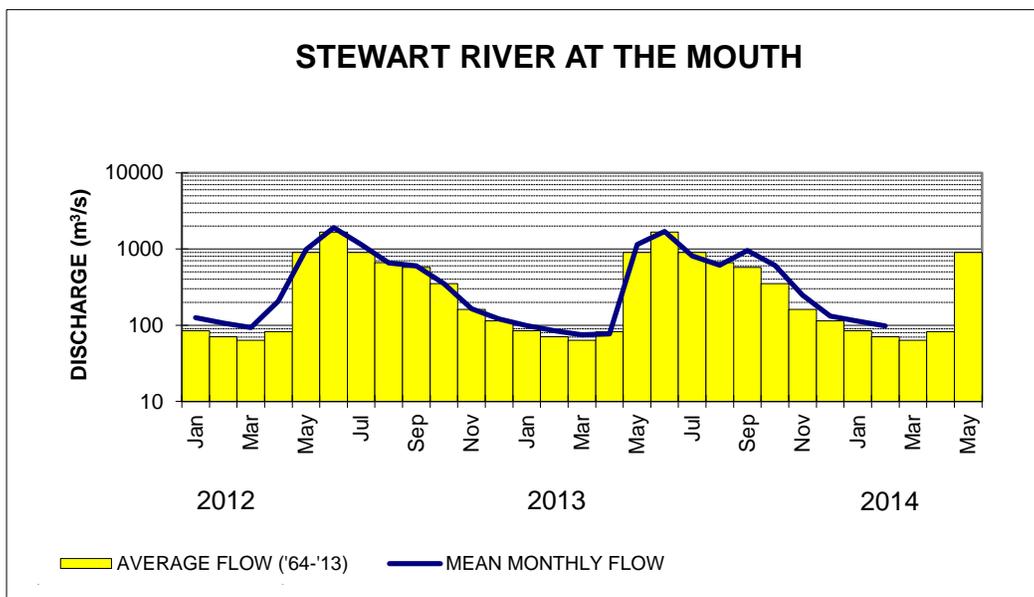
Snowpack conditions in the Stewart River watershed are slightly above normal for March 1st. Values of snow water equivalent range from 103 percent of normal at Plata Airstrip to 114 percent of normal at Mayo Airport. A basin-wide average has been estimated to be 108 percent of normal.

Mean February streamflow for the watershed was 139 percent of normal as indicated by the Stewart River at the Mouth. Given normal summer meteorological conditions, volume runoff and peak flows for the season are each expected to be 100 and 110 percent of normal, respectively.



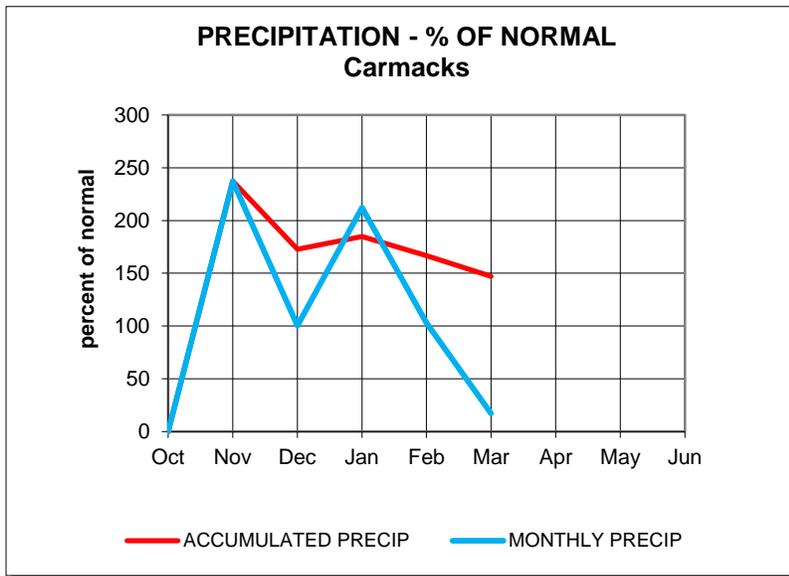
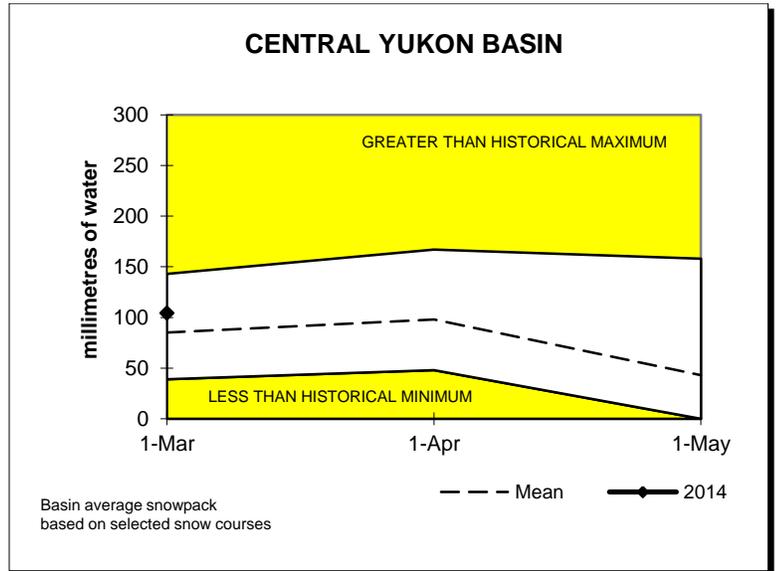


Note: The slight drops in measured Snow Water Equivalent toward the end of both October and January are attributed to unusually high daily temperatures causing liquid water to precipitate out of the snow pack.



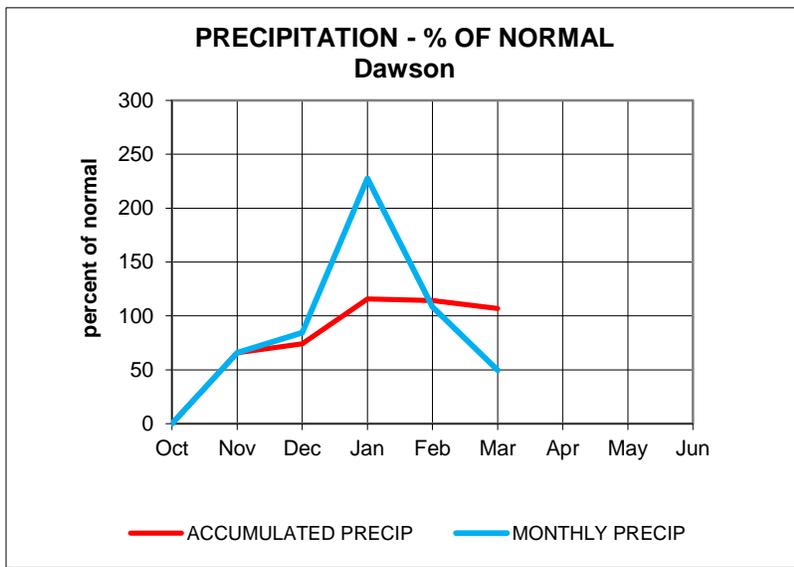
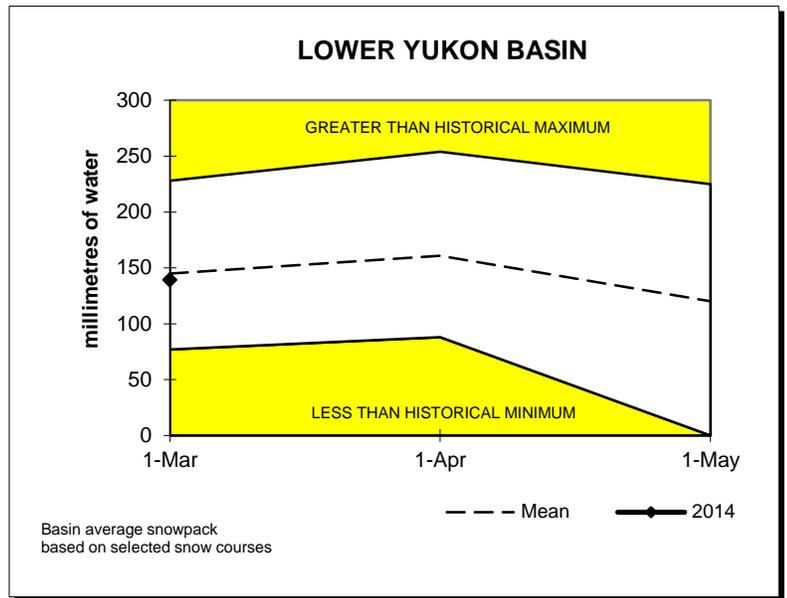
CENTRAL YUKON RIVER BASIN (CARMACKS AREA)

Snowpack conditions in the Carmacks area are above normal for March 1st. Values of snow water equivalent range from 82 percent of normal at MacIntosh to 153 percent of normal at Mt. Nansen. An area-wide average has been estimated to be 122 percent of normal.



LOWER YUKON RIVER BASIN (DAWSON AREA)

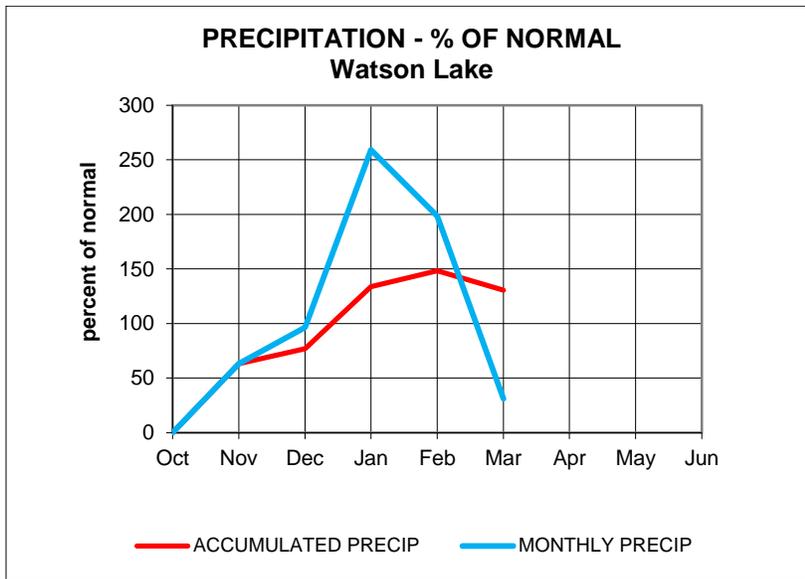
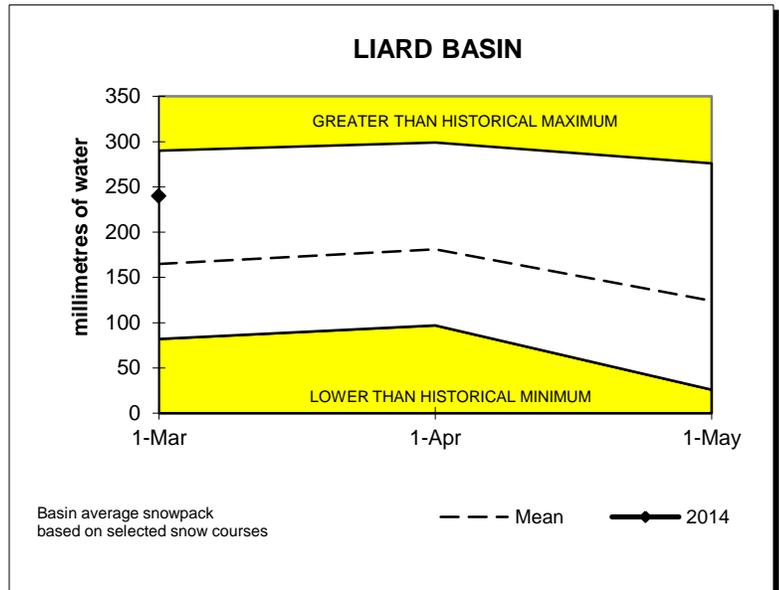
Snowpack conditions in the Dawson area are close to normal for March 1st. Values of snow water equivalent range from 86 percent of normal at Midnight Dome to a record of 113 percent of normal at King Solomon Dome. An area-wide average has been estimated to be 95 percent of normal.



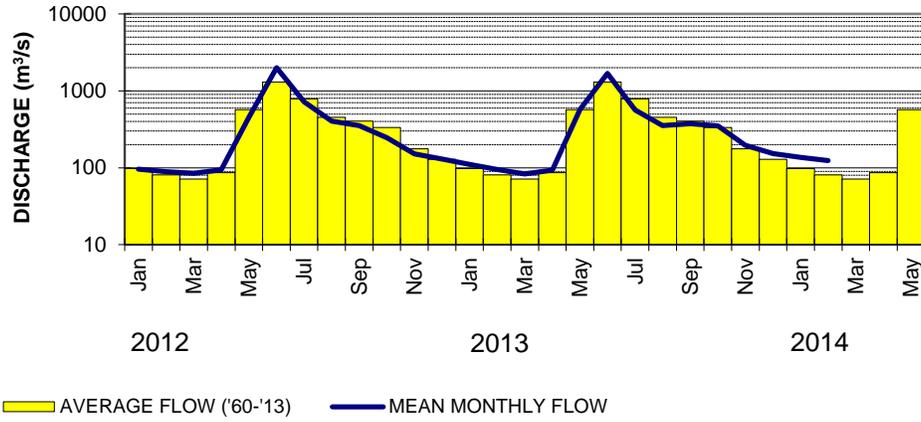
LIARD RIVER BASIN

Snowpack conditions within the Liard River watershed are well above normal. Values of snow water equivalent range from 128 percent of normal at the Tintina Airstrip to 175 percent of normal at Watson Lake Airport. A basin-wide average has been estimated to be 146 percent of normal.

Mean February streamflow for the Liard River upstream of Upper Liard was 154 percent of normal. Given normal summer meteorological conditions, volume runoff and peak flows for the season are expected to be 150 percent and 145 percent of normal, respectively.



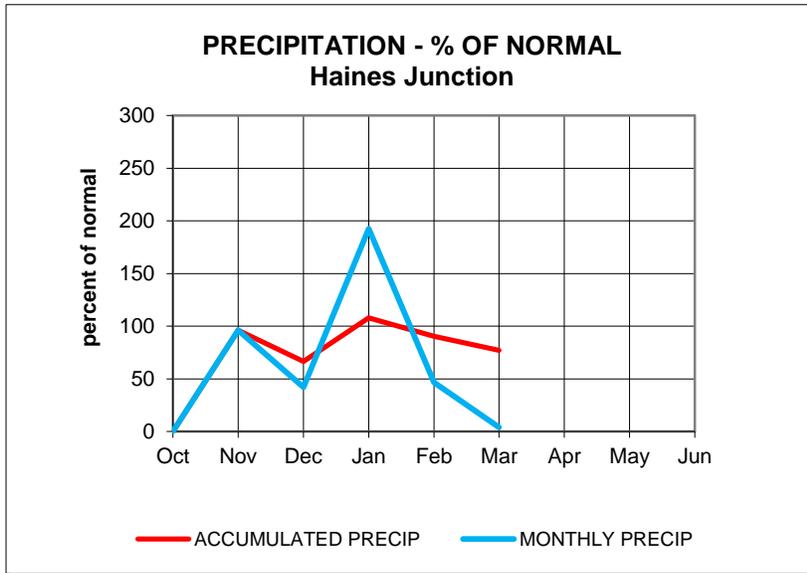
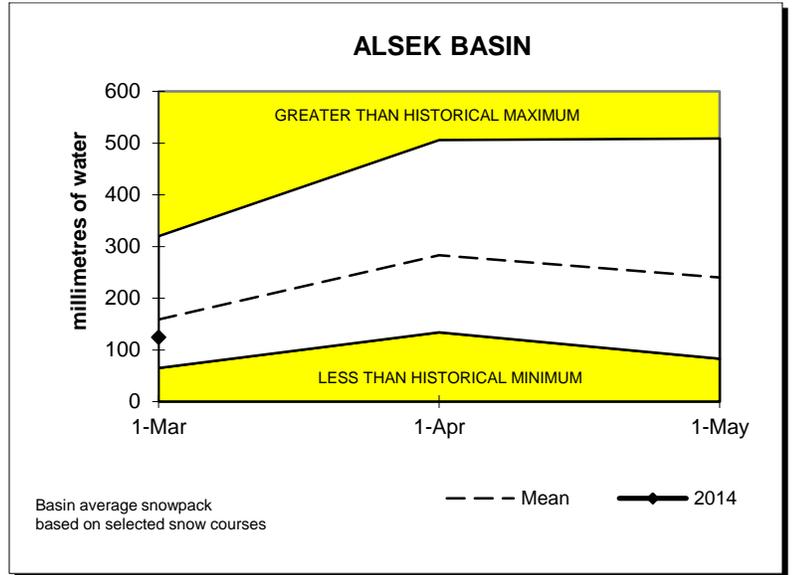
LIARD RIVER AT UPPER CROSSING



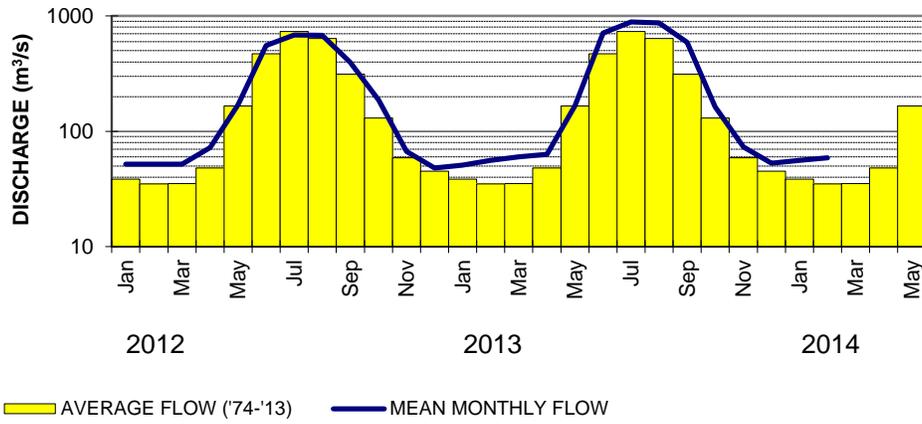
ALSEK RIVER BASIN

Snowpack conditions within the Alsek River watershed, although variable, are below normal for March 1st. Values of snow water equivalent range from 46 percent of normal at Summit to 117 percent of normal at Alder Creek. A basin-wide average has been estimated to be 78 percent of normal.

Mean monthly streamflow for April as indicated by the Alsek River above Bates River was 169 percent of normal. The Alsek River is primarily a glacial regime type, which is largely dependent on summer temperatures. Given normal summer meteorological conditions, volume runoff and peak flows for the season are expected to be 95 and 90 percent of normal, respectively.



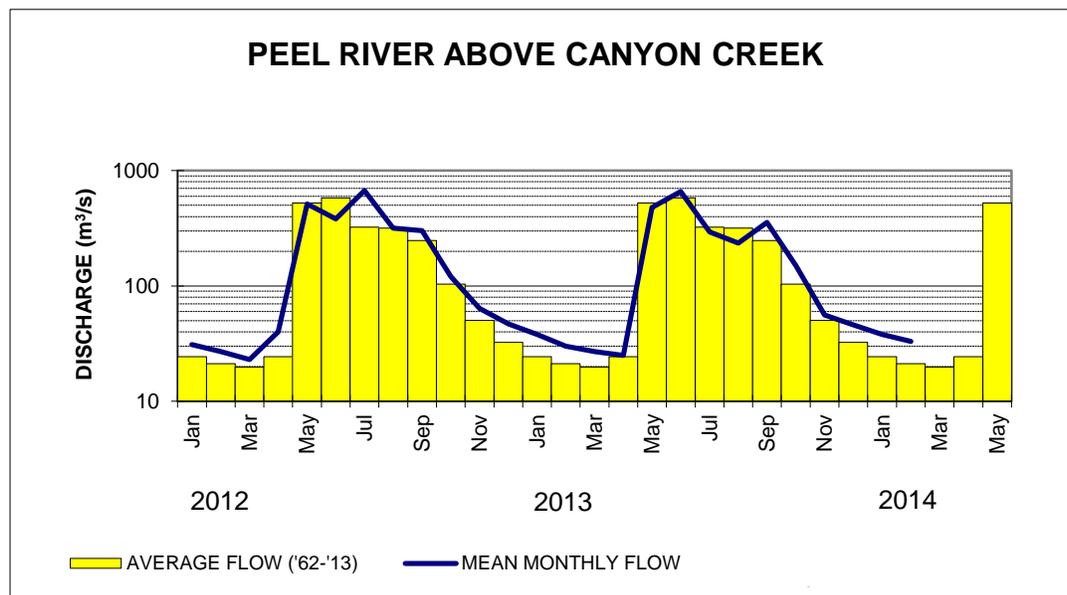
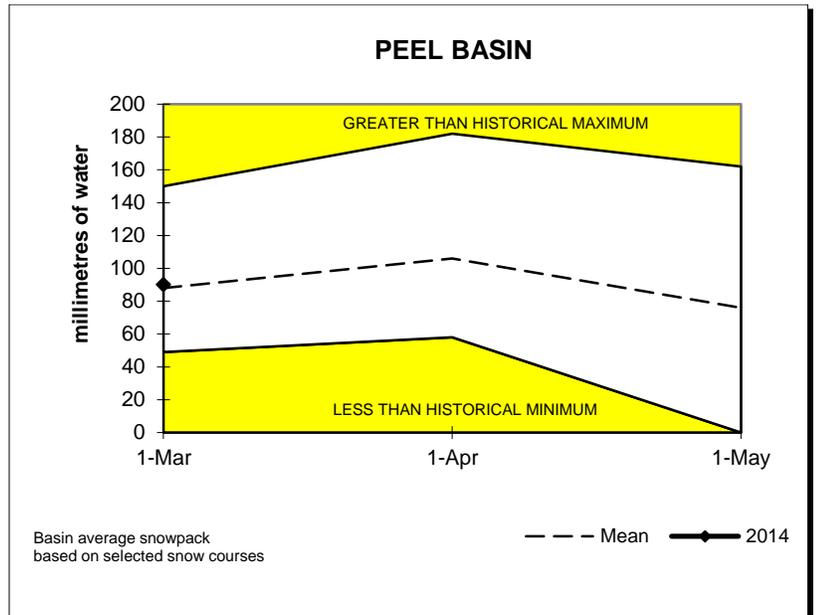
ALSEK RIVER ABOVE BATES RIVER



PEEL RIVER BASIN

Snowpack conditions in the Peel River watershed are near normal with values of snow water equivalent ranging from 83 percent of normal at Blackstone to 120 percent of normal at Ogilvie. A basin-wide average has been estimated to be 102 percent of normal.

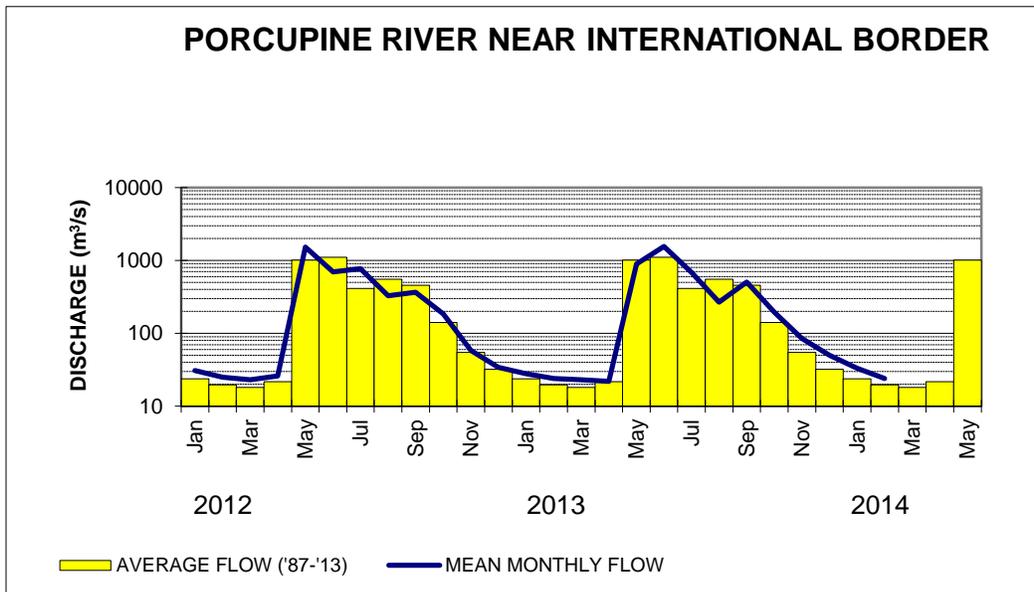
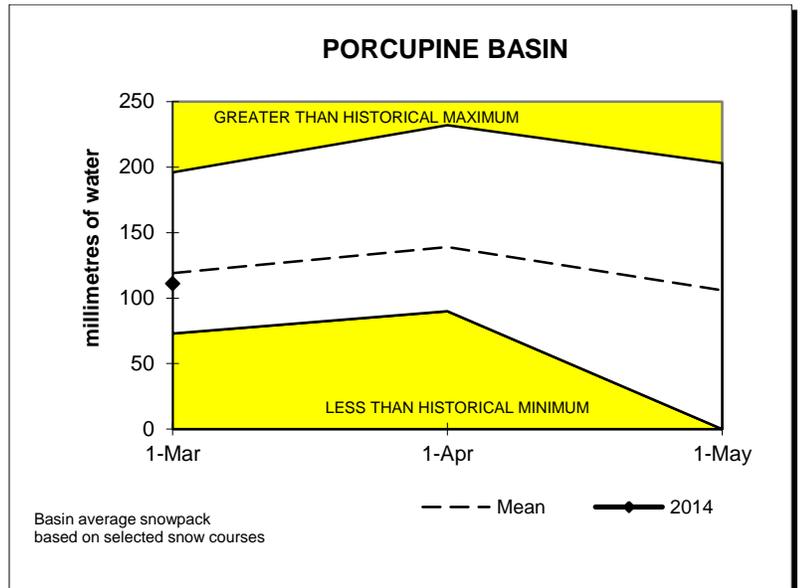
Mean monthly streamflow for February as indicated by the Peel River above Canyon Creek station was 156 percent of normal. Given normal summer meteorological conditions, volume runoff and peak flows for the season are expected to be 85 and 95 percent of normal, respectively.



PORCUPINE RIVER BASIN

Snowpack conditions in the Porcupine River watershed are just above normal with values of snow water equivalent ranging from 81 percent of normal at Eagle Plains to 115 percent of normal at Old Crow. A basin-wide average has been estimated to be 94 percent of normal.

Mean February streamflow for the basin as indicated by the Porcupine River near the International Boundary is 122 percent of normal. Given normal summer meteorological conditions, volume runoff and peak flows for the season are expected to be 90 and 85 percent of normal, respectively.



Drainage Basin and Snow Course

For Sample Date: 2014-03-01

Name	Number	Elev (m)	Date of Survey	This Year		Water Content		
				Snow Depth (cm)	Water Content (mm)	Last Year (mm)	Average (mm)	Yrs of Rec
Alsek River Basin								
Canyon Lake	08AA-SC01	1160	2/25/2014	42	85	111	83	36
Alder Creek	08AA-SC02	768	2/26/2014	71	175	170	149	33
Aishihik Lake	08AA-SC03	945	2/25/2014	33	77	120	78	20
Haines Junction Farm	08AA-SC04	610	2/25/2014	33	79	46	94	14
Summit	08AB-SC03	1000	2/27/2014	59	112	134	248	34
Yukon River Basin								
Tagish	09AA-SC01	1080	2/27/2014	59	144	122	129	39
Montana Mountain	09AA-SC02	1020	2/25/2014	55	140	130	131	38
Log Cabin (B.C.)	09AA-SC03	884	2/27/2014	99	354	372	330	53
Atlin (B.C)	09AA-SC04	730	No Surv			106	111	49
Mt McIntyre B	09AB-SC01B	1097	2/28/2014	66	170	134	136	38
Whitehorse Airport	09AB-SC02	700	2/28/2014	53	118	99	93	49
Meadow Creek	09AD-SC01	1235	2/26/2014	118	328	276	247	37
Jordan Lake	09AD-SC02	930	2/25/2014	75	176	142	126	26
Morley Lake	09AE-SC01	824	2/26/2014	73	192	156	144	25
Mount Berdoe	09AH-SC01	1035	2/26/2014	51	123	142	97	38
Satasha Lake	09AH-SC03	1106	2/27/2014	45	83	102 E	86	27
Williams Creek	09AH-SC04	914	2/27/2014	48	118	104 E	88	18
Twin Creeks	09BA-SC02	900	2/26/2014	85	181	200	166	36
Hoole River	09BA-SC03	1036	2/25/2014	78	148	180	120	37
Burns Lake	09BA-SC04	1112	2/25/2014	105	254	261	196	27
Finlayson Airstrip	09BA-SC05	988	2/25/2014	58	99	158	93	27
Fuller Lake	09BB-SC03	1126	2/26/2014	81	179	174	172	27
Russell Lake	09BB-SC04	1060	2/26/2014	93	195	204	204	27
Rose Creek	09BC-SC01	1080	2/27/2014	67	122	154	98	19
Mount Nansen	09CA-SC01	1021	2/26/2014	47	107	100 E	69	38
MacIntosh	09CA-SC02	1160	2/27/2014	43	67	98 E	82	38
Burwash Airstrip	09CA-SC03	810	2/26/2014	10	10	48	41	37
Burwash Uplands	09CA-SC06	1080	No Surv			N.S.	70	4
Beaver Creek	09CB-SC01	655	2/27/2014	53	74	91	74	39
Chair Mountain	09CB-SC02	1067	2/27/2014	62	121	107	84	20
White River	09CB-SC03	823	No Surv			N.S.	61	5
Casino Creek	09CD-SC01	1065	2/27/2014	68	147	100 E	107	36
Pelly Farm	09CD-SC03	472	2/28/2014	42	81	90	76	27
Plata Airstrip	09DA-SC01	830	2/26/2014	81	174	239	169	34
Withers Lake	09DB-SC01	975	2/26/2014	80	187	172	201	27

Code "E" - Estimate, Code "B" - Survey date is outside of valid sampling range

Drainage Basin and Snow Course

For Sample Date: 2014-03-01

Name	Number	Elev (m)	Date of Survey	This Year		Water Content		
				Snow Depth (cm)	Water Content (mm)	Last Year (mm)	Average (mm)	Yrs of Rec
Yukon River Basin								
Rackla Lake	09DB-SC02	1040	2/26/2014	71	118	158	168	24
Mayo Airport A	09DC-SC01A	540	2/25/2014	53	103	129	90	44
Mayo Airport B	09DC-SC01B	540	2/25/2014	55	120	80	94	25
Edwards Lake	09DC-SC02	830	2/26/2014	61	93	156	148	26
Calumet	09DD-SC01	1310	2/28/2014	82	189	158	173	36
King Solomon Dome	09EA-SC01	1080	2/28/2014	84	168	170	148	39
Grizzly Creek	09EA-SC02	975	2/27/2014	80	134	182	154	38
Midnight Dome	09EB-SC01	855	2/25/2014	75	114	192	134	38
Boundary (Alaska)	09EC-SC02	1005	No Surv			142	115	39
Porcupine River Basin								
Riff's Ridge	09FA-SC01	650	2/26/2014	67	114	150	126	27
Eagle Plains	09FB-SC01	710	2/26/2014	65	117	142	146	31
Eagle River	09FB-SC02	340	2/26/2014	65	102	96	110	31
Old Crow	09FD-SC01	299	3/7/2014	72	115 B	N.S.	103	25
Liard River Basin								
Watson Lake Airport	10AA-SC01	685	2/26/2014	86	236	197	133	49
Tintina Airstrip	10AA-SC02	1067	2/25/2014	95	239	282	185	35
Pine Lake Airstrip	10AA-SC03	995	2/26/2014	104	292	240	202	37
Ford Lake	10AA-SC04	1110	2/25/2014	90	251	202	169	26
Frances River	10AB-SC01	730	2/27/2014	86	215	176	144	38
Hyland River	10AD-SC01	855	2/27/2014	88	220	178	154	38
Peel River Basin								
Blackstone River	10MA-SC01	920	2/28/2014	47	71	84	86	38
Ogilvie River	10MA-SC02	595	2/26/2014	62	108	89	89	38
Bonnet Plume Lake	10MB-SC01	1120	2/26/2014	67	136	154	151	24
Alaska Snow Courses								
Eaglecrest	08AK-SC01	305	No Surv			594	460	32
Moore Creek Bridge	08AK-SC02	700	3/1/2014	109	442	533	478	21

Code "E" - Estimate, Code "B" - Survey date is outside of valid sampling range

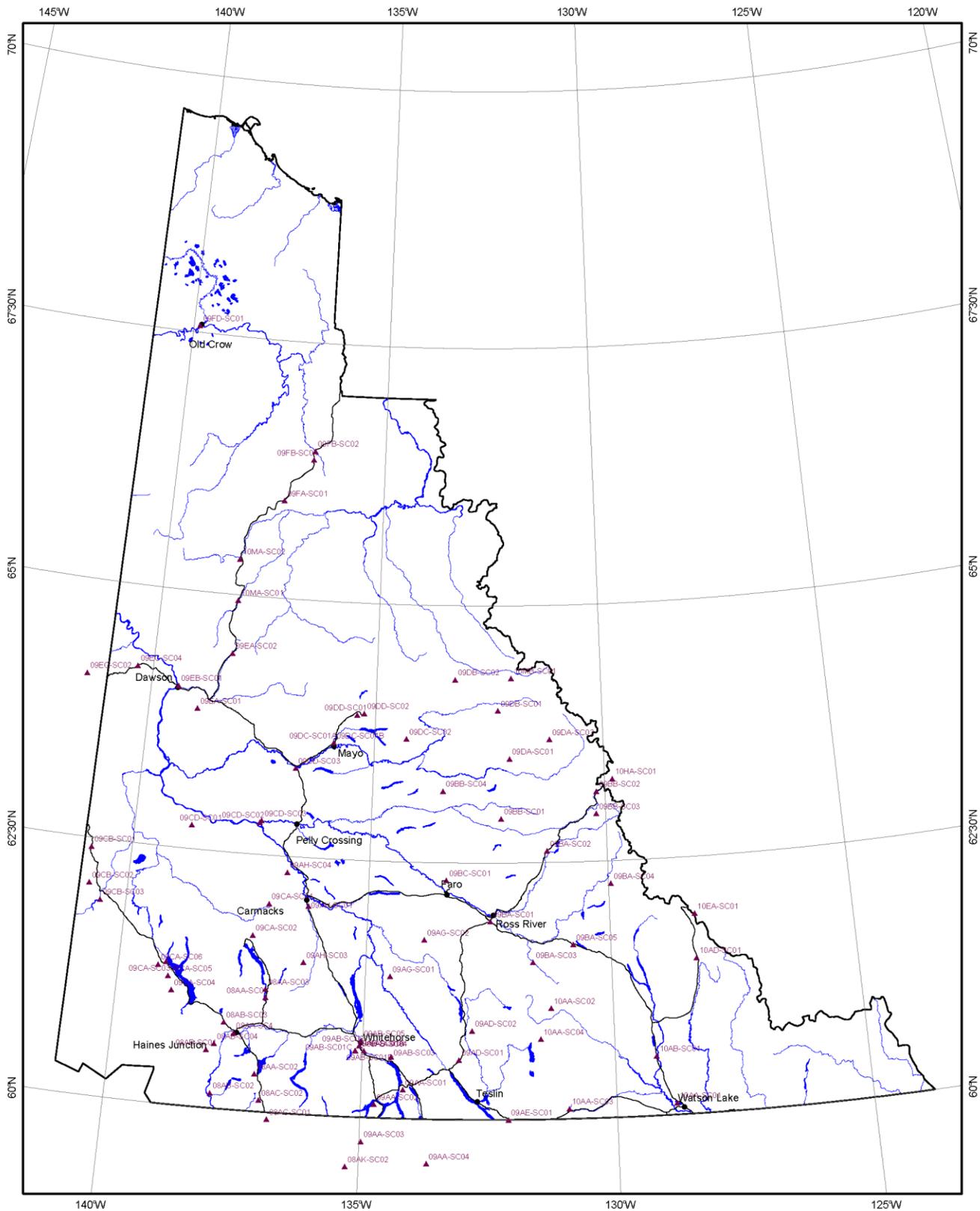
INDEX OF YUKON SNOW COURSES

NAME	NUMBER	ELEVATION (m)	LATITUDE	LONGITUDE	AGENCY
YUKON RIVER BASIN					
Tagish	09AA-SC1	1080	60°17'	134°11'	2
Montana Mountain	09AA-SC2	1020	60°08'	134°44'	2
Log Cabin (B.C.)	09AA-SC3	884	59°46'	134°58'	2
Atlin (B.C.)	09AA-SC4	730	59°34'	133°42'	3
Mt. McIntyre (B)	09AB-SC1B	1097	60°39'	135°08'	1
Whitehorse Airport	09AB-SC2	700	60°42'	135°04'	1
Meadow Creek	09AD-SC1	1235	60°35'	133°05'	2
Jordan Lake	09AD-SC2	930	60°52'	132°50'	2
Morley Lake	09AE-SC1	824	60°00'	132°07'	2
Mount Berdoe	09AH-SC1	1035	62°02'	136°14'	2
Satasha Lake	09AH-SC3	1106	61°29'	136°16'	2
Williams Creek	09AH-SC4	914	60°21'	136°43'	2
Twin Creeks	09BA-SC2	900	62°37'	131°16'	2
Hoole River	09BA-SC3	1036	61°32'	131°36'	2
Burns Lake	09BA-SC4	1112	62°17'	129°57'	2
Finlayson Airstrip	09BA-SC5	988	61°42'	130°46'	2
Fuller Lake	09BB-SC3	1126	62°58'	130°46'	2
Rose Creek	09BC-SC01	1080	62°20'	133°23'	2
Russell Lake	09BB-SC4	1060	63°12'	133°29'	2
Mount Nansen	09CA-SC1	1021	62°02'	137°03'	2
Macintosh	09CA-SC2	1160	61°43'	137°20'	2
Burwash Airstrip	09CA-SC3	810	61°23'	139°03'	2
Duke River	09CA-SC5	1310	61°15'	138°59'	6
Beaver Creek	09CB-SC1	655	62°25'	140°51'	2
Chair Mountain	09CB-SC2	1067	62°04'	140°48'	2
White River	09CB-SC3	823	61°55'	140°32'	2
Casino Creek	09CD-SC1	1164	62°44'	138°48'	2
Pelly Farm	09CD-SC3	472	62°50'	137°20'	8
Plata Airstrip	09DA-SC1	830	63°31'	132°03'	2
Arrowhead Lake	09DA-SC2	1120	63°42'	131°10'	2
Withers Lake	09DB-SC1	975	63°59'	132°18'	2
Rackla Lake	09DB-SC2	1040	64°17'	133°15'	2
Mayo Airport (A)	09DC-SC1A	540	63°38'	135°53'	2
Mayo Airport (B)	09DC-SC1B	540	63°38'	135°53'	2
Edwards Lake	09DC-SC2	830	63°42'	134°18'	2
Calumet	09DD-SC1	1310	63°55'	135°24'	2
King Solomon Dome	09EA-SC1	1080	63°52'	138°56'	2
Grizzly Creek	09EA-SC2	975	64°26'	138°16'	2
Boundary (Alaska)	09EC-SC2	1005	64°05'	141°27'	4
Midnight Dome	09EB-SC1	855	64°04'	139°24'	2

NAME	NUMBER	ELEVATION (m)	LATITUDE	LONGITUDE	AGENCY
LIARD RIVER BASIN					
Watson Lake Airport	10AA-SC1	685	60°07'	128°50'	2
Tintina Airstrip	10AA-SC2	1067	61°05'	131°15'	2
Pine Lake Airstrip	10AA-SC3	995	60°06'	130°56'	2
Ford Lake	10AA-SC4	1110	60°47'	131°28'	2
Frances River	10AB-SC1	730	60°35'	129°11'	2
Hyland River	10AD-SC1	855	61°31'	128°16'	2
ALSEK RIVER BASIN					
Canyon Lake	08AA-SC1	1160	61°07'	136°59'	7
Alder Creek	08AA-SC2	768	60°22'	137°06'	2
Aishihik Lake	08AA-SC3	945	61°12'	137°00'	7
Haines Junction Farm	08AA-SC4	610	60°45'	137°34'	2
Clay Creek	08AB-SC2	670	60°09'	137°56'	6
Summit	08AB-SC3	1000	60°51'	137°47'	2
Profile Mountain	08AB-SC4	900	60°38'	137°56'	6
PEEL RIVER BASIN					
Blackstone River	10MA-SC1	920	64°57'	138°15'	2
Ogilvie River	10MA-SC2	595	65°21'	138°18'	2
Bonnet Plume Lake	10MB-SC1	1120	64°18'	132°00'	2
PORCUPINE RIVER BASIN					
Riff's Ridge	09FA-SC1	650	65°57'	137°22'	2
Eagle Plains	09FB-SC1	710	66°22'	136°44'	2
Eagle River	09FB-SC2	340	66°27'	136°43'	2
Old Crow	09FD-SC1	299	67°34'	139°51'	6
ALASKA SNOW COURSES					
Eaglecrest	34J03	305	58°17'	134°32'	4
Moore Creek Bridge	34K02	701	59°31'	135°15'	4

Numbers refer to Agencies cooperating in the Yukon Snow Surveys:

1. Department of Environment, Government of Yukon
2. Dept of Energy Mines and Resources Yukon
3. British Columbia Ministry of Environment
4. USDA Natural Resources Conservation Service
5. Yukon Transportation and Highways
6. Parks Canada
7. Yukon Energy Corp.
8. Private Contract



Location of Water Resource Snow Courses