

## 2. Description of Planning Region

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### 2.1 Setting

The Peel Watershed Planning Region, shown in Figure 2.1, represents about 14% of Yukon. At about 68,000 square kilometres, the region is almost the size of Ireland. The Region encompasses overlapping traditional territories of the Tetlit Gwich'in, Nacho Nyak Dun, Tr'ondëk Hwëch'in, and Vuntut Gwitchin First Nations. There is one major all-season road, the Dempster Highway. This region is the only planning region in the Yukon without any permanent settlements, though there are scattered seasonal inhabitants along the Dempster Highway in semi-permanent big game outfitting base-camps, scattered trappers' cabins, and temporary mineral exploration camps.

Land and resource management in the planning region is shared among governments, other agencies, and land claim boards. The Yukon manages non-settlement lands (both surface and subsurface rights) totaling 97.3% of the region. The Tetlit Gwich'in First Nation owns 11 blocks of fee-simple settlement land – with surface rights only – and 14 smaller site-specific settlement lands. These lands represent 2.32% of the Region. The Nacho Nyak Dun hold 25 site-specific settlement lands and one category-A R-Block – with surface and subsurface rights – accounting for 0.38% of the Region. The Tr'ondëk Hwëch'in and Vuntut Gwitchin hold much smaller amounts of settlement land. The Tr'ondëk Hwëch'in have 8 site-specific blocks and two category-B R-Blocks (surface rights only) totaling less than 0.01% of the Region, and the Vuntut Gwitchin have two site-specific blocks along the Dempster Highway. As of 2008, there is no private land ownership in the Peel Watershed Planning Region.

The Peel Watershed Planning Region includes the Bonnet Plume River, a Canadian Heritage River. This designation recommends a “higher duty of care” for this watershed, but does not have any legislative power. While no lands in the Region are managed with a conservation focus, several areas in adjacent jurisdictions are managed in this way. The Rat River and James Creek-Vittrekwa River Gwich'in Conservation Zones in NWT are located to the north, the Gwich'in General Management Area lies to the east, and further south can be found the Arctic Red River Headwaters Special Management Zone. Tombstone Territorial Park abuts the Region to the southwest. The Rock River – Mount Joyal Integrated Management Zone of the North Yukon Planning Commission, which abuts the Region to the northwest, carries a recommendation for a low level of development only.

The regional context also relates to planning for resource development. This includes the eastern Gwich'in General Management Area, which provides for a range of industrial development activities (e.g., oil & gas, mining). Similar provisions apply to North Yukon Region's Integrated Management Area designation (Class III & IV) for areas to the northwest of the Peel planning region.

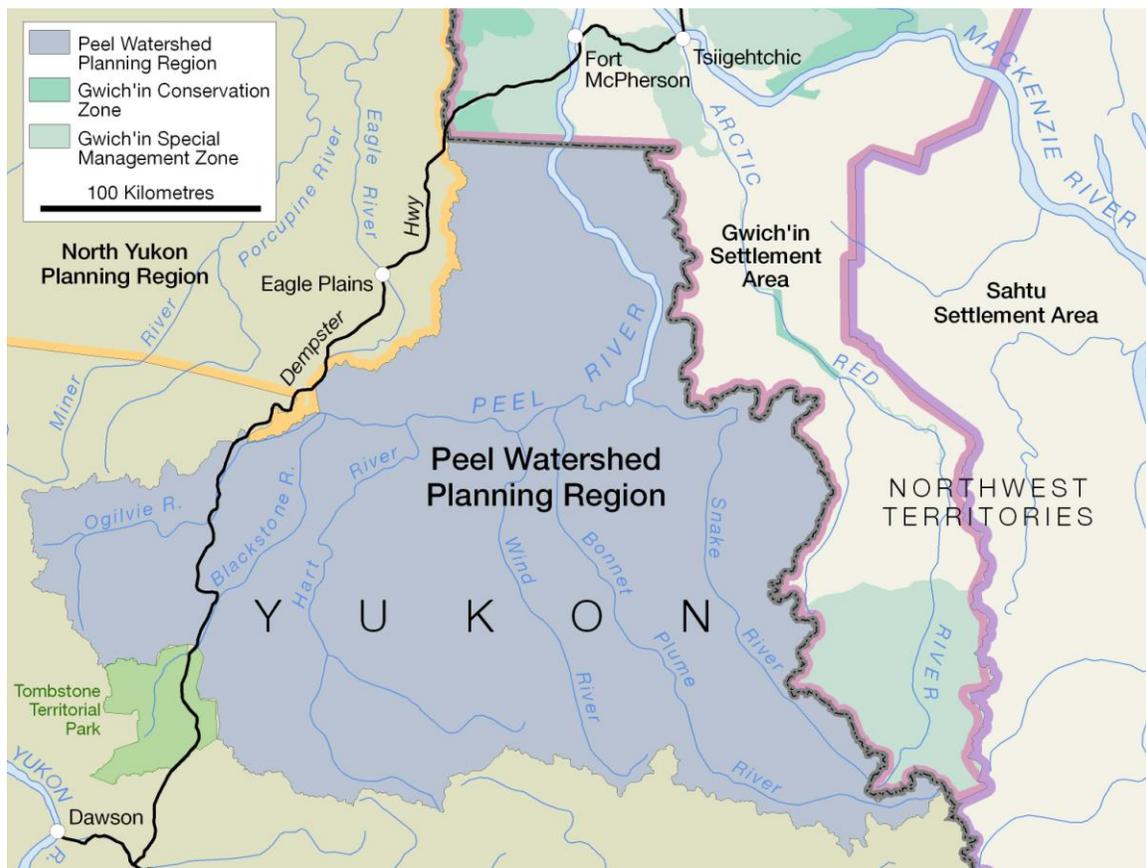


Figure 2.1. Overview of Peel Watershed Planning Region.

## 2.2 Environment

The region lies at the eastern-most edge of Beringia, an area extending from Yukon to Siberia. For almost two million years, Beringia remained free of glaciers, providing a refuge for plants, animals, and some of the first people of North America. These ice-free conditions left a legacy of unaltered landscapes and unusual plant populations in the western half of the planning region.

The Peel Watershed Planning Region has a very cold and dry climate owing to its northerly latitude and to the rain-shadow effect of the Ogilvie, Wernecke and Selwyn mountains on its southern limit. Low-stature spruce forests, shrub and tundra vegetation underlain with permafrost, and scattered wetlands characterize low-to-mid-elevation areas of low relief. High-elevation mountain ranges contain extensive areas of rock and sparse vegetation. Large tributaries to the Peel River are often flanked by gravel bars, shrubs, and older stands of large white spruce. Rivers experience very low winter flows and dramatic variations in the summer. Available water flow rates and storage capacity may be inadequate to support industrial activities during the winter months.

The region contains portions of six distinct ecoregions, including Fort McPherson Plain, Peel River Plateau, Eagle Plains, North Ogilvie Mountains, British-Richardson

Mountains, and Mackenzie Mountains. Elevation ranges from almost 0 to 2,700 metres above sea level. With a few very small exceptions in the Richardson Mountains, the entire region is within the Peel watershed. However, there are two notable portions of the Peel Watershed located outside the planning region: a portion of Tombstone Territorial Park, and an R-Block (VG R-08A) where the Dempster Highway leaves the Ogilvie River heading north.

## **2.3 People**

Parts of the Traditional Territories of the four participating First Nations are situated within the planning region. Historically, the people of these First Nations lived in and traveled throughout what they also describe as homelands. There are no settlements within the region today, but the region is the seasonal home of subsistence hunters and fishers, trappers, highway maintenance personnel, and big game outfitters. Wilderness tourists, Dempster Highway tourists, geologists, prospectors, and drillers also spend time in the region. The nearest settlements are Keno, Mayo, Dawson City, and Fort McPherson.

## **2.4 Economy**

Historically, the Peel region has played a vital role in supporting the traditional, subsistence economy of the region's First Nation people. Although there is less reliance today on the harvest of wild game, plants, and medicines, this Plan gives special consideration to First Nations' long-term interest in maintaining these traditional harvest activities throughout the Peel region. Other commercial activities that have long contributed to both the local and Yukon economy include both renewable, surface uses (trapping, guide/outfitting, wilderness eco-tourism, outdoor recreation) and non-renewable subsurface uses (mineral and gas exploration).

The regional economy is a mixed economy, in which traditional subsistence harvesting and wage-based activities co-exist. Subsistence hunting, gathering, and trapping are still very important economic and cultural activities to residents of Mayo, Keno City, Dawson City, Fort McPherson, and Old Crow. These communities also express interest in maintaining a viable degree of participation in the wage economy.

While some data exists to show significant economic flows within the Peel region, no concrete determination has yet been made by sector organizations or government regarding the actual total economic impact (direct, indirect, and induced) including benefits from employment, government revenues, and business spin-off. Renewable resource sector proponents and individual firms have clearly articulated that new permanent access and development would potentially have a negative economic impact on those industries, due to the perceived loss of the "intact wilderness" experience. According to industry representatives, wilderness and scenic features are highly valued as an international tourism product by both government, and industry representatives. Similarly, the mineral sector (industry representatives and individual firms) has expressed strong concerns about the need to maintain access to existing claims and provide for

access to explore and develop those mineral resources. Of notable interest is the potential economic viability of the Crest iron-ore deposit.

To date, there has not been a detailed economic analysis of all sectors in the context of the planning region, thus making direct comparisons difficult. It is recommended that this work be undertaken co-operatively as soon as possible by government and industry representatives, according to a mutually-agreed methodology (e.g., Multiple Accounts Assessment, to capture both private and public-sector revenues). Several sectors have significant economic interests in the planning region, including transportation, tourism (“rubber tire tourism” on the Dempster Highway, and “wilderness-based tourism”), mineral exploration, oil and gas exploration, trapping, and big game outfitting. There is no agriculture or commercial forestry, although some limited, community-based forestry occurs in the north end of the planning region.

Major economic sectors are discussed briefly below.

#### **2.4.1. Transportation**

The Dempster Highway connects southern Yukon and Canada to the Mackenzie Delta communities of the Northwest Territories (NWT) and passes through the western portion of the planning region. Regular scheduled air service facilitates the transport of goods and people between Old Crow, Dawson, Inuvik, and Whitehorse. The Dempster Highway corridor is also the potential route for future pipeline, telecommunications, or other linear infrastructure. Related uses that might be situated off the Highway Right-of-Way include gravel pits or highway maintenance stations. Other historical transportation routes include the Wind River Trail and the Hart River Winter Road, providing access to mineral exploration properties in the Mackenzie Mountains and Hart River headwaters, respectively. Another winter access road goes to the historic J-21 gas well in the Peel plateau. Other exploration trails are now largely overgrown with vegetation.

Air travel in the region includes frequent chartered flights to various land airstrips, and float-plane charters to several lakes or the larger river landing sites in the planning region. Major rivers provide summer and winter travel routes for local residents and tourists seeking wilderness recreation. Local residents use many trails and routes for subsistence harvest, travel between communities, and other cultural activities.

#### **2.4.2. Tourism**

The Peel watershed is a valuable region for Yukon tourism largely because of its wilderness character. The Dempster Highway, considered by many to be one of the few remaining “wilderness highways” in the north, draws increasing numbers of tourists interested in road-accessible activities and scenery. These visitors are drawn to the unique landscapes, wildlife viewing, photography, viewsapes, hiking, birdwatching, and road-accessible wilderness rivers (e.g. The Blackstone and Ogilvie Rivers) of the region. The portion of the region outside of the highway corridor is of territorial and international significance to the wilderness tourism sector, and supports approximately 20 operations (guides, transport and expeditors) that are mostly Yukon-based businesses.

According to both government and industry sources, the Snake, Wind, Bonnet Plume and Hart River watersheds within the Southern Mackenzie Range represent together the largest intact, remote wilderness areas in the Yukon and North America. This landscape is traversed by challenging but navigable rivers with an international reputation for world-class river travel. Other popular activities related to river tours are hiking, horseback riding, wildlife viewing, birdwatching, fishing, photography and nature study. The Peel region-based river-based tourism in this region has been generated in the range of \$3.67 million for the period 2001-2006 (Earle, 2008). The region has excellent potential for managed growth of wilderness adventure and eco-tourism products, and further potential for development of First Nation cultural tourism product. Industry and government representatives indicate that current and future tourism activities depend upon the maintenance of wilderness and wildlife values as the foundation for high quality, sustainable tourism products and services.

### **2.4.3. Big Game Outfitting**

Big game outfitting has been an economic generator in the Peel watershed for decades. In order to be economically viable and ecologically sustainable, the industry requires large intact wilderness and healthy wildlife populations. The Peel watershed represents some of North America's highest quality big game hunting opportunities. There are six outfitting concessions in the PWPR. Sport hunting products focus primarily on hunting of Dall sheep, grizzly bear, caribou, and moose. Other products offered by guide outfitters include: horseback riding, birdwatching, and wildlife viewing. Most excursions are accessed by float plane, with overland transportation by horseback or by foot. Big game outfitting activities and their associated concessions are generally located in the southern half of the PWPR. A conservative estimate of \$12-18 million direct revenues were generated in the period 2001-06, based upon information provided by Peel region outfitters.

### **2.4.4. Oil and Gas**

Oil and gas exploration activity in the Peel watershed has been low since its initial surge in the early 1960s. The region contains a significant portion of Yukon's total estimated natural gas and oil potential in four petroleum basins. The Eagle Plains basin, which contains proven reserves, is the basin most likely to be developed first in northern Yukon, given its proximity to gas fields off the Dempster Highway. In the small portion of this basin that extends into the planning region, there are two exploration permits and eight significant discovery licenses held by Northern Cross (Yukon) Ltd. It is thought that this basin has substantial natural gas potential and moderate oil potential. The Peel Plateau and Plain Basin has the potential to be economically viable for natural gas development. Such development would most likely begin well after that of Eagle Plains. Only one exploration license, belonging to AustroCan Petroleum Corp., exists in the Yukon portion of this basin. The remaining two basins, the Kandik and Bonnet Plume, are the least likely to be developed in the foreseeable future, owing to their limited exploration history and remoteness. Lack of pipeline infrastructure is a major barrier to developing the natural gas resource of this region.

### **2.4.5. Mining**

Though mineral development has not yet occurred in the region, interest in mineral exploration has increased in the last few years. Much of the planning region remains inadequately explored. There are approximately 219 known mineral occurrences and 13 known deposits in the Peel watershed. There are two mineral deposit-types of significant economic size: the Crest iron deposit and the Bonnet Plume coal deposits. Both these deposits would require significant transportation infrastructure (e.g., railway and/or slurry pipeline) for them to be exploited. Indeed, mineral development in the planning region would face many challenges: lack of infrastructure, costly infrastructure, remote location, rugged terrain, and lack of water at upper elevations and during the winter. However, these challenges may not be insurmountable given a sufficiently high market price for the targeted commodity. A large portion of the region is considered to have high potential for mineral resources, and has received an increase in interest from exploration companies in recent years. A total of 11,275 active quartz claims and 525 active iron-mica claims exist in the region as of February, 2009, representing a seven-fold increase since establishment of the planning region in the fall of 2004<sup>1</sup>. There are nine active coal licenses. Based upon government analyses, the industry spent an average of \$6 million per year in mineral exploration expenditures during the period from 2000-2008 (YEMR, 2009).

### **2.4.6. Trapping**

Trapping provides self-employment opportunities for area residents and is a cultural tradition valued by First Nations. The entire Peel Watershed Planning Region is occupied by trapping concessions. There are 28 concessions permitting the exclusive rights to harvest furbearing animals to an individual. Not all these concessions may be active. In addition, Tetsit Gwich'in and Vuntut Gwitchin First Nations each have their own larger group area concessions, which permit exclusive harvesting rights to their members.

### **2.4.7. Aggregate (gravel)**

Aggregate is an important resource for the maintenance of the Dempster Highway. Large amounts of gravel may be required to support future industrial activity. In Beringian portions of the Peel Watershed Planning Region, there are thought to be relatively few gravel deposits compared to many other areas of western Canada, largely due to lack of glaciation. From preliminary assessments by the Geological Survey of Canada, however, the central and lower Peel region appears to have sufficient aggregate-bearing formations. A detailed inventory of aggregate resources is currently underway in the region. Crushed rock can be used in place of gravel, though for a higher cost.

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<sup>1</sup>Based on public quartz claims data base (Min\_qclaims\_20090209.shp) using October 15<sup>th</sup>, 2004 as the PWPC start date.

### **2.4.8. Forest Resources**

Due to the sub-arctic location of the Peel watershed, the majority of forest growth is found on alluvial soils in the major river valleys. Part of the planning region in the southwest section is within an established forest management planning area (as set out in UFA, Chap. 17) and was identified by the Forest Management Planning Committee as a Hinterland Forest Zone. The forest resource is not considered valuable for production of timber products due to the remoteness of the resource and low productivity of the forest.

The majority of forest harvesting occurs in support of First Nations' traditional use, as well as backcountry activities (i.e., outfitting, trapping, recreation). Much of the timber use, therefore, is for individual subsistence purposes but potential exists for other industrial uses such as bridge timbers, tourism lodge construction, or other needs of the oil & gas or mining sectors. Currently, the principal consumptive-use forest products are domestic fuelwood, cabin logs, and wood used for other traditional or cultural purposes. To date, only a minor volume of commercial fuel-wood permits has been issued within this region, and that has been concentrated around km 286 of the Dempster Highway. The harvest sites are unrecorded and are adjacent to major rivers, popular camping spots, and travel corridors. Timber values are known to exist in the Peel River Corridor, and there may a future need to undertake forest management planning in that part of the region as well.

## **2.5 Significant Ecological and Cultural Values**

The region contains a number of features and values of territorial, national, and global significance, including both heritage and ecological resources.

### **2.5.1 Heritage Resources**

Although there are currently no human settlements located in the PWPR, the Tr'ondëk Hwëch'in, Na-Cho Nyak Dun, and Vuntut Gwitchin of the Yukon and the Tetl'it Gwich'in of the Northwest Territories have traditionally occupied, traveled, or harvested in virtually every corner of the planning region. This presence is reflected in the many trails and named places, which provide a window into the culture and history of the region. Archaeological evidence indicates the region has been occupied for millennia.

Much of the PWPR has yet to be systematically surveyed by archaeologists or palaeontologists, and the First Nations have gathered some but not all traditional knowledge of the region. Nonetheless, fossils and other remains of plants, dinosaurs, ancient fish, insects, and Ice Age mammals, including mammoth, sheep, bison, and Yukon horse, have all been found at a number of locations around the region. The numerous archaeological sites and artifacts around the watershed include gravesites, tent rings, caribou fences, caches, adze-cut stumps, abandoned settlements, and trading posts. Spring water, sulfur sources, medicinal plants, furbearers, and big game continue to have cultural importance. Some heritage trails and routes are still used to travel between communities and to reach areas for hunting, trapping, and fishing. At a much broader scale, expansive natural features – such as

mountains, mountain ranges, lakes, and rivers, and the stories embedded in these places – also represent First Nations heritage and culture.

### **2.5.2 Wildlife and Plants**

The diversity of wildlife and plants in the Peel watershed is remarkably high for a taiga region at these latitudes. This diversity results in part from a lack of glaciation over parts of the region. The wide range of elevations, and consequently habitat types, also contributes to present-day diversity. The western portion of the region represents an area with the most endemic plant species (i.e., plant species found nowhere else) in Canada. The region also contains a number of animal species listed as being of national or international conservation concern, including: Short-eared Owl, wolverine, northern mountain populations of caribou (e.g., Hart River, Bonnet Plume, and Redstone herds), grizzly bear, Rusty Blackbird, Peregrine Falcon, Olive-sided Flycatcher, American Golden-Plover, Harlequin Duck, Smith's Longspur, Solitary Sandpiper, Surf-bird, Swainson's Hawk, Upland Sandpiper, and Wandering Tattler. The Peel River and its tributaries also support a unique assemblage of fish species. Again, the region's unique glacial history, in concert with the impassable Aberdeen Canyon, has given rise to genetically distinct populations of several fish species.

Several wildlife resources in the region have great cultural or economic importance. The Porcupine caribou herd has been very important to several First Nations for generations. The population of the herd is currently (2009) estimated at 110,000 animals and has been declining steadily since 1989. The winter range of the herd in this planning region extends primarily down the Richardson Mountains into the Hart, Blackstone, and Ogilvie drainages. Over the years, the herd has wintered throughout the planning region, with the exception of the headwaters of the Wind, Bonnet Plume, and Snake rivers, and east of the Peel River below the Snake. Traditional knowledge of the Tetl'it Gwich'in tells of some of this herd calving in the region. Several sea-run fish species (whitefish, herrings/ciscos, inconnu, and Dolly Varden char) are of immense current and historical importance as subsistence food to communities in the Mackenzie Delta. Despite their importance, little is known about numbers or key spawning habitat. Dall Sheep is the most important game species for the guide-outfitting industry in the Peel. Other species with significant cultural or economic importance are: marten, moose, non-sea-run fish (e.g., grayling, arctic char), waterfowl, grizzly bears, and other herds of caribou (Hart River, Bonnet Plume, Redstone, and Boreal herds).

### **2.5.3 Wetlands**

Wetland ecosystems contribute enormously to the total biodiversity of the region because of their productivity and unique growing conditions that are otherwise uncommon in this generally mountainous region. They also serve as reservoirs in a region relatively devoid of lakes. The Peel River drainage breaks the long spine of the northern cordillera, creating a migratory pathway for numerous birds traveling east or west between the Yukon and Mackenzie river basins. Many of the region's wetlands sit in this break, on the Peel Plateau, and so provide valuable staging and stop-over sites for waterfowl. Some of these wetlands are of territorial significance: Turner Lakes, Jackfish Creek, Tabour Lakes, and Chappie Lakes. Many wetlands on the Peel Plateau are "perched" near rivers incised in the plateau. The terrain between these wetlands and neighbouring escarpments is underlain with

permafrost. Therefore, these perched wetlands may be sensitive to changes in the permafrost incurred through climate change or surface disturbance.

#### **2.5.4 Water**

The fact that the planning region is defined by its watershed highlights the critical role of water in the land use plan – ecologically, socially, culturally, and economically. The waters sustain the full spectrum of plant and animal life across many ecosystems, provide an important source of food for the First Nations, offer a means of access to renewable and non-renewable resources, are required for a number of industrial activities, and are critical to the health of the downstream communities of Fort McPherson and Aklavik.

The headwaters of the six tributaries flow northward through the planning region, converging with the Peel River, which then flows west and north before crossing into the Northwest Territories and passing by the communities of Fort McPherson and Aklavik. What happens upstream – from the headwaters to the mainstem – has a significant impact on the wildlife of the planning region, as well as on the people of the Mackenzie Delta.

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