A PEAK into the Future
Potential Landscape Impacts of Gas Development in Northern Canada

Achieving your Vision
You have an opportunity to personally shape the future of the North.

Northerners can still choose where oil and gas development can occur and which areas will be free of development. In the places open to development, you can decide how it proceeds. In much of southern Canada this is no longer possible.

Find out what development is planned for your area. Learn more about the potential of gas development and its environmental impacts. Get involved in the decision making process about gas development projects in your area. Examine how lower impact practices can reduce the footprint of development.

Communities can find ways to balance the economic opportunities of gas development and the social and environmental risks.

Now that we can envision where potential gas development may be headed, you can begin to plan for your vision of the future.

The choice is yours.

This project was carried out by the Pembina Institute in partnership with the Canadian Arctic Resources Committee (CARC) and Canadian Parks and Wilderness Society (CPAWS) - Yukon Chapter and Northwest Territories Chapter.

The information in this brochure is based on a detailed study. To download a free copy of the complete study, visit the Pembina Institute Web site at www.pembina.org.
Potential Landscape Impacts of Gas Developments in Northern Canada

<table>
<thead>
<tr>
<th>Project Area</th>
<th>Total # of Wells Pads</th>
<th>Total # of Seismic Lines</th>
<th>Total # of Roads</th>
<th>Total # of New Pipelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mackenzie Delta</td>
<td>331</td>
<td>964</td>
<td>453</td>
<td>16</td>
</tr>
<tr>
<td>Colville Hills</td>
<td>532</td>
<td>8,557</td>
<td>3,920</td>
<td>21</td>
</tr>
<tr>
<td>Peel Plateau</td>
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<td>21</td>
</tr>
</tbody>
</table>

Additional Infrastructure:

- Well pads = 6,151 hockey rinks
- hectares disturbed = 29,148 football fields
- new roads = 3X the distance from Inuvik to Tuktoyaktuk
- new pipelines = 3X longer than the proposed Mackenzie Valley pipeline
- seismic lines = a distance once around the Earth

Environmental Impacts from Gas Development can include the following:

- Land is cleared of vegetation, roads and pipelines right of ways. In Northern regions, it can take a long time for this vegetation to grow back.
- Clearing disturbs life, road and pipeline right of ways in all Northern environments and off-met Thunder. This leads to increased legal and illegal hunting and fishing in certain areas and can delay the regrowth of vegetation.
- Linear disturbance, such as seismic lines, causes greater habitat loss for many species in surface area fragments. Often landscapes are fragmented, this can lead to habitat use by animals.
- Clearing land and operating in the field can disturb wildlife in many ways. Clearing areas allow predators easier access, fish move during or to a decline in natural populations. Animals are directly affected by increases in noise and human activity, the spread of invasive species of plants, exposure to hazardous materials, altered climates with reduction and reduced access to food, water and cover.

Best Practices:

- "Best practices" are technologies, techniques, and governance policies that have been found to reduce environmental damage. They are not always the "best" solutions for gas development, but will result in less damage. "Best practices" can help reduce the footprint on future gas development projects.

Study Results:

Based on public information on the amount of gas reserves in the Mackenzie Delta, Colville Hills and Peel Plateau, we determined the number of seismic lines, roads, well pads, and pipelines that would be required to extract all the gas in those areas.

This study determined the potential footprint of gas development in the three study areas. The actual footprint would likely be larger than the study estimates indicate, because the study did not include all of the facilities that would be needed in the development, such as camps, borrow pits, landfills and gas plants.

Maps:

The three maps created as part of the study show an overall future scenario of development if all gas reserves are extracted in the Mackenzie Delta, Colville Hills and Peel Plateau areas.

The maps give an idea of the amount of land that could be used for future gas development, but they do not identify the exact location of well sites or pipelines.

Study Areas:

Mackenzie Delta
- Existing well sites
- Existing seismic lines
- Existing roads
- Current pipeline

Colville Hills
- Existing well sites
- Existing seismic lines
- Existing roads
- Current pipeline

Peel Plateau
- Existing well sites
- Existing seismic lines
- Existing roads
- Current pipeline

Environmental Disturbance:

- Reclaim land in an average of 15 years
- Overlap seismic, road and pipeline corridors
- Increase number of wells per pad from one to six

Best Practice Reduced by:

- Surface Footprint

- 30 Years
- 30 Years
- 30 Years

For more information on the potential environmental impacts and "best practices," visit www.pembina.org.