The Gitxsan Nation and the Ministry of Forests and Range have agreed that sharing of resource information is the first step in planning -- and agreeing upon -- the use of resource values known to the Ministry within Gitxsan traditional territories. This pamphlet describes the resources lying within the Sustut Watershed and forms part of the Atlas of Resource Values in the Gitxsan Watersheds. The goal of the atlas is to describe resource values in the nine Gitxsan watersheds that lie within provincial government forest districts. The Sustut Watershed lies within the boundaries of the Fort St. James and Mackenzie Forest Districts.
1.0 Geographic Description

The Sustut Watershed is a large-sized (488,559 hectares) watershed area including portions of the Sustut River, Driftwood River, and Finlay River drainage areas and is one of nine watersheds in the traditional territory of the Gitxsan First Nation. It is bounded by the Skeena River to the west, includes Thutade Lake to the north, follows the Sustut River, Connelly Range, and Driftwood Rivers along its eastern boundary, and follows the height of land between the confluence of Embre Creek and Driftwood River to the confluence of Squingula River and Skeena River along its south western boundary.

2.0 Social Characteristics

2.1 Communities

The Sustut is a remote area with no highway and little industrial road access. The primary access to the Sustut Watershed is via a deactivated rail line running along the east side of Bear Lake, the Sustut River and the Skeena River. The land is rich in salmon and wildlife making it a vital part of Gitxsan life for countless generations. The Sustut Watershed includes four Gitxsan house territories represented by the following hereditary Gitxsan Chiefs: Nil Kyap within the Mackenzie and Prince George Timber Supply Areas (TSA) and Wii Gaak, Tsa Buk, Miluulak, and Haiwas within the Prince George TSA.

2.2 Parks and Special Management Zones

The Sustut Park and Protected Area is over 77,929 hectares in size. Of this, 18,543 hectares is located within the Sustut. The park was established as a result of implementing the Fort St. James Land and Resource Management Plan. The current objectives of the park are primarily directed at protection of geographic and ecological features, cultural values, recreation values, and fish and wildlife from access development.

Tatlatui Park, which was established to conserve mountain headwaters of the Arctic drainage, borders the northern portion the Sustut Watershed.

2.3 Cultural Heritage Values

Due to the richness of the salmon and wildlife habitat, the watershed has an extensive history of aboriginal use. Along with the many traditional trails and camps running throughout the area, there is a wide variety of cultural features echoing the history of the Gitxsan Nation. The cultural heritage map included in this document (see page 12) highlights some of the general locations of the historic travel corridors and cultural features that cover the landscape.

As well, a Cultural Heritage and Archaeological Resource inventory has been developed using known information gathered from surveys related to industrial activities which forms the basis of current archaeology potential mapping.
3.0 Environmental Characteristics

3.1 Biodiversity Values

Biodiversity is the sum of the diversity of plants, animals, and other living organisms in all their forms and levels of organization, including genes, species, ecosystems, and the processes that link them. Due to difficulties in describing, measuring or monitoring diversity, habitat types are often used as a substitute for managing biodiversity. In BC, the Biogeoclimatic Ecosystem Classification system (BEC) is used. This is a system of ecological classification based primarily on climate, soils, and vegetation that divides the province into large geographic areas with similar climate and dominant tree species.

In the Sustut Watershed there are four zones: Boreal Altai Fescue Alpine (BAFA); Engelmann Spruce Sub alpine Fir (ESSF); Sub Boreal Spruce (SBS) and Spruce Willow Birch (SWB).

Natural Disturbance Types

Throughout the province it is recognized that different forest zones have developed under the influence of different types of disturbance, (e.g. fire, insects, wind storms or land slides) which vary in size, concentration and frequency. Managing forests to resemble these natural disturbances will increase the probability that all native species and ecological processes will be maintained. The historic patterns of these disturbances have been studied and each BEC zone has been given a Natural Disturbance Type (NDT) classification.

There are four NDT types in this unit:

- **NDT1:** ecosystems with rare natural disturbances. Disturbances are generally small resulting in uneven-aged or multi-storied even-aged forest, with regeneration occurring in gaps created by the death of individual trees or small patches of trees.

- **NDT2:** ecosystems that experience infrequent natural disturbances. Wildfires are often of moderate size (20 to 1000 ha) producing a landscape dominated by extensive areas of mature forest surrounding patches of younger forest.

- **NDT3:** ecosystems with frequent natural disturbances. Natural burns usually contain unburned patches of mature forests producing a landscape of even aged regeneration stands containing mature forest remnants.

- **NDT5:** ecosystems are Alpine Tundra and Sub alpine Parkland ecosystems. They occur above or immediately below the alpine tree line, and are characterized by short, harsh growing seasons.

<table>
<thead>
<tr>
<th>BEC Variant</th>
<th>hectares</th>
<th>% of Planning Unit</th>
<th>NDT</th>
<th>NDT (ha)</th>
<th>NDT (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAFAlm (Boreal Altai Fescue Alpine – Undifferentiated)</td>
<td>60550</td>
<td>14</td>
<td>5</td>
<td>113231</td>
<td>26</td>
</tr>
<tr>
<td>ESSFmc (Engelmann Spruce - Subalpine Fir - Moist Cold)</td>
<td>134576</td>
<td>31</td>
<td>2</td>
<td>193909</td>
<td>44</td>
</tr>
<tr>
<td>ESSFmcP (Engelmann Spruce - Subalpine Fir - Moist Cold Parkland)</td>
<td>43564</td>
<td>10</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESSFmV 3 (Engelmann Spruce - Subalpine Fir - Omineca Moist Very Cold)</td>
<td>26211</td>
<td>6</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESSFmcB (Engelmann Spruce - Subalpine Fir - Moist Warm Parkland)</td>
<td>8936</td>
<td>2</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESSFw (Engelmann Spruce - Subalpine Fir - wet, very cold)</td>
<td>2495</td>
<td>1</td>
<td>1</td>
<td>2495</td>
<td>1</td>
</tr>
<tr>
<td>ESSFwP (Engelmann Spruce - Subalpine Fir - Wet Very Cold Parkland)</td>
<td>581</td>
<td>&lt;1</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SESSm2 (Sub-Boreal Spruce - Babine moist cold)</td>
<td>65721</td>
<td>15</td>
<td>3</td>
<td>129720</td>
<td>29</td>
</tr>
<tr>
<td>SESSw3 (Sub-Boreal Spruce - Takla Wet Cool)</td>
<td>63999</td>
<td>15</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SWBm (Spruce Willow Birch - Moist Cool)</td>
<td>5423</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SWBmS (Spruce Willow Birch - Moist Cool Scrub)</td>
<td>27699</td>
<td>6</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Area for Planning Unit</td>
<td>439755</td>
<td>100</td>
<td></td>
<td>439755</td>
<td>100</td>
</tr>
</tbody>
</table>

3.2 Water Values

The Ministry of Environment Watershed Atlas has broken the province down into small order watersheds based on creek and rivers. Within the Sustut Watershed there are 34 named watersheds and 92 un-named watersheds. The named watersheds are listed below.

<table>
<thead>
<tr>
<th>Watershed</th>
<th>Hectares</th>
<th>Watershed</th>
<th>Hectares</th>
<th>Watershed</th>
<th>Hectares</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attichika Creek</td>
<td>460</td>
<td>Kaslberg Creek</td>
<td>7094</td>
<td>Salya Creek</td>
<td>3372</td>
</tr>
<tr>
<td>Attycalley Creek</td>
<td>943</td>
<td>Kotline Creek</td>
<td>7651</td>
<td>Salx Creek</td>
<td>4216</td>
</tr>
<tr>
<td>Azulotz Creek</td>
<td>10162</td>
<td>Menard Creek</td>
<td>117</td>
<td>Skeena River</td>
<td>8898</td>
</tr>
<tr>
<td>Barcheau Creek</td>
<td>101</td>
<td>Minaret Creek</td>
<td>4084</td>
<td>Spingula River</td>
<td>25794</td>
</tr>
<tr>
<td>Bear River</td>
<td>19236</td>
<td>Moosevale Creek</td>
<td>9747</td>
<td>Sustut River</td>
<td>41883</td>
</tr>
<tr>
<td>Birdfall Creek</td>
<td>15564</td>
<td>Mosque River</td>
<td>6168</td>
<td>Thorne Creek</td>
<td>1463</td>
</tr>
<tr>
<td>Condor Creek</td>
<td>7488</td>
<td>Nikkika River</td>
<td>87</td>
<td>Thudate Creek</td>
<td>7758</td>
</tr>
<tr>
<td>Driftwood River</td>
<td>17345</td>
<td>Niven River</td>
<td>18079</td>
<td>Two Lake Creek</td>
<td>14166</td>
</tr>
<tr>
<td>Elmore Creek</td>
<td>2627</td>
<td>Omineca River</td>
<td>65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Endless Creek</td>
<td>92</td>
<td>Patch Creek</td>
<td>3390</td>
<td></td>
<td></td>
</tr>
<tr>
<td>February Creek</td>
<td>7150</td>
<td>Ploea Creek</td>
<td>1825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fernie River</td>
<td>30314</td>
<td>Pilot Creek</td>
<td>4849</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fort Creek</td>
<td>68</td>
<td>Red Creek</td>
<td>7736</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3.3 Fisheries Values
Fisheries values are rated high to very high in the Sustut. The watershed drains to both the Arctic Ocean and the Pacific Ocean.
The Arctic drainage includes: arctic grayling, bull trout, dolly varden, kokanee, largescale sucker, longnose sucker, mountain whitefish, and rainbow trout.
The Pacific drainage includes: bull trout, burbot, chinook salmon, chub, coho salmon, dolly varden, lamprey, leopard dace, longnose dace, minnow, mountain whitefish, pink salmon, prickly sculpin, rainbow trout, sculpin, sockeye salmon, steelhead, unidentifiable trout, and whitefish.

3.4 Soil Values
The Sustut Watershed is mountainous with steep slopes throughout the watershed. Terrain Stability Mapping (TSM) completed for this unit has identified potentially unstable terrain (Class IV) over an area of 15,929 ha (3% of the unit). TSM identified unstable terrain (Class V) over an area of 5,860 ha (1% of the unit). In addition, mapping of environmentally sensitive areas completed in the early to mid-1970s classified another 26,048 ha (5% of the unit) as having environmental sensitivity for soils.

3.5 Forest Values
Some 377,408 hectares of land within the unit is forested. This represents 77% of the total landbase. The breakdown of forest habitat types by leading tree species is summarized in the table below.

<table>
<thead>
<tr>
<th>Leading Species</th>
<th>Hectares</th>
<th>% of forested area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixed deciduous</td>
<td>6652</td>
<td>2%</td>
</tr>
<tr>
<td>Pine species</td>
<td>47,909</td>
<td>13%</td>
</tr>
<tr>
<td>Alpine/Amabilis fir</td>
<td>27,5751</td>
<td>73%</td>
</tr>
<tr>
<td>Spruce species</td>
<td>47,036</td>
<td>13%</td>
</tr>
<tr>
<td>Total</td>
<td>377,408</td>
<td>100%</td>
</tr>
</tbody>
</table>

3.6 Wildlife Values
The Sustut River and Bear River valleys and neighbouring slopes and alpine habitats support numerous wildlife species including mountain goat, which is identified as a species requiring winter habitat conservation, and northern mountain caribou, which is recognized as a species at risk. Other important species supported by habitat within the Sustut watershed include grizzly bear, black bear, moose and several species of fur bearing mammals.

4.0 Economic Characteristics

4.1 Timber and Silviculture

Sustut Landbase Summary

The discrepancy between forested landbase area and operable landbase area in the Sustut is a result of large portions of the landbase being capable of sustaining forest operations, but not presently containing merchantable species. It is expected that future TSR reviews will address this discrepancy and the figures in the Gitxsan Watershed will be revised to reflect the new figures.

Timber
The Sustut Watershed lies within two Timber Supply Areas: the Prince George and the Mackenzie. Most of the total area of the Sustut is located within the Prince George TSA (84%), as is most of the operable landbase (84%). The table below shows the proportion of total landbase and operable landbase associated with each TSA in the watershed.

<table>
<thead>
<tr>
<th>TSA</th>
<th>Total Landbase (ha)</th>
<th>Operable Landbase (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prince George</td>
<td>410,390</td>
<td>395,501</td>
</tr>
<tr>
<td>Mackenzie</td>
<td>78,169</td>
<td>75,334</td>
</tr>
<tr>
<td>Total</td>
<td>488,559</td>
<td>470,835</td>
</tr>
</tbody>
</table>

The total forested area that can be used for timber production (operable landbase) in the Sustut Watershed is 470,835 hectares. This represents 98% of the total landbase in the watershed. The timber from the operable landbase of each ESA is classified in Table 6 and 7.

<table>
<thead>
<tr>
<th>Ha.</th>
<th>% Operable</th>
<th>Sawlog Operability Code A1</th>
<th>% Oper.</th>
<th>Sawlog Operability Code A2</th>
<th>% Oper.</th>
<th>Sawlog Operability Code C</th>
<th>% Oper.</th>
<th>Sawlog Operability Code H</th>
<th>% Oper.</th>
<th>Immature &lt;= 60 Yrs Old</th>
</tr>
</thead>
<tbody>
<tr>
<td>27818</td>
<td>37</td>
<td>53</td>
<td>0.7</td>
<td>864</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1148</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

The timber from the operable landbase of the Mackenzie ESA is classified as follows:

- A1: Conventional ground based skidding (slope <=18%, all soil types)
- A2: Conventional / cable based skidding / yarding (slope >18% and <=50%, stable soils, non-lacustrine)
- C: Cable based yarding system (slope >50% and <=100%) (stable soils, non-lacustrine, cable based yarding system (slope >100% and <=150%)
- H: Helicopter based logging (slope >100%)
- I: Inoperable
Table 7. Operable Timber Resources for the Prince George TSA.

<table>
<thead>
<tr>
<th>Sawlog Operability Code A</th>
<th>Sawlog Operability Code M</th>
<th>Sawlog Operability Code C</th>
<th>Sawlog Operability Code H</th>
<th>Immature &lt;=80 yrs Old</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Operable</td>
<td>% Oper.</td>
<td>% Oper.</td>
<td>% Oper.</td>
<td>% Oper.</td>
</tr>
<tr>
<td>201570</td>
<td>50</td>
<td>38181</td>
<td>76006</td>
<td>18</td>
</tr>
</tbody>
</table>

A. Conventional ground base skidding (slope <= 30% (all soil types))
B. Conventional / cable yarding system (slope > 30% and <= 55%) (stable soils, Non-Lacustrine)
C. Cable based yarding system (slope > 30% and <= 100%) (stable soils, Non-Lacustrine, Cable based yarding system (slope > 30% and <= 100%) (Lacustrine soils)
H. Helicopter base logging (slope > 100%)
I. Inoperable

Silviculture Status
As of 2007, 11618 ha (3% of the operable forested landscape) had been harvested in the Sustut Watershed. All areas harvested must be planted or restocked naturally, and then monitored until the trees have established themselves and have a good chance of becoming a mature forest (attaining “free growing” status). The Ministry of Forests and Range is responsible for planting areas that were harvested prior to 1987. Areas harvested after 1987 are planted and managed to free growing status by individual licensees.

Of the 11618 ha that have been harvested, 10,172 ha (88%) have been restocked and 1100 ha (9%) is free growing. Some 346 ha (or about 3% of the watershed) are classified as “not satisfactorily restocked.”

Table 10. Area by Opening Type in the Sustut Watershed.

<table>
<thead>
<tr>
<th>Timing of harvest or fire</th>
<th>Not Satisfactorily Restocked</th>
<th>Satisfactorily Restocked</th>
<th>Free Growing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ha.</td>
<td>%</td>
<td>Ha.</td>
<td>%</td>
<td>Ha.</td>
</tr>
<tr>
<td>Total</td>
<td>346</td>
<td>3</td>
<td>10172</td>
<td>88</td>
</tr>
</tbody>
</table>

4.2 Tourism and Recreation

Wilderness Values
A good portion of the area is relatively untouched and primitive, providing potential opportunities for wilderness recreation experiences.
- 60% is classified as “primitive” (greater than or equal to 8 km from a four-wheel-drive road and greater than or equal to 5000 ha in size).
- 30% is classified as “semi-primitive” (greater than or equal to 1 km from a road, and greater than or equal to 1000 ha in size).

Camp Sites
There are no provincial recreation trails or recreation sites established within the Sustut Watershed. There are currently two privately owned fishing lodges operating along the Sustut River.

Visual Quality
Due to the high quality recreation opportunities available within the Sustut Watershed area, visually sensitive areas and associated visual quality objectives have been established. The primary areas identified for visual quality conservation and management include the landscape adjacent to Bear Lake, the landscapes visible from the Bear River, Sustut River and the Skeena River (below the confluence with the Sustut River). The map on page 30 shows the location of these visual designations.

4.3 Other Values

Range and Agriculture
There is no land designated within the Agriculture Land Reserve within the watershed. There is, however, one large, active range tenure occupying the entire northern portion of the watershed (north of the Sustut River) and the area surrounding Bear Lake. The tenure was established for grazing horses, which are used for guided hunting.

Roads
The only roaded areas are located east and west of the Driftwood River and located north and south of the lower Sustut River. The road system in the Driftwood River area is connected to the Forest Service Road network, which provides access to the community of Fort St. James and Highway 27. The road system in the Sustut River area is currently isolated from all other road systems as there is only a deactivated rail line connecting the Sustut area to the Driftwood River road system.

Minerals, Oil and Natural Gas
Metals mineral potential is low to moderate except for the portion southwest of Bear Lake and the area southwest of the Bear, Sustut and Skeena Rivers. There is also an area of high metallic mineral potential in the northeast corner of the watershed area.

Industrial mineral potential is moderate to high throughout the majority of the watershed area.

There is a significant amount of showing prospects southwest of Bear Lake, Bear River and the Sustut River. Showing prospects are also common in the Two Lake Creek area and along the north end of Thutade Lake. The watershed contains two developed prospect areas: one at the north end of Thutade Lake, and one near the headwaters of Red Creek.
Map 1  Social Boundaries / Territories, Parks, Agricultural Land Reserve

Resource Maps

Atlas of Resource Values for the Gitxsan Watersheds

Sustut Watershed
Map 3 Environmental Characteristics / Biogeoclimatic Classification

Data Source:
Land and Resource Data Warehouse
MOF Fort St James Stewardship Div.
MOF Fort St James Forest District
Projection: BC Albers
Datum: GCS NAD 83
Map 6  Environmental Characteristics / Forested Landbase

Data Source:
Land and Resource Data Warehouse
MOF Fort St James Stewardship Div.
MOF Fort St James Forest District
Projection: BC Albers
Datum: GCS NAD 83
Map 7  Environmental Characteristics / High Value Wildlife Habitat

Data Source:
Land and Resource Data Warehouse
MOF Fort St James Stewardship Div.
MOF Fort St James Forest District
Projection: BC Albers
Datum: GCS NAD 83

Caribou Populations
Herds/Tracts
Unsed/Managed
Major River Basins

Moose Habitat

Sustut Watershed
Map 9  Economic Characteristics / Opening Status

Data Source:
Land and Resource Data Warehouse
MOF Fort St James Stewardship Div.
MOF Fort St James Forest District
Projection: BC Albers
Datum: GCS NAD 83

Legend:

[Map details and legend]
The Recreation Opportunity Spectrum (ROS) is a system used by the Ministry of Forests and Range to classify forest lands in relation to the availability of recreational experiences and opportunities. The descriptions used to classify the settings are on a continuum and are described as: rural, roaded resource, semi-primitive motorized, semi-primitive non-motorized, and primitive.
Visual Quality Objectives

- **Preservation VQO**—forest management activities cannot be visible from designated viewpoints.
- **Retention VQO**—forest management activities may be noticeable but not clearly visible to the average viewer. Disturbances must appear to be from natural causes.
- **Partial Retention VQO**—forest management activities may be noticeable but must blend well with the natural landscape.
- **Modification VQO**—forest management activities must appear natural.
Map 13  Economic Characteristics  /  Mineral Potential

Data Source:
Land and Resource Data Warehouse
MOF Fort St James Stewardship Div.
MOF Fort St James Forest District
Projection: BC Albers
Datum: GCS NAD 83

Atlas of Resource Values for the Gitxsan Watersheds
Sustut Watershed
For more information, contact:

Carl Pollard, C&E Senior Forester
Ministry of Forests and Range
Fort St. James Forest District
PO Box 100 Stonesbay Road
Fort St. James, BC
V0J 1P0
Tel: 250-996-5200