



# **Gravel and Rock Extraction Highway Maintenance, Recapitalization and Twinning**

Backgrounder: Mountain National Parks

## ***A Need for Change***

Existing supplies of aggregate (sand and gravel) for highway maintenance, repairs, winter abrasives, and twinning are quickly becoming depleted. The management plans need to provide direction for obtaining these materials. This may require slight adjustments to the boundaries of declared wilderness areas.

## ***Background***

- Canada's mountain national parks use aggregate to build, repair, maintain and operate highways.
- Using sand and gravel as abrasives is critical to public safety on mountain park highways and roads in winter.
- To reduce the amount of gravel used in highway projects, Parks Canada has adopted practices such as asphalt recycling.
- While gravel and rock should come from sources outside the parks whenever possible, Parks Canada's policy allows for the use of aggregate from inside the parks if other sources are "unobtainable within a reasonable distance from a park, or where they are available but transporting them to the work site would cause more environmental disturbance than seeking materials locally."<sup>1</sup>
- The policy requires parks to prepare rehabilitation plans and identify funding for rehabilitation before allowing a new quarry.
- The policy indicates that land use zone II (wilderness) and zone III (natural environment) will be closed to extractive activity.
- Aggregate reserves from existing sources in Banff and Jasper are nearly exhausted.
- In Kootenay, reserves in Settler's Pit will meet immediate needs (i.e. winter abrasives for the next five years).
- There are no active quarries in Yoho, Waterton Lakes, Mount Revelstoke, or Glacier national parks.
- Because wilderness boundaries are close to existing roads, most new sources of aggregate as well as potential staging areas for highway work are in declared wilderness areas.
- Outside the parks, active pits or new sources of aggregate are limited. Most are on provincial lands and are reserved for the province's future needs, or are owned by private developers. These pits are often far from the park, or from the location where the material is needed. Some aggregate is unsuitable for paving.
- Aggregate for twinning the Trans-Canada Highway in Banff will come from existing pits that are not in designated wilderness areas (Mannix pit at Castle Interchange and Km 69 pit east of Lake Louise).
- Eventual twinning of the Trans-Canada through Yoho, Glacier, and Mount Revelstoke national parks, and various improvement projects in Jasper will also require aggregate.

---

<sup>1</sup> Parks Canada Management Directive 2.4.7 – Sand, Gravel, and Other Earth Material: Excavation and Site Rehabilitation.

### ***Existing Management Plan Direction***

Park management plans call for reducing the environmental impact of roads generally, and the rehabilitating or restoring of disturbed sites.

### ***Considerations***

- Highway maintenance in the mountain parks (except Waterton Lakes) requires approximately 38,000 m<sup>3</sup>/year of aggregate or 72,200 tonnes.
- The current phase of the TCH twinning will use an estimated 605,000 m<sup>3</sup>, or 1,149,500 tonnes.
- Other highway recapitalization (i.e. paving) will require an estimated 75,000 m<sup>3</sup>/year or 142,500 tonnes.
- The cost of importing aggregate from the nearest available sources outside the larger mountain parks is currently estimated at \$19.00/t to \$23.00/t. The estimated cost of producing this material from park sources is between \$7.40/t and \$8.15/t.
- Based on the above figures, the annual cost of aggregate from external sources, for maintenance alone, would be in the order of \$1.4 million to \$1.7 million. The cost to produce the same amount of aggregate in the parks would be between \$530,000 and \$590,000.
- Hot mix asphalt must reach the paver within one hour of leaving the plant or the temperature of the asphalt drops below acceptable levels. Because of this, staging areas are required.
- Hauling gravel from pits outside the parks increases truck traffic on park roads and releases more CO<sub>2</sub> and particulates into the atmosphere. Reducing these emissions by opening new pits in the parks would be temporarily offset by the removal of vegetation and loss of carbon storage capacity until the quarry site is successfully restored.

### ***Declared Wilderness***

- Declared wilderness areas are “those areas where the public will have a high degree of assurance that development and use inconsistent with wilderness character will not occur” (*Parks Canada Guide to Management Planning*, 2008).
- The *Canada National Parks Act* states that the Minister may not authorize any activity in a wilderness area that is likely to impair its wilderness character.
- Quarries are inconsistent with the purpose of declared wilderness areas.
- When new quarries, quarry expansions, or staging areas are proposed for wilderness areas, the wilderness boundary must be changed through a formal amendment process.
- Wilderness area boundaries in the four contiguous Rocky Mountain parks are located 100m from the centreline of all developed highway, road or railway rights-of-way. Boundaries around day use areas and other development vary.
- Wilderness area boundaries for Waterton Lakes have not yet been established by regulation.
- There are no declared wilderness areas in Mount Revelstoke or Glacier national parks.
- Proposed changes to declared wilderness area boundaries cannot be confirmed until Parks Canada completes the appropriate studies and planning to identify the precise areas that are required for extraction or staging.
- Any new quarry, or expansion of an existing quarry, requires an environmental assessment.
- Depleted quarries offer an opportunity to demonstrate leadership in restoring specific habitats. However, when restoring gravel pits, the natural process of soil formation and the establishment of mature vegetation take a very long time.

## ***New Directions***

***Parks Canada welcomes public comments on the following proposed direction for the revised management plan.***

- Use gravel sources inside the parks for highway purposes. The attached table identifies potential and existing sources.
- Carefully identify areas for extraction, and begin the process of changing the wilderness boundaries through an amendment to the *National Parks Declared Wilderness Area Regulations*.
- Prepare a long-term extraction plan for the mountain national parks, including site restoration.
- Exclude sites with locally rare plant communities and habitat, archaeological resources or high visitor experience values from consideration.
- Carry out environmental assessments and prepare comprehensive rehabilitation plans for any new quarries or expansions.
- In rehabilitating depleted sources, direct succession toward specific habitats (e.g., grassland, aspen parkland, open Douglas fir forest, wetland).
- Include rehabilitation costs in estimates for highway construction and recapitalization. Apply funds to ecological restoration of depleted gravel sources and old disturbed sites, in accordance with a long-term restoration plan.

## **Questions**

1. What concerns, if any, do you have related to gravel extraction in the mountain parks?
2. Under what conditions would you support the limited modification of existing wilderness boundaries to accommodate gravel extraction or staging areas?
3. Do you have specific concerns or suggestions about the gravel sources on the attached table?

***Specific Direction for Mount Revelstoke and Glacier national parks.***

- The current (2005) management plan for Mount Revelstoke and Glacier national parks and Rogers Pass National Historic Site does not include any direction specific to quarries.
- The previous 1995 plan indicated that there would be no new borrow pits established in Glacier National Park, and that Parks Canada would stop the use of park natural resources for management purposes.
- In recognition of the need for gravel sources to support public safety on the Trans Canada Highway, Parks Canada is proposing to make a policy change related to the use of park natural resources for the Mount Revelstoke and Glacier management plan. Specifically:
  - Gravel extraction may be considered within the park, where significant ecological gains can be achieved relative to acquiring material from external sources (including both the ecological benefits of park quarry restoration after the conclusion of extraction, and the reduction in the overall ecological costs of long distance gravel hauling);
  - The process identified above for the other mountain national parks will be used to evaluate potential sources;
  - A resource options study will be conducted as the first step;
  - Parks Canada will consult the public on this study to seek input on the balance between park resource protection objectives and expending additional public funds to transport materials greater distances for park use;
  - Environmental assessments will be required for any proposed extraction activities.

**Additional question:**

If Parks Canada determines that new extraction sites should be opened in Mount Revelstoke or Glacier national parks, what mechanisms or measures should be considered to compensate for the loss of current ecological conditions?

PARK& PIT LOCATION	Hwy	Zone	DWA?	Comments
<b>JASPER</b>				
Transfer Station	16	3 - natural environment	No	potential to expand - currently used for dumping and garbage transfer
Marmot	93A	4 - outdoor recreation		7.5km s. of Jasper - potential to expand
Mile 9	93	3 - natural environment	No	14 km s. of Jasper - potential to expand or use for staging/dumping
Ranger South	93	4 - outdoor recreation		50km s. of Jasper - potential to expand or use for staging/dumping
Ranger North	93	2 - wilderness	Yes	48km s. of Jasper - potential to expand or use for staging/dumping
Kerkeslin	93	4 - outdoor recreation		35km south of Jasper, potential to use for staging
Stanley Falls borrow area	93	4 - outdoor recreation		Potential to use for staging/dumping
<b>BANFF</b>				
Cascade Pit	TCH	4 - outdoor recreation		currently used for dumping and staging
Castle Pit	1A/93S	4 - outdoor recreation		currently used for abrasives storage/staging
Mannix Pit	TCH	4 - outdoor recreation		active pit with extraction/rehab expansion plan
Castle Pit	TCH/93S	4 - outdoor recreation		currently used for dumping and staging
Km 69 Pit	TCH	4 - outdoor recreation		active pit with extraction/rehab expansion plan
Niblock Pit	93 N	4 - outdoor recreation		currently used for dumping and staging
Mosquito Creek	93N	2 - wilderness	Yes	potential for expansion or use for staging/dumping
David Thompson Pit	93N	2 - wilderness	Yes	potential for expansion or use for staging/dumping
<b>YOHO</b>				
Yoho Sand Pit	TCH	4 - outdoor recreation		currently used for abrasives storage/staging
Ottertail Pit	TCH	4 & 2 - outdoor recreation/wilderness	No	currently used for staging/dumping with potential for expansion
<b>KOOTENAY</b>				
Snow Creek Pit	93S	2 - wilderness	Yes	potential for expansion or use for staging/dumping
4 Mile pit	93S	4 - outdoor recreation		currently used for abrasives storage/staging
Settlers Pit	93S	4 & 2 - outdoor recreation/wilderness	Yes	active pit with potential for expansion

**Potential Pits and Staging Areas in the Mountain National Parks (shaded rows are pits where changes to zoning and/or declared wilderness area boundaries are required)**

**DWA = Declared Wilderness Area – column indicates whether or not DWA boundary changes would be required.**