

ENVIRONMENTAL ASSESSMENT SCREENING REPORT

PROPOSED EXPANSION OF THE JASPER NATIONAL PARK "MARMOT PIT" FOR AGGREGATE EXTRACTION



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**Prepared for Responsible Officer D. Edwards,
Highway Area Manager, Jasper National Park.
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APPROVAL PAGE

Environmental Assessment Screening Report

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It is the conclusion of this screening report that Parks Canada may take the course of action provided for by section 20 (a) of the Canadian Environmental Assessment Act, to approve the project:

"where, taking into account the implementation of appropriate mitigation measures, the project is not likely to cause adverse environmental effects, the RA may exercise any power that would permit the project to proceed, and shall ensure that the mitigation measures are implemented;"

Parks Canada is not aware of public interest in this project. The project was registered with the Public Registry on October 31, 1996, and considered a matter of public record since that time. No inquiries nor comments regarding this project have been received from the public. Given the scope and nature of the project, Parks Canada does not anticipate public concern and has not undertaken a formal public consultation. The decision date will be posted with the Public Registry.

Screening Approved by:



**Ron Hooper
Park Superintendent**

Date: 15 Aug 97

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PROPOSED EXPANSION OF MARMOT PIT FOR AGGREGATE EXTRACTION JASPER NATIONAL PARK

1.0 Introduction

Parks Canada proposes to expand the existing "Marmot Pit" to extract aggregate. The limits of proposed expansion are those identified in a 1983 aggregate material resource study.

The Marmot Pit was first assessed in 1975, to support resurfacing of Highway 16. The pit was then three hectares in extent and 13 metres deep (Jakimchuk, 1975). In 1983, a Materials Resource Study was prepared, which described limits of expansion for the next 10 years, and provided a rehabilitation plan (Public Works and Government Services Canada, 1983). This project involves continued implementation of that plan. Extraction will continue in incremental fashion, in response to supply requirements, until the limitations set out in the 1983 document are reached.

Parks Canada considers the proposed activity to trigger the Inclusion List Regulations of the Canadian Environmental Assessment Act (CEAA), through the expansion of an existing borrow pit (or opening an inactive portion of an existing pit). The Inclusion List (Part 1, Section 2) defines as a project under CEAA the proposed activity at Marmot Pit:

"The removal of natural objects for construction purposes within a national park that requires a permit under subsection 11(1) of the National Parks General Regulations, where the removal involves a new borrow site, the expansion of an existing borrow site, the reopening of an inactive borrow site, an increase in the amount of extraction, new extraction or the extraction of materials from aquatic locations"

2.0 Scope of assessment

This document is prepared as a screening report to meet the requirements of the CEAA. The project has not been previously assessed. The extraction plan itself predates the *Environmental Assessment and Review Process Guidelines Order* (1984), the forerunner of CEAA, although subsequent activities at the Marmot pit were assessed under the EARPGO.

The geographic scale of this assessment focuses on the immediate area of the pit, with reference to the broader ecological context. The scope of any approvals authorised by this assessment are limited to the extraction limits set in the 1983 extraction plan (Materials Source Study, 1983).

The scope of operational activities considered appropriate within the pit include crushing, storage of aggregate, and asphalt plants. This assessment does not address in detail the abandonment of the pit, as information deficiencies exist regarding timing and ancillary facilities, such as the access road. Accordingly, final decommissioning and abandonment will require further additional assessment.

3.0 Policy direction

Aggregate management activities are guided by the Parks Canada *Management Directive 2.4.7*, respecting Sand, Gravel, and Other Earth Materials (Canadian Parks Service, 1989). This Directive identifies the need to plan site rehabilitation concurrently with extraction plans. It directs Parks Canada to obtain materials from outside parks unless they are not obtainable within a reasonable distance or transportation would cause more disturbance than getting them locally.

The Park Management Plan (Environment Canada, 1988) for Jasper National Park provides direction that "Future disturbances to natural landscapes will be minimized. Any activity that disturbs a landform may be approved only when all necessary rehabilitation plans have been developed and approved." The Ecosystem Conservation Strategy for Jasper National Park identifies the need to establish a mineral aggregate supply program consistent with ecosystem values and to actively restore disturbed landforms to functioning ecological units (Jasper National Park, 1994).

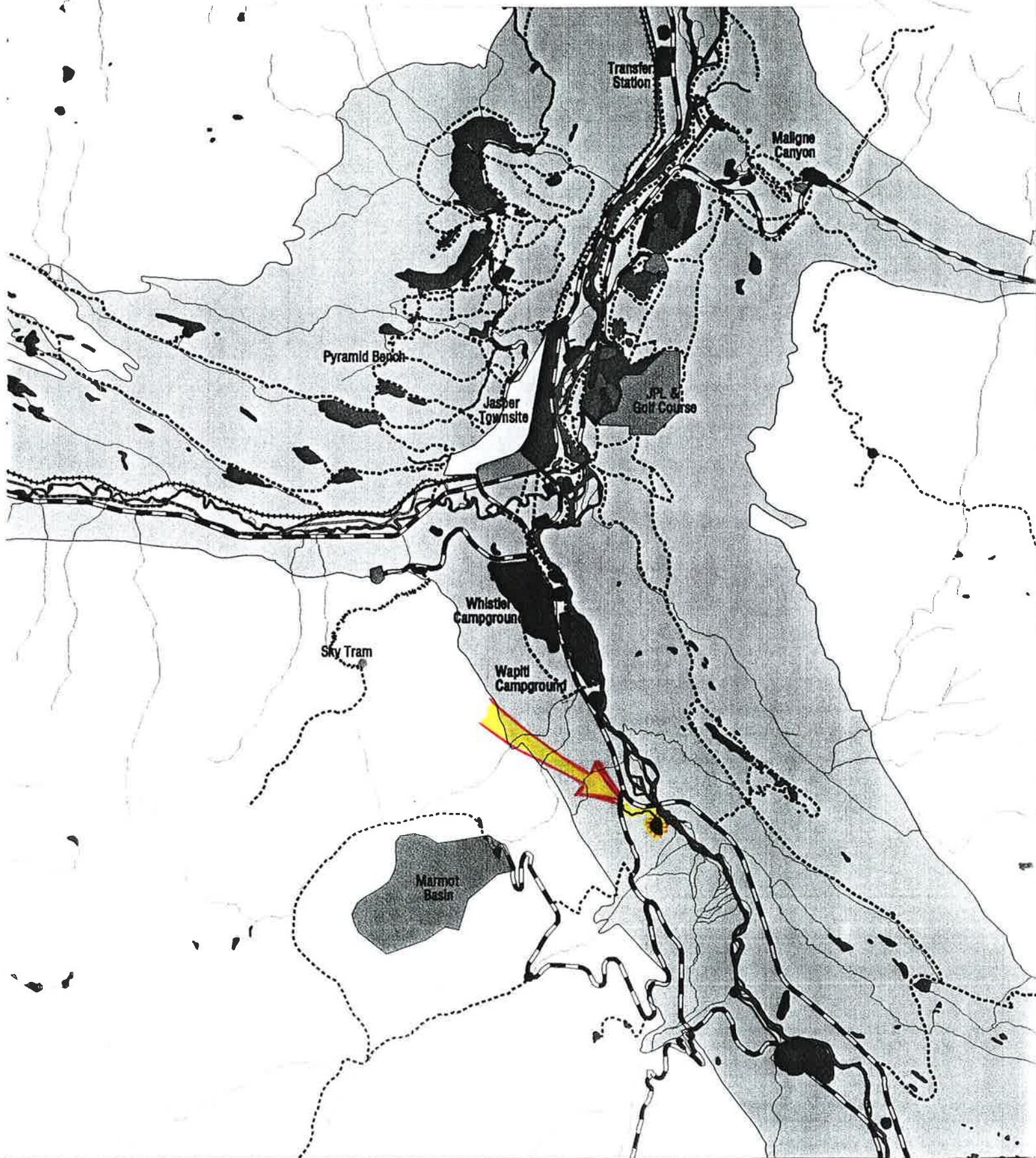
Parks Canada considers that the proposal to continue implementation of the extraction plan for Marmot pit is consistent with policy direction. The *Materials Source Study* (1983) provided the required extraction and expansion design and a rehabilitation plan. Rehabilitation of existing finished extraction faces within the pit are ongoing.

4.0 Project Description

Activities involved at the Marmot pit operation include:

- clearing of mature forest vegetation to expose a new extraction face;
- removal of organic and mineral soil horizons, stockpile of those soils for rehabilitation work;
- disposal of timber and brush;
- excavation of aggregate;
- crushing and stockpiling aggregate; possible operation of asphalt plants
- burial of spoil (boulders;)
- maintaining an extraction face;
- operation of heavy equipment for excavation and moving aggregate;
- re-contouring finished slopes, and rehabilitation (on-going activities);

Figure 1: Location of Marmot Pit in Jasper National Park



- final rehabilitation and abandonment
- long term monitoring for vegetative recovery and action on non-native plants.

All project activities occur within the perimeter of a existing borrow pit (limits described in 1983). Based on predicted supply needs, it is anticipated that the pit will be exhausted within five years (Dave Edwards, personal communication, 1996). The limits of expansion will have been reached by this time, and approximately 40,000 m³ of material excavated and removed. Retirement is expected in 2001 or sooner.

5.0 Site Environment

Marmot Pit is located off of Highway 93A at the northern junction with Highway 93 (see Figure 1), adjacent to the Athabasca River. The site was initially developed as an aggregate source to support paving of Highway 93 in the mid 1960's. The site has provided the majority of aggregate for paving the Townsite area since the early 1970's. The size of the existing disturbance footprint was 103,219 square metres when last measured in 1993/1994 by Park Warden Dave Smith.

The Marmot Pit site is located on alluvial fan deposits of Portal Creek and floodplain deposits of the Athabasca River. Elevation is 1090 metres ASL. Vegetation is described using the Ecological Land Classification (Biophysical) developed for the park (Holland and Coen, 1982). The site is in the Athabasca (AT) ecosection. The AT1 ecosite is characterized by lodgepole pine forest on terraces of calcareous, coarse textured glaciofluvial material in the Montane Ecoregion. Extensive tracts are mapped in the Athabasca River valley from Jasper Townsite south to the Sunwapta River. Soils for the surrounding area are eutric brunisols. Intermittent water and stagnant water have been identified on site. The excavation has encountered the water table. The site is well drained. The site is also used for storage of materials. It is the main area in the park for gravel crushing and borrow storage for Parks Canada.

The montane ecoregion is limited to lower elevation valley bottoms and slopes. The lower reaches of the Athabasca watershed are most important to ungulates and their predators, to waterfowl, and to many species of birds. The dry, open vegetation of the lower Athabasca River valley provides abundant forage for grazing animals, while the high winds and low snow accumulation of winter allow them better mobility and easier foraging than in the upper reaches of the watershed. It is one of the most important areas for elk, sheep and deer and, potentially, moose.

Large carnivores, including coyote, wolf and cougar, occur more commonly in the lower Athabasca River valley than anywhere else in Jasper. Black bears are uncommon in the Athabasca River valley. Grizzlies forage in the valley bottoms during spring and are then uncommon until late summer when they become increasingly common at the Jasper sanitary landfill. Because it contains the bulk of Jasper's montane habitats and provides a direct link into the boreal forest region of northern Alberta, and because of the extent of its floodplain lakes and wetlands, the

valley of the lower Athabasca River is the most important area in Banff and Jasper for a number of species of birds.

The immediate area surrounding the pit is well used by ungulates, and wolf scat was observed during a site visit July 30, 1997. As use of the pit by humans is infrequent, the existing disturbance or displacement of wildlife is likely attributed alienation of the pit itself from native vegetation, and habitat fragmentation resulting from other man-made disturbances in the immediate area. Adjacent disturbances include Highway 93, Highway 93A, and the Alberta Power Limited overhead line and right of way.

Sixteen species of non-native plants have been identified in the vicinity of the pit (Biota Consultants, 1995). Two sites were identified - 93A-1-GP and 93A-2-GP. Non-native species identified are:

Scientific Name	Common Name
Agropyron repens	Quack grass
Capsella bursa-pastoris	Shepherd's Purse
Chenopodium album	Lamb's-quarters
Chrysanthemum leucanthemum	Oxeye daisy
Crepis tectorum	Annual hawksbeard
Descurainia sophia	Flixweed
Echium vulgare	Blueweed
Lappula squarrosa	Bluebur
Matricaria matricarioides	Pineapple weed
Melilotus alba	White Sweet Clover
Senecio viscosus	Sticky ragwort
Sisymbrium loeselii	Loesel tumbling mustard
Sonchus spp.	Perennial sow thistle
Thlaspi arvense	Stinkweed
Trifolium hybridum	Alsike clover
Trifolium pratense	Red clover

6.0 Environmental Effects

6.1 Wildlife

6.1.1 Displacement: Forest dwellers will be displaced beyond the new pit perimeter, when forest cover is removed. Effects are local in nature and temporary. As game trails ring the existing pit perimeter, it is predicted these will be re-established within cover surrounding the new pit perimeter.

6.1.2 Loss of habitat: wildlife species will be affected by changes in micro habitat as a result of vegetation removal and landform change. Effects are local in nature and temporary.

6.2 Vegetation

6.2.1 Species composition or community structure: effects of local tree or plant cover removal.

6.2.2 Successional stage: removal of climax vegetation will result in a change back to an early plant successional stage within the area of pit disturbance.

6.2.3 Introduction of non-native species and noxious weeds: site disturbance may result in establishment of non-native plants and/or noxious weeds.

6.2.4 Rare, endangered or special resource species: The presence of these species on this site has not been ascertained. Effects may include damage to or removal of these species.

6.3 Landform

6.3.1 Physical change of the landform - the residual result of aggregate extraction is the establishment of new landscape contours and drainage pattern. Effects are permanent and local in scale.

6.4 Soils

6.4.1 Removal of organic matter and soil horizon: the removal of a surface organic horizons. Temporary, local in scale.

6.5 Water

6.4.3 Excavating below the water table: The existing bottom of the excavation is penetrates the water table to several metres (below the water level of the adjacent Athabasca River). Accordingly, standing water is frequently observed at the pit bottom, a condition present throughout spring and summer.

6.6 Aesthetics

6.5.1 Visibility - The extraction site is located between and is partially visible from Highways 93A and 93. Future extraction may slightly increase visibility from Highway 93A and high vantage points in the valley. Other view corridors to consider are from boating activities on the river, from hiking trails (Skyline and Tramway) and from the air. The change, however, to existing conditions resulting from the project is not significant.

6.7 Historical/Archaeological Resources - there are no resources identified within existing documents.

7.0 Cumulative Effects

It is not within the scope of this assessment to qualify the cumulative effects of overall alteration of landscapes within the montane. A report has been prepared to document all extraction activities in the park, to facilitate future analysis and guide rehabilitation priorities.

Given the existing site conditions, and the scope of the project, it is predicted that there are no cumulative effects associated with the project. There is no change in type nor intensity of human use. With the project location between two highways and a river, there is likely no additional cumulative effect for fragmentation of habitat, nor impairment of wildlife movement corridors. Incremental effects do occur with the total disturbed land area associated with past and future projects. Parks Canada has become increasingly concerned regarding the status of denuded and disturbed land in the park, from the context of sites where non-native plants and noxious weeds can establish. However, as rehabilitation can occur concurrently, and action taken to monitor and eliminate noxious weeds, those effects can be mitigated.

8.0 Mitigative Measures

The following mitigation measures address environmental impacts identified in section 6 of this report. For logical progression, they are arranged to reflect timing of project activities.

Site Preparation

1. Vegetation clearing activities should be timed for fall or winter to avoid any disruption to bird nesting behaviour.
2. Prior to disturbance, the site should be inspected to confirm the absence of rare, endangered or special resource species.
3. Boundaries of the project area will be marked by the project supervisor and the surveillance officer prior to stripping of vegetation. Back sloping will be considered at the planning stage of each extraction phase so enough material is left at the boundaries of the site to accomplish rehabilitation goals.
4. Clearing timber by hand is preferred to mechanical means, to prevent soil compaction and scarring of adjacent timber by equipment.
5. Organic and mineral soil horizons are to be stripped and stockpiled separately for use in rehabilitation.
6. Usable wood will be removed to the woodlot. Shrubs and tree seedlings may be salvaged before clearing, by Parks grounds crew for transplanting on other park's projects. Stumps may be buried on site, but not in areas where standing water is encountered.
7. Alberta Power Limited personnel will be notified prior to project start up, as a matter of routine given the proximity to the power right of way.
8. Spill prevention and clean up protocols will be in place for fuel and wastewater spills. Pits are situated on well drained soils and are particularly susceptible to rapid drainage of any

spills that may enter and contaminate the water table. On this site, the lowest excavation is below the water table in spring and fall. Spill kit to be on site.

Operation and Retirement of Working Faces

9. The site shall be inspected several times each growing season for the presence of non-native plants and noxious weeds. Eliminate weeds where required according to the park non-native plant control program. Re-establishment of native vegetation should be monitored.
10. Reduce habitat opportunities for non-native weeds by retiring and re-contouring exhausted working faces, encouraging prompt rehabilitation of all existing disturbed areas within the pit.
11. An adaptive management approach is acceptable for rehabilitation. The project manager may consider experimenting with active and passive rehabilitation options. Active rehabilitation would include seeding and active revegetation activities to establish ground cover. Native seed stock is available at the recommendation of Mr. Otto Hammer.
12. Soil amendments may be added such as products from Townsite composting, provided that it meets criteria for being free of non-composted food products and weeds. Topsoil may be used to recreate a growing environment for vegetation.
13. The lowest grades of the existing pit area should be filled with clean fill on an opportunistic basis, to eliminate the water table penetration.
14. Future excavation is to avoid the depth of water table penetration as encountered elsewhere on site.
15. Wastewater management for sand and gravel washing operations is guided by the Water Quality Branch of Environmental Protection Services (Alberta Environment, 1980).
16. Any asphalt plant activities associated with this project need to follow the guidelines laid out in the Environmental Control Guidelines for Asphalt Paving Plants (Alberta Environment, 1977).
17. This project involves a sequential or incremental excavation over years to the limit of the pit. Mitigation measures should be reviewed on an annual, or as-needed basis to ensure success of environmental protection measures and objectives.

9.0 Residual Impacts

Poor regeneration of vegetation in the area of working faces and storage areas is expected on the site until extraction has ceased and slopes have been contoured. Disturbed areas can be viable seedbeds for non-native plants and noxious weeds.

The residual impacts resulting from removal of substrate and vegetation will be a change in the successional stage of the vegetation which is inconsistent with the surrounding vegetation. The landform shape will be changed from the fluvial-erosional deposit to a re-contoured depression.

10.0 Project Surveillance

Project surveillance and compliance with mitigation measures is the responsibility of the Project Manager (Parks Canada - Highways staff). Surveillance is required to document forecasted or unforeseen impacts and to evaluate the usefulness of mitigative measures. Success and usefulness of mitigative measures is used to update the mitigative measures to be used in future screenings to increase the knowledge base and gain a better understanding of the impacts of these types of activities.

11.0 Follow-up Program

A follow-up program is required to inspect the site for the presence of non-native plants and noxious weeds. New sites should be included in the non-native plant control program operating in the park. Re-establishment of native vegetation should be monitored.

12.0 Knowledge Deficiencies

Knowledge deficiencies exist for rehabilitation standards, final retirement date, and expectations for timing to return to native successional vegetation stages.

References

- Alberta Environment. 1977. Environmental Control Guidelines for Asphalt Paving Plants. Environmental Protection Services. Standards & Approvals Division.
- Alberta Environment. 1980. Wastewater Management Guidelines for Alberta Sand & Gravel Washing Operations. Environmental Protection Services. Standards & Approvals Division. Water Quality Branch.
- Audy, M. 1995. Business Unit Plan. Jasper National Park.
- Biota Consultants. 1995. Non-native Plant Inventory of Jasper National Park, 1993-1994. Final Report. Cochrane, AB.

Canadian Environmental Assessment Act. 40-41 Elizabeth II. C. 37. 1992.

Canadian Parks Service. Management Directive 2.4.7. Sand, Gravel, and Other Earth Materials: Excavation and Site Rehabilitation. May 1989.

Environment Canada. 1988. Jasper National Park Management Plan. Canadian Parks Service. Western Region.

Holland, W.D. and G.M. Coen (Eds.). 1982. Ecological (Biophysical) Land Classification Of Banff and Jasper National Parks.

Jakimchuk, R.D. 1975. Environmental Impact Assessment and Aggregate Pit Reclamation Study. Yellowhead Highway, Jasper National Park. Prepared for Public Works Canada by Renewable Resources Consulting Ltd. and Milus Tress Barron Landscape Architects.

Jasper National Park. 1994. Ecosystem Conservation Strategy for Jasper National Park. Draft.

Public Works and Government Services Canada. Architecture and Engineering. 1983. Jasper National Park Materials Source Study. Phase IV Report. Public Works Canada. Western Region. Edmonton.

EARP files:

J87-21 Marmot Pit Expansion - clay

J88-64 Hwy. Marmot Pit Expansion

J89-30 Gravel Crush - Marmot Pit C.P.S.

J90-59 Rehabilitation Plan Preparation - Borrow Pits

Air photo G9009063-5-46 1990 color

Appendix:

Materials Source Study Narrative and Figures:

Inventory

Analysis

Extraction

Rehabilitation