SAND AND GRAVEL RESOURCES OF THE SPIRIT RIVER REGION BOUNDED BY THE PEACE RIVER, ALBERTA-B.C. BORDER, SMOKY RIVER AND SOUTHERN BOUNDARIES OF MAP SHEETS 83M/13-83M/16 AND 83N/13

W.A.D. Edwards
D.W. Scafe

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ABSTRACT

A compilation and evaluation of existing sand and gravel resource information for the Spirit River area was completed by the Alberta Geological Survey for Alberta Forestry, Lands and Wildlife, Public Lands Division. Data were obtained from Alberta Transportation & Utlities (pit data), Alberta Environment (water well logs) and Alberta Research Council (geological) for the study.

The only economic source of gravel in the area is of alluvial origin and consists of terraces and bars primarily in the Peace River valley. Glacial and preglacial deposits occur in the region but are of no importance in the study area.

Further gravel exploration should focus on the river valleys. Since gravel is in short supply and exploration prospects are limited, it may be expedient to concentrate on alternative materials or more effective transportation plans rather than primary searches.

INTRODUCTION

This study is part of a program initiated in 1976 by the Alberta Research Council (ARC) and Alberta Forestry, Lands and Wildlife (AFLW) to provide information on the sand and gravel resources of Alberta. The area of study (figure 1), level of detail and roles of the participants were determined by representatives of the Public Lands Division of AFLW, Alberta Transportation and Utilities (AT&U) and the Alberta Geological Survey (AGS) a department of ARC at a meeting on September 13, 1989.

A reconnaissance level study (level 5 on figure 2) of the area bounded by the southern bank of the Peace River, Alberta-B.C. border, west bank of Smoky River and souther boundaries of NTS map sheets 83M/13-16 and 83N/13 was completed by AGS.

ACKNOWLEDGMENTS

Public Lands Division of AFLW provided the funds for the geological study. Alberta Transportation and Utilities provided testing and sampling data and Alberta Environment (AE) provided water well records.

METHODS

The study consists of compilation of existing information. Information available for the area includes water well logs from Alberta Environment, a surficial geology report by the ARC, information on sand and gravel pits from AT&U and an aggregate resource potential map by ARC for the northeast tip of the area and a bedrock topography map by ARC.

Deposits are grouped by their geological mode of formation. Their potential for containig gravel is assessed.

GEOLOGY

PHYSIOGRAPHY AND BEDROCK

The survey area lies primarily in the Peace River Lowland, a relatively flat region underlain by thick, fine grained, glaciolacustrine sediments over Cretaceous sandstones and shales. The Saddle Hills Upland and Wapiti Plain rise above the lowland and bring bedrock to the surface.

SURFICIAL GEOLOGY

Most surficial materials in the survey area are glaciolacustrine clay, silt and sand (light brown in figure 3). A thin mantle of eolian outwash

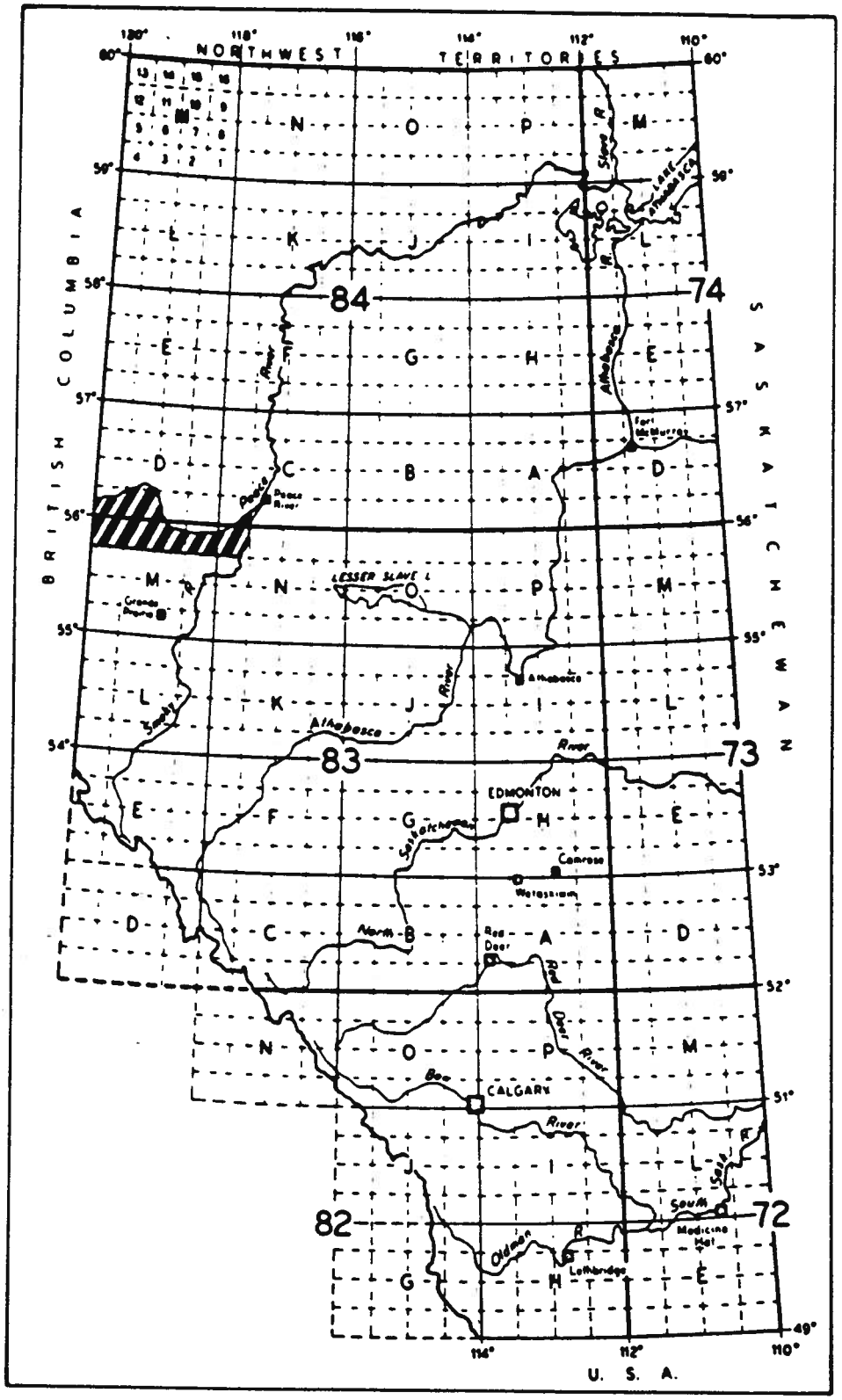

Figure 1. Study area

AGGREGATE INVENTORY MAPPING LEVELS

Format	Reconnaissance Study 5	Enhanced Reconnaissance Study 4	Regional Mapping 3	Detailed Mapping 2	Deposit Evaluation 1
Scale (Common)	1:250,000 (approx. 11x14 townships)	1:250,000 (approx. 11x14 townships)	1:50,000 (approx. 3x3 townships)	1:10,000	1:10,000 or larger
Mapping Methodology	Derived from existing surficial geology information. Aerial photograph interpretation.	Derived from existing surficial geology information. Aerial photograph interpretation. Some field traverses and site examination.	Aerial photograph interpretation Field traverses. Site examinations. Selected deposit testing. Laboratory testing.	Sedimentological studies. Site examination. Deposit testing. Laboratory testing.	Test pitting on an established grid. Hole logging. Materials analysis.
Uses	Broad scale planning. Preliminary aggregate exploration.	Broad scale planning. Preliminary aggregate exploration. Preliminary resource assessment.	Land use planning. Resource management. Resource estimates.	Land management. Reserve estimates. Deposit management.	Deposit evaluation. Development plan preparation.
Comments	Only potential areas suitable for finding deposits shown. Fairly quick and inexpensive to produce.	Potential areas suitable for finding deposits are shown. Some deposits are examined. A map will take 6 months to a year to produce.	Estimates deposit boundaries and gives quality and quantity estimations. A map may take 8 months to a year to produce.	Establishes deposit boundaries. Refines quantity/quality information. Fairly expensive survey.	Precise quality and quantity estimates. Deposit variations identified. Very expensive survey.
Output	2 map sheets per prof-year.	1 map sheet per prof-year.	2 to 3 map sheets per prof-year.	Special projects only.	Special projects only.

Figure 2. Study Levels