

INVENTORY OF AGGREGATE RESOURCES

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INTRODUCTION

The inventory of aggregate resources in Newfoundland was begun in 1975 as part of the Surficial and Glacial Mapping Program and continued in 1976. In 1977 a separate sampling program conducted analyses in areas previously mapped surficially (Vanderveer, 1977; Grant, 1973; and Brookes, 1974). This program was supplemented in 1977 by sampling conducted by the Surficial and Glacial Mapping Program (Vanderveer and Sparkes, 1978).

The Inventory of Aggregate Resources program is funded under the Canada/Newfoundland Mineral Development Subsidiary Agreement. The program is designed to provide an inventory of aggregate (sand, gravel, crushed stone, stone, ballast) resources along existing and proposed transportation routes in Newfoundland and Labrador and will show the location, size, quality, present degree of use and potential of each deposit.

FIELD PROGRAM

A 6 km wide corridor (Figure 1) centered and parallel to existing, proposed, or partially constructed highways and secondary roads was covered. Tertiary roads and trails capable of being ungraded to handle truck traffic were included in the corridor and sampling extended for a distance of 8 km along these from the main road.

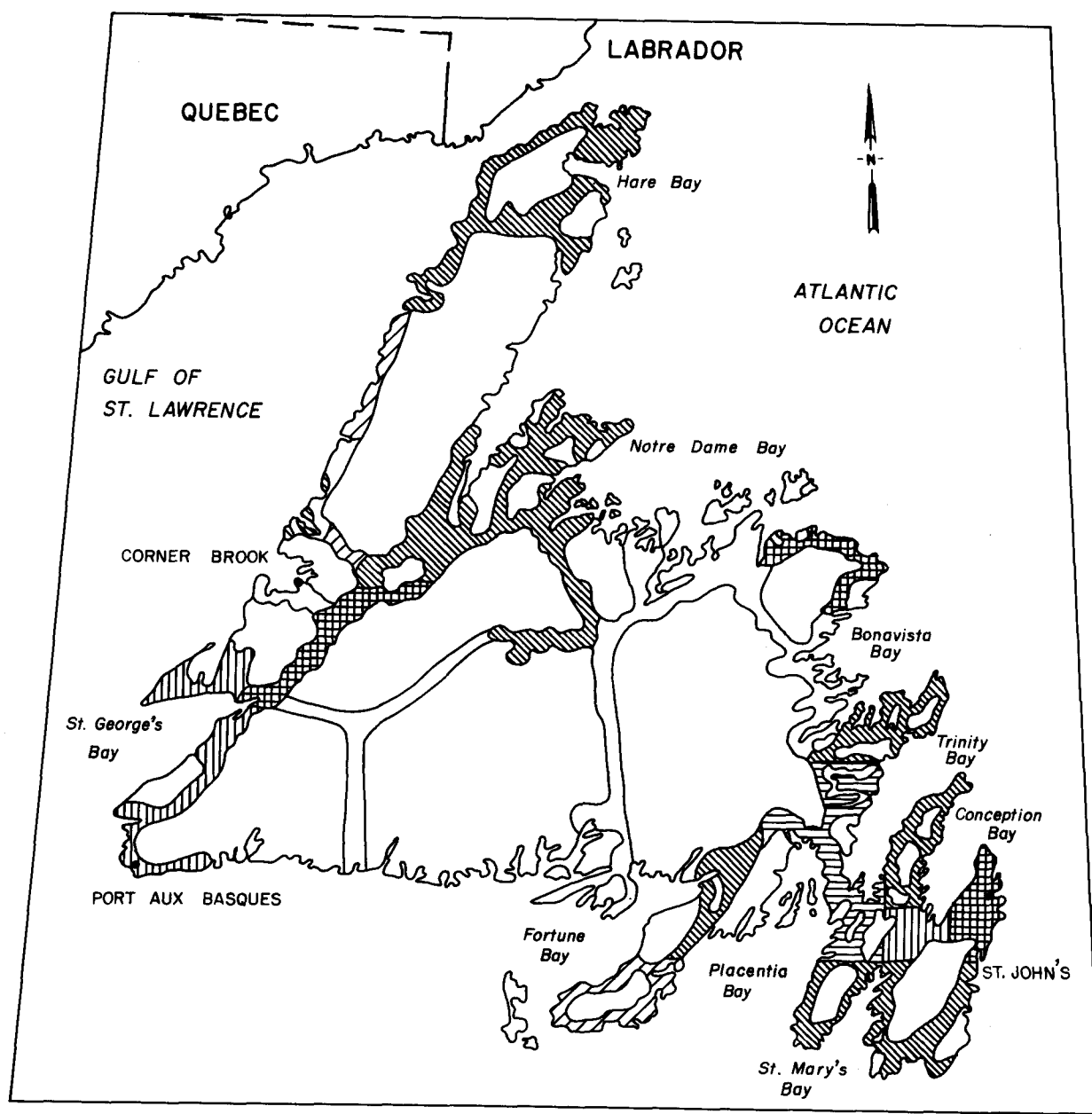
Sampling was conducted mainly by vehicular traverses, but in areas of potential aggregate resources (e.g. glaciofluvial, fluvial, deltaic, marine or esker deposits) foot traverses were carried out. These traverses extended 3 km from the road with samples taken every 500 to 1000 m in areas of aggregates. Additional samples

were obtained where deposit changes occurred or quality differences were apparent at any given location; *i.e.*, where products could be quarried separately. In areas lacking potential sand and/or gravel material, morainal and bedrock materials were sampled; *i.e.*, one sample per 1 to 2 km, except where the varying nature of the deposit required additional sampling.

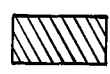
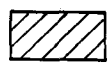
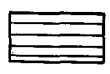


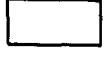

Generally, sample sites were limited to existing natural (stream or coastal cuts) or man made (road cuts, pits and quarry excavations, *etc.*) exposures. In areas of potential aggregate resources, shallow hand dug pits were made if no other exposures existed.

All field and sieve data for 1978 were placed on two separate forms. Form I gives general site information including data on location, landforms, map legend, stratigraphy, ice movement indicators, and notation for photo numbers and extra notes. Form II gives a field description of the sample, plus data on field sieve analyses, field pebble analyses and a section for laboratory sieve analyses.

Field sieve analyses were conducted on all samples containing + 8 mm size material. Moisture tests were usually conducted on every second or third sample if the deposit remained consistent along the traverse route; otherwise, analyses were done at every sample location. During sieve analyses approximately 10 to 20 kg of material was sampled, weighed and sieved through a bank of four, 30 cm diameter sieves (sizes 63 mm, 31.5 mm, 16 mm and 8 mm). If a sample had a high silt-clay content and/or a high moisture content, it was wet sieved; *i.e.*, washed through the bank of sieves. The -8 mm size fraction was then taken from the exposure site for laboratory analyses. The total sample weight and the weights retained on each of the field sieves and canvas were recorded on Form II. A 200-500 gm split of the -8 mm sand-silt/clay fraction was retained for laboratory



Aggregate Resource Inventory

-  Completed Corridor Sampling 1978
-  Preliminary Sampling 1977
-  Completed Corridor Sampling 1978
-  Preliminary Sampling 1975
-  Completed Corridor Sampling 1978
-  Preliminary Sampling 1977
-  Preliminary Sampling 1975, 1976
- Unsampled Corridor

sieve analyses. A split (100-200 pebbles) of the + 16 mm retained pebble fraction of each sieved sample was saved for field lithological studies. A bulk sample (500-1000 gm) minus any larger stones was taken when sieve analyses were not conducted in the field and returned to the laboratory for sieve analyses. All samples were taken from fresh unweathered exposures and from below the normal soil horizon wherever possible. Where exposures permitted, channel sampling or multiple spot sampling was used to ensure a representative sample. More than one sample were collected from sites where different grades or types of material were encountered that might be exploited or excavated separately.

A reference collection of bedrock samples was compiled during the field traverses for each study areas as an aid to the pebble lithology investigations. The pebble lithologic studies included information on the silt/clay coating, weathering, staining, sphericity, rounding, fracturing, mineralogy and texture for the various lithologies present in the pebble samples.

LABORATORY PROGRAM

The laboratory program consists of sieve analyses of the sand-silt/clay fraction of each sample returned from the field. These analyses consisted of drying and splitting the sample to a manageable size (70 to 140 gm); then sieving through a bank of seven sieves (4 mm, 2 mm, 1 mm, 0.5 mm, 0.25 mm, 0.125 mm and 0.062 mm) for each sample of gravel or sand, *i.e.* samples not containing much silt and/or clay material. The weights retained on each sieve and in the pan were recorded on Form II.

Glacial tills and other samples of a high silt and/or clay content were treated as follows: 1) the sample was dried and split to 70 to 140 g; 2) deflocculated using a dilute solution of hydrogen peroxide (3 percent H_2O_2); 3) wet sieved through the 0.062 mm sieve; 4) the plus 0.062 mm sand fraction was dried and sieved, and the data recorded as with sand and gravel samples and; 5) the minus 0.062 mm fraction (water and silt and clay) was flocculated and settled using magnesium chloride ($1N MgCl_2$), the excess water removed and the resultant silt-clay mixture dried and weighed.

The sample and site number, N.T.S. map number, the percents gravel, sand, and silt-clay, and the moisture content are recorded and a particle size cumulative curve and a histogram plotted for each sample.

Pebble lithology studies conducted in 1978 consisted of a review of the geological literature of each study area, the selection of a reference collection of rock specimens for each study area, and the determination of the percentage of each rock type found in each sample of pebbles. A brief report will be written concerning this study for each area investigated.

RESULTS

During the 1978 field season 2,517 samples were collected. The breakdown of these samples was as follows: tills - 1,168, gravels - 824, sands - 201, silt - 19, clay - 13, rock - 225, and organics (including peat, shells and fossils) - 29.

The samples were collected from the following areas: Eastern Section - Southern Avalon Peninsula (1N/2-4, 1K/11-15), Harbour Grace - Bay de Verde (1N/11, 1N/14, 2C/2-3), Isthmus of Avalon (1N/5, 1N/12-13, 1M/16, 2C/4), Burin Peninsula (1L/13-14, 1M/3-4, 1M/6-7, 1M/10, 1M/16), and the Bonavista Peninsula (2C/5-6, 2C/11-12). The Western Section covered all the roads from Grand Falls to Deer Lake (2D/13, 2E/4, 2E/12-13, 12A/15-16, 12G/8, 12H/1-12, 15, 16), and all roads of the Northern Peninsula (2L/13, 2M/5, 2M/11-12, 12H/13, 12I/4-6, 12I/9, 12I/11, 12I/14-16, 12P/1-3, 12P/7-9).

Field pebble lithology studies were conducted on approximately 1,900 samples collected during 1978 and on another 350 samples collected in 1977.

Sampling and sieve analyses in previous years have contributed data on an additional number of areas, *i.e.* Avalon Isthmus (1N/5, 1M/7, 1N/12-13, 1M/16, 2C/4), Wesleyville-Carmanville (2E/8, 2F/4-6), Deer Lake - Harry's River (12A/13, 12B/9, 12B/16, 12H/3) areas and the Forteau and Goose Bay areas, Labrador (Figures 2 and 3, respectively). Some of these data are available through open file release 960 (Avalon Isthmus area) and the rest is available upon request.

Analyses of the data from the 1977 field season have been completed but, to date, the data have not been released. Areas covered in 1977 included (a) St. John's (1N/10), (b) Holyrood (1N/6), (c) Burin Peninsula (1L/13-14, 1M/3-4), (d) Southwest Newfoundland (12B/2, 12B/7-8, 11O/10-11, 11O/14-15), (e) Stephenville - Port au Port (12B/6, 12B/10-11, 12B/15), (f) Great Northern Peninsula (12G/5-6, 12H/12-13, 12I/4-6, 12I/11, 12I/14), and (g) Southern Labrador (12P/6-7, 12P/9-11). These data will be incorporated with the 1978 data.

Data from of the 1978 program will be released as it becomes available. An outline of potential areas of aggregate materials and the locations of all samples will be plotted on 1:250,000 topographic base maps for open file release. These data will also be recorded on 1:50,000 base maps.

When the laboratory analysis program is completed on the samples collected during 1978, data will be on file for 4250 samples collected since 1975 and covering a large percentage of Newfoundland and Labrador.

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