

AGGREGATE RESOURCES INVENTORY
(With Reference to the Location of the Silica
Sand Deposit for North Star Cement Production)

by

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ABSTRACT

Since 1975 the Aggregate Resources Inventory has developed into a system, flexible enough to meet the needs of various users, (e.g. Quaternary Geology project geologists other government departments and industry).

The data base system used is the Scientific Information Retrieval System or SIR. The system is used for the storage and retrieval of aggregate and geology data.

Apart from the SIR system, the section is also providing information upon requests from companies and individuals, (e.g. pebble lithology data for Dr. Ian Brookes, and silica sand investigation for North Star Cement).

INTRODUCTION

The Quaternary Geology Section has been collecting aggregate resource data (Kirby et al., 1983) throughout the province since 1975. To date, approximately 12,000 samples have been collected. The data base management system selected for the manipulation of the data is the Scientific Information Retrieval (SIR) system. The end product is the Aggregate Resources Inventory System, an interactive data base designed for the storage and retrieval of aggregate and surficial geology data.

SIR SYSTEM

The system consists of a series of programs which permit the user to:

- edit data collected by the geologists
- correct any data which was coded incorrectly or omitted
- produce cumulative curve plots of gravel, sand, silt-clay percentages for individual samples
- produce various reports on paper or microfiche, e.g. master file report, lithological analysis report, particle-size-analysis report
- check the integrity of the data base for any changes since the last time it was accessed.

The data in the data base can be divided into two categories, information pertinent to a specific sample site or location, and information related to individual samples taken at the site. Of the sixteen record types defined for the data base, records 1 to 6 hold site information and records 7 to 16 hold information related to a particular sample. This gives the data base a hierarchical structure, i.e. each site record may have many sample records associated with it. Atkinson (1984) contains a more detailed report of the system.

The codes have been updated to remove ambiguity and redundancy. Also the forms used to collect the data have been modified to speed up the data entry process (e.g. the laboratory data are on a separate form from the field data, allowing separate keying and data entry (i.e. laboratory data keyed and entered at a later date).

As of August 31, 1984, the data base held information on 8689 sites, with approximately 44,345 records on file; and new data are continually being added.

The system is also being utilized by outside sources for scientific investigation (e.g. Dr. Ian Brookes used pebble lithology data collected in the Bonavista area to substantiate his ice movement theories). Data on textures of tills were supplied for inclusion in the volume on Quaternary Geology of the Atlantic Provinces Region for the Decade of North America Geology volumes.

AGGREGATE RESOURCES

Apart from the SIR system, it has also been a busy year dealing with requests for information on aggregate resources (e.g. approximately 70 requests from different companies and individuals involving 377 aggregate maps, 46 surficial maps, 437 aggregate graphs and 276 data sheets) and screening numerous Crown land application referrals and other land use proposals for conflicts with aggregate resource management.

INVESTIGATION

The Quaternary Geology Section was contacted by The North Star Cement Company requesting information on silica sand deposits which may be located in the Corner Brook area. A silica rich source was required to provide a fourth mix (Dave Stonehouse, personal communication) that

could be used in the plant feed to reduce or control the amount of Al_2O_3 in the cement.

The SIR system was used to retrieve all data pertinent to the area. From the data, discriminatory sites and samples were chosen. Follow-up investigations consisted of (a) a visual analysis for quartz rich aggregates conducted on archived aggregate samples maintained at the Core Storage Building in St. John's and (b) chemical analysis of potential samples by North Star Cement. From this investigation a number of sites were chosen for field testing. Fred Kirby assisted with the field testing and sampling of one particular site at Steady Brook. Nine backhole test pits were dug in the area at an average depth of 4.9 meters. Eight out of the nine test pits showed high silica sand content greater than 90% silica. One test pit which showed low silica content had taken in the transition zone between the terrace and till deposit. Thus through this investigation the potential silica rich deposit in the terrace was confirmed and is presently being used by North Star Cement in their plant feed and cement. The site is under quarry permit to Joseph Batstone who has been contracted to supply North Star Cement.

CONCLUSION

The continued updating of the 1:50,000 and 1:250,000 aggregate maps and a series

of Geotechnical Geology maps with descriptive notes and legends for Newfoundland, should be available by March 31, 1985. Compilation of the 1:1,000,000 scale summary maps for the island and Labrador is ongoing.

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