

## CHAPTER VII

### DIAMOND DRILLING

Preliminary diamond drilling programs in the four counties of Cape Breton Island were carried out to further assess limestone and dolomite deposits which appeared to warrant immediate further investigation. This work was done with a view to substantiating in part, the possible economic significance of certain areas underlain by these deposits. In all, 20 deposits on Cape Breton Island were assessed by two or more drill holes.

Although this phase of the inventory does not give a complete and comprehensive appraisal of all the limestone and dolomite deposits found on Cape Breton Island, it does permit a substantial indication of the potential which could exist and establishes a comprehensive basis for further exploration and assessment of areas underlain by limestones and dolomites of the Windsor and George River Groups.

Included in this chapter are plans and sections of the various areas drilled, showing the location of diamond drill holes, detailed profiles and average analyses of the limestone and dolomite encountered.

### VICTORIA COUNTY

Six areas of Victoria County were assessed by preliminary diamond drilling based in part, on the results of surface inventory. Each area will be described under a separate heading.

#### INGONISH

A preliminary diamond drilling program was carried out to investigate the high quality dolomite sampled on surface in the Ingonish area of Victoria County.

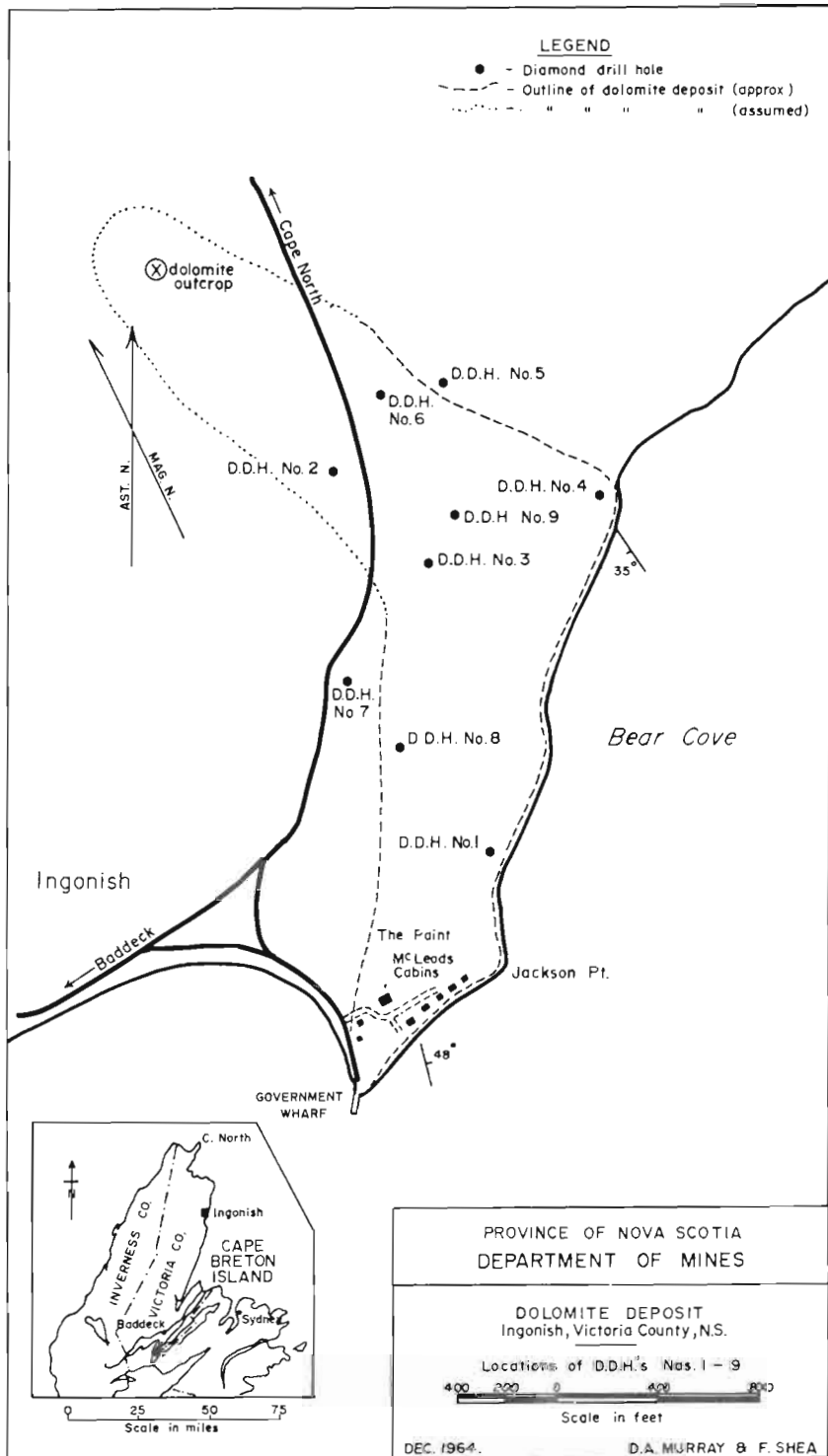
This deposit of dolomite is located along the shore of Bear Cove at North Ingonish and extends northwestward to the Cabot Trail. **See plate 27.**

Nine holes were drilled to assess this deposit during 1964, with holes 1, 3, 4, 6, 8 and 9 intersecting the dolomite zone, while holes 5 and 7 were drilled through overburden into a granite basement rock. Hole 2 was stopped in overburden at a depth of 20 feet. **See plate 27A.**

The dolomite is of good quality having a silica content averaging 1.70 percent with a ratio of CaO to MgO being 1.56:1. The minimum tonnage calculated for this deposit was approximately 10,000,000 using an average thickness of 64 feet as intersected in the drill holes east of the Cabot Trail. There appears to be additional tonnage west of the Cabot Trail in a northwestward extension of this deposit. Further drilling would be required to determine the full extent of this deposit with respect to tonnage and grade.

This deposit lies directly on Precambrian (?) granite in the form of an irregularly-shaped basin of Windsor age. Its thickest section runs through the long axis of the basin structure in a general east-west direction. The dolomite has been extensively folded and therefore varies in thickness.










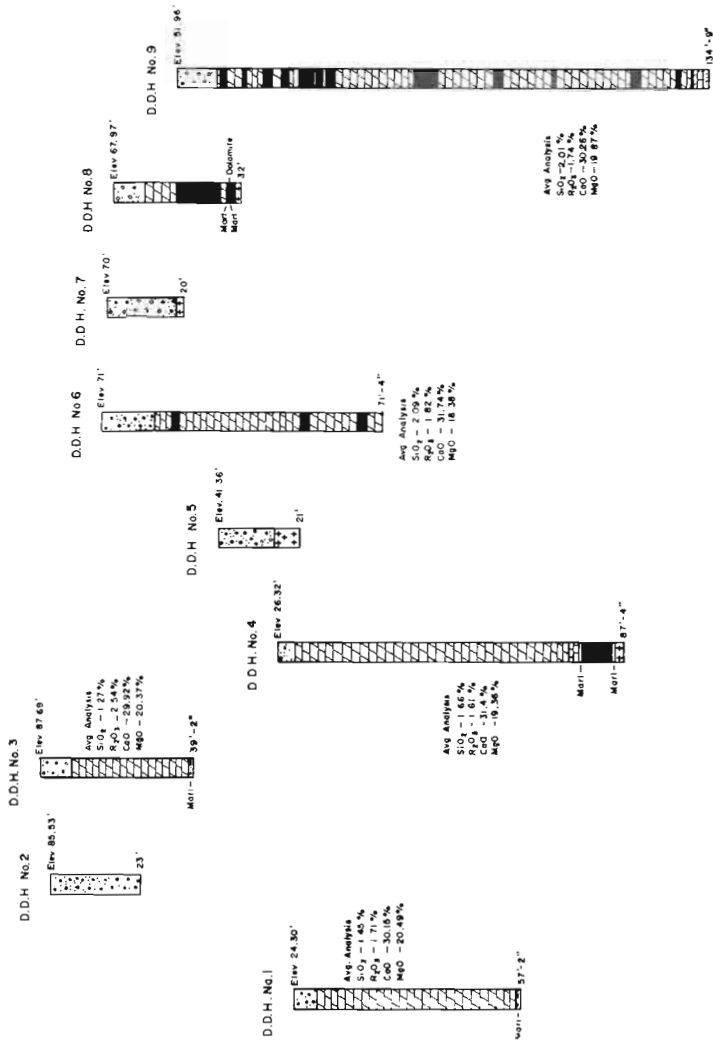


D.H.B.



**LEGEND**

-  Overburden
-  Dolomite
-  Limestone
-  Marl (clay)
-  Sandstone
-  Granite
-  Lost Core



PROVINCE OF NOVA SCOTIA  
DEPARTMENT OF MINES

DOLOMITE DEPOSIT  
Ingonish, Victoria County, N.S.  
Profiles of D.D.H. Nos. 1 - 9



DEC. 1964 D.A. MURRAY & F. SHELL



### **SOUTHSIDE BADDECK RIVER**

A preliminary program was carried out to assess the limestone of this area at depth and to record continuity of grade and thickness.

The area drilled is located near the village of Southside Baddeck River on the north side of Foyle Brook and west of the main road running between Baddeck and Forks Baddeck in Victoria County. See plate 28.

Three holes were drilled with only hole 2 penetrating the limestone. Holes 1 and 3 did not reach limestone and therefore were stopped. The limestone intersected in hole 2 is a brown, soft, porous, easily broken, shell limestone of the Windsor Group. The shells consist mostly of brachiopods. See plate 28A.

Due to the prevalence of overburden and the inconsistency of the limestone horizons as shown in the three drill holes, this area is considered to be of little or no economic significance.

### **WESTSIDE BADDECK RIVER**

Two holes were drilled on the west side of Baddeck River, approximately one mile south of the village of Southside Baddeck River and two miles north of Baddeck Bridge. See plate 29.

This drilling showed that limestone as intersected in hole 1 is only 7 feet in thickness. The limestone is overlain by a narrow band of grey siltstone and 33 feet of overburden. Hole 2 was drilled in an open field 450 feet southwest of hole 1 and was stopped after penetrating 20 feet of overburden. See plate 29A.

Surface examination of this area had disclosed limestone outcrops along the Westside Baddeck River. The beds appear, however, to be steeply dipping to the west, with extensive overburden. These factors eliminate the economic value of any limestone in the immediate area.

### **BIRCH POINT**

This area is located on the northeast tip of the Iona Peninsula in Victoria County. See plate 30.

Two vertical holes were drilled in this area with hole 1 penetrating one foot of dark grey, hard, fine to medium-grained, dolomitic, Windsor limestone, while hole 2 penetrated 9 feet of dolomitic limestone of the same general description as that intersected in hole 1. See plate 30A.

The drilling has shown that this dolomitic limestone forms only a thin capping over the entire area of Birch Point and therefore does not provide a tonnage or grade of economic significance.

### **MIDDLE RIVER**

Two holes were drilled for limestone on the west side of the Middle River road, between that road and Indian Brook. Hole 2 was drilled immediately west of the Middle River road and hole 1 was drilled approximately 880 feet west of the road and hole 2. See plate 31.



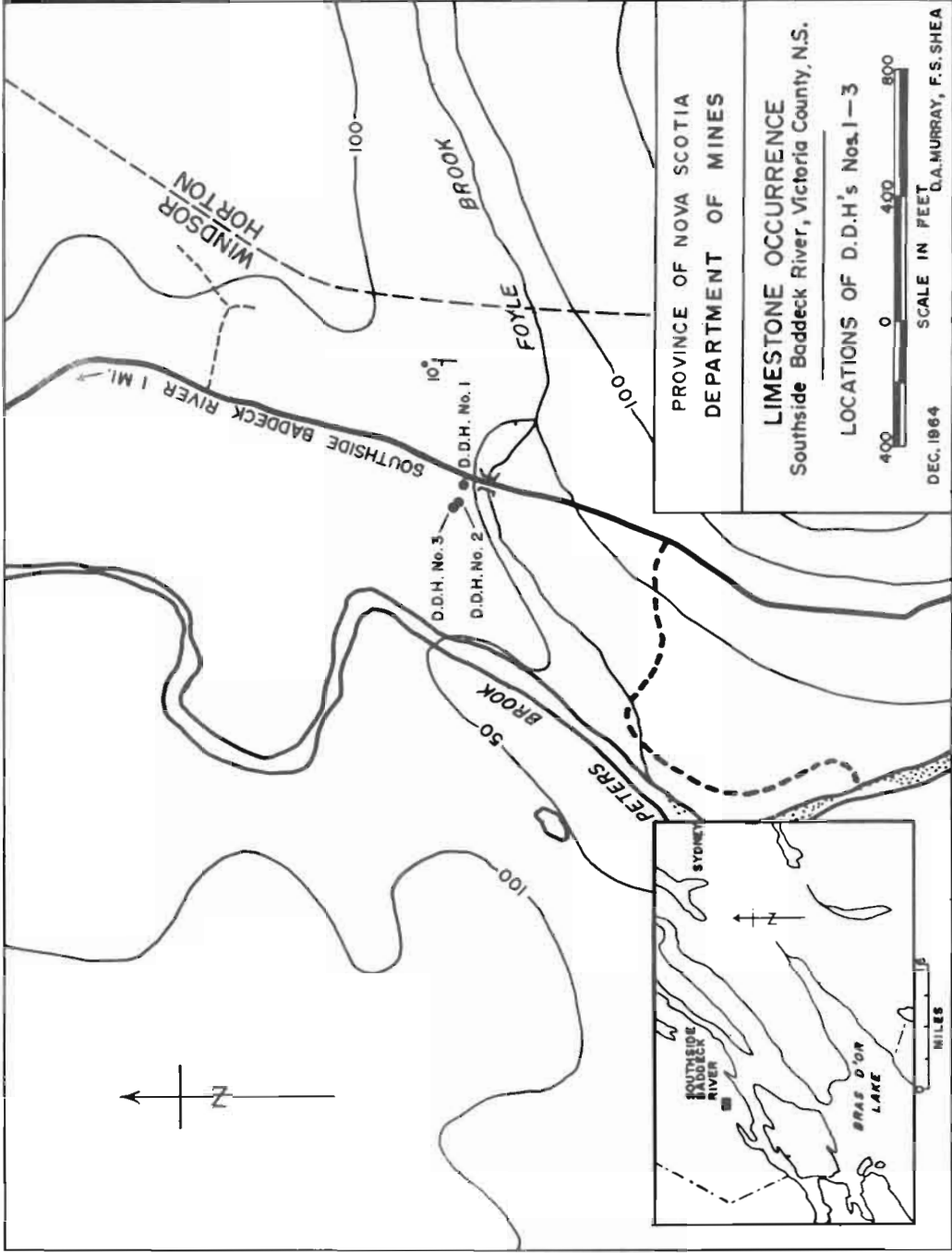


PLATE 28



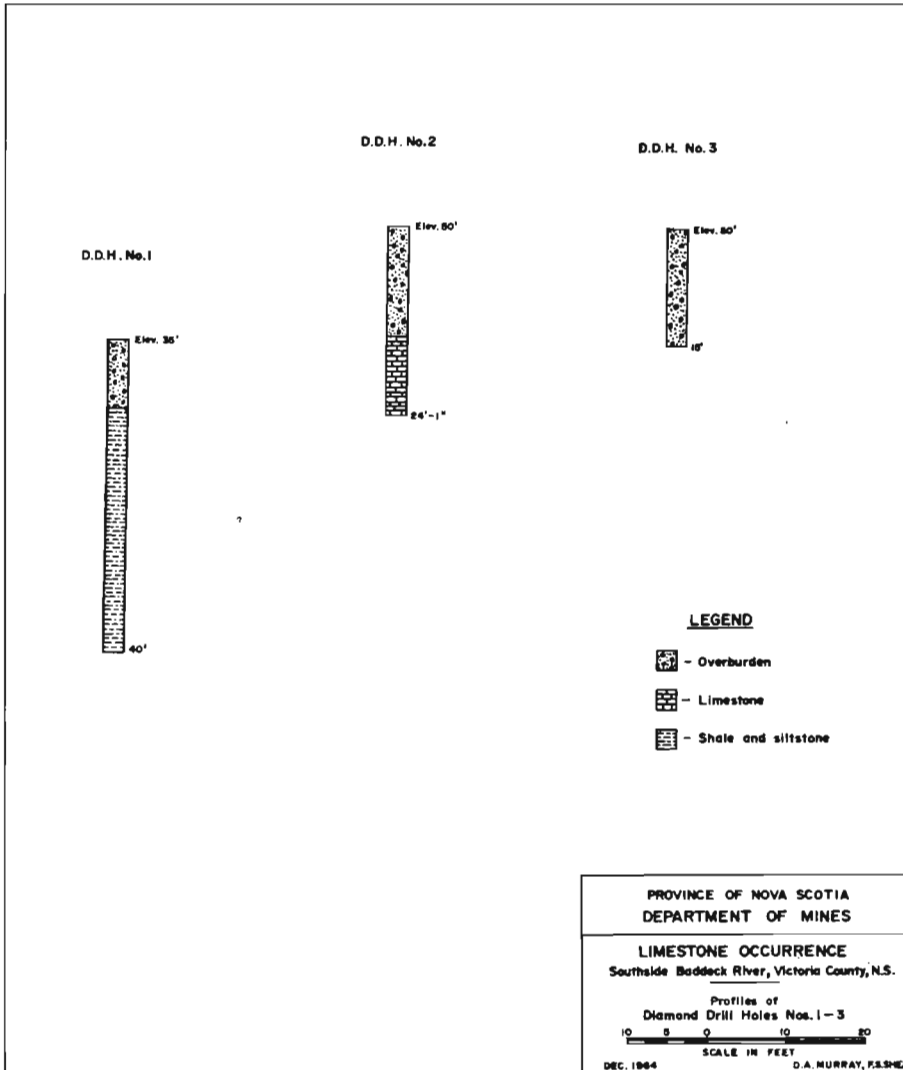
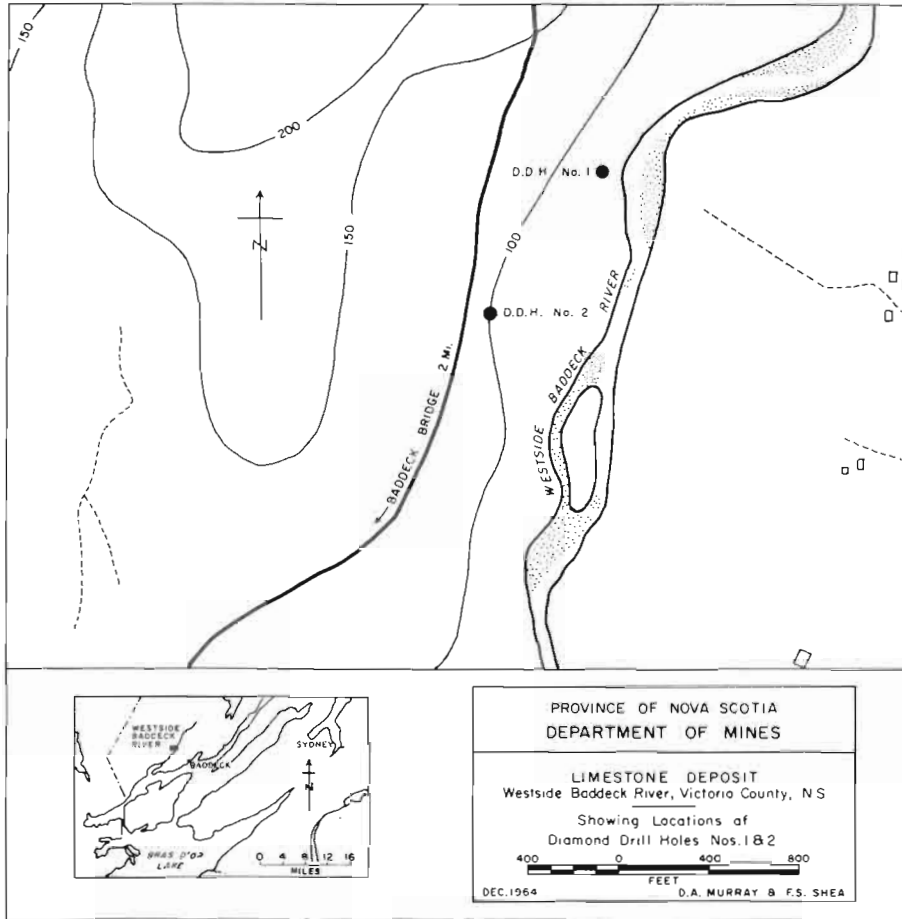


PLATE 28A

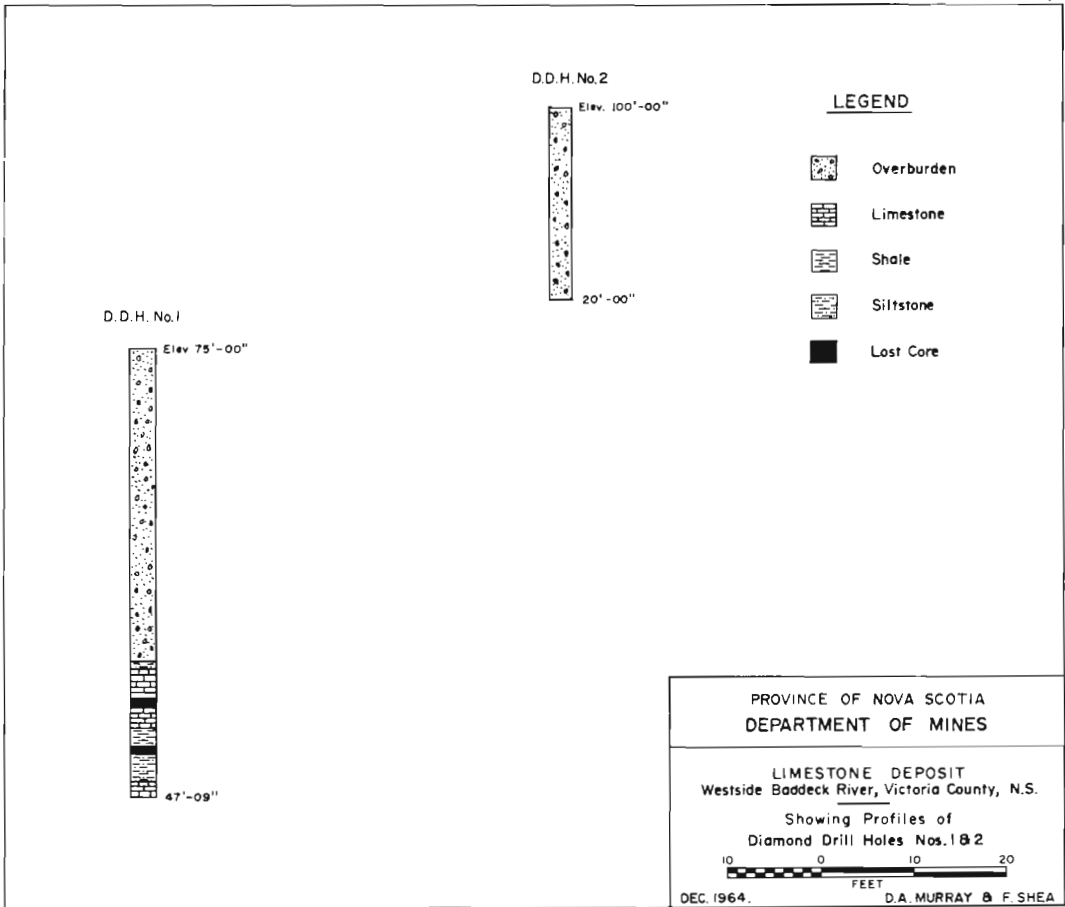




D.H.B.

PLATE 29





D.H. 8

PLATE 29A



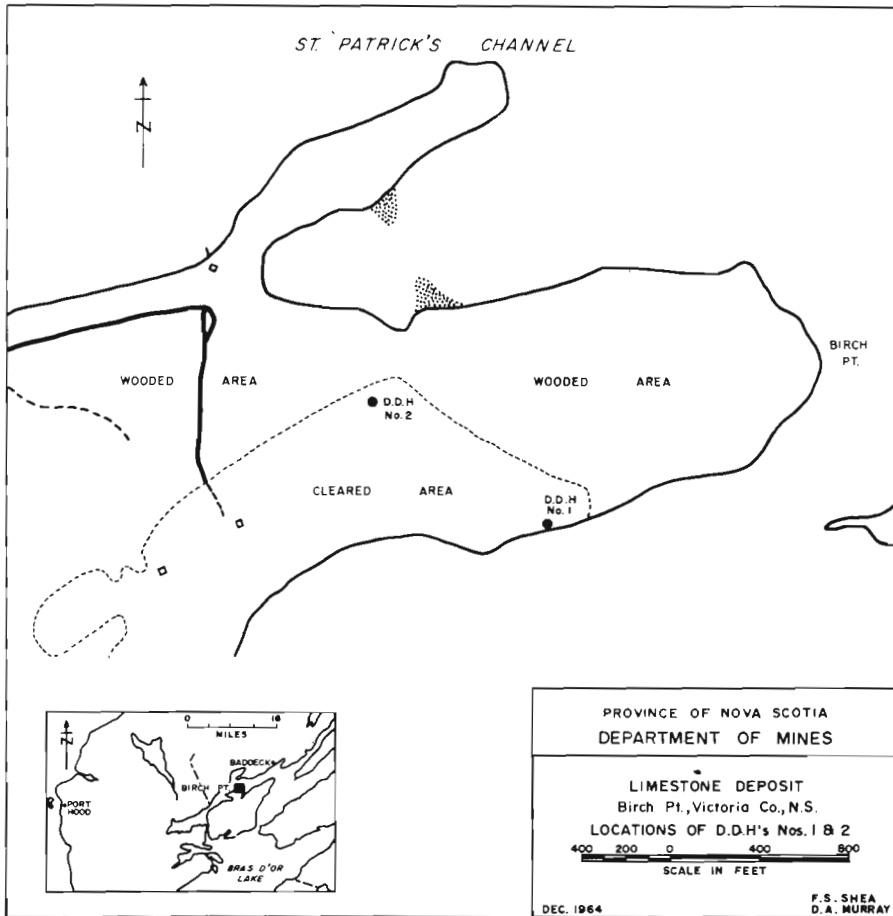
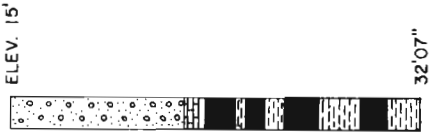


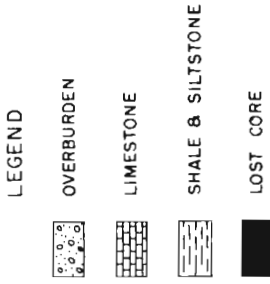
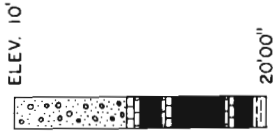
PLATE 30



D.D.H. # 1



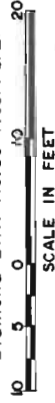
D.D.H. # 2



PROVINCE OF NOVA SCOTIA  
DEPARTMENT OF MINES

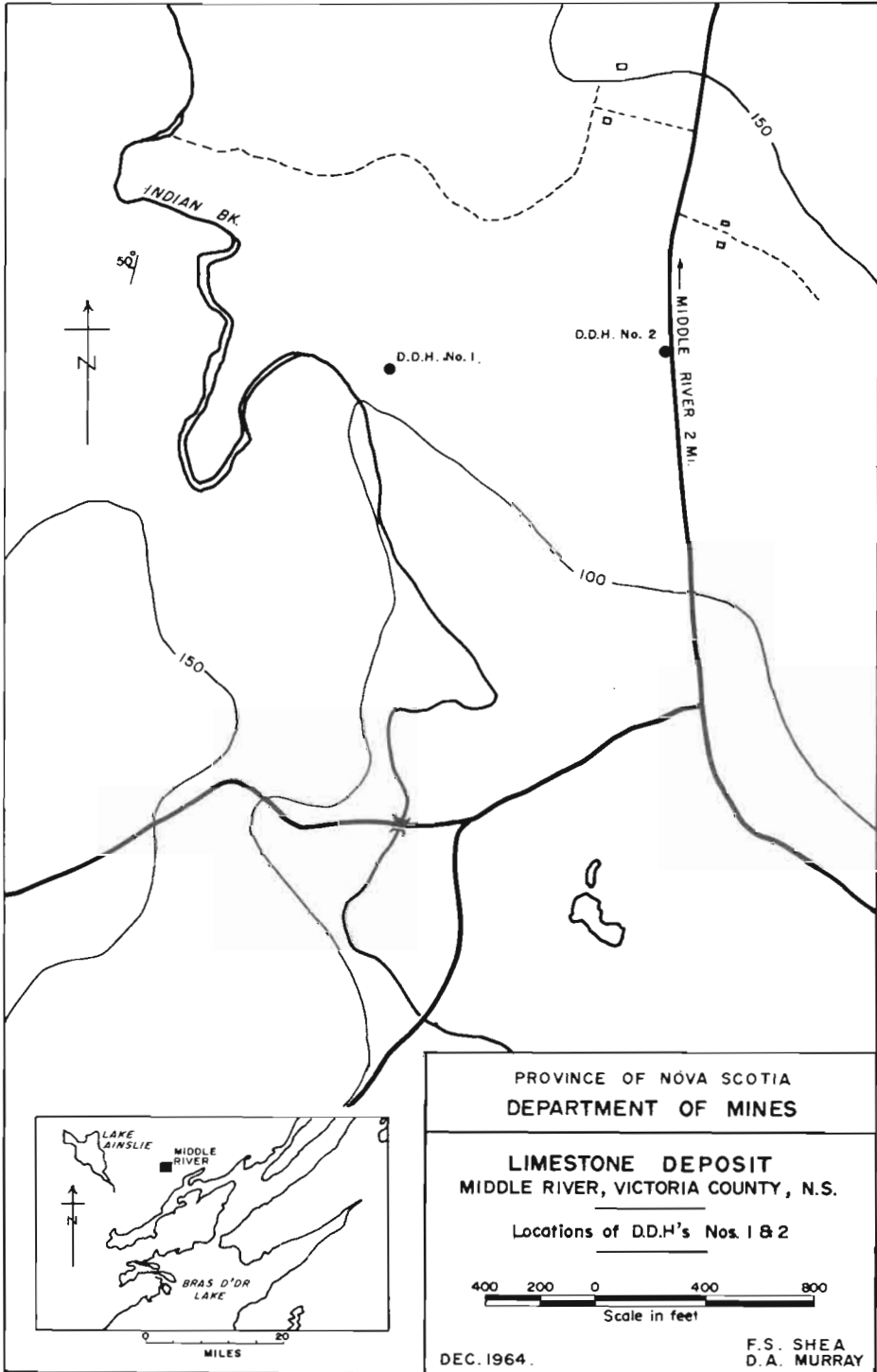
LIMESTONE DEPOSIT  
Birch Pt., Victoria Co., N.S.

Profiles of  
Diamond Drill Holes Nos. 1 & 2.



DEC. 1964  
F.S. SHEA  
D.A. MURRAY

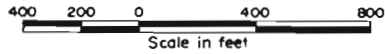




PROVINCE OF NOVA SCOTIA  
DEPARTMENT OF MINES

**LIMESTONE DEPOSIT**  
MIDDLE RIVER, VICTORIA COUNTY, N.S.

Locations of D.D.H.'s Nos. 1 & 2



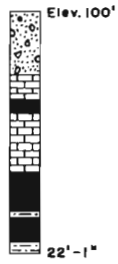
DEC. 1964.

F.S. SHEA  
D.A. MURRAY

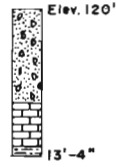
PLATE 31



D.D.H. No. 1



D.D.H. No. 2



-  Overburden
-  Limestone
-  Siltstone
-  Lost Core

PROVINCE OF NOVA SCOTIA  
DEPARTMENT OF MINES

LIMESTONE DEPOSIT  
Middle River, Victoria Co., N.S.  
Profiles of D.D.H.'s Nos. 1 & 2



DEC. 1964

F.S. SHEA  
D.A. MURRAY

D.H.B.

PLATE 31A



Hole 2 penetrated 12 feet of dark grey, hard, fine-grained, Windsor limestone which is, in turn, underlain by a calcareous siltstone. Hole 1, drilled east of Indian Brook, intersected only 2 feet of limestone which is considered to be the lateral extension of that limestone intersected in hole 2. These intersections show that this limestone horizon is almost flat-lying and thinning out westward towards Indian Brook. The immediate area is considered to be of no economic significance. **See plate 31A.**

#### **BAY ST. LAWRENCE**

This limestone deposit is located at Bay St. Lawrence on the northernmost part of Cape Breton Island in Victoria County. The limestone outcrops in an open pasture 0.5 miles northeast of McDougall Pond, and 1.7 miles from the crossroads at St. Margaret Village. **See plate 32.**

Four holes were put down in this area with holes 1 and 3 terminating in overburden, while holes 2 and 4 intersected limestone. The overburden encountered in holes 1 and 3 consists mostly of reddish clay material with gypsum fragments.

Hole 2 was drilled at an angle of  $-60^\circ$ , almost perpendicular to the bedding. In this hole, 25 feet of overburden was encountered above 56 feet of limestone. The limestone is dark grey, hard, compact, fine-grained, argillaceous, fossiliferous and belongs to the Windsor Group.

Hole 4 encountered 3 feet of overburden and then intersected limestone for 46 feet. The same general description as hole 2 applies to this limestone. **See plate 32A.**

The limestone intersected in these two holes is of fair quality for industrial use, possibly in cement production. From surface examination the deposit appears to be extensive and has excellent possibilities for a quarry operation. Further drilling will be needed to determine continuity, tonnage and grade.

### **RICHMOND COUNTY**

Two areas of Richmond County were assessed by preliminary diamond drilling based, in part, on the results of surface inventory. Each area will be described under their separate headings.

#### **JOHNSTOWN AREA**

Six holes were drilled in and around the village of Johnstown on highway 4, between Sydney and Port Hawkesbury to investigate promising limestone occurrences. Chemical analysis shows a high calcium, low silica and magnesium oxide content. **See plate 33.**

Six vertical holes were drilled in this area with all holes except No. 4 intersecting limestone. The remaining five holes intersected limestone with hole 1 showing the greatest thickness of 40 feet. As shown in the plans and profiles of holes 1 to 4, it appears that the limestone decreases and the overburden increases in thickness away from the shoreline of the Bras D'Or Lakes. **See plate 33A.**

It is generally accepted that this limestone of the Windsor Group, is overlying the older rocks of the Fourchu Group. Holes 5 and 6 were drilled east of Johnstown Village and near the shoreline, thus giving a decrease in the thickness of overburden intersected. It is along this shoreline that most of the outcrops occur.



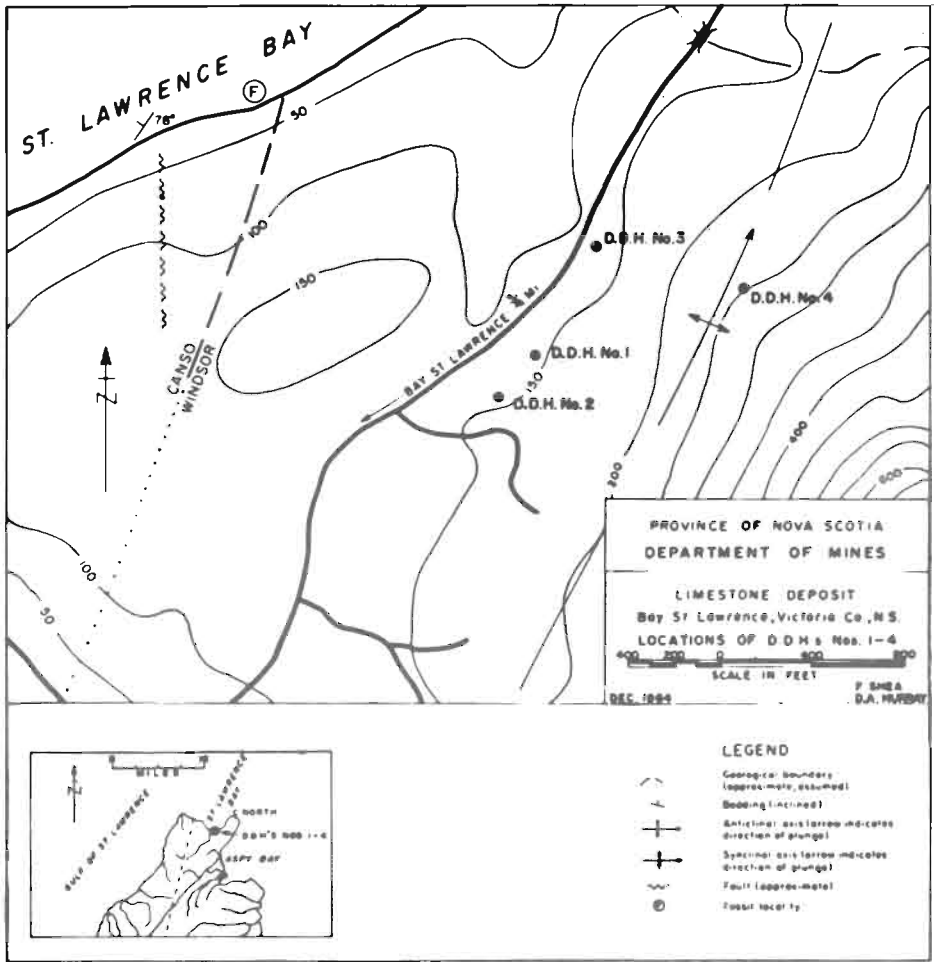






PLATE 32



D.D.H. #4



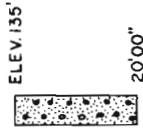
LEGEND

-  OVERBURDEN
-  LIMESTONE
-  CLAY
-  LOST CORE

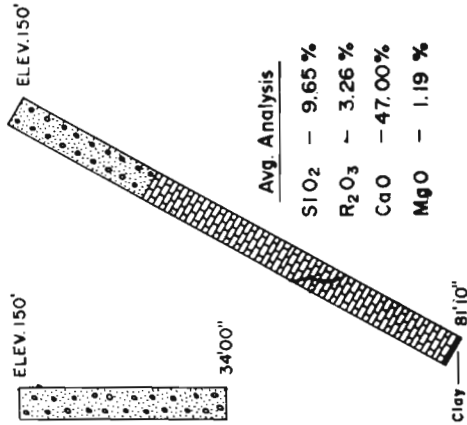
Avg. Analysis

SiO<sub>2</sub> - 5.70 %  
 R<sub>2</sub>O<sub>3</sub> - 3.02 %  
 CaO - 49.61 %  
 MgO - 0.96 %

D.D.H. #3



D.D.H. #2



Avg. Analysis

SiO<sub>2</sub> - 9.65 %  
 R<sub>2</sub>O<sub>3</sub> - 3.26 %  
 CaO - 47.00 %  
 MgO - 1.19 %

PROVINCE OF NOVA SCOTIA  
 DEPARTMENT OF MINES

LIMESTONE DEPOSIT  
 Bay St. Lawrence, Victoria Co., N.S.

Profiles of  
 Diamond Drill Holes Nos. 1-4



F. S. SHEA  
 D. A. MURRAY

DEC. 1964



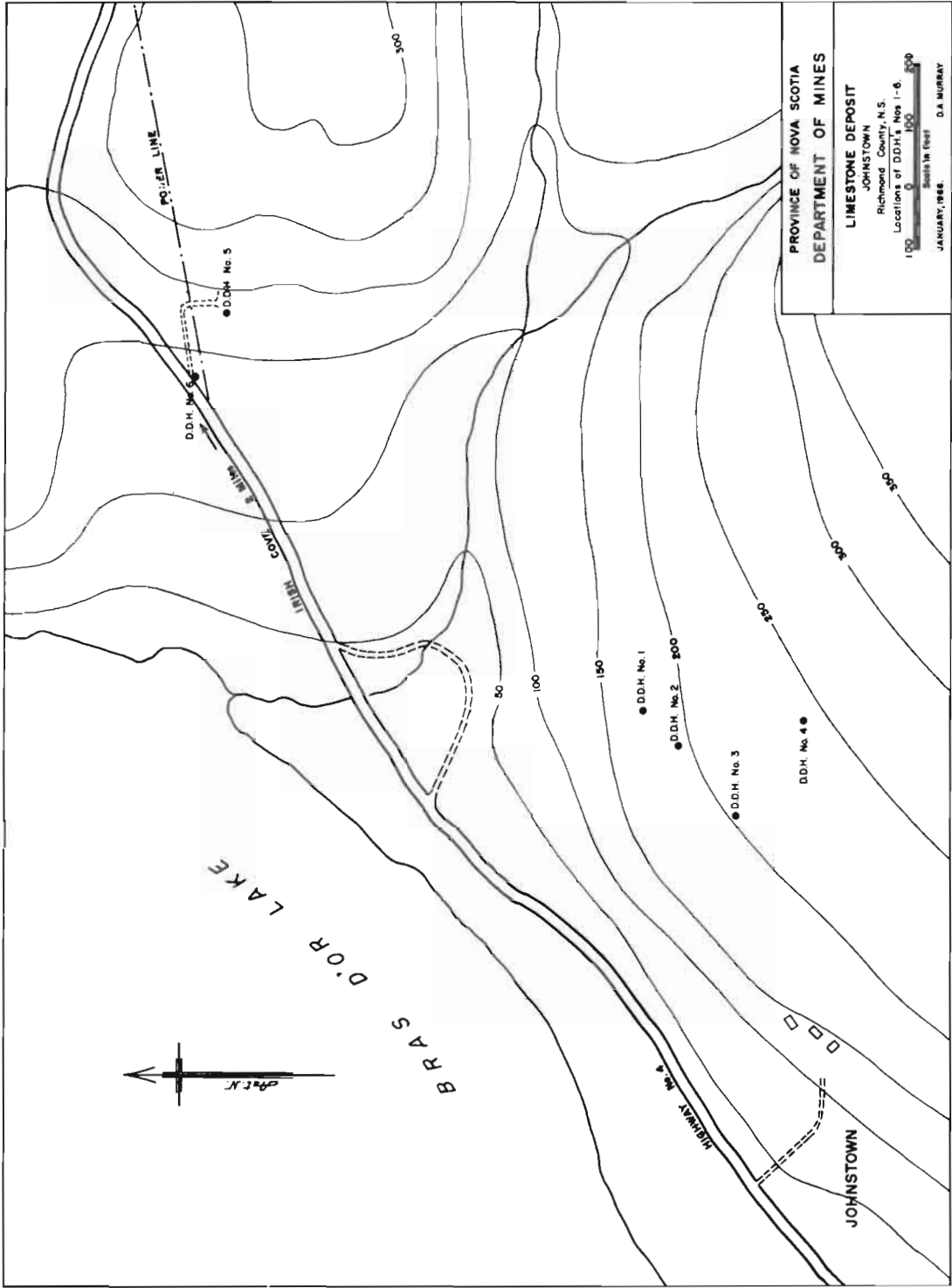
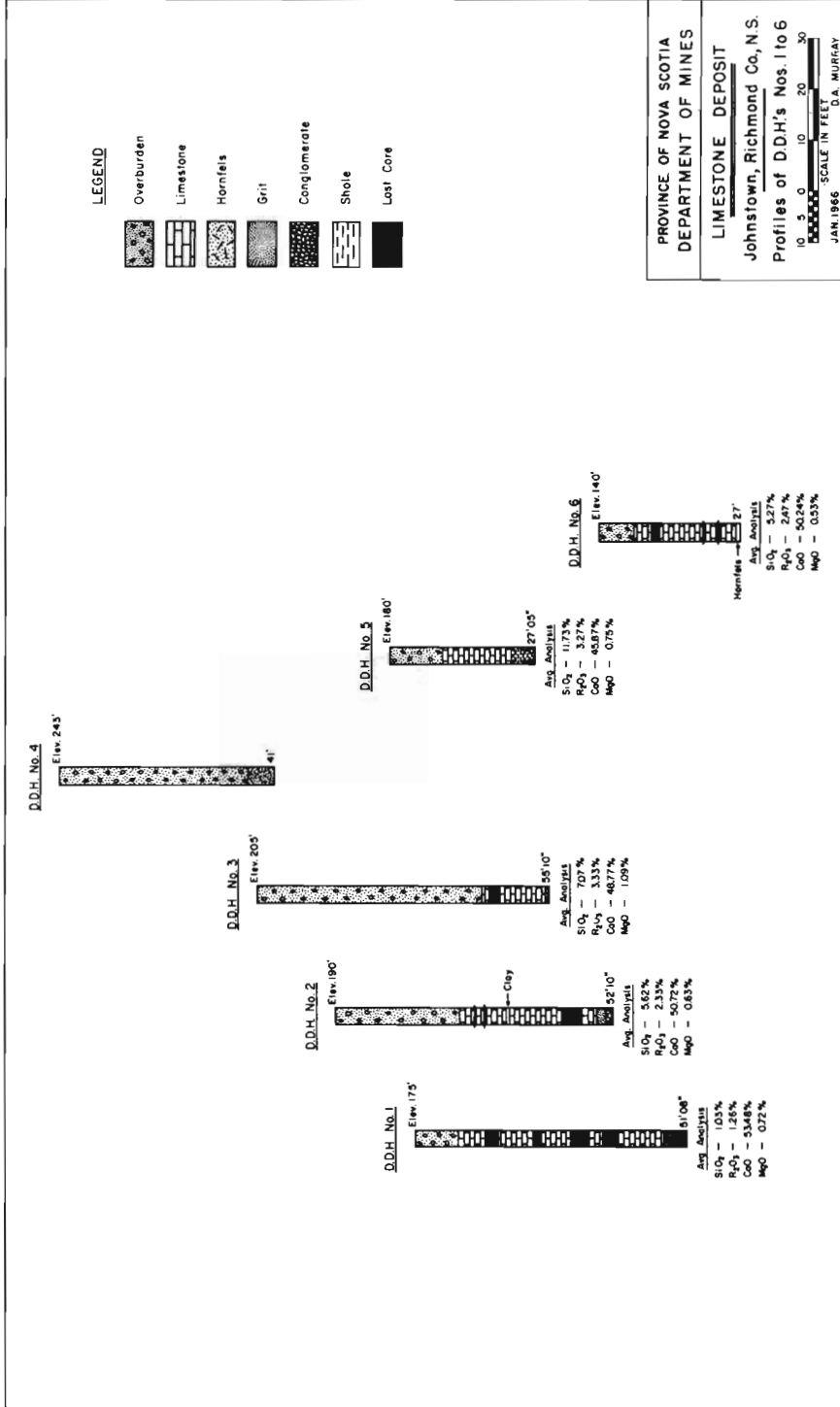


PLATE 33

REF. MAP 11-F-B-E

D.H.B.





G.M.C.D.



The limestone in this area, for the most part, is of good quality as shown by both surface sampling and drilling results. It is generally a dark greyish-brown, hard, medium-grained, porous, Windsor limestone containing fossil remains consisting mostly of brachiopods and pelecypods. The limestone horizon contains many shell cavities partially filled with clusters of calcite crystals and a considerable amount of connate waters. The limestone crumbles very easily.

Although bedding was not observed, the limestone would appear to be nearly flat-lying and as shown by the drilling results is underlain in turn by as shale, a grey grit and a pebbled conglomerate.

Drilling results indicate that the immediate area along the shoreline of the Bras D'Or Lakes is underlain by a considerable tonnage of limestone similar to the Irish Cove deposit which is located two miles east of Johnstown. Investigations to date have not determined any one limestone horizon or series of beds that would permit a large tonnage quarrying operation. More drilling in and around Johnstown appears warranted and should yield a more comprehensive appraisal of these limestone occurrences.

### **REAR BLACK RIVER**

This deposit is found at Rear Black River, Richmond County, approximately three miles southeast of the village of West Bay. The limestone underlies a cleared area on a vacant farm property. See plate 34.

Six vertical holes were drilled in this area with holes 1, 4, 5 and 6 intersecting limestone. The greatest thickness was intersected in hole 1 near an old abandoned quarry. Holes 2 and 3 were drilled to a depth of 36 and 40 feet respectively, intersecting granitic and volcanic rock types which appear to be faulted against the limestone. See plate 34A.

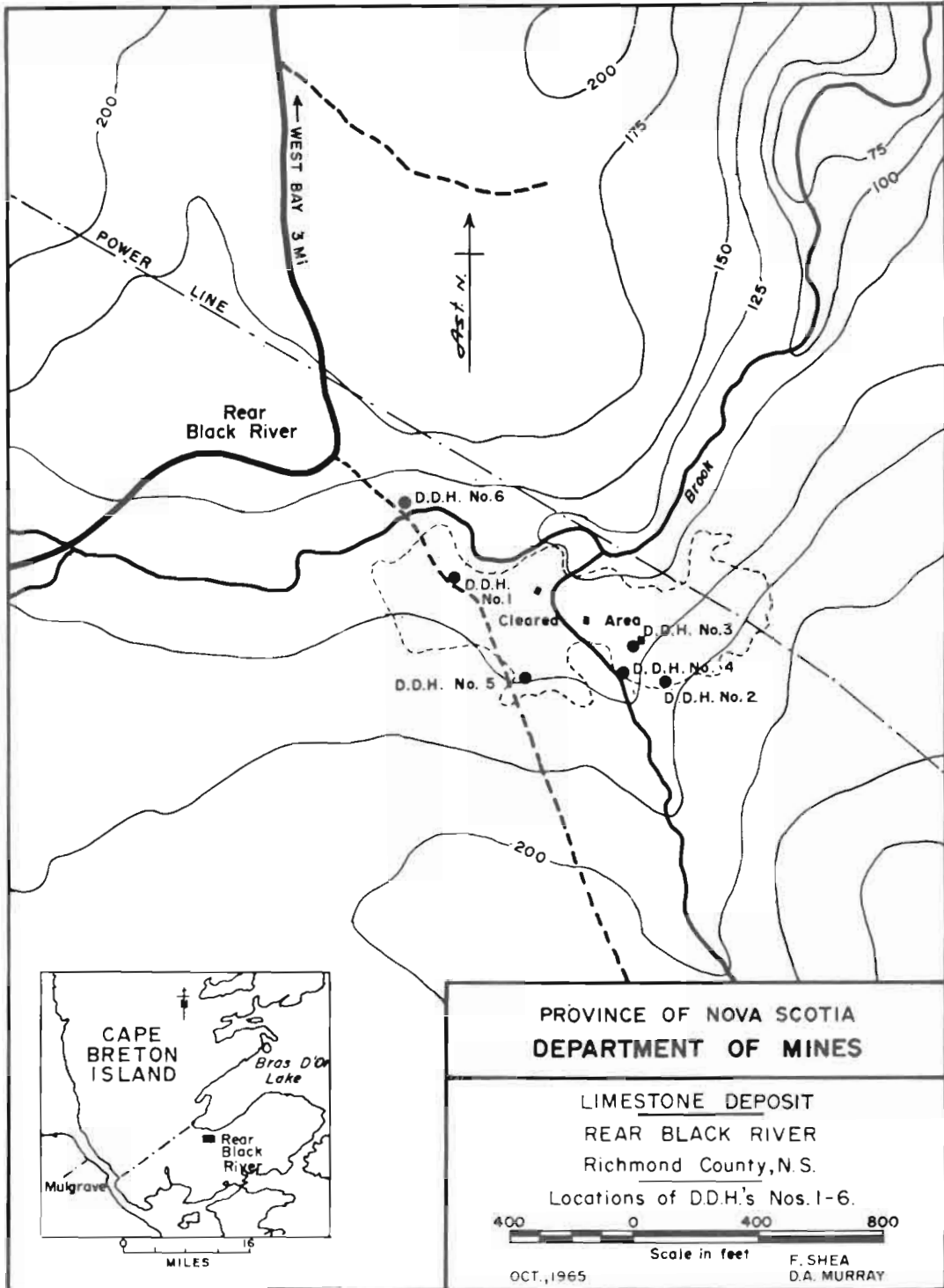
The limestone intersected in the drill holes has a general appearance ranging downward, from a dark grey, hard, fine-grained material to a light grey, hard, coarse-grained, porous, sandy material near the base. The limestone contains a few calcite stringers and exhibits a minor fracture pattern. The bedding is poorly developed but appears to be flat-lying. At the base of this limestone there is a thin transitional phase into a grey calcareous, sandstone which in turn, overlies quartzite, possibly a member of the Horton Group. Minor amounts of mineralization in the form of pyrite and galena were noted.

Surface examination and drilling results show this limestone to be irregular, having been faulted against granitic and volcanic rock to the southeast. It is overlain by the Canso Group of sediments on the west.

The material found in this deposit is generally of good quality and could possibly contain sufficient tonnage to warrant a small quarrying operation in the vicinity of hole 1. Due to the irregular nature of the deposit more drilling will be required before a final appraisal of the tonnage and grade of material can be determined.

The average analysis of hole 1 is:  $\text{SiO}_2$ —1.51%;  $\text{R}_2\text{O}_3$ —1.36%;  $\text{CaO}$ —52.19%;  $\text{MgO}$ —0.86%.





D. H. B.



DDH #1

DDH #2

DDH #3

DDH #4

DDH #5

DDH #6

ELEV. 175'



ELEV. 135'



Avg. Analysis

SiO <sub>2</sub>	1.51%
R <sub>2</sub> O <sub>3</sub>	1.36%
CaO	52.19%
MgO	0.86%

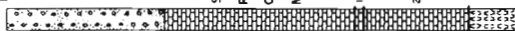
LEGEND

- OVERBURDEN
- LIMESTONE
- LIMESTONE
- CONGLOMERATE
- QUARTZITE
- CONGLOMERATE
- LOST CORE

ELEV. 150'



ELEV. 145'



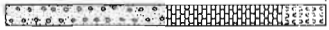
(DDH #4)  
Avg. Analysis

SiO <sub>2</sub>	3.51%
R <sub>2</sub> O <sub>3</sub>	2.76%
CaO	50.39%
MgO	1.05%

ELEV. 145'



ELEV. 130'



Avg. Analysis

SiO <sub>2</sub>	10.91%
R <sub>2</sub> O <sub>3</sub>	2.83%
CaO	45.68%
MgO	1.66%

PROVINCE OF NOVA SCOTIA  
DEPARTMENT OF MINES

LIMESTONE DEPOSIT  
Rear Black River, Richmond County N.S.  
Profiles of Diamond Drill Holes  
Numbers 1-6.





## CAPE BRETON COUNTY

Seven areas of Cape Breton County were assessed by preliminary diamond drilling programs based, in part, on the results of the surface inventory. Each area will be described under a separate heading.

### BIG GLEN

The Big Glen area is located on the road between Enon and Salmon River, three miles east from the village of Enon in Cape Breton County. See plate 35.

Three vertical holes were drilled in this area to assess the limestone and dolomite occurrences along this road. Holes 1 and 3 intersected one dolomitic horizon while hole 2 is considered to have intersected another horizon containing a high percentage of silica and magnesium oxide. The overburden in the areas drilled is minimal, thus suggesting a decrease in thickness in a southerly direction to a point where the Windsor rocks are in contact with the underlying granites and rhyolites of Devonian age. See plate 35A.

The dolomite in hole 1 is underlain by rhyolite, while holes 2 and 3 are underlain by shale and sandstone respectively, possibly of the Horton Group.

Galena is found disseminated throughout the limestone in hole 1 and is also found in minor amounts in hole 3, being more concentrated between 40 and 44.3 feet in depth. It is interesting to note that this dolomitic limestone is near a large galena deposit occurring in the Pennsylvanian sandstone of the Salmon River area.

Thickness, grade and accessibility of this dolomitic limestone warrants further drilling to establish a possible site for a quarrying operation, particularly in the immediate area of holes 1 and 3. Particular attention must be given to the area immediately southeast of holes 1 and 3 and the Salmon River road at Big Glen where an acceptable grade and thickness of material has been intersected. A series of drill holes southeast from holes 1 and 3 to the Mississippian-Devonian contact may outline a suitable dolomitic limestone or dolomite deposit.

### SALMON RIVER

This occurrence of dolomitic limestone is located along the east side of the Salmon River, 1,300 feet upstream from the bridge which crosses the Salmon River, on the road between Marion Bridge and Enon. The drilling area is approximately two miles south of the village of Huntington. See plate 36.

Two vertical holes were drilled. Hole 1 was drilled on the east side and adjacent to the Salmon River, penetrating 7 feet of overburden and 22 feet of dolomitic limestone underlain by shale. This limestone grades into an arenaceous material at the bottom of the hole, but in general is dark grey, hard, medium-grained and belongs to the Windsor Group. Hole 2 was drilled east of hole 1 and was stopped after penetrating 21 feet of overburden. See plate 36A.

Surface examination and drilling results suggest that this limestone horizon thins out towards hole 2 and increases in thickness west of hole 1 and the Salmon River. It is dipping in a westerly direction however, and may be concealed beneath a considerable thickness of overburden, which would make this occurrence of little or no economic value. A further drilling program would be needed to assess the area north and south of hole 1 and west of the Salmon River to substantiate this observation.



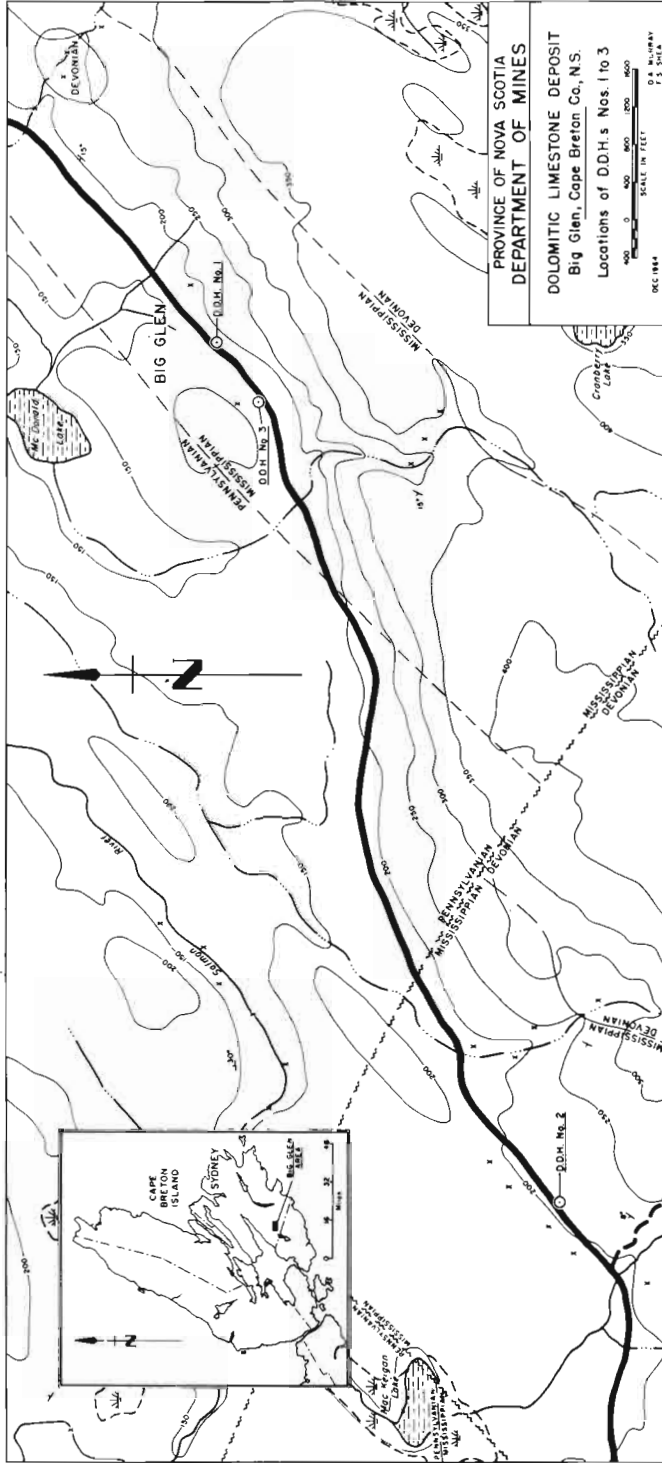


PLATE 35



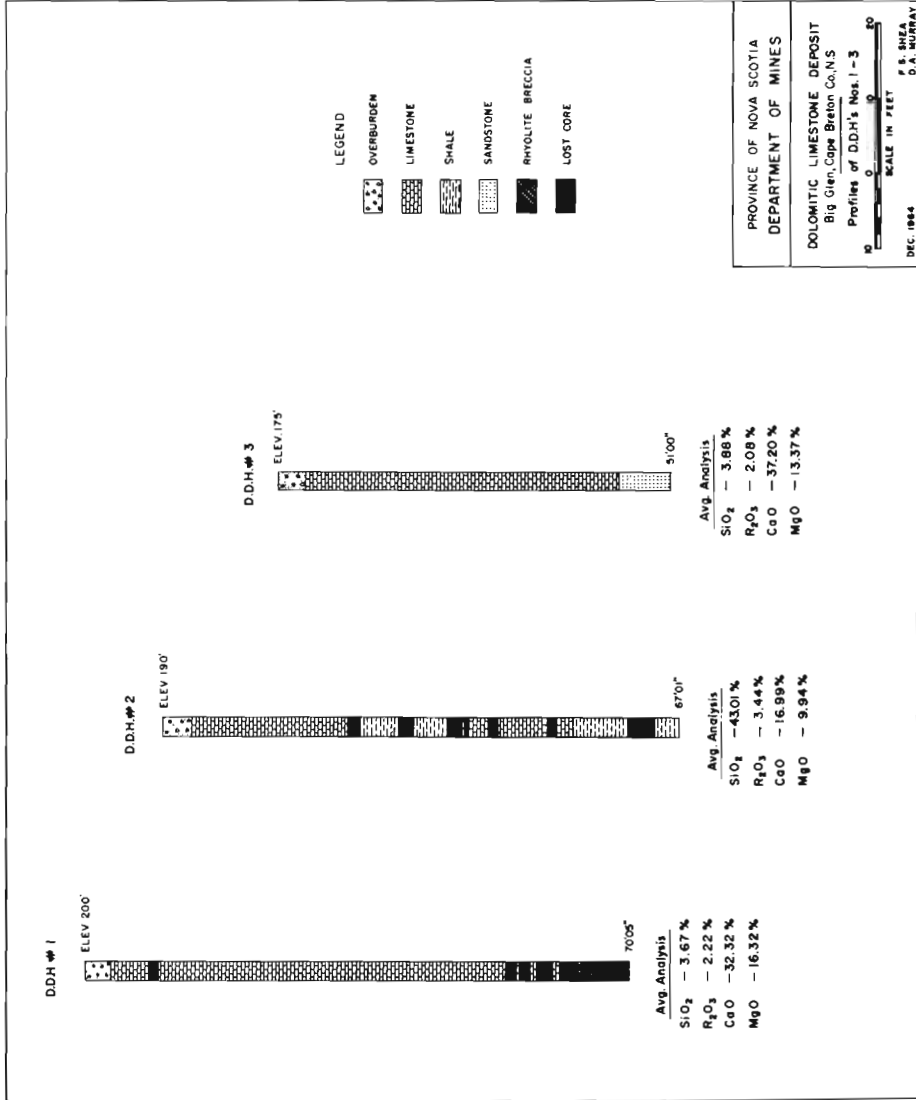
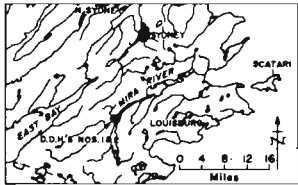
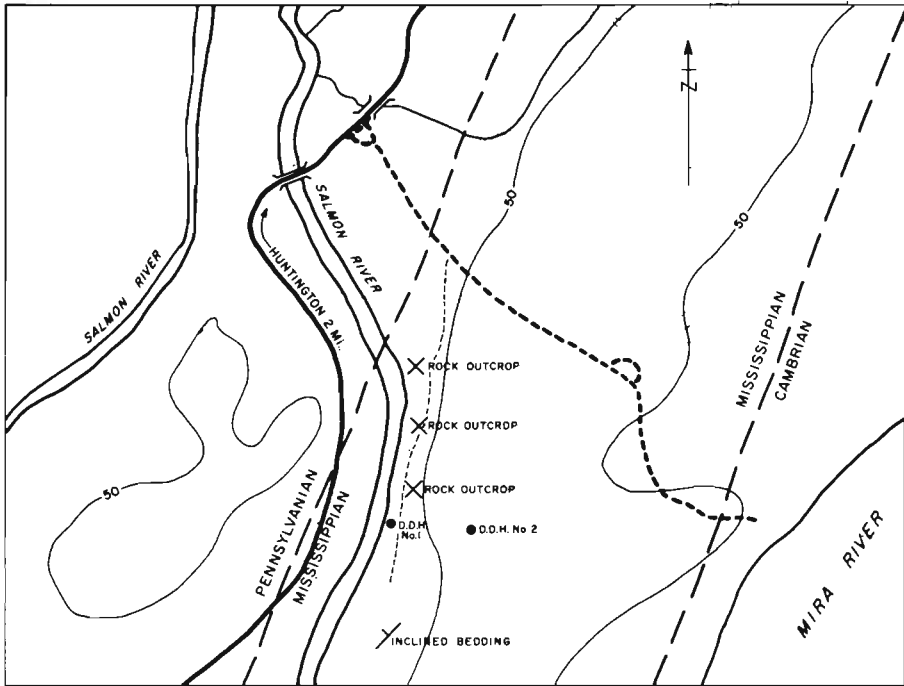


PLATE 35A





PROVINCE OF NOVA SCOTIA  
 DEPARTMENT OF MINES

DOLOMITIC LIMESTONE DEPOSIT  
 Salmon River, Cape Breton Co., N.S.  
 Locations of D.D.H.'s Nos. 1 & 2

400 200 0 400 800  
 Scale in feet

DEC. 1964 D.A. MURRAY  
 F.SHEA

G.M.C.D.

PLATE 36



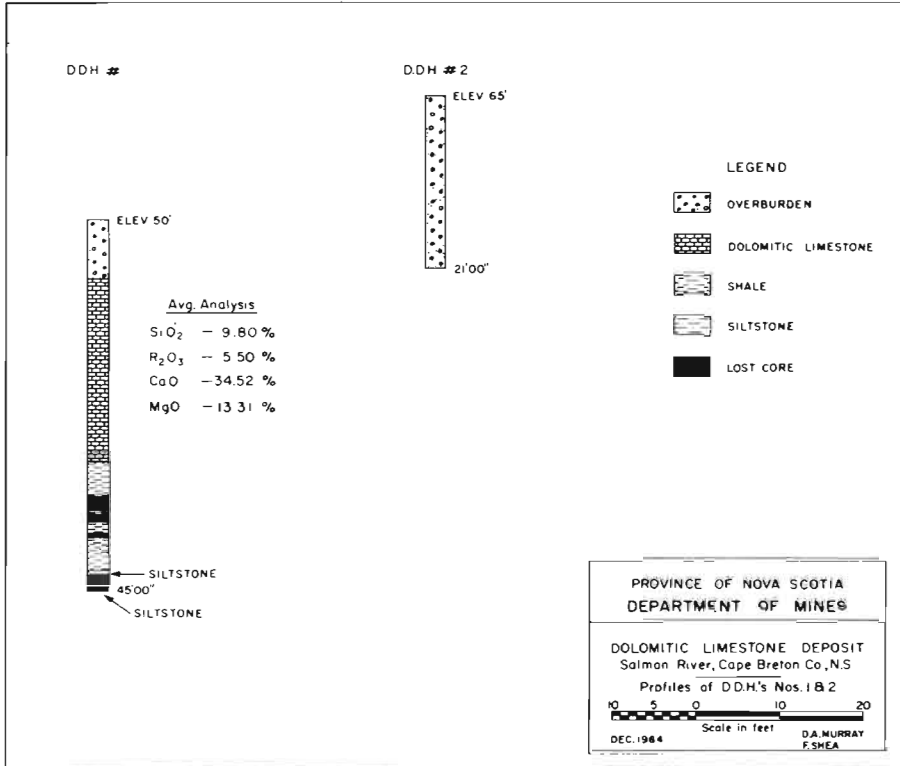


PLATE 36A



## **GABARUS LAKE**

The Gabarus limestone deposit is located on a small peninsula on the west shore of Gabarus Lake located in the eastern part of Cape Breton County. See **plate 37**. The area is accessible by the main road between the villages of Gabarus and Framboise.

This limestone is part of an isolated section or outlier of Windsor marine sediments, lying in a small circular basin within the volcanics and metamorphosed sediments of the Fourchu Group.

Three vertical holes were drilled on this peninsula. Holes 1 and 3 intersected limestone giving an average of 63 feet of material for the two holes. Hole 2 was drilled and stopped in overburden at a depth of 23 feet. See **plate 37A**.

A preliminary estimate of tonnage, based on holes 1 and 3, and surface observations, is 2,700,000 tons covering an area of approximately 494,412 square feet.

This limestone is essentially a grey, hard, medium-grained, fossiliferous material belonging to the Windsor Group. The fossils are mainly brachiopods and a few crinoid stems.

The deposit, as sampled, is of fairly good quality. Further drilling will be needed to assess the area between holes 1 and 3 to provide information regarding continuity of thickness and grade. Further study would be needed as to the economics of starting a small quarrying operation in this area.

## **CATALONE LAKE**

This dolomite deposit is located just north of the Catalone Lake and River and east of the highway between Louisbourg and Sydney, approximately 12 miles north from the town of Louisbourg. See **plate 38**.

Two vertical holes were drilled in this area with hole 1 intersecting 50 feet of dolomite and hole 2 intersecting 10 feet of dolomitic limestone. Hole 1 was drilled in what is considered to be the centre of the deposit. See **plate 38A**.

The dolomite intersected in hole 1 is light brown to grey, hard, medium-grained, porous and belongs to the Windsor Group. It contains minor sandy material and numerous small cavities partially filled with dolomite and calcite crystals. At the base of this dolomite horizon minor amounts of malachite and bornite were observed. Hole 2 was drilled near the northeast boundary of this deposit and encountered a considerable amount of siliceous material in the dolomite. The dolomite in both holes is very massive thus no bedding was observed.

Dolomite extends north from the shore of Catalone River and underlies an open field and elevated area. It is, in turn, underlain by a light grey, medium-grained, slightly porous, calcareous sandstone.

Results indicate that the upper 30 feet would be of economic value with the dolomite becoming more siliceous toward its base. More drilling would be required to determine the lateral extent, tonnage and grade continuity before a final determination of the economic significance of this deposit could be made.



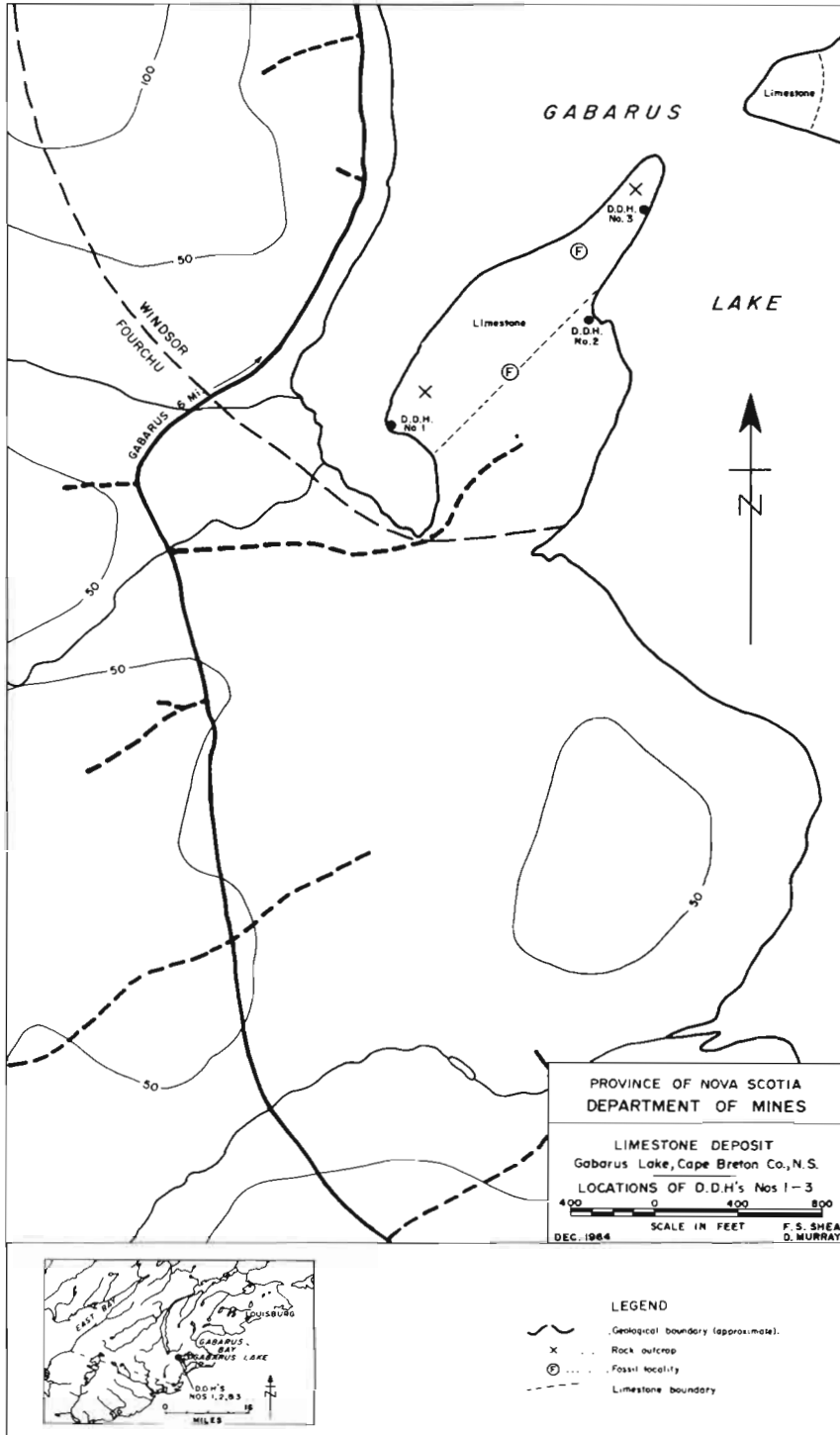


PLATE 37



D.D.H. #1

ELEV. 25'



Avg. Analysis

SiO<sub>2</sub> — 1.39 %  
 R<sub>2</sub>O<sub>3</sub> — .98 %  
 CaO — 53.36 %  
 MgO — 1.12 %

D.D.H. #2

ELEV. 25'



D.D.H. #3





ELEV. 25'



Avg. Analysis

SiO<sub>2</sub> — 1.92 %  
 R<sub>2</sub>O<sub>3</sub> — 1.90 %  
 CaO — 50.30 %  
 MgO — 2.60 %

LEGEND

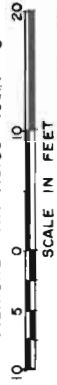
-  OVERBURDEN
-  LIMESTONE
-  SHALE
-  LOST CORE

PROVINCE OF NOVA SCOTIA  
 DEPARTMENT OF MINES

LIMESTONE DEPOSIT  
 Gabarus Lake, Cape Breton Co., N.S.

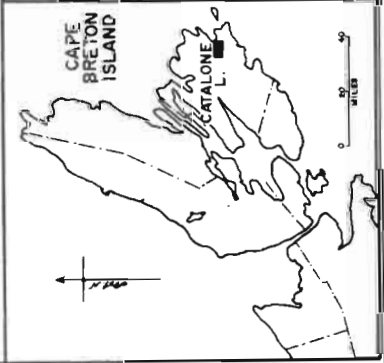
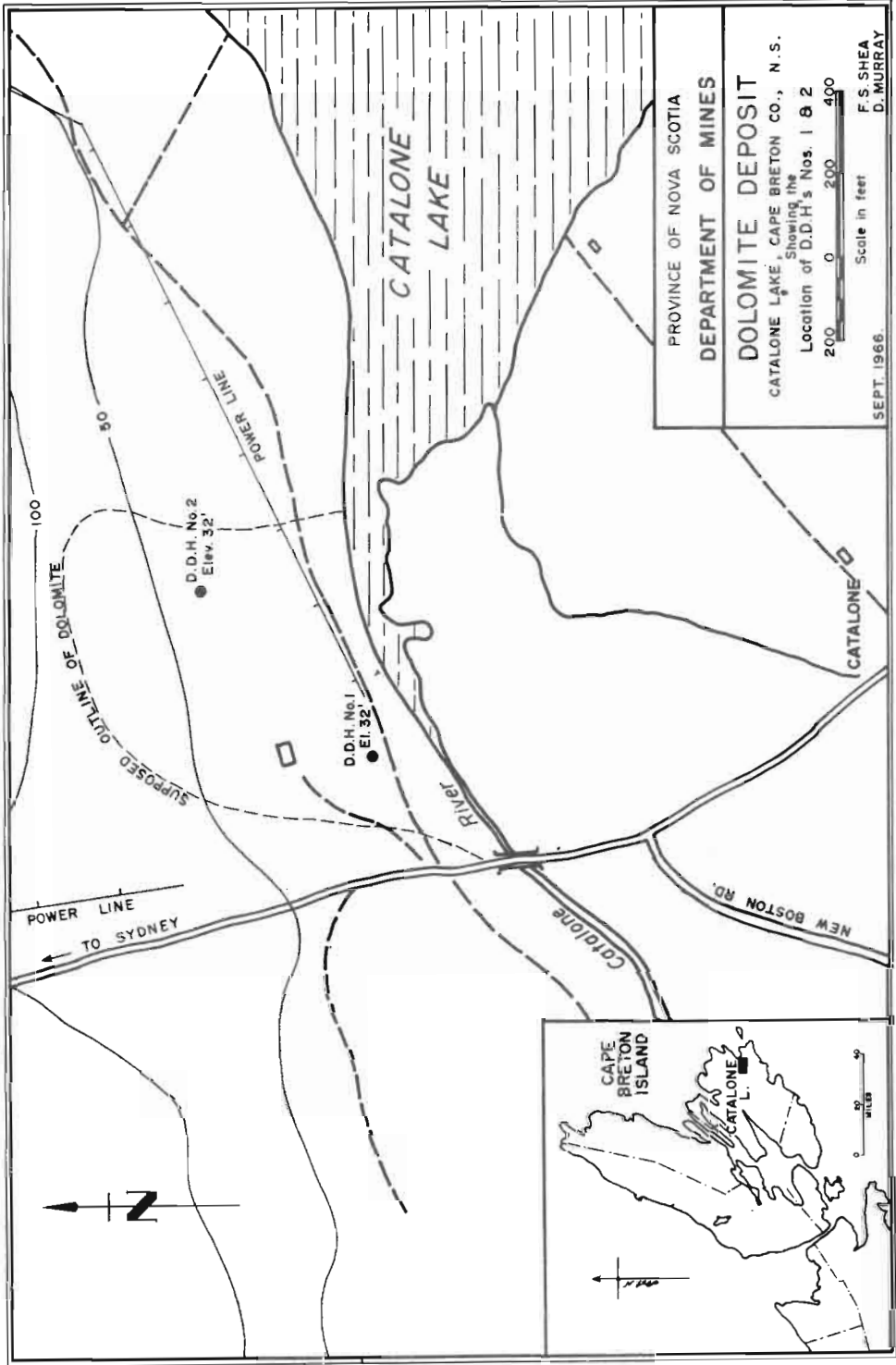
Profiles of

Diamond Drill Holes Nos. 1-3



DEC. 1964.  
 F. S. SHEA  
 D. A. MURRAY





PROVINCE OF NOVA SCOTIA  
 DEPARTMENT OF MINES  
**DOLOMITE DEPOSIT**  
 CATALONE LAKE, CAPE BRETON CO., N.S.  
 Showing the  
 Location of D.D.H.'s Nos. 1 & 2



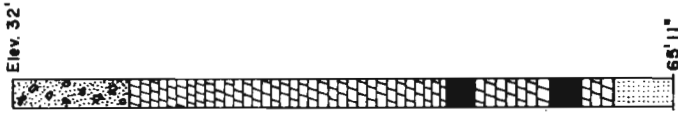
SEPT. 1966. F.S. SHEA  
 D. MURRAY

PLATE 38

D.H.B.



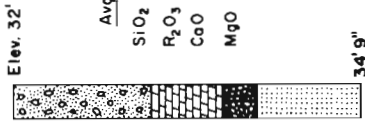
D.D.H. No. 1



Avg Analysis

SiO <sub>2</sub>	- 3.27 %
R <sub>2</sub> O <sub>3</sub>	- 3.86 %
CaO	- 30.40 %
MgO	- 17.04 %






D.D.H. No. 2



Avg Analysis

SiO <sub>2</sub>	- 13.00 %
R <sub>2</sub> O <sub>3</sub>	- 5.94 %
CaO	- 33.59 %
MgO	- 9.29 %

LEGEND

-  Overburden
-  Dolomite
-  Conglomerate
-  Sandstone
-  Lost Core

PROVINCE OF NOVA SCOTIA  
DEPARTMENT OF MINES

DOLOMITE DEPOSIT  
Catalone Lake, Cape Breton Co., N.S.  
Profiles of D.D.H.'s Nos. 1 & 2



OCT. 1966  
F. S. SHEA  
D. A. MURRAY



## SHAWFIELD POINT

Shawfield Point is located on the east shore of Boularderie Island, Cape Breton County, along the St. Andrew's Channel. The Shawfield Point area is 1.7 miles north-east of Black Brook. See plate 39.

Four vertical holes were drilled in this area with high silica limestone being intersected in each hole. Holes 1, 3 and 4 intersected what is considered the larger or main limestone bed in the area, while hole 2 intersected a 7 foot thickness of limestone which is considered to overlie the main limestone horizon. Hole 2 is approximately 1,200 feet north of hole 1. See plate 39. Surface examination and drill hole results show these two limestone horizons as being separated by a reddish-grey shale.

From the analysis, this limestone is a fair quality stone for cement production. A dip inland makes it probable that there will be an increase in the vertical depth of the limestone horizon and overburden. See plate 39A. This limestone has its greatest thickness along the shore of St. Andrew's Channel and gradually thins out landward and down dip. At sea level the limestone bed measures 43 feet in thickness.

A preliminary tonnage calculation for the area assessed by drilling gives 4,700,000 tons, using an average thickness of 30 feet. Surface examination and drill hole results show this area to have a minimum of overburden along and near the shore of St. Andrew's Channel.

To complete the assessment of this area and to establish a larger tonnage of limestone, further drilling will be required northeast and southwest of hole 1, in selected areas where the overburden is considered to be at a minimum.

## FRENCHVALE

This dolomite deposit is located in the Frenchvale - Upper Leitches Creek area of Cape Breton County. More specifically, it is found immediately northwest of the village of Frenchvale and Gautereau Lake and southwest of a road between Frenchvale and Upper Leitches Creek. See plate 40.

Eight vertical holes were drilled on this deposit which outcropped in a small abandoned quarry operated during 1927. Holes 2 and 6 were drilled in overburden and granite while holes 1, 3, 4, 5, 7 and 8 intersected the dolomite. These holes were drilled to an arbitrary depth of 100 feet and stopped.

The dolomite found here belongs to the George River Group and is white to blue-grey, hard and coarsely crystalline and generally with a low silica content. See plate 40A.

The deposit underlies an area of approximately 100,000 square feet, surrounded on all sides by a granitic rock. The beds strike N 30° W and dip 60° SW. Preliminary tonnage estimates for this area vary between 500,000 and 1,000,000 tons depending upon the ultimate depth of the quarry. Additional tonnages may be found by further drilling east and west of the original quarry site.

This deposit is presently being quarried by the Scotia Limestone Company, for use at the Dominion Steel and Coal Company plant in Sydney. Approximately 50,000 tons of material have been produced yearly from this quarry since 1964.

There are additional dolomite deposits in this area which have not been fully assessed as to quality and quantity.

## LEITCHES CREEK - McISAAC LAKE AREA

The Leitches Creek - McIsaac Lake limestone deposit is located in the northwestern part of Cape Breton County, approximately 15 miles northwest from Sydney. Specifically, it is found six miles southwest of the village of Leitches Creek and southwest of McIsaac Lake. The deposit underlies the farm of Angus McLeod. See plate 41.



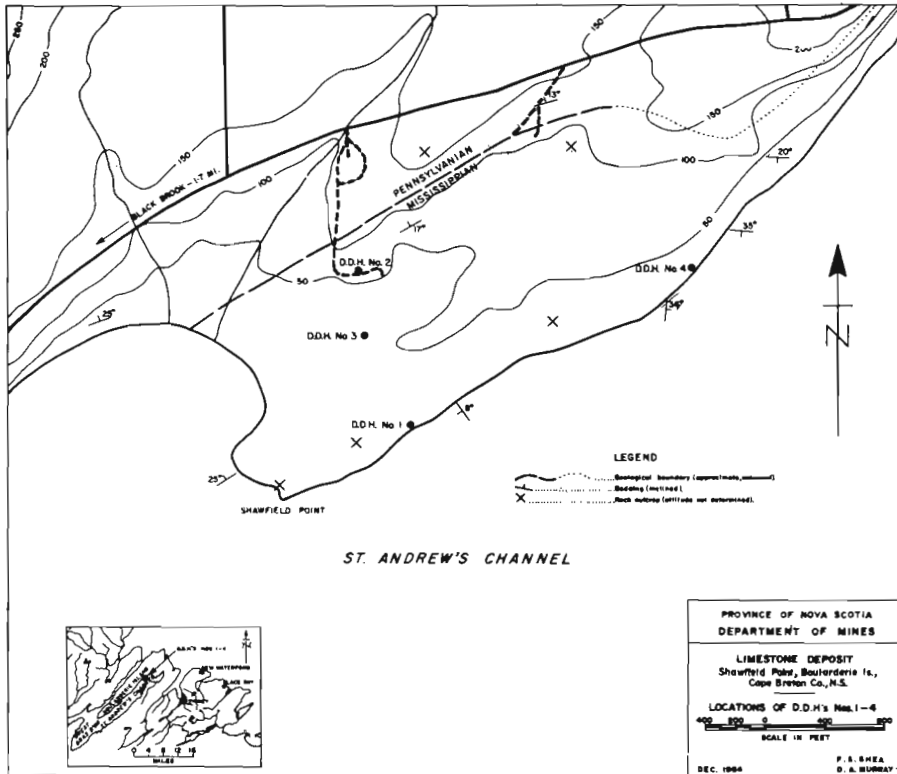


PLATE 39



D.D.H. #1

ELEV. 35'



Avg. Analysis

SiO<sub>2</sub> - 14.15 %  
 R<sub>2</sub>O<sub>3</sub> - 3.44 %  
 CaO - 43.92 %  
 MgO - 1.64 %

D.D.H. #2

ELEV. 50'



Avg. Analysis

SiO<sub>2</sub> - 5.51 %  
 R<sub>2</sub>O<sub>3</sub> - 3.87 %  
 CaO - 50.61 %  
 MgO - 0.62 %

D.D.H. #3

ELEV. 30'



Avg. Analysis

SiO<sub>2</sub> - 18.44 %  
 R<sub>2</sub>O<sub>3</sub> - 3.02 %  
 CaO - 40.34 %  
 MgO - 2.37 %

D.D.H. #4

ELEV. 40'



Avg. Analysis

SiO<sub>2</sub> - 9.76 %  
 R<sub>2</sub>O<sub>3</sub> - 1.69 %  
 CaO - 47.46 %  
 MgO - 0.72 %

LEGEND

- OVERBURDEN
- LIMESTONE
- SANDSTONE
- SHALE
- LOST CORE

PROVINCE OF NOVA SCOTIA  
 DEPARTMENT OF MINES

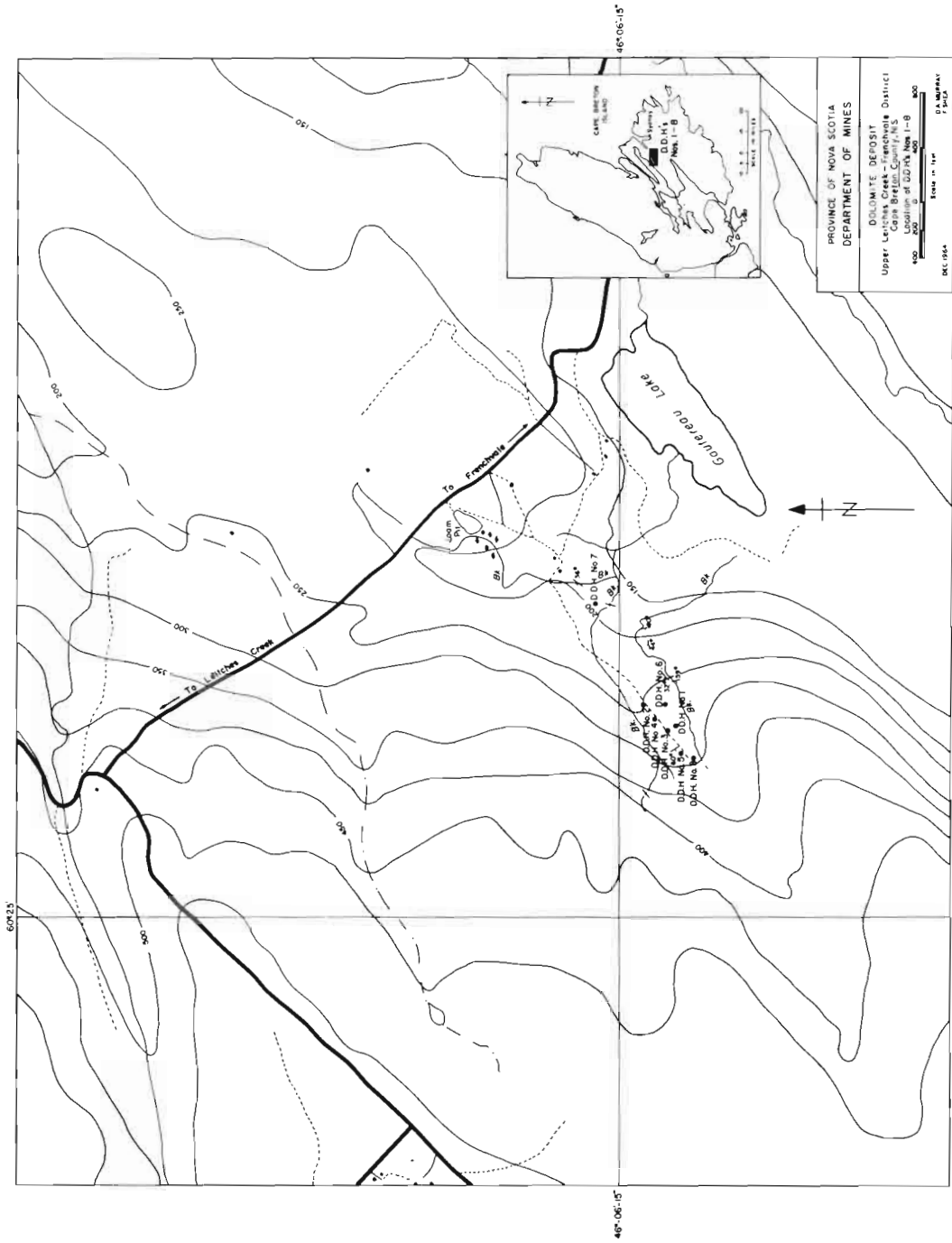
LIMESTONE DEPOSIT  
 Shawfield Point, Baulderrie Is.,  
 Cape Breton Co., N.S.

Profiles of  
 Diamond Drill Holes Nos. 1-4



DEC. 1964  
 F. S. SHEA  
 D. A. MURRAY





PROVINCE OF NOVA SCOTIA  
 DEPARTMENT OF MINES

DOLOMITE DEPOSIT  
 Upper Litchfield Creek  
 Cape Breton District  
 Location of D.D.H. Nos. 1-8

Scale in feet  
 0 100 200 300 400 500  
 D.A. MURPHY  
 1964

PLATE 40



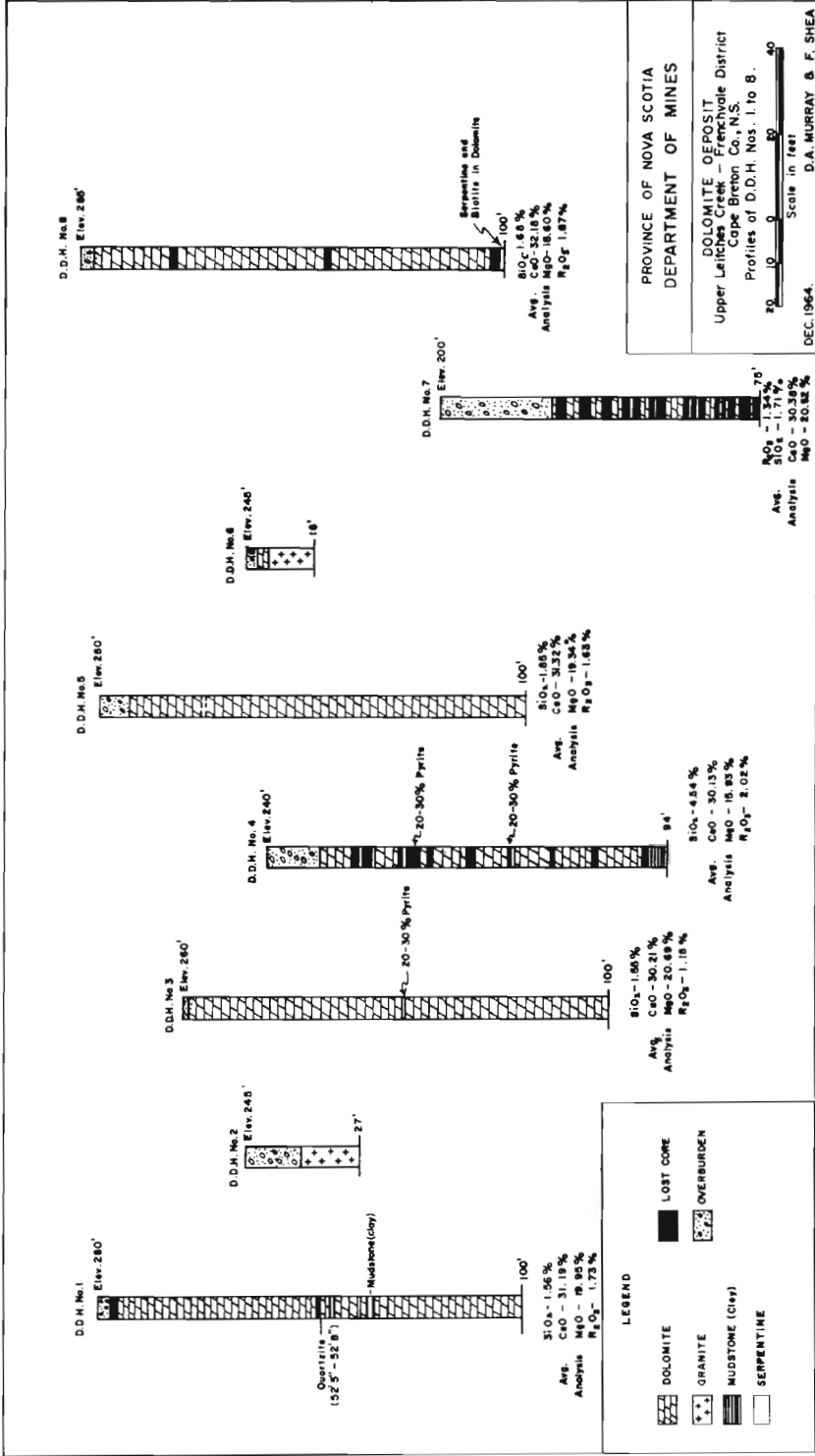


PLATE 40A



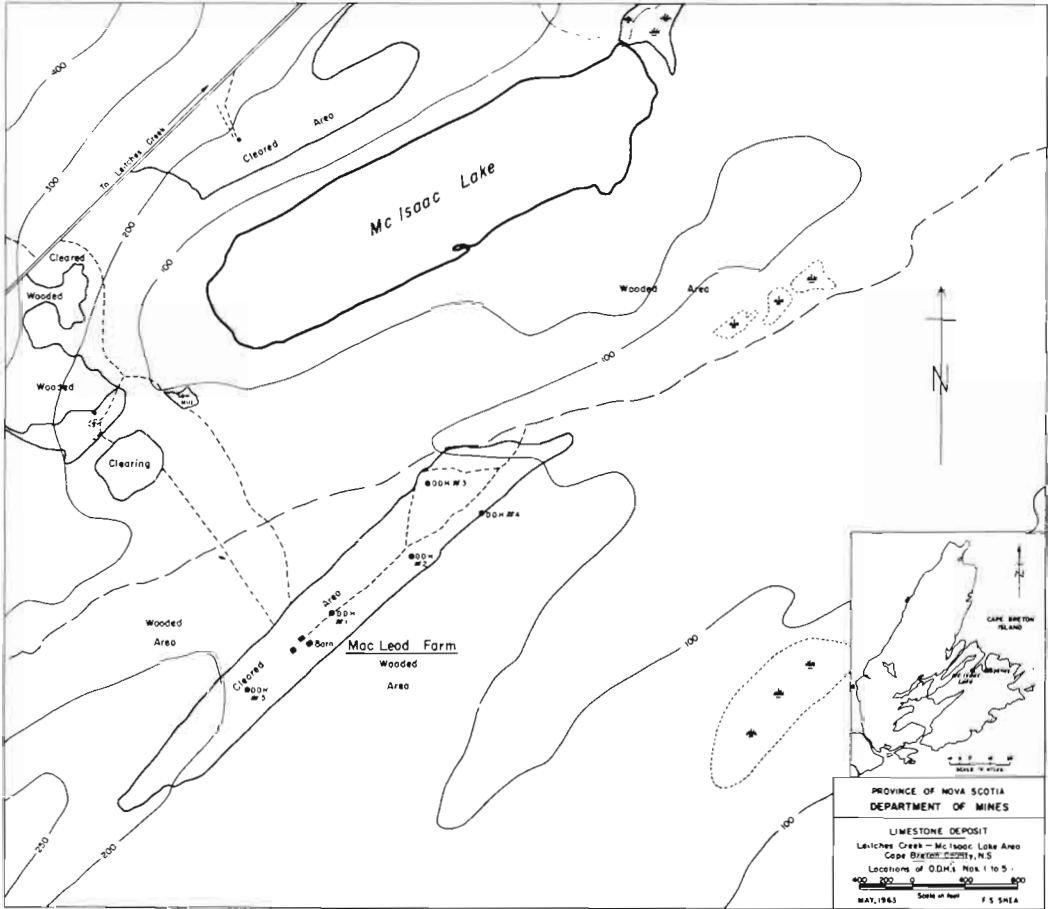


PLATE 41



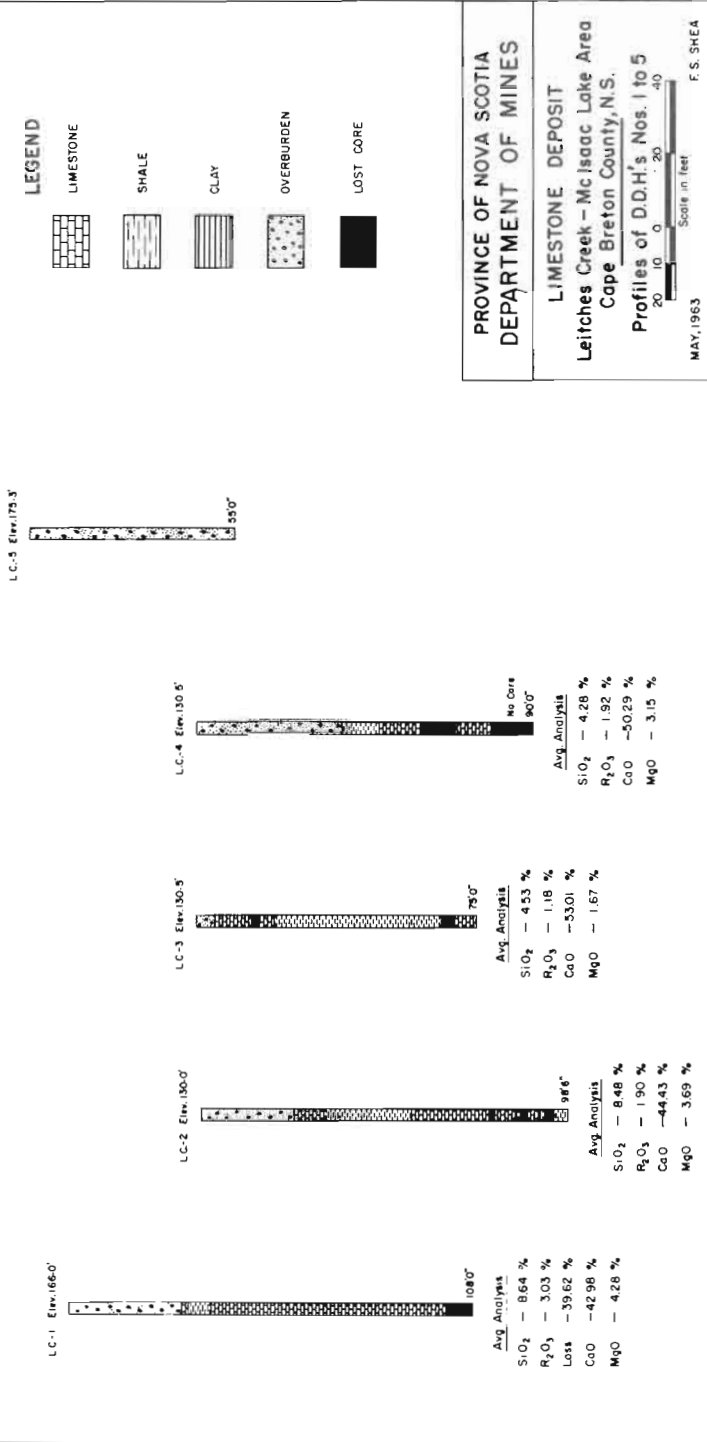


PLATE 41A



Several outcrops of Windsor limestone are exposed along a small creek south of McIsaac Lake. Four analyses of limestone samples collected from surface in this area indicated the possibility of a high calcium limestone which, as exposed on surface, is greyish-brown, hard, brittle, fine-grained and slightly fossiliferous. A slight petroliferous odor may be detected from the outcrop.

Five vertical drill holes were put down to assess this limestone horizon along a strike length of 2,200 feet. See plates 41 and 41A. The drilling indicates that shale bands occur on top of and within the limestone horizon. These impurities as well as excessive overburden, render this deposit uneconomic for a quarrying operation. The average silica content for holes 1 to 4 is 6.47%, further restricting its economic possibility.

Although the immediate area drilled is not suitable for quarry operations, a large untested area does exist in this part of Cape Breton County and the necessary quality and quantity of stone to permit an economical operation may yet be found. Further exploration work will be required to exploit this possibility.

### INVERNESS COUNTY

Five areas in Inverness County underlain by limestone and dolomite were assessed by preliminary drilling programs. Two or more holes were drilled in each area to test depth of overburden, thickness of deposits, grade and continuity. Two areas drilled are underlain by limestones and dolomites of the George River Group of Precambrian age, and three areas are underlain by limestones and dolomites of the Windsor Group of marine sediments.

While only a few of the limestone areas in Inverness County were tested by drilling, it is felt that the work carried out in these selected areas provides a basis for further exploratory efforts in those parts of Inverness County which have commercially potential deposits of limestone and dolomite.

### KEWSTOKE

The Kewstoke area of Inverness County is located approximately nine miles northwest of the village of Whycomagh, situated on highway 5, and is approximately 18 miles north of the Canadian National Railline at Orangedale, Inverness County.

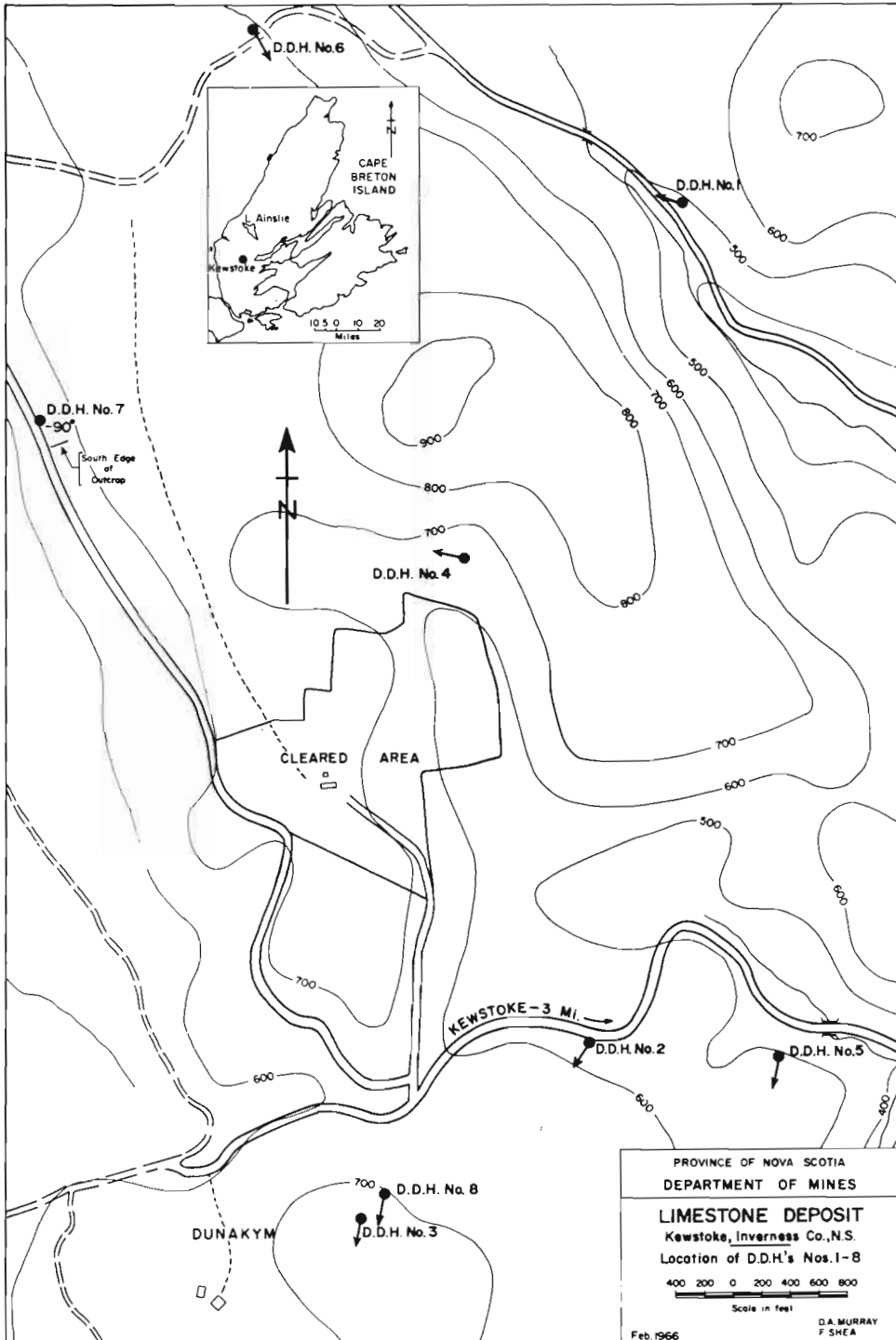
Eight holes in all were drilled in the Kewstoke - Dunakyn area during the years 1964-1966. Approximately 3 square miles were tested in preliminary fashion during this drilling program. The type of material encountered ranges from high grade limestone to a high grade dolomite. See plate 42.

The Kewstoke area, as a whole, consists mainly of limestone with numerous bands of dolomite ranging in thickness from a few feet to 200 feet. The dolomite and limestone horizons generally have a well defined or sharp contact, with transition phases being conspicuous by their absence.

Surface examinations and preliminary drilling programs show that several different limestone horizons or beds occur in this area. Hole 6 intersected a dolomite horizon while holes 1, 2, 3, 4, 5 and 8 intersected good quality limestone.

All holes except No. 7 were angle holes designed to cut steeply dipping strata. The overburden encountered was usually minimal with all holes being drilled to 100 feet or further in limestone or dolomite.





G. Mc D.

PLATE 42



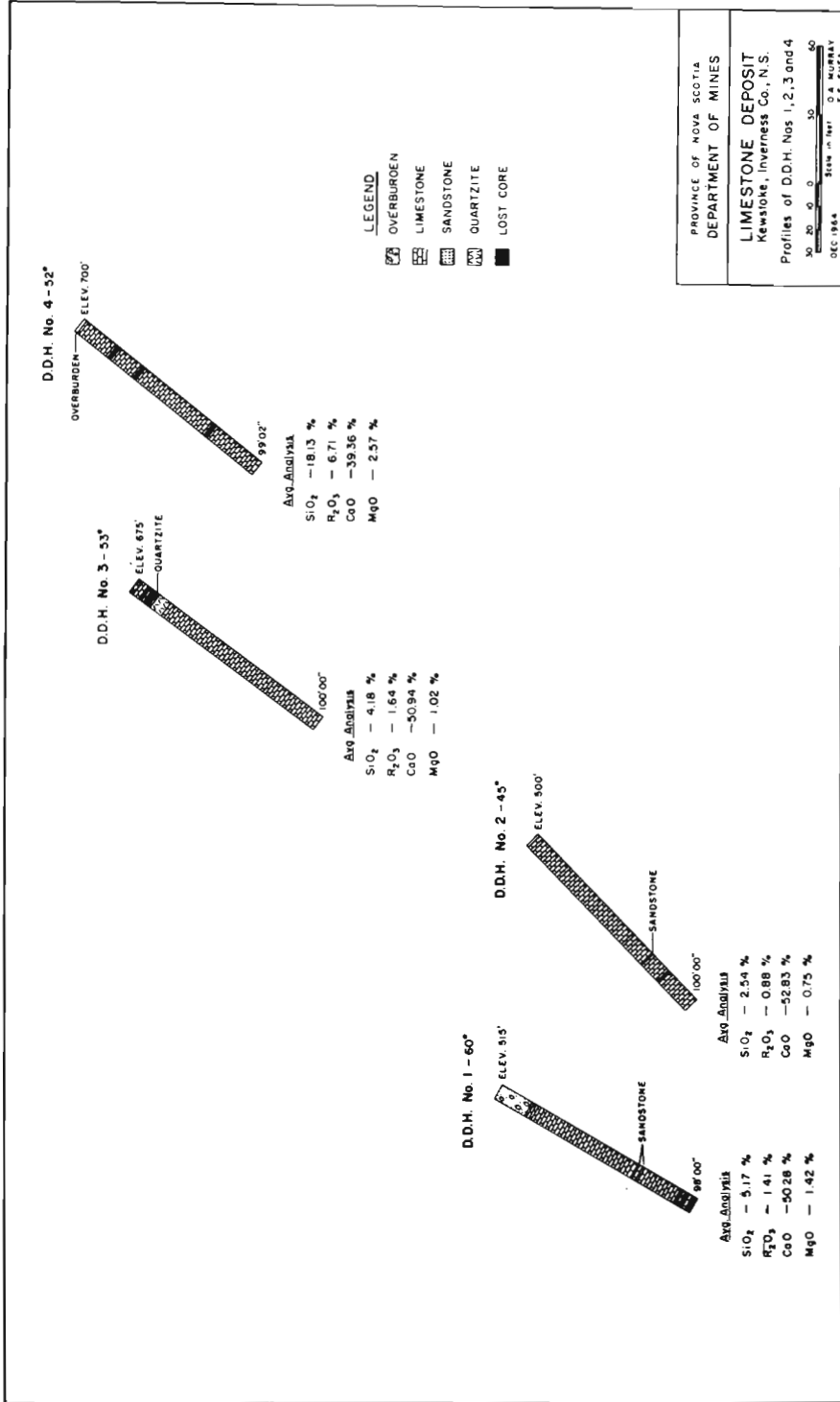
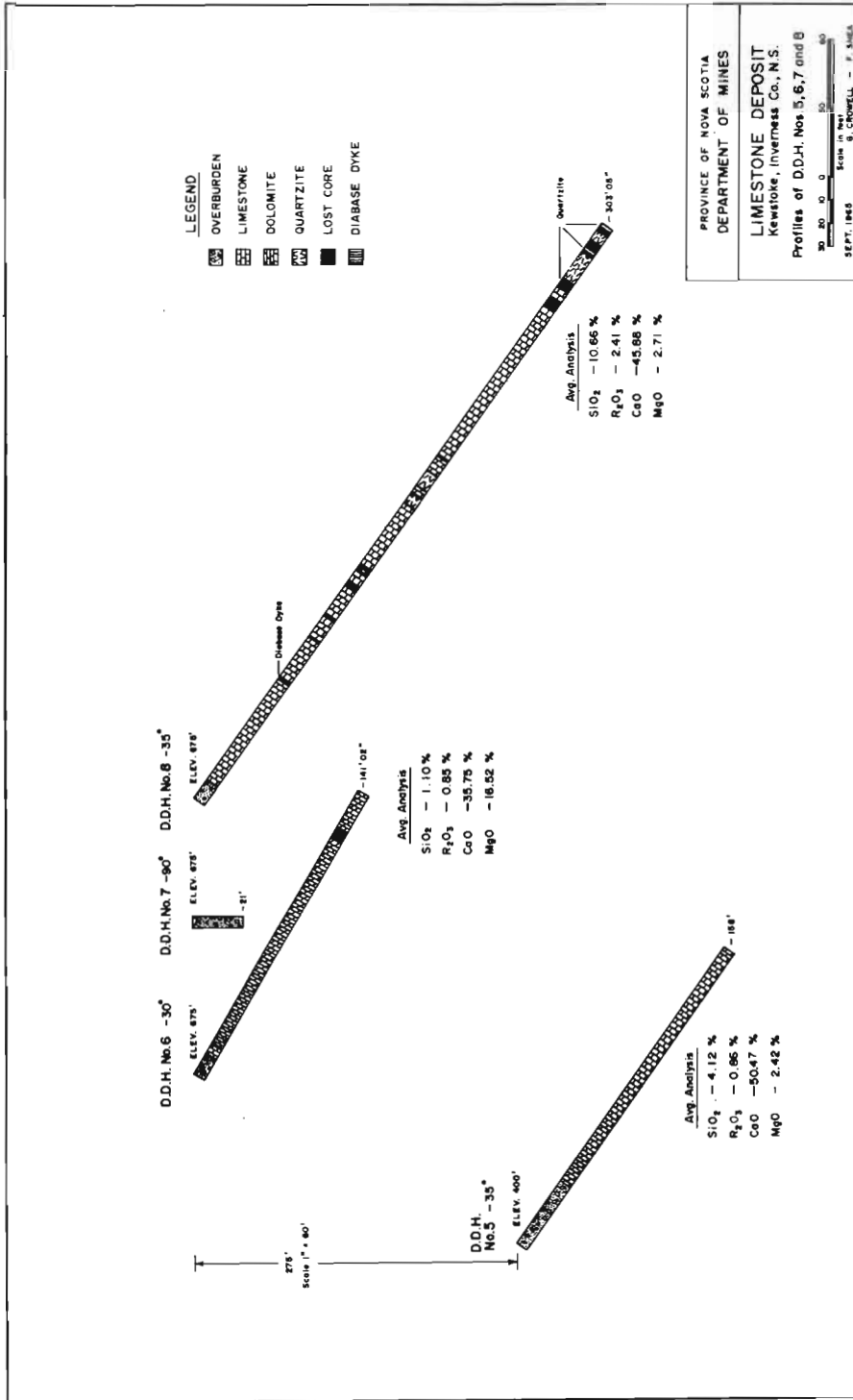


PLATE 42A

8 AND







The crystalline limestone is generally blue-grey in color but may vary to grey, pink or white. The limestone is usually laminated or exhibits a color banding effect. In some instances it is difficult to determine whether the lamination represents bedding or a secondary banding. Its texture ranges from fine to coarse-grained. Minor amounts of pyrite may occur. Calcite veinlets and irregular stringers are quite numerous throughout the core. Sheared surfaces are common and sometimes are found to be lined with serpentine, talc and graphitic material.

The dolomite in the area is generally blue-grey with a mottled appearance. It is usually fine-grained, hard and can be distinguished from limestone because of its rough, irregular, weathered surface, whereas the limestone generally has a smooth appearance on its weathered surface.

Holes 3 and 8 were drilled approximately 300 feet apart to obtain information as to thickness and continuity of the limestone in this area. The limestone is steeply dipping near surface and appears to flatten out at depth. Several small quartzite horizons or bands were intersected in hole 8. **See plates 42A and B.** These quartzite bands contain disseminated sulphide minerals, mainly pyrite and chalcopyrite.

The limestone where intersected in holes 2, 3 and 8 is approximately 150 feet in thickness and is underlain by quartzite.

The work completed to date suggests a limestone deposit of considerable tonnage which could be used in the production of cement. A more comprehensive program will be needed before a complete appraisal of both the limestone and dolomite occurrences in the area, with respect to tonnage and composition can be made. Closely spaced drill holes on an established grid system would provide the necessary information for such an appraisal and would suggest a quarry site. Information to date indicates that 50 million tons of limestone could be quarried from this deposit, the total tonnage being dependent upon specifications set by industrial requirements.

For the average analysis of core from all drill holes see plates **42A and 42B.**

#### **NORTHEAST MABOU**

This limestone is located along the southern slopes of the Mabou Highlands, one-half mile northwest of the village of Northeast Mabou in Inverness County. The deposit can be found outcropping in two small hills within a cleared area, 550 feet above sea level. **See plate 43.**

Three holes were drilled. Holes 1 and 3 intersected limestone while hole 2 was discontinued in overburden. **See plate 43A.**

The limestone recovered from these holes ranges from a light grey to dark brown and has a mottled appearance. It is hard, fine-grained, compact, slightly crystalline and belongs to the Windsor Group. Numerous calcite stringers are present in this limestone. Shearing is quite evident with bedding not well developed.

Structurally, this limestone deposit is found as a series of small folds which form small hills, superimposed along the southern slopes of the Mabou Highlands, east and west of an old abandoned road. Schists and phyllites occur north of this limestone. The limestone is underlain by a grey, calcareous shale which in turn, is underlain by a sandstone. **See hole 3, plate 43A.**



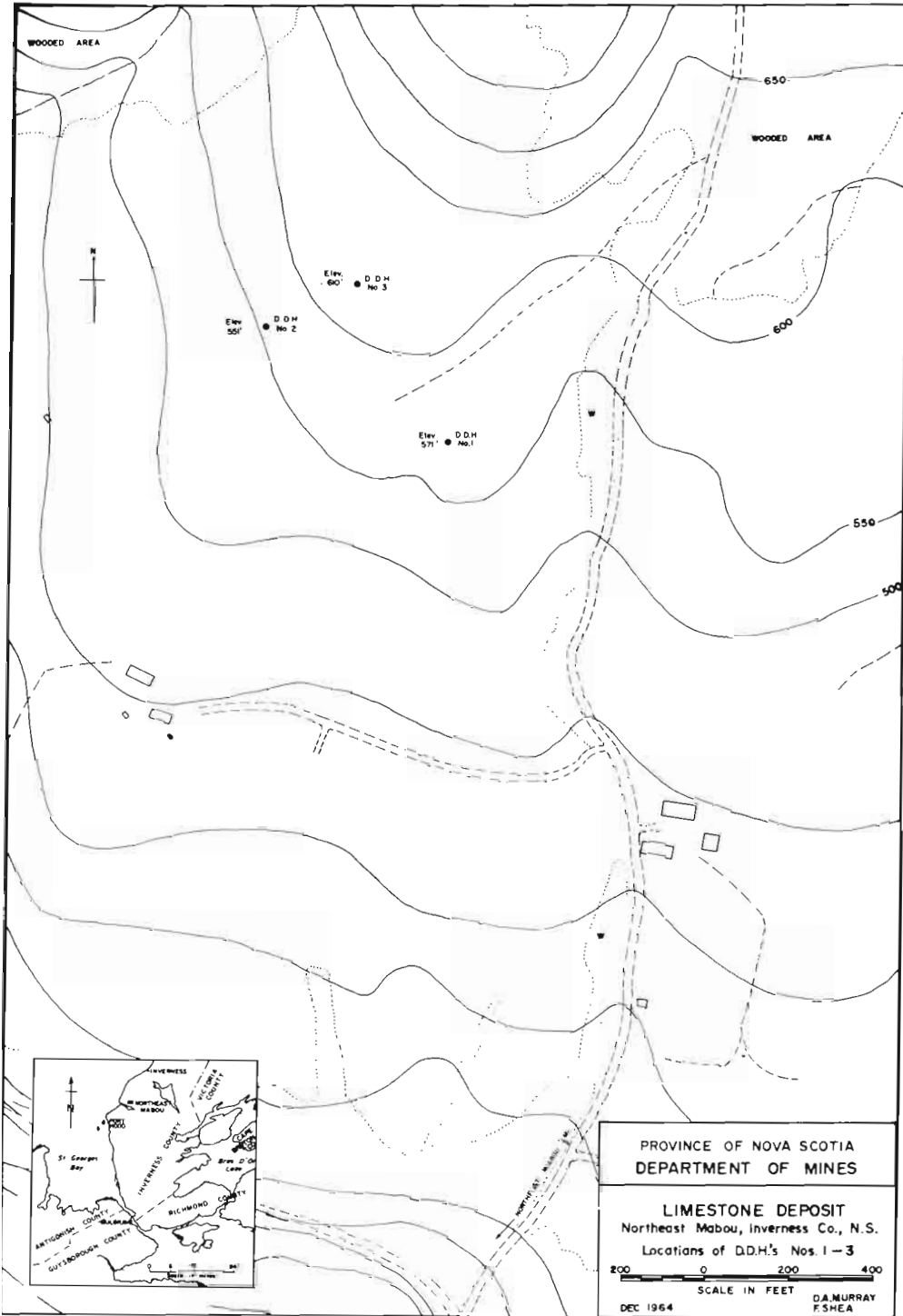


PLATE 43



Avg. Analysis

SiO<sub>2</sub> — 7.46 %  
R<sub>2</sub>O<sub>3</sub> — 2.29 %  
CaO — 49.25 %  
MgO — 0.83 %

D.D.H. No.3

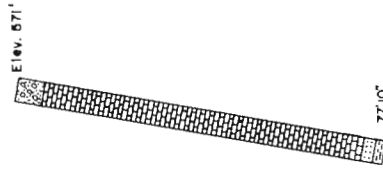


— Conglomerate  
— 55'

Avg. Analysis

SiO<sub>2</sub> — 4.99 %  
R<sub>2</sub>O<sub>3</sub> — 1.72 %  
CaO — 50.90 %  
MgO — 1.15 %

D.D.H. No.1



Elev. 667'

— 46'

LEGEND

- OVERBURDEN
- LIMESTONE
- SANDSTONE
- SHALE

PROVINCE OF NOVA SCOTIA  
DEPARTMENT OF MINES

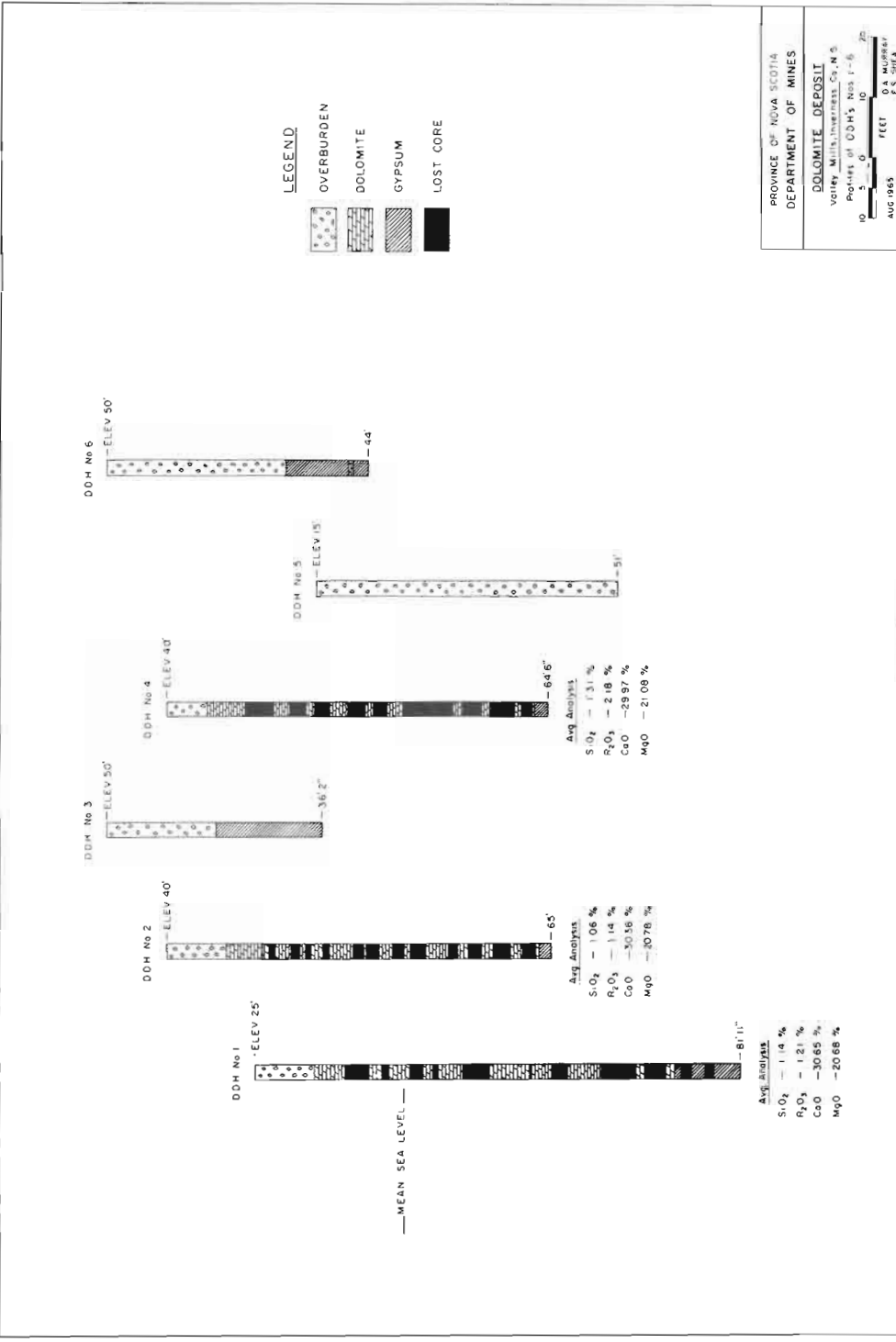
NORTHEAST MABOU  
Inverness County, N.S.  
Profiles of Diamond Drill Holes  
Numbers 1, 2, & 3











PROVINCE OF NOVA SCOTIA  
 DEPARTMENT OF MINES  
**DOLOMITE DEPOSIT**  
 Valley, Mount Allison, C.S.N.S.  
 Profiles of DDH's Nos 1-6  
 0 5 10  
 FEET  
 D.A. MURPHY  
 P.S. 3/1/64  
 AUG 1965

PLATE 44A



In hole 1, the limestone is approximately 66 feet in thickness. Hole 3, which was drilled north of hole 1, intersected only 22 feet of limestone. See plates 43 and 43A. The analyses of samples taken from this deposit show that the material would be suitable for use in the production of cement. More drilling will be needed to outline the size and continuity of the deposit. Proximity to tide water at Mabou Inlet adds to the economic attractiveness of any deposit of commercial size.

For the average analysis of holes 1 and 3 see plate 43A.

### VALLEY MILLS

This deposit of dolomite is located on the north side of North Mountain and along the south shore of Denys Basin at Valley Mills, Inverness County. The Valley Mills area is readily accessible by secondary road from Orangedale in Inverness County.

Six vertical holes were drilled in this area on the properties of Messrs. Kenneth and Charles G. MacLean, which are located along a road approximately two miles northeast of the Valley Mills bridge. See plate 44. Two holes were drilled south of the road and four drilled north of this road towards the shore of South Basin. Of the six holes drilled in this area, three holes intersected dolomite and the remaining three holes either intersected a considerable thickness of overburden and/or gypsum. See plate 44A.

The dolomite encountered in this area belongs to the Windsor Group and is classed as a fossiliferous dolomite belonging to Subzone "B". The material is light grey to brownish-grey in color on a weathered surface and exhibits a range from brownish-grey to dark grey on a fresh surface. Its texture varies from fine to coarse-grained, depending upon fossil content. The matrix of this fossiliferous dolomite is fine-grained and appears to have been a calcareous, microcrystalline ooze.

Fossil shell remains are generally abundant in this deposit, giving the appearance in part, of a shell limestone. Fossil remains have a random distribution throughout the deposit with no preferred orientation apparent in the core or outcrops. Brachiopods, bryozoans, pelecypods, gastropods and crinoid stems were noted. Hole 1 shows that bryozoans exist as the dominant fossil from 10 to 25 feet, while from 25 to 81 feet, brachiopods become the most common fossil although bryozoans are still plentiful.

Although the dolomite is generally massive, the fossil-rich material is cavernous due to the presence of hollowed brachiopod shells. The inner parts of these shells are usually lined with well-formed crystals of dolomite and calcite. There is little or no evidence of bedding in this deposit, although there are indications the dolomite may have a fairly steep dip. Drilling has shown that the deposit is underlain by a gypsum horizon.

The quality of the dolomite found in the Valley Mills area is high, averaging 20.35 per cent magnesium oxide and 1.7 per cent silica, but the preliminary drilling program suggests that only a limited quantity may be present. Field observations show that this dolomite may be found only in east-west-trending small mounds or elevated areas. Away from these elevated areas considerable thicknesses of overburden are encountered as well as silty gypsum which in most cases, underlies swampy areas. The true thickness of the dolomite could not be determined due to the lack of bedding. Considerable drilling would be required before thickness and tonnage can be determined.

It is worthy to note that a dolomite deposit at Stoney Creek, similar to that found at Valley Mills, occurs north of Valley Mills and east of Munro Bridge Station. The Stoney Creek area could contain sufficient tonnage to warrant a small quarry operation.

### **CAMPBELL BROOK AREA**

In 1963, a horizontal drill hole was collared and directed to intersect limestone exposed along a ridge north of Campbell Brook, located in the River Denys area of Inverness County. The limestone intersected in this area belongs to the George River Group of Precambrian age. See plate 45.

Two bands of limestone were intersected in this hole as shown on plate 45A. The first limestone intersected is 90 feet wide and the second 438 feet. Locally, this limestone is highly fractured, the cementing material being secondary white calcite and a reddish hematite. The average analysis of core from this hole is noted on plate 45A.

Sufficient information was derived from this drill hole to suggest that further drilling should be carried out in this area to determine if adjacent areas are underlain by this limestone. Sufficient tonnage of similar or better grade could support a quarry operation, the rock possibly being used for the production of cement.

### **RANKINVILLE**

Many exposures of limestone occur along the north and south banks of the Mabou River and its tributaries in the vicinity of Rankinville and Hillsborough, Inverness County.

Two vertical holes were collared immediately southwest of the Mabou River in the vicinity of Rankinville, as a preliminary test of thickness and quality of the limestone along a strike length of 1,200 feet. See plate 46. Drill hole 1 intersected 36 feet of limestone overlain by 10 feet of overburden. Hole 2 intersected 59 feet of limestone after passing through 39 feet of overburden. The limestone is underlain by shale, siltstone and sandstone. The average analysis of core from these drill holes is shown on plate 46A.

The area in the vicinity of Rankinville, Hillsborough, Mull River and Brook Village is underlain by limestone and/or dolomite and may possess considerable potential as to grade and tonnage. Extensive drilling will be required to assess these areas for economic deposits. It should also be noted that these localities involve the greater part of the Mabou Basin area and significant deposits of limestone and dolomite, situated only a short distance from rail transportation and coastal shipping at Mabou Inlet, may be developed.



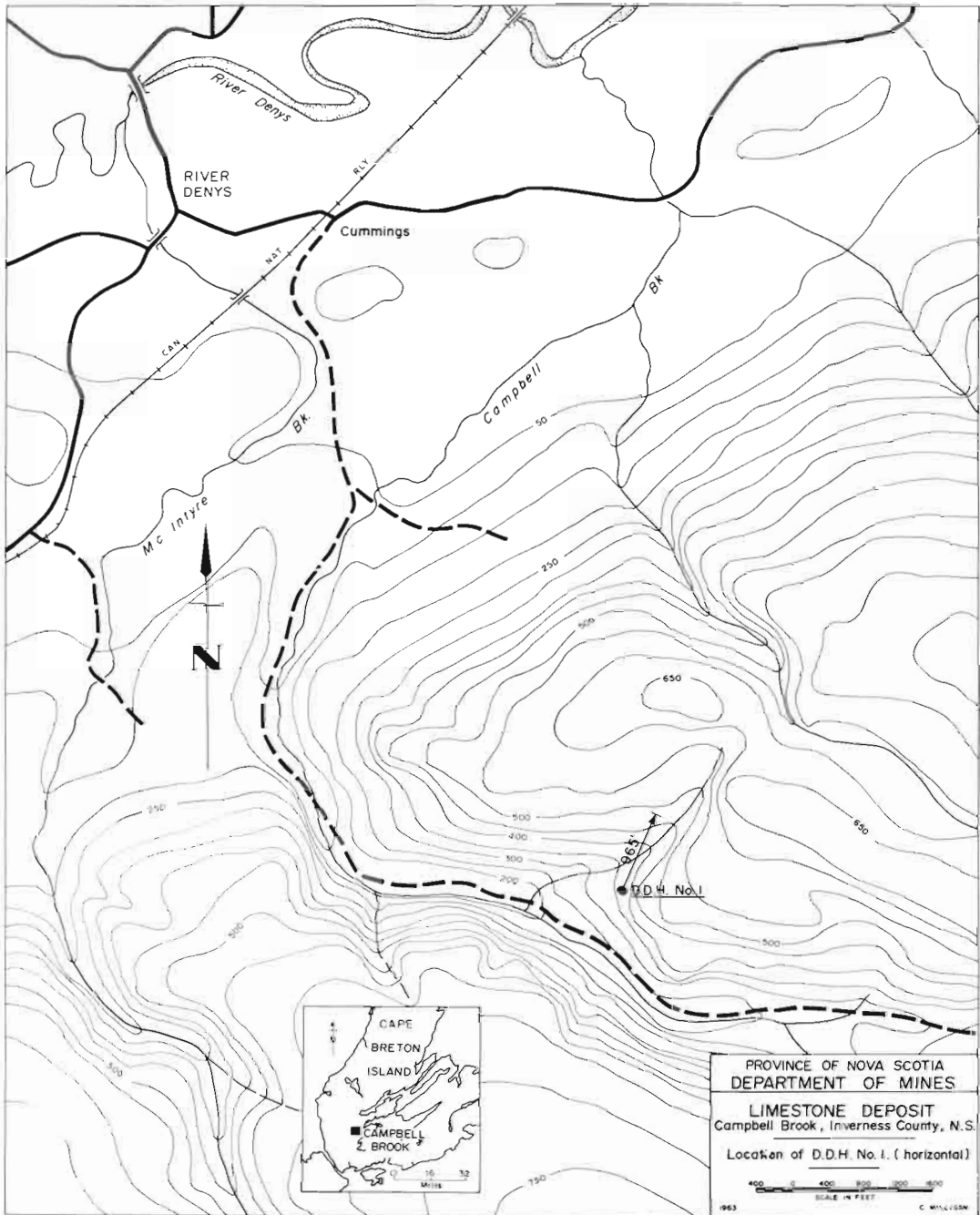


PLATE 45



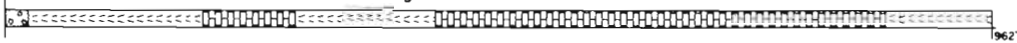
Average Assay 193' - 225'

SiO<sub>2</sub> = 3.95  
R<sub>2</sub>O<sub>3</sub> = 1.09  
CaO = 53.45  
MgO = 0.73




Average Assay 500' - 837'

SiO<sub>2</sub> = 3.56  
R<sub>2</sub>O<sub>3</sub> = 1.15  
CaO = 46.48  
MgO = 4.68

True bearing - North 30° East



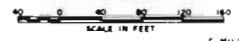
**LEGEND**

-  OVERBURDEN
-  LIMESTONE
-  QUARTZITE - with minor shale and schist

PROVINCE OF NOVA SCOTIA  
DEPARTMENT OF MINES

LIMESTONE DEPOSIT  
Campbell Brook, Inverness County, N.S.

Profile of D.D.H. No. 1 (horizontal)



SCALE IN FEET

1963 C. MILLIGAN



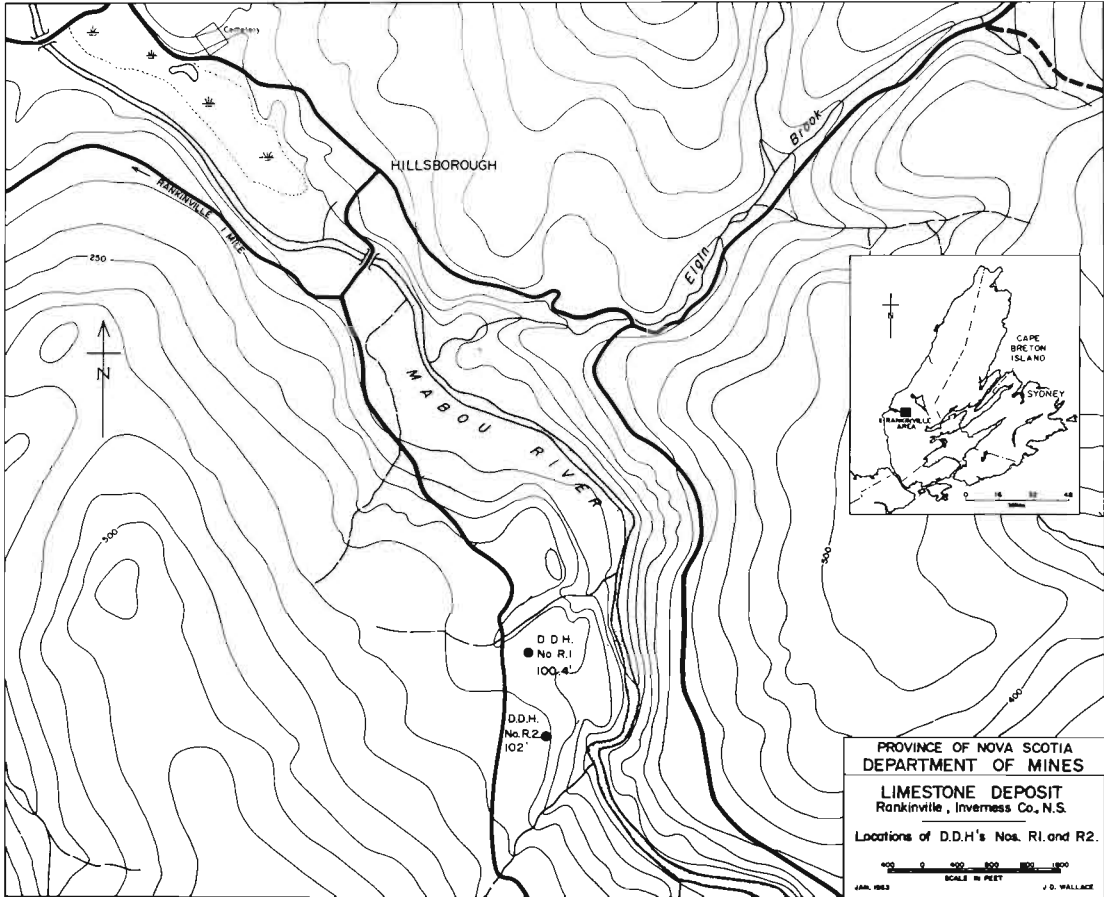


PLATE 46



