CHAPTER 2. COLCHESTER COUNTY

GENERAL GEOLOGY

Most of the limestones and dolomites in Colchester County are found in the Windsor Group marine sedimentary rocks. One occurrence of crystalline limestone is found in the Cobequid Fault Zone near Londonderry and another crystalline marble occurrence is found in the banks of North River, north of Lower Five Islands that has been assigned to the Hadrynian Jeffers Formation (Donohoe and Wallace, 1982; Pe-Piper and Piper, 1987) now Jeffers Group.

The Windsor Group sedimentary rocks are found distributed throughout the area, with the largest concentration being the Gays River Bank Complex in the Shubenacadie Basin area in the southern part of the County. This Complex forms a major carbonate outcrop area trending northeast-southwest approximately parallel to the regional basement structural trend in the Nova Scotia Platform. It is situated on paleotopographic high areas immediately updip from the pinchout line of Horton Group continental clastics in the Shubenacadie Basin. The lower contact is a prominent angular unconformity with significant paleorelief on the Cambro-Ordovician Meguma Group metasedimentary rocks (Boehner *et al.*, 1989a). Isolated beds of slightly metamorphosed Lower Windsor Group limestone, thought to be Pembroke Formation (Stevenson, 1958) occur at Manganese Mines and the Penny Mountain areas near Truro. The following is the usual stratigraphic sequence encountered in the study area showing the age relationship of the different limestones described.

Pleistocene	Sand and gravel till	
Cretaceous	Clay and silica sand	
Lower Carboniferous (Windsor Group)	Upper Windsor	shales, siltstones, thin beds of limestone and dolomite
	Lower Windsor	shale, gypsum, dolomite, conglomerate (local)
Cambrian-Ordovician (Meguma Group)	Halifax Formation	slate
	Goldenville Formation	quartzite
Hadrynian	Jeffers Group	grey, white marble

At Pleasant Valley near Brookfield, Lafarge Canada Inc. has been operating a cement factory since 1964 with an average annual production from their quarry of 600 000 t. The limestone mined is a natural cement stone; no additives are necessary to manufacture Normal Type 10 cement.

ALTON AREA

ALTON (At-1-1)

This occurrence is located 2.57 km northeast of Alton and 1.93 km southeast of Brentwood. This area is approximately 20 km south of the Town of Truro and just east of the old Truro-Halifax highway. The limestone outcrops in a quarry on the property of Sandy Munro, 563.9 m southwest of his house. This quarry was once serviced by a road and by a branch line of the railroad. The Munro farm is on the Brentwood to Little River road, 1.93 km southeast of Brentwood (Fig. 2).

Description

The limestone varies between a grey, hard, dense, massive, highly fossiliferous, B_1 Subzone (Bell, 1929) Windsor Group limestone on the northern side of the quarry, to a light grey, very hard, compact, fine grained, Windsor Group limestone with few fossils, on the southern side of the quarry. The limestone can only be seen outcropping on the southern side of the quarry. On the northern side, only rubble can be found. The bedding is very poorly developed and massive with a light grey, fairly smooth, weathered surface. Calcite is not very abundant. There is a large variety of fossils including several types of brachiopods which are by far the most numerous fossil type, pelecypods, crinoid stems, corals, three types of bryozoans, a few gastropods and some cephalopods (both coiled and straight) (Fig. 3). All species are well developed, and some are large. There does not appear to be any particular orientation except that the crinoid stems and stick bryozoans are parallel to the bedding. The strike and dip could not be determined with certainty because of the small amount of outcrop and the massive nature of the limestone. It appears, however, to be trending in a N 60°E direction.

The limestone here was originally quarried for use in the Londonderry iron operation around 1900. A spur railway line was put in from the regular Canadian National Railway line, approximately 1.6 km to the west from where it was shipped to Londonderry. The quarry is thought to be about 24.5 m in depth, but it is now filled with water (Fig. 4). The limestone might have been mined at one time because there is an old shaft in the vicinity of the quarry.'

There is no indication as to the thickness of limestone or the depth of overburden in the surrounding area. Gypsum outcrops to the east of the quarry and northwest of the Munro house.

The area is easily accessible, however there might be a great thickness of overburden away from the quarry. At the Munro farm house a well was drilled 33.5 m without striking bedrock.

Sample At-1-1 was taken on the southern side of the quarry.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
At-1-1	43.00%	1.05%	0.71%	54.65%	0.28%

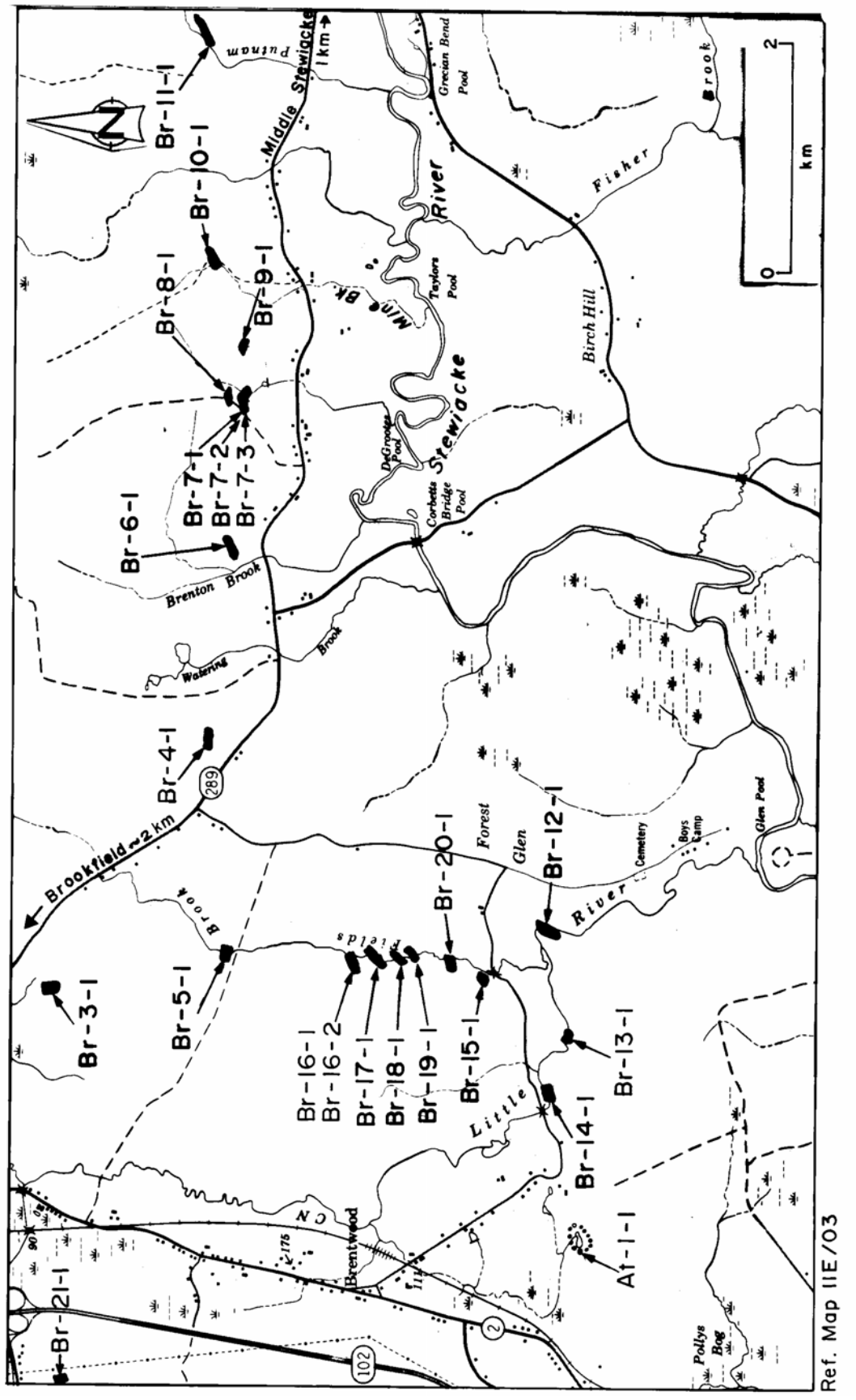


Figure 2. Location map of limestone and dolomite occurrences sampled in the Alton and Brookfield areas, Colchester County (11E/03).

Figure 3. *Didoceras avonensis* found at the Alton limestone quarry, Colchester County (At-1-1). The fossils are very abundant and very well preserved here.

Figure 4. Quarry of B_1 limestone found at Alton, Colchester County (At-1-1). Quarry has been filled with water.

BEAVER BROOK AREA

BEAVER BROOK (BB-1-1) (BB-2-1) (DRILLING)

This occurrence is located along the eastern branch of Beaver Brook on the property of Whyman H. Yuill. The limestone was quarried to some extent in the early part of the Twentieth Century. The outcrop is 0.97 km east of the main road between Beaver Brook and Old Barns. The quarry can be reached from a farm road which services the Yuill field. The limestone is found in a 7.6 m high embankment which strikes southeast away from the Brook. There are several other limestone occurrences farther up the Brook, but these are very argillaceous and of very poor quality (Fig. 5).

Lafarge Canada Inc. drilled this deposit using drill targets obtained from a geophysical survey (Levaque *et al.*, 1988). They estimated a tonnage of 250 000 t of high calcium limestone approximately 11.6 m below the surface in a bed approximately 7.5 m thick.

Description

The limestone is grey, hard, massive, medium grained, Windsor Group limestone with reddish iron staining. This limestone is near the bottom of the Windsor Group section and is associated with gypsum which is found to the southwest. The limestone is similar to limestone of the Pembroke Formation. Some sections are conglomeratic containing limestone fragments from an underlying limestone. The bedding is very poorly developed and extensively fractured. The weathered surface is red and smooth. Dip and strike cannot be determined because of the fracturing and massive nature of the limestone, however in some sections it appears to be flat lying.

The limestone appears to be at least 12 m thick with very little overburden. The surrounding area is open and easily accessible.

Sample BB-2-1 was taken 427 m southeast along the eastern branch of Beaver Brook from the main quarry of limestone and sample BB-1-1. The dolomite can be traced along the Brook for 129.5 m. It is a hard, dense, argillaceous, brownish-grey, Lower Windsor Group dolomite.

Several other limestone beds are found farther up the Brook, but these are thin, impure and very inaccessible. Limestone can be found outcropping as far as 1.6 km up this Brook from the quarry.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
BB-1-1	43.15%	1.28%	0.41%	55.00%	0.31%
BB-2-1	45.50%	2.08%	3.08%	30.40%	18.70%

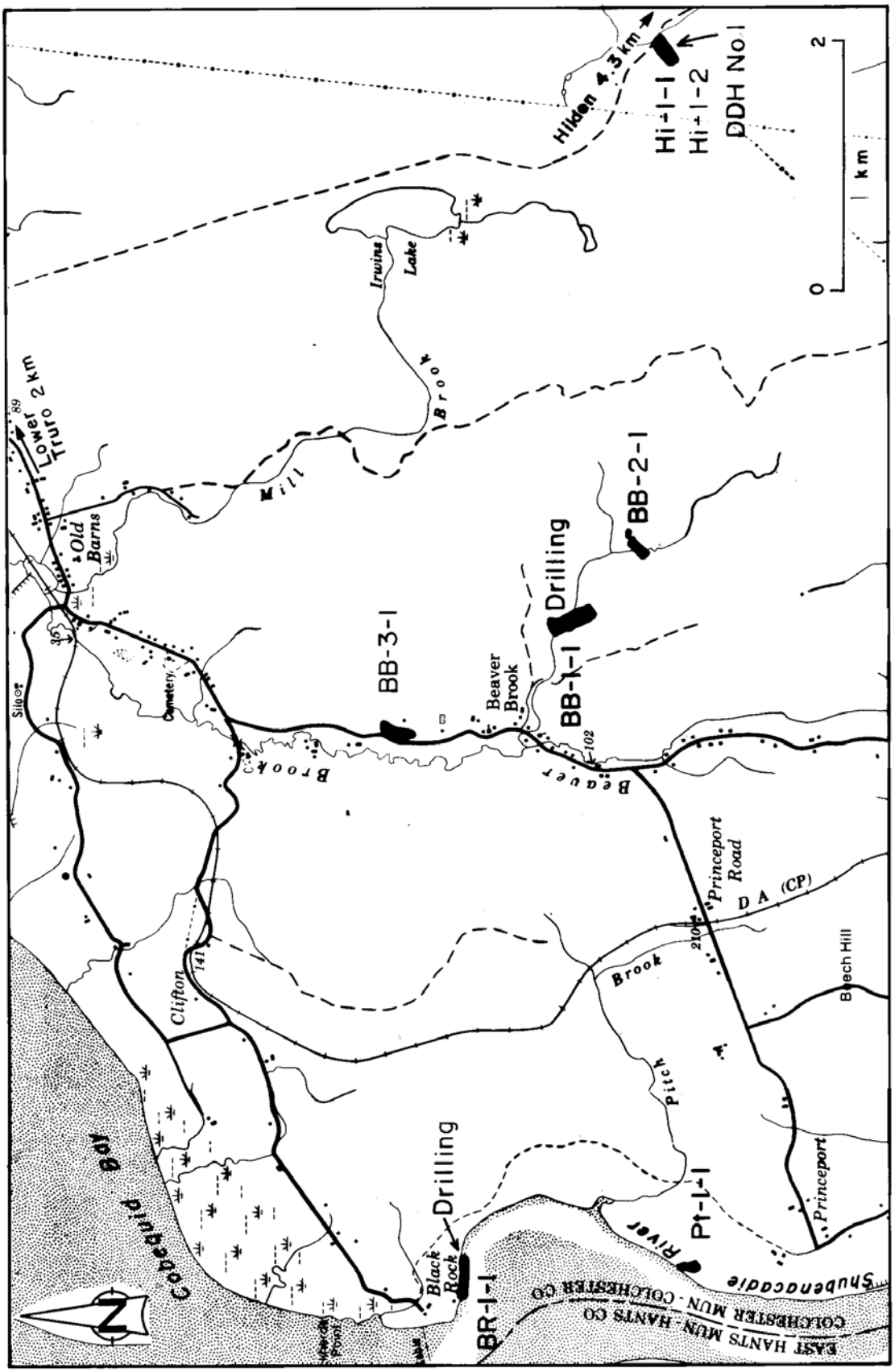


Figure 5. Location map of limestone and dolomite occurrences sampled in the Beaver Brook, Black Rock, Hilden and Princeport areas, Colchester County (11E/06).

BEAVER BROOK (BB-3-1)

This occurrence is located at Beaver Brook on the eastern side of the Beaver Brook-Clifton highway, 1.6 km south of the Clifton-Black Rock turnoff. The limestone can be found outcropping in the ditch on the eastern side of the road. The limestone can be traced 183 m along the ditch in various spots. This may be a continuation of BB-1-1 (Fig. 5).

Description

The limestone is a dark grey, very hard, dense, massive, Windsor Group limestone with a reddish coating. The bedding is very poorly developed with a reddish-brown, smooth, weathered surface. There are numerous small cavities partially filled with calcite crystals. This limestone appears to be part of Stevenson's (1958) Pembroke Formation of the Lower Windsor Subzone. The strike and dip could not be measured because of the lack of outcrop and massive nature of the limestone.

There is no indication as to the thickness or areal extent of the limestone. The overburden appears to be <3 m.

The area in the vicinity of the outcrop is heavily wooded towards the east and open fields towards the west. The area is easily accessible.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
BB-3-1	43.40%	0.89%	0.57%	53.35%	1.48%

BLACK ROCK AREA

BLACK ROCK (BR-1-1) (DRILLING)

The occurrence of limestone is located at Black Rock on the southern shore of Cobequid Bay, approximately 16 km west of Truro. The outcrop is at the mouth of the Shubenacadie River, on the eastern shore, southeast of the telephone cable. The limestone outcrops 294 m eastward along the shore from Black Rock farm. The banks of the River are formed by the limestone. A large amount of the limestone is covered when the tide comes into the River (Fig. 5). Levaque *et al.* (1988) provided an interpretive cross-section (Fig. 6).

Description

This is a grey, hard, medium grained, laminated, Windsor Group limestone belonging to the A Subzone (Bell, 1929) (Fig. 7). Numerous thin, limy sandstone layers can be seen throughout the section. The bedding is very well developed with numerous small folds and crenulations (Fig. 8). The weathered surface is light grey and smooth. There are numerous clusters of calcite crystals (dog-tooth spar), plus numerous sigmoidal gas veins. The limestone contains a large amount of red iron staining in various locations with large amounts of other impurities throughout. This is the contact between the Windsor, Horton and Triassic Groups. It strikes east and dips 20° south.

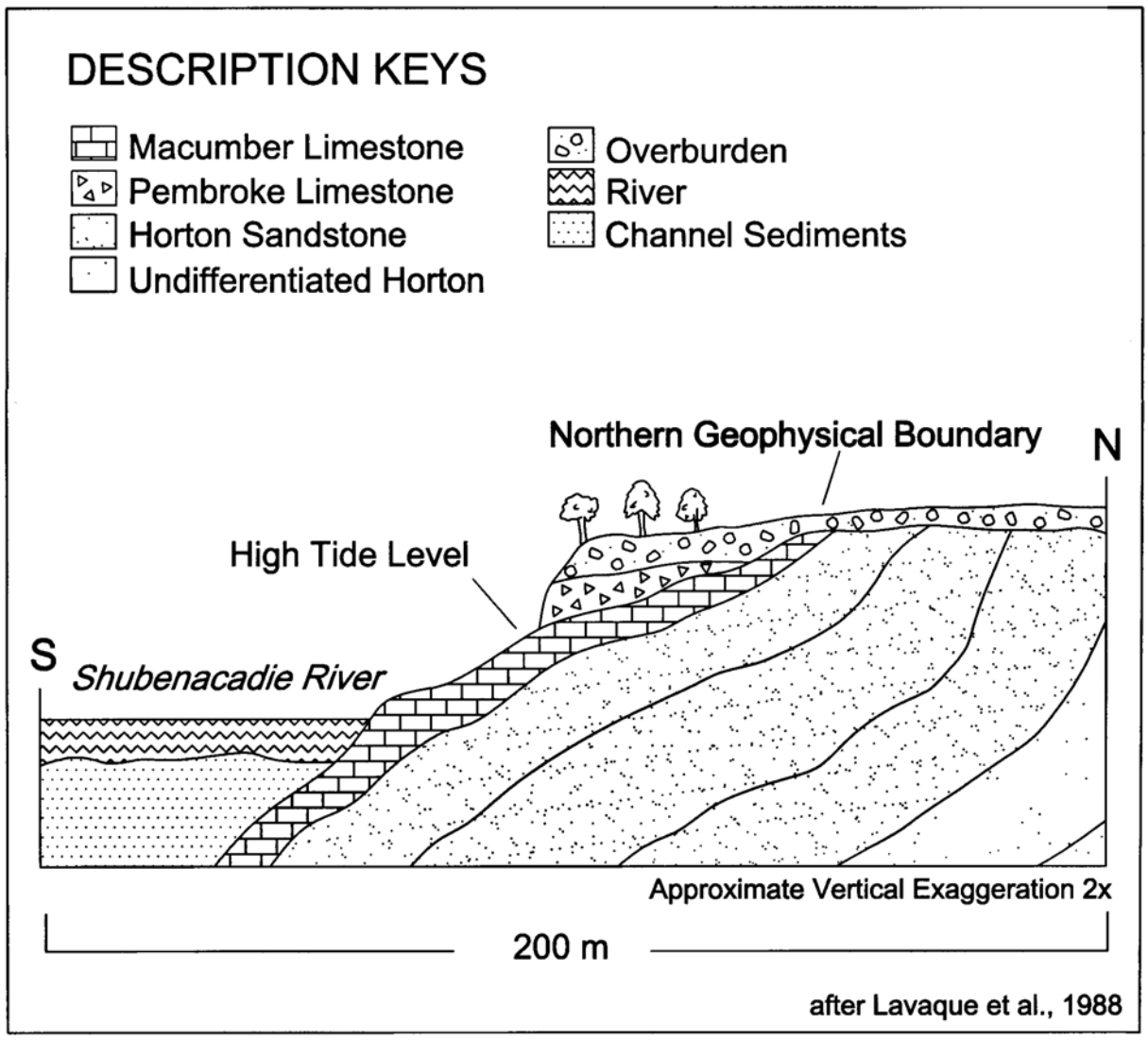


Figure 6. Interpretive cross-section of Black Rock, Colchester County from Levaque *et al.,* 1988.

The deposit was drilled by Lafarge Canada Inc. in 1988, completing six holes totalling 185 m (Levaque *et al.,* 1988). Chemical analyses were done on three holes and are in Appendix 1.

The following conclusions were made by Lafarge Canada Inc. as a result of their 1988 drilling and geophysical programs. The Macumber limestone is highly folded, and dips steeply to the south, making the thickness and width variable. The mineable tonnage was estimated to be 780 000 t assuming an average thickness of 7.5 m and a width of 50 m. The length of the deposit was extrapolated from the area drilled west to the tip of Black Rock. This gives the deposit a length of approximately 800 m.

Much of the deposit is exposed along the Shubenacadie River. When the tide is high, it covers much of the deposit, therefore creating problems with water control that could become costly (Levaque *et al.,* 1988).

Figure 7. Laminated basal Windsor limestone found near the mouth of the Shubenacadie River at Black Rock, Colchester County (BR-1-1).

Figure 8. Contorted beds of basal Windsor limestone, Black Rock, Colchester County (BR-1-1).

The limestone is at least 6-7.6 m thick with very little overburden. The surrounding area is easily accessible.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
BR-1-1	42.25%	2.54%	0.87%	53.05%	0.38%

BROOKFIELD AREA

BROOKFIELD (Br-1-1)

Outcrops of the occurrence are located 3.7 km northeast of Brookfield along the northern side of Little River. The limestone is associated with the Brookfield barite quarry. Outcroppings of the limestone can be found west of the quarry in the side of the hill approximately 30.5 m in elevation above Little River. This limestone forms the upper part of the contact between the Windsor Group and the underlying Horton Group rock. The barite is a vein deposit in the Horton Group sedimentary rocks (Fig. 9).

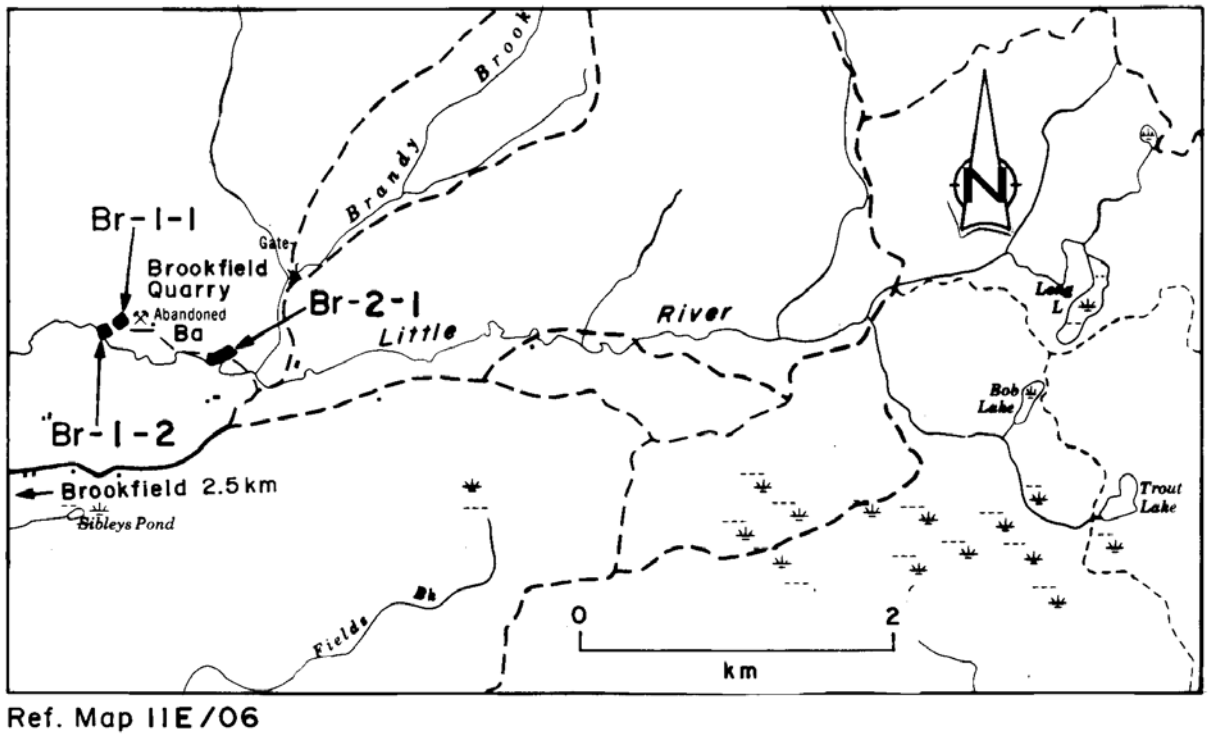


Figure 9. Location map of limestone and dolomite occurrences sampled in the Brookfield area, Colchester County (11E/06).

Description

This Windsor Group limestone is hard, dense, dolomitic and brecciated. The upper section is massive with the limestone becoming more platy towards the bottom. The lower section is brecciated. The weathered surface is brown and rough. Calcite stringers are common, and calcite crystals are found along the veins. No fossils were found. The beds strike N 70° E and dip 22° NW.

The limestone is at least 3 m thick, but there is no indication as to the total thickness. The overburden is very light.

The surrounding area is very hilly and lightly wooded. The area is easily accessible by the road which serviced the barite deposit.

The limestone does not appear to be extensive enough to be of any economic value.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Br-1-1	42.10%	6.22%	3.23%	36.50%	11.70%

BROOKFIELD (Br-1-2)

This occurrence is located southwest of the barite deposit at Brookfield. This area is 3.7 km northeast of Brookfield and is in the Little River valley. The sample is a continuation of Br-1-1 which is found outcropping farther up the hill on the northern side of the River. The limestone can be found outcropping along the side of the River for a distance of 91 m. Outcrops can also be seen at various locations on the side of the hill (Fig. 9).

Description

The limestone is grey, hard, dense, thinly bedded, dolomitic, Windsor Group limestone. The weathered surface is light brown to grey. Bedding is well developed. A few calcite stringers are in evidence. It strikes N 64° W and dips 26° NE.

The limestone outcrops from Little River to 30.5 m above the River and dips into the hill making the limestone at least 18 m thick with very little overburden. Although the limestone is thick, the rock dips into the hill where it is cut off by the Horton Group, lending very little areal extent to the limestone. The surrounding area is only lightly wooded and is easily accessible.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Br-1-2	44.10%	3.80%	3.05%	36.50%	13.00%

BROOKFIELD (Br-2-1)

This occurrence is located southeast of Br-1-1 and the barite quarry. This area is 3.7 km northeast of Brookfield. The limestone can be found outcropping along the northern bank of the road that runs to the barite quarry. It also runs along the southern side of the Little River which runs along the side of the quarry road at this point. The limestone dips to the southwest underneath the River (Fig. 9).

Description

The limestone is hard, dark grey, thinly bedded, argillaceous, Windsor Group limestone. The bedding is well developed with a light brown, smooth, weathered surface. The limestone is slightly laminated. There are numerous calcite stringers throughout. It strikes N 80° W and dips 35° SW.

Maximum thickness is 4.6 m. The limestone forms the contact zone with the Horton Group. The contact is not visible even though the overburden is not too great over the area. The area is open and easily accessible.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Br-2-1	37.80%	10.30%	5.30%	44.10%	1.98%

BROOKFIELD (Br-3-1)

This occurrence is located approximately 2 km southeast of the Brookfield intersection. The limestone can be found outcropping in an area south of the Brookfield-Middle Stewiacke road along an old logging road. This logging road joins the Middle Stewiacke road 2.57 km southeast of Brookfield. Outcrops of this limestone can be found 396 m southwest of the Middle Stewiacke road (Fig. 2).

Description

This is a dark grey, hard, porous, slightly fossiliferous, massive, high calcium, Windsor Group

limestone. The bedding is very poorly developed with a brown, rough, weathered surface. It contains a few brachiopods and some gastropod cavities. There are numerous solution cavities, but very little secondary calcite.

The dip and strike could not be measured due to the massive nature of the limestone. It appears, however, to be striking in a northwesterly direction.

There is no indication as to the thickness or extent of the limestone. The amount of overburden appears to be slight. The limestone is surrounded by gypsum. The terrain is very rugged and typical of land underlain by gypsum. The area is heavily wooded.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Br-3-1	43.50%	1.06%	0.80%	54.40%	0.40%

BROOKFIELD (Br-4-1)

This occurrence is located 229 m up a small brook which crosses the Brookfield-Middle Stewiacke road approximately 4.5 km east of the Brookfield intersection. The limestone outcrops in a small ridge on the western side of the brook. The brook cuts off the ridge. There is another very thin bank of limestone 122 m farther up this brook, but it was not sampled due to the lack of thickness and poor quality of the limestone (Fig. 2).

Description

This is a dark grey, hard, dense, thickly bedded, Windsor Group limestone. The bedding is well developed with a rough, light grey, weathered surface. There is very little calcite associated with the limestone. It strikes N 65° E and dips 20° SE.

The limestone is at least 3 m thick with little indication as to the total thickness. The limestone outcrops on the surface with little or no overburden. The surrounding area is heavily wooded and is not easily accessible.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Br-4-1	40.00%	7.70%	2.56%	48.70%	0.92%

BROOKFIELD (Br-5-1)

Limestone outcrops approximately 1.6 km southwest along Fields Brook from where it crosses the Brookfield-Middle Stewiacke road. The area is 3 km southeast of the Brookfield intersection. The limestone can be found in and on both sides of Fields Brook, 76 m upstream from where a logging road crosses the Brook (Fig. 2).

Description

The limestone is dark grey, hard, compact, slightly fossiliferous, impure, Windsor Group limestone (Fig. 10). The bedding is well developed with a smooth, brown, weathered surface. A few cavities can be seen. The only fossils noted were a few, very small brachiopods. It contains numerous calcite stringers. It strikes N 68° W and dips 66° SW.

Figure 10. Outcrop of limestone located on Fields Brook, southeast of Brookfield, Colchester County (Br-5-1).

The limestone is at least 6 m thick with little or no overburden. The surrounding area is only lightly wooded and was at one time open pasture land. The area is easily accessible.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Br-5-1	34.70%	17.50%	3.99%	41.90%	0.90%

BROOKFIELD (Br-6-1)

This occurrence outcrops approximately 6 km southeast of Brookfield on the northern side of the Brookfield-Middle Stewiacke road. The limestone is found on a small tributary of Brenton Brook which crosses the road 0.64 km east of the Birch Hill road. This limestone was quarried and burned by farmers 30-40 years ago. The quarry has, however, grown in. The quarry is 183 m north of the road (Fig. 2).

Description

This is a dark grey, hard, dense, thinly bedded, Windsor Group limestone. The weathered surface is light grey to brown with a well developed bedding. Calcite stringers are numerous. It strikes N 65° E and dips 57° SE.

The limestone is at least 4.6-6.1 m thick with very little overburden. The limestone can be found outcropping on either side of a small tributary of Brenton Brook and strikes across the tributary.

The surrounding land was cleared at one time but has since grown over with alder bushes. It is in an easily accessible area.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Br-6-1	38.80%	9.10%	2.75%	47.90%	0.60%

BROOKFIELD (Br-7-1) (Br-7-2) (Br-7-3)

This occurrence is located approximately 7 km southeast of Brookfield along the northern side of the Brookfield-Middle Stewiacke road. Outcroppings of the limestone can be found 335 m up a small brook which crosses the Brookfield-Middle Stewiacke road, 1.6 km east of Brenton Brook. The brook branches 30.5 m north of an artificial pond. The limestone outcrops on three branches of the brook and is found at various locations along the banks of these three branches (Fig. 2).

Description

The limestone is dark grey, hard, petroliferous, dense, medium grained, thickly bedded, Windsor Group limestone. The bedding is well developed with a grey, smooth, weathered surface. Some calcite stringers are in evidence.

The strike varies at different outcrops. At Br-7-1, the strike is N 75° E and dip is 63° SE. At Br-7-2, which is a channel sample, the limestone strikes N 55° E and dips 28° SE.

A continuous section cannot be seen, but the limestone appears to be 15-18 m thick. It can be traced along strike for a distance of 244 m. The overburden is only slight in the vicinity of the outcrop. The area is easily accessible.

Br-7-3 was taken from the eastern branch of this brook, Br-7-2 (channel sample) was taken from the middle branch and Br-7-1 was taken from the western branch.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Br-7-1	42.00%	4.70%	0.96%	51.70%	0.47%
Br-7-2	41.00%	5.46%	1.40%	50.50%	0.73%
Br-7-3	42.10%	3.20%	1.19%	51.50%	1.10%

BROOKFIELD (Br-8-1)

Located on the same brook as Br-7-2, this occurrence outcrops 18 m up the middle branch of this brook from Br-7-2. This limestone is underlying the limestone sampled at Br-7-2 and is near the Horton-Windsor contact. The limestone outcrops in the banks on either side of this brook. This area is approximately 7 km southeast of Brookfield (Fig. 2).

Description

This limestone is grey, hard, dense, fossiliferous, thinly bedded, Windsor Group limestone. The bedding is well developed with a smooth, light grey, weathered surface. The only fossils noted are brachiopods, and these are seen mainly on the weathered surface. There appears to be only one species of brachiopod. The fossils are not numerous. The limestone is very argillaceous. It strikes N 52° E and dips 36° SE.

The banks of the brook rise 6-9 m above the brook on either side. The limestone outcrops in these banks and is from 4.6-6 m thick with very little overburden. The surrounding area has been cleared and is accessible although very hilly.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Br-8-1	37.30%	11.00%	4.80%	44.10%	1.05%

BROOKFIELD (Br-9-1)

This occurrence is located on the eastern branch of the brook where Br-7-3 outcrops. The limestone can be found outcropping on both sides and in this brook 731.5 m north from the Middle Stewiacke-Brookfield road. The area is 8 km southeast of Brookfield (Fig. 2).

Description

This limestone is light grey, hard, dense, slightly fossiliferous, thinly bedded, Windsor Group limestone. The bedding is well developed with a smooth, light brown, weathered surface. The fossils can easily be seen on the weathered surface and are mainly brachiopods and crinoid stems. There are some thin calcite stringers. This limestone is very similar to Br-8-1 which is located 427 m to the west. The occurrence is probably a continuation of Br-8-1. The strike is N 55° E and the dip is 24° SE. The limestone is near the Horton-Windsor contact.

The limestone does not appear to be any thicker than 6 m with 3-4.6 m of overburden covering the rock. The surrounding area is heavily wooded and not easily accessible.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Br-9-1	38.20%	9.80%	3.88%	46.10%	1.10%

BROOKFIELD (Br-10-1)

This occurrence is located on the Mine Brook in the Middle Stewiacke area, approximately 8.5 km southeast of Brookfield on the northern side of the Brookfield-Middle Stewiacke road. The limestone in this area was quarried in the 1890s to some extent for the barite which is associated with it. A shaft was put into the limestone. This quarry is serviced by a road which runs to the barite showing. The shaft is located 731.5 m up this wood road (Fig. 2).

Description

This is a dark grey, hard, dense, massive, Windsor Group limestone conglomerate. The bedding is very poorly developed with a light brown, rough, weathered surface. The limestone conglomerate has been replaced by barite. In parts of the limestone, the barite forms a breccia whereas in other sections it completely replaces the limestone. The conglomerate also contains some carbonaceous clasts. There are numerous cavities containing secondary calcite. Calcite stringers are also abundant.

The strike and dip could not be determined because of the massive nature and slumping in the quarry. It does appear, however, to be fairly flat lying. There is no indication as to the thickness of the limestone. The overburden is only slight. This limestone conglomerate is in contact with Horton Group sedimentary rocks.

The Brookfield barite deposit is found in Horton Group sedimentary rocks, but this Middle Stewiacke barite occurrence is found in Windsor Group limestone along the Horton-Windsor contact.

The surrounding area is wooded, but is easily accessible by a woods road. The limestone does not appear to have the quality or quantity to be of economic importance. The barite, however, should possibly have additional work done on it.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Br-10-1	40.50%	6.10%	1.80%	50.50%	0.60%

BROOKFIELD (Br-11-1)

Occurrence Br-11-1 is located approximately 10 km southeast of Brookfield on the northern side of the Brookfield-Middle Stewiacke road. The limestone outcrops on the eastern side of Putnam Brook, 671 m upstream from the Brookfield-Middle Stewiacke road. The limestone outcrops in the side of a 12 m high embankment along the side of the Brook. This limestone was quarried years ago, and was used by local farmers for their fields (Fig. 2).

Description

The limestone is a light grey, hard, dense, Windsor Group limestone conglomerate. The bedding is poorly developed with a light brown, smooth, weathered surface. The conglomerate consists of different sized, rounded limestone clasts in a limestone matrix. It strikes N 40° E and dips 43° SE. The limestone is 6-7.6 m thick with very little overburden. The conglomerate is at the Horton-Windsor contact. It is overlain by gypsum and underlain by Horton Group shale.

The area is heavily wooded and hilly and not easily accessible. The limestone deposit does not appear to be of any economic value. The sample taken was from one of the clasts of the conglomerate.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Br-11-1	42.50%	1.77%	1.60%	53.30%	0.55%

BROOKFIELD (Br-12-1)

This occurrence is located on Little River. The area is approximately 5.5 km southeast of the Village of Brookfield. This area is 1.6 km north of where Little River empties into the Stewiacke River. This occurrence is south of the Brentwood-Forest Glen road. The limestone outcrops in and on the eastern side of Little River at the base of a 12 m embankment. The occurrence is 1792 m south, downstream from where Little River crosses the Brentwood-Forest Glen road (Fig. 2).

Description

The limestone is brown, hard, compact, dolomitic, thickly bedded, Upper Windsor Group limestone. The bedding is well developed with a light brown, smooth, weathered surface. There are no visible fossils and no secondary calcite. The limestone is slightly arenaceous and is underlain by a red and grey siltstone. It strikes N 5° E and dips 21° SE.

The limestone appears to be only 3 m thick and is probably covered by at least 6 m of overburden. There is no indication as to areal extent, although the limestone can be traced along Little River for a distance of 91 m.

The surrounding area is mainly open farmland with some wooded patches along the River. Another very thin bank of limestone is found along Little River, 529 m upstream. It was not sampled because of its impurity and minor thickness.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Br-12-1	42.10%	7.08%	7.35%	28.90%	14.20%

BROOKFIELD (Br-13-1)

This occurrence is located on Little River, approximately 5 km southeast of the Village of Brookfield. This limestone outcrops in and on the southern side of the River, 623 m downstream from where Little River crosses the Brentwood-Forest Glen road. The limestone is 1169 m upstream from Br-12-1 (Fig. 2).

Description

The limestone is hard, grey to brown, slightly porous, Upper Windsor Group dolomitic limestone. Alternating bands of light brown and dark grey material make up the occurrence. The bedding is well developed with a light brown, rough, weathered surface. The limestone contains numerous, very small cavities running parallel to the banding. Some of these small cavities contain small blebs of purple fluorite. It strikes N 75° E and dips 16° SE.

There is little indication as to the thickness of the limestone, but it does not appear to be very thick. The overburden is at least 3-4.6 m thick. The surrounding area is mainly cultivated farm land and is easily accessible. This limestone is of very little economic value.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Br-13-1	40.50%	10.00%	9.95%	28.00%	11.50%

BROOKFIELD (Br-14-1)

This occurrence of limestone is on Little River, 67 m downstream from where Little River crosses the Brentwood-Forest Glen road. This area is approximately 5 km southeast of the Village of Brookfield. Limestone outcrops on the southern side of the River in a 12 m high embankment. The embankment consists of limestone from top to bottom. The outcrop area is 556 m upstream from Br-13-1. Limestone can be traced along the River for a distance of 61 m (Fig. 2).

Description

This is a grey, very hard, dense, massive, fossiliferous, B_1 Windsor Group limestone. The bedding is very poorly developed with a brown, rough, weathered surface. Numerous fossil cavities throughout give the limestone its rough, weathered surface. Bryozoans and brachiopods are the only fossils found. These fossils are not well preserved. Very little secondary calcite is found in the cavities. It appears to strike N 35° W and dip 30° NE.

The limestone is at least 15 m thick with no more than a few metres of overburden. The areal extent of the limestone is not known because of the lack of outcrop or float on top of this hill.

The surrounding area is mainly wooded, but a road servicing cultivated fields runs along the top of the occurrence making it easily accessible for drilling.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Br-14-1	43.00%	1.38%	0.50%	54.05%	0.60%

BROOKFIELD (Br-15-1)

This occurrence is found on Fields Brook. The area is approximately 4.8 km southeast of the Village of Brookfield. Float from this limestone can be found 6 m up the Brook north from the road which runs between Brentwood and Forest Glen. The float occurs as large boulders in and on the western side of Fields Brook (Fig. 2).

Description

The limestone is brownish-grey, hard, dense, massive, Windsor Group limestone. No outcrop is visible. The weathered surface is light brown and pitted. No fossils were found. A few cavities were found, some containing calcite.

There is no indication as to the areal extent or thickness of the limestone. Overburden is at least 3 m thick. The surrounding area is mainly open farm land and is easily accessible.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Br-15-1	43.20%	3.67%	1.78%	49.40%	2.70%

BROOKFIELD (Br-16-1) (Br-16-2)

This occurrence is located on Fields Brook, 4 km southeast of the Village of Brookfield. Outcrops of this limestone are found 1524 m south along Fields Brook from where the logging road at Forest Glen crosses Fields Brook. The limestone outcrops in and on the western bank of Fields Brook, although most of the outcrop is in the Brook. Limestone outcropping can be traced along the Brook for a distance of 91 m. Boulders of the limestone are found in a 9 m high hill beside the Brook (Fig. 2).

Description

On the bottom of the section, the limestone is hard, thinly bedded, argillaceous and dark grey. This basal section then grades into a light grey, massive, hard, fossiliferous, high calcium limestone and then again into a thinly bedded, compact limestone. The bedding is generally well developed with a smooth, light grey, weathered surface. In the upper portion of this occurrence, a large amount of calcite is found filling fossil cavities. The fossils found in this occurrence include brachiopods, crinoid stems, corals (cup corals) and bryozoans (*Fenestrellina lyelli* and *Batostomella*(?)). This is not the massive type of limestone which is typical of the B Subzone. It is only a small biohermal development. It strikes N 56° E and dips approximately 30° SE.

There is no indication as to the thickness, although it is probably at least 6-9 m thick. Very little overburden is covering the limestone. The surrounding area is heavily wooded and not easily accessible. Sample Br-16-2 was taken from the 9 m cliff of fossiliferous limestone.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Br-16-1	38.15%	11.50%	2.40%	45.60%	2.20%
Br-16-2	43.70%	1.50%	0.70%	53.30%	0.78%

BROOKFIELD (Br-17-1)

This occurrence is located on Fields Brook, 1740 m downstream from the logging road which crosses Fields Brook at Forest Glen. This area is 4 km southeast of Brookfield. This occurrence is located 216 m downstream from Br-16-1. Outcrop can be found on the eastern bank of the Brook in a 3.7 m embankment and can be traced for a distance of 30 m (Fig. 2).

Description

The limestone is hard, dense, dark grey, compact, fossiliferous, Windsor Group limestone. The bedding is well developed with a light brown, smooth, weathered surface. Only a few brachiopods were found at this occurrence. Very little calcite was found in this limestone. It strikes N 41° E and dips 39° SE.

There is no indication of the thickness or areal extent of the limestone. The overburden is only light. The surrounding area is heavily wooded and not readily accessible.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Br-17-1	39.85%	7.55%	2.35%	47.50%	0.85%

BROOKFIELD (Br-18-1)

Occurrence Br-18-1 is located on Fields Brook, 4 km southeast of Brookfield. The limestone outcrops 1871 m downstream from where the logging road at Forest Glen crosses Fields Brook and 100 m downstream from Br-17-1. Outcrops are found in and on both banks of the Brook. Here the banks of the Brook are only 0.9-1.2 m high. This occurrence is probably a continuation of Br-17-1 (Fig. 2).

Description

The occurrence is a hard, dense, grey, fossiliferous, highly siliceous, Windsor Group limestone. The bedding is well developed with a light brown, crumbly, weathered surface. There are numerous fossil and solution cavities. Some of the cavities are lined with calcite crystals. The only fossils found were brachiopods. It strikes N 41° E and dips 30° SE.

The limestone does not appear to be very thick, although the total thickness cannot be seen. There appears to be very little overburden. The limestone is overlain by grey siltstone which outcrops 30 m down the Brook. The surrounding area is heavily wooded and not easily accessible.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Br-18-1	28.70%	32.10%	3.65%	33.50%	0.80%

BROOKFIELD (Br-19-1)

Outcrops of this occurrence of dolomite can be found on Fields Brook, 4 km southeast of Brookfield. The dolomite is located 79 m downstream from Br-18-1 and is underlain by a grey siltstone. This dolomite outcrops only in the Brook with some rubble found on the western bank. The dolomite strikes perpendicular to the Brook so that it cannot be traced for any distance (Fig. 2).

Description

The occurrence is dark brown, hard, massive, slightly porous, Windsor Group dolomite. The bedding is not well developed and it has a light brown, smooth, weathered surface. There were no fossils, calcite veins or stringers found. It strikes N 38° E and dips 30° SE.

The dolomite is approximately 4.5-6 m thick with only a small covering of overburden away from the Brook. The surrounding area is heavily wooded and not easily accessible.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Br-19-1	38.56%	17.45%	4.10%	24.40%	13.90%

BROOKFIELD (Br-20-1)

This occurrence is located on Fields Brook, 506 m downstream from Br-19-1 and 500 m upstream from the Brentwood-Forest Glen road. The limestone in this occurrence is found outcropping along the western bank of the Brook and is found in a mound which strikes perpendicular to the Brook. This mound is 6 m high (Fig. 2).

Description

The occurrence is grey, hard, massive, fossiliferous, B_1 Subzone Windsor Group limestone. The bedding is very poorly developed with a light grey, rough, weathered surface. Numerous fossil cavities can be seen, some partially filled with calcite crystals. Fossils include abundant bryozoans and brachiopods.

The mound trends N 70° E, but there is no indication as to the dip or the strike of the limestone. This mound is 3 m wide on top and the limestone is probably at least 4.5-6 m thick with no overburden. The surrounding area is only lightly wooded, but is not easily accessible.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Br-20-1	44.30%	0.30%	0.60%	54.20%	0.81%

BROOKFIELD (Br-21-1)

This occurrence of limestone is found outcropping on the western side of Highway 102 (Truro-Halifax Highway), approximately 396 m south of the Brookfield turnoff. The limestone outcrops on the western side of the Highway and was uncovered during excavation for this Highway. Outcroppings of this limestone can be found 15 m up a small brook which crosses the Highway at this point (Fig. 2).

Description

The occurrence is bluish-grey, brittle, slightly fossiliferous, Windsor Group limestone. It is a well bedded and platy limestone. Crinoid stems and small shell fragments are abundant. Brachiopods are common, but are not in identifiable condition. This appears to be Upper Windsor Group limestone, possibly Subzone D or E. Calcite stringers are abundant with some of the crystals being larger than what are normally found in limestones. Large calcite veins are also prominent. The limestone strikes N 40° W and dips 10° SW.

The thickness of the limestone could not be seen. The overburden is only slight.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Br-21-1	36.30%	13.50%	3.55%	45.10%	0.87%

EASTVILLE AREA

EASTVILLE (Ea-1-1)

This limestone occurrence is located 3.5 km southwest of Eastville on the eastern side of the road running between Newton Mills and Eastville. The limestone outcrops in a mound which is 283.5 m east of the road and 0.6 km south of the interval road which joins the Newton Mills-Eastville road with Route 289. The mound is trending in a N 30° W direction and can be traced for a distance of 1067 m. The mound is only 18.3-21.3 m wide at the summit and reaches a height of approximately 9 m above the surrounding terrain (Fig. 11).

Description

The occurrence is a grey, hard, massive, highly fossiliferous, high calcium, Windsor Group limestone belonging to the B_1 Subzone (Bell, 1929). The bedding is very poorly developed with a rough, light brown, weathered surface. The fossils found are brachiopods, bryozoans and worm burrows. The

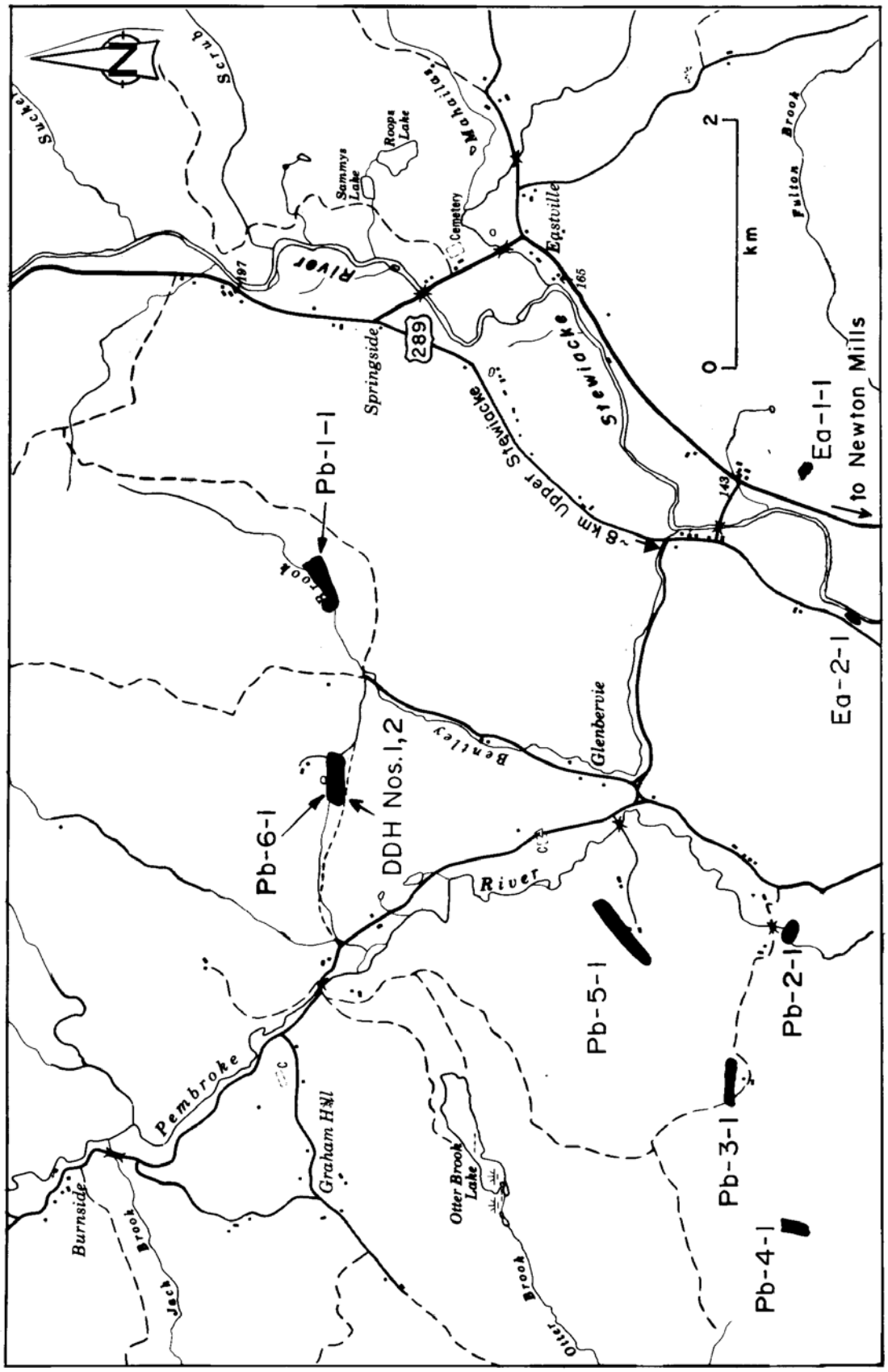


Figure 11. Location map of limestone and dolomite occurrences sampled in the Eastville and Pembroke River areas, Colchester County (11E/02 and 11E/07).

limestone is composed almost entirely of fossils and fossil cavities. To the east, 183 m, the limestone is associated with gypsum which is found in an old quarry with walls reaching 18.3-21.3 m in height. There are numerous sink holes over the entire area.

There was a limestone quarry indicated on Fletcher and Faribault (1902) at this location.

There is no indication of the dip, strike, thickness or areal extent of this limestone because of the lack of outcrop. The limestone is found mainly as rubble along the edges of the mound. The limestone has a reef like structure with the limestone sloping off on both sides, away from the crest of the mound. The overburden appears to be only slight. The surrounding area is heavily wooded and is not easily accessible, although it is not far from the main road.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Ea-1-1	42.50%	0.23%	0.55%	55.05%	0.59%

EASTVILLE (Ea-2-1)

This occurrence of dolomite is located southwest of Eastville and northeast of Upper Stewiacke along Route 289. The dolomite outcrops along the western side of the Stewiacke River, approximately 1.6 km south of the road which joins the Newton Mills-Eastville road with Route 289. These outcrops can be traced for 30 m along and on the bottom of the Stewiacke River. They are located behind a log cabin which is built on the bank of the River (Fig. 11).

Description

The occurrence is brown, porous, crumbly, massive, very fossiliferous, B Subzone Windsor Group dolomite. The bedding is very poorly developed with a rough, dark brown, weathered surface. The fossils include bryozoans (stick), brachiopods and crinoid stems. The fossils are well preserved with some of the internal structure showing in some of the fossil cavities. Some of the cavities are filled or partially filled with calcite. This is a very pure dolomite. This dolomite is in the vicinity of Ea-1-1 which is found about 1.3 km northeast and is very similar to Ea-1-1 except that Ea-1-1 is limestone.

There is a definite stratification striking N 60° W and dipping 43° NE, although it does not appear to be the bedding. The stratification is probably due to weathering. There is no indication as to the thickness or areal extent. The glacial till appears to be very thick away from the River, with at least 4.6-6 m of overburden. The surrounding area is only lightly wooded and is easily accessible.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Ea-2-1	46.60%	0.64%	1.04%	32.75%	19.05%

GREEN CREEK AREA

GREEN CREEK (GC-1-1)

This occurrence of impure limestone is located at Green Creek, on the eastern shore of the Shubenacadie River approximately 11 km from the mouth of the River. The limestone here is almost vertical and forms a point which juts out into the River. This point is known as Anthonys Nose. This location is approximately 0.8 km south of the Green Creek-Old Barns road. The limestone forms a 23-30 m cliff (Fig. 12).

Description

This limestone ranges in colour from light brown to dark grey to light grey, is hard, dense, siliceous, fossiliferous, algal and belongs to the Windsor Group. The bedding is well developed with a light brown to grey, smooth, weathered surface. The limestone is thinly bedded and very fossiliferous on the bottom and changes to an algal limestone on top of the section. This algal limestone is also fossiliferous. The algal material resembles large pillow structure with small oncolitic mounds comprising these larger mounds Figs. 13 and 14). The fossils consist of several varieties of brachiopods and a few pelecypods. The limestone is underlain by gypsum and red and grey siltstone and is overlain by red and grey siltstone. It strikes N 65° E and dips 80° SE.

The limestone is 9-12 m thick with very little overburden. Along strike, the limestone can be traced for a distance of 91 m. The surrounding area on top of the cliff and away from the River is only lightly wooded and is easily accessible.

There are several very thin beds of limestone east of Anthonys Nose along the shore (Fig. 15). These beds are interbedded with siltstones and shales and are of no value. Some of the beds have been folded extensively near a fault, approximately 0.4-0.8 km east of Anthonys Nose and no more limestone can be seen.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
GC-1-1	35.65%	14.60%	3.82%	44.10%	0.75%

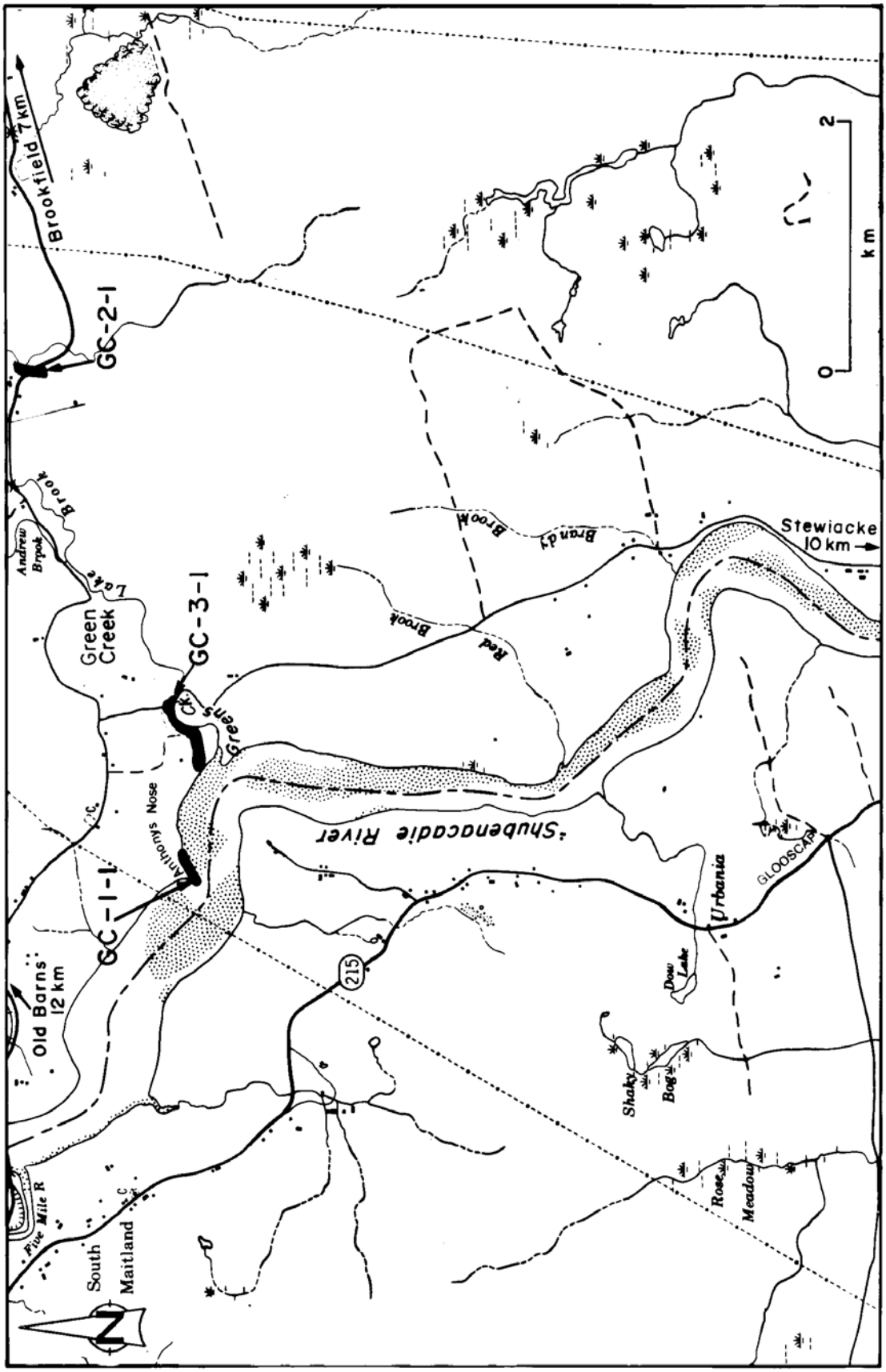


Figure 12. Location map of limestone and dolomite occurrences sampled in the Green Creek area, Colchester County (11E/03).

Figure 13. Vertical dipping beds of Upper Windsor limestone showing a nodular, bedding surface. This outcrop is at Anthonys Nose, Colchester (GC-1-1).

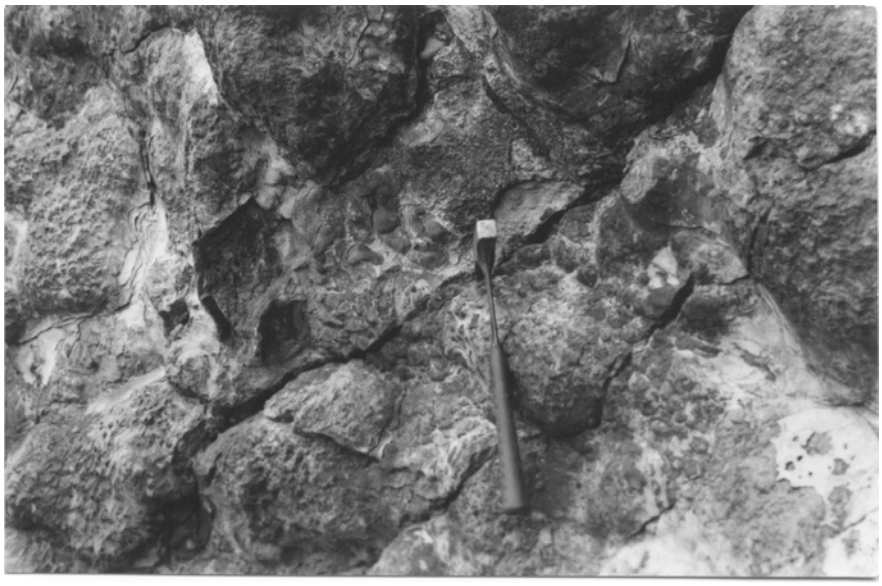


Figure 14. Closeup of limestone in Figure 13 showing nodular nature, Anthonys Nose, . Colchester County (GC-1-1)..

Figure 15. Thin bed of folded Upper Windsor limestone found along the shore of the Shubenacadie River, just east of Anthonys Nose, Colchester County (GC-1-1).

GREEN CREEK (GC-2-1)

This occurrence is located east of Green Creek which is several kilometres west of the Village of Brookfield. The limestone outcrops along the southern side of the Brookfield-Green Creek road, 4 km east of the Stewiacke turnoff. The limestone outcrops on the property of Sanford Burris in a 1.8 m embankment along the side of the road. This mound of limestone trends across the road and runs in a northerly direction (Fig. 12).

Description

This occurrence is dark grey, hard, dense, fossiliferous, Upper Windsor Group limestone. The limestone ranges from thickly bedded (10-13 cm) to thinly bedded (<2.5 cm) and these beds alternate. The bedding is very well developed with a dark grey, smooth, weathered surface. The fossils found are brachiopods, gastropods, a few small trilobites, and some long, tapering cylindrical fossils. Numerous, calcite veins ranging up to 10 cm in thickness can be seen throughout. There is no indication as to the dip and strike because the outcrop area is small, shows slumping and has been extensively broken.

There is no indication as to the thickness of the limestone. The overburden appears to be only slight. The limestone can be traced in a narrow mound in a northerly direction for a distance of 0.4 km where it crosses the Green Creek-Brookfield road and extends into a field on the northern side. The surrounding area is open and easily accessible.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
GC-2-1	36.50%	12.80%	4.03%	45.20%	0.87%

GREEN CREEK (GC-3-1)

This occurrence can be found at Green Creek on the eastern side of the Shubenacadie River. The limestone outcrops on both sides of the road running from Stewiacke to Green Creek and can be found 45.7 m north of the bridge which crosses Greens Creek (Fig. 12) as well as along the Creek.

Description

The occurrence is a brownish-grey, hard, slightly porous, fossiliferous, highly siliceous, argillaceous, limestone, probably belonging to the Upper Windsor Group C Subzone. The upper 0.6 m of the limestone is light brown, hard, massive and highly calcareous containing numerous cavities. The bedding is very well developed, ranging in thickness from 0.6-2.5 cm. The weathered surface is dark brown and smooth. The fossils found include brachiopods and crinoid stems. There are numerous rounded, long tapering objects(?) which show no structure or orientation. There are numerous worm trails on the bedding surfaces of most of the limestone. There are numerous 0.6 cm thick, clayey and carbonaceous layers along most of the bedding surfaces. It strike N 70° E and dips 10° NW (Figs. 16 and 17). This is a channel sample.

The limestone ranges from 7.6-10.6 m thick and can be found in a 15 m embankment along the northern side of Greens Creek. The overburden appears to range from 3-4.5 m thick. The limestone is underlain by a red and grey siltstone and is overlain by a thinly bedded, red siltstone. This limestone can be traced along Greens Creek from the bridge to the mouth of Greens Creek where it empties into the Shubenacadie River. Away from the Creek, the land is hilly and heavily wooded but is accessible.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
GC-3-1	25.50%	35.01%	7.30%	29.70%	1.17%

HILDEN AREA

HILDEN (Hi-1-1) (Hi-1-2) (DIAMOND DRILLING)

The occurrence is located 4.3 km west of Hilden which is located on Route 2 south of Truro. The dolomite can be found outcropping in a quarry 27.4 m west of the road running from Hilden to Irwins Lake. This road at one time ran through to Lower Truro. This quarry can be found 1.2 km northwest

Figure 16. Flat lying Windsor limestone found along Greens Creek, Colchester County (GC-3-1).

Figure 17. Closeup of Figure 16 showing the nearly flat lying limestone along Greens Creek, Colchester County (GC-3-1).

of the Hilden-Pleasant Valley turnoff along this road. The dolomite outcrops in a mound which can be traced for approximately 152.4 m on both sides of and in the road (Fig. 5).

See Chapter 4 and Appendix 1 for information concerning diamond drilling and chemical analyses in the Hilden area.

Description

The dolomite displays many colours from light grey to red, is hard, dense, massive, very fossiliferous, and belongs to the Windsor Group in the B_1 Subzone (Bell, 1929). The bedding is very poorly developed with a light brown, rough, weathered surface. The dolomite is stained red in a number of places and also contains some small, rounded (octahedral), hematite(?) crystals. The fossils found include several varieties of brachiopods, a few cephalopods, crinoid stems and bryozoans. The crinoid stems have been replaced by black dolomite. Near the top of the section, the dolomite becomes very white and hard and also contains some fossils. The strike and dip could not be measured because of the massive nature of the dolomite. The mound is, however, trending N 35° E.

The dolomite can be found outcropping on both sides of the mound. This mound drops off 9.1-10.6 m on both sides at its highest point. The crest of the mound is very narrow. There is no indication as to the areal extent of the dolomite. The thickness is at least 6-7.6 m with very little overburden. The area is easily accessible, although heavily wooded.

Sample Hi-1-1 was taken from the lower section and Hi-1-2 was taken from the white dolomite in the upper section.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Hi-1-1	46.55%	0.58%	1.90%	30.40%	20.45%
Hi-1-2	43.40%	1.35%	2.27%	34.85%	18.35%

LONDONDERRY AREA

LONDONDERRY (Ld-1-1)

This occurrence of limestone is located 0.8 km northeast of Lornevale and 5 km west of Londonderry. The limestone outcrops in a quarry 88 m south of a road which runs west from the falls on Spencer Brook. The marble can be found 731 m west of the intersection of the Spencer Brook road and the road which runs west. Several iron quarries can be found in the area. The turnoff is 0.48 km north of the Lornevale-Londonderry road. Goudge (1934) indicated that the limestone had been quarried from several locations in the area, but only one quarry was located (Figs. 18 and 19).

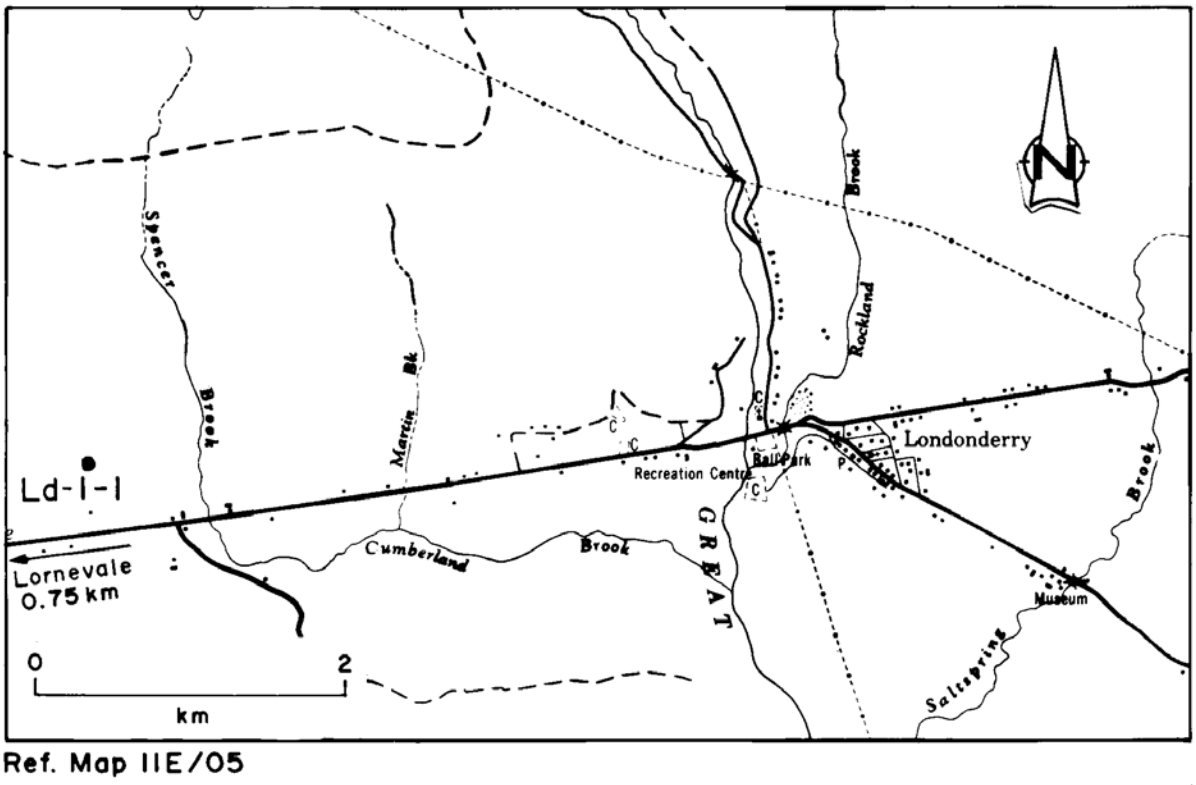


Figure 18. Location map of limestone occurrence sampled in the Londonderry area, Colchester County (11E/05).

Description

The occurrence is white, tan, grey, hard, dense, finely crystalline, metamorphosed limestone found in the Cobequid Fault Zone (Fig. 20). It is similar in appearance to the George River limestones found on Cape Breton Island. The bedding is indistinguishable with a dark grey, rough, weathered surface. There is no indication as to the thickness or areal extent of the limestone. The limestone is thought to cover a wide area. The quarry is now partially filled with water. The surrounding area is only lightly wooded and is easily accessible.

This limestone was used at one time as a flux in the iron works at Londonderry.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Ld-1-1	43.10%	1.18%	0.45%	53.99%	0.98%

Figure 19. Quarry of metamorphosed limestone found in the Cobequid Mountains, 5 km west of the Village of Londonderry, Colchester County (Ld-1-1).

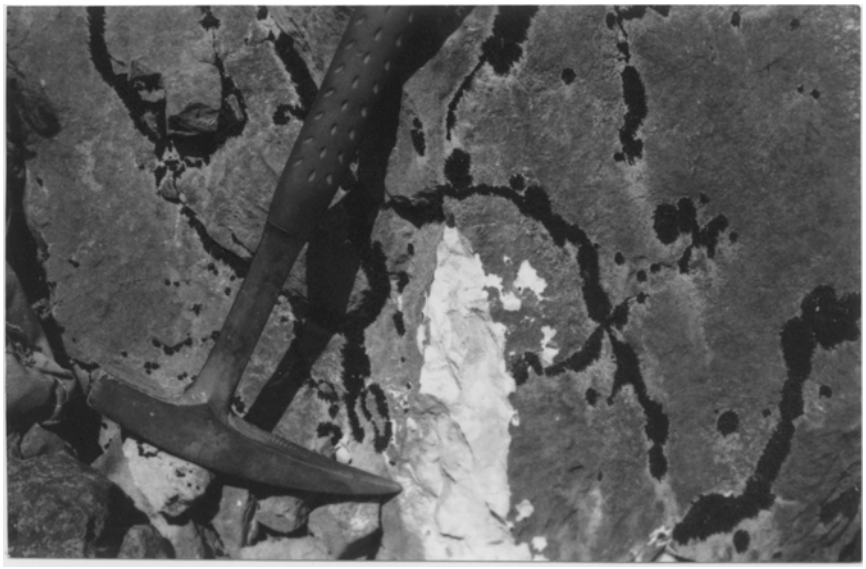


Figure 20. Closeup of white marble found in the quarry shown in Figure 19, west of Londonderry, Colchester County (Ld-1-1).

LOWER FIVE ISLANDS AREA

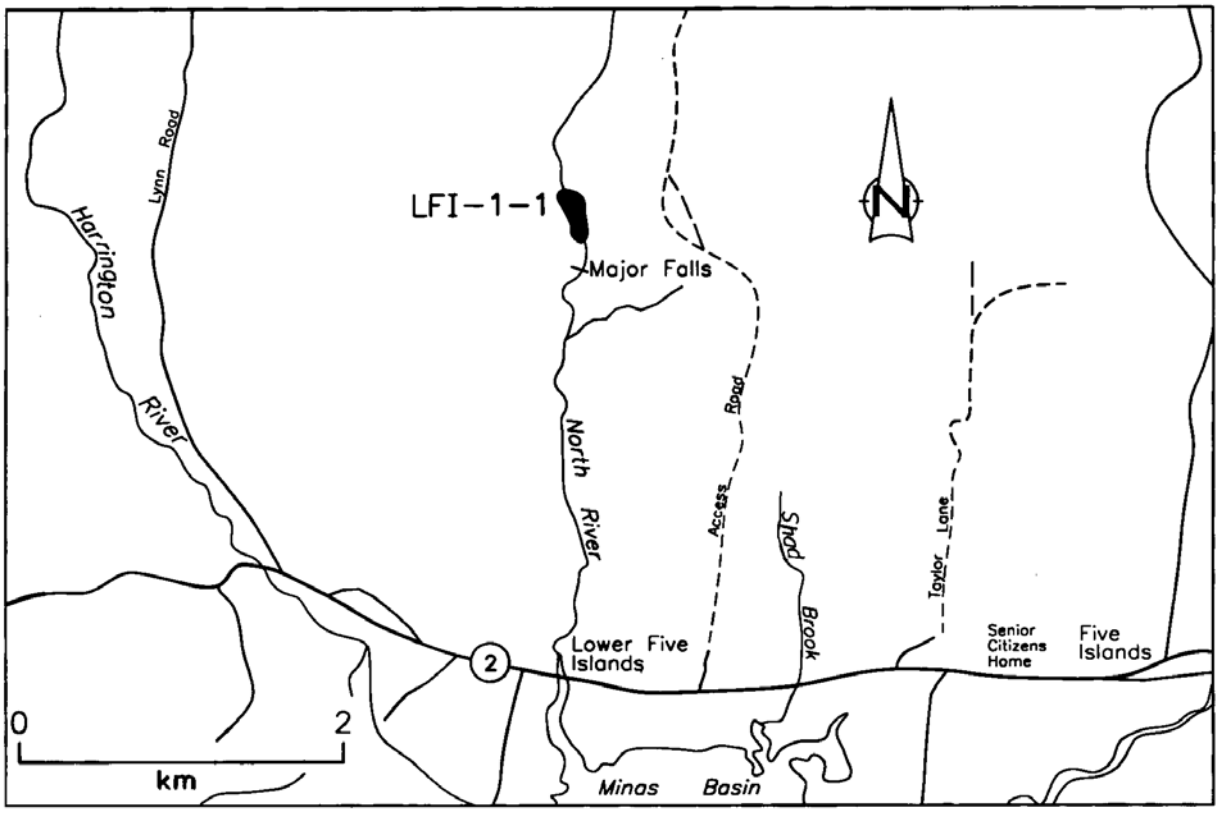
LOWER FIVE ISLANDS (LFI-1-1)

The occurrence is located on the North River approximately 3 km north of where it intersects Route 2 (Fig. 21). The North River empties into the Minas Basin at Lower Five Islands at its intersection with Route 2. The occurrence is approximately 0.5 km north of the major falls.

Description

The occurrence is grey, white marble and calcareous metasiltstone of the Hadynian Jeffers Formation (Donohoe and Wallace, 1982). It occurs within variably deformed volcanic and volcaniclastic rocks of the Jeffers Formation. Bedding and low grade metamorphic foliation trend southeastward and dip to the southwest. A southeastward trending foliation antiform runs through the area (Donohoe and Wallace, 1982).

The marble occurs on the western side of a deeply incised river valley. Boulders of marble are found in the stream and on the western bank. The surrounding area is not easily accessible.



Ref. Map 21H/08

Figure 21. Location map of limestone occurrence sampled in the Lower Five Islands area, Colchester County (21H/08).

Analysis

Sample	SiO_2	Al_2O_3	CaO	MgO	Fe_2O_3	Brightness
LFI-1-1	1.76%	0.14%	54.34%	0.23%	0.034%	92.3%

MANGANESE MINES AREA

MANGANESE MINES (MM-1-1)

This occurrence is located at Manganese Mines, 11 km east of the Town of Truro and 0.6 km north of the Trans-Canada Highway 104. The limestone can be found outcropping in a small quarry 165 m east of the road which runs from Route 4 at Half Moon Hill to Route 4 again at East Mountain. This limestone outcrops in an open field just west of the Clifford Brook. The quarry is marked on the 1:50 000 topographic map of the area (Fig. 22).

This deposit was further explored by Lafarge Canada Inc. in the late 1980s. A geophysical survey further delineated the deposit and a followup diamond drilling program of 14 holes outlined a mineable deposit of 146 000 t to 5 m and 292 000 t to 10 m depth (Levaque *et al.*, 1988). Lafarge Canada Inc. undertook mining on this deposit in the 1990s.

Description

The occurrence is light grey, very hard, dense, medium grained, massive, slightly metamorphosed, Windsor Group limestone. The bedding is very poorly developed with a light brown, weathered surface. It appears to strike N 66° E and dip 65° NW; but, due to the small areal extent of the outcrop and the massive nature of the limestone, the dip and strike are difficult to determine. There is no indication as to the thickness of the limestone. There appears to be very little overburden.

The surrounding area is easily accessible.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
MM-1-1	42.00%	2.80%	1.00%	52.99%	0.30%

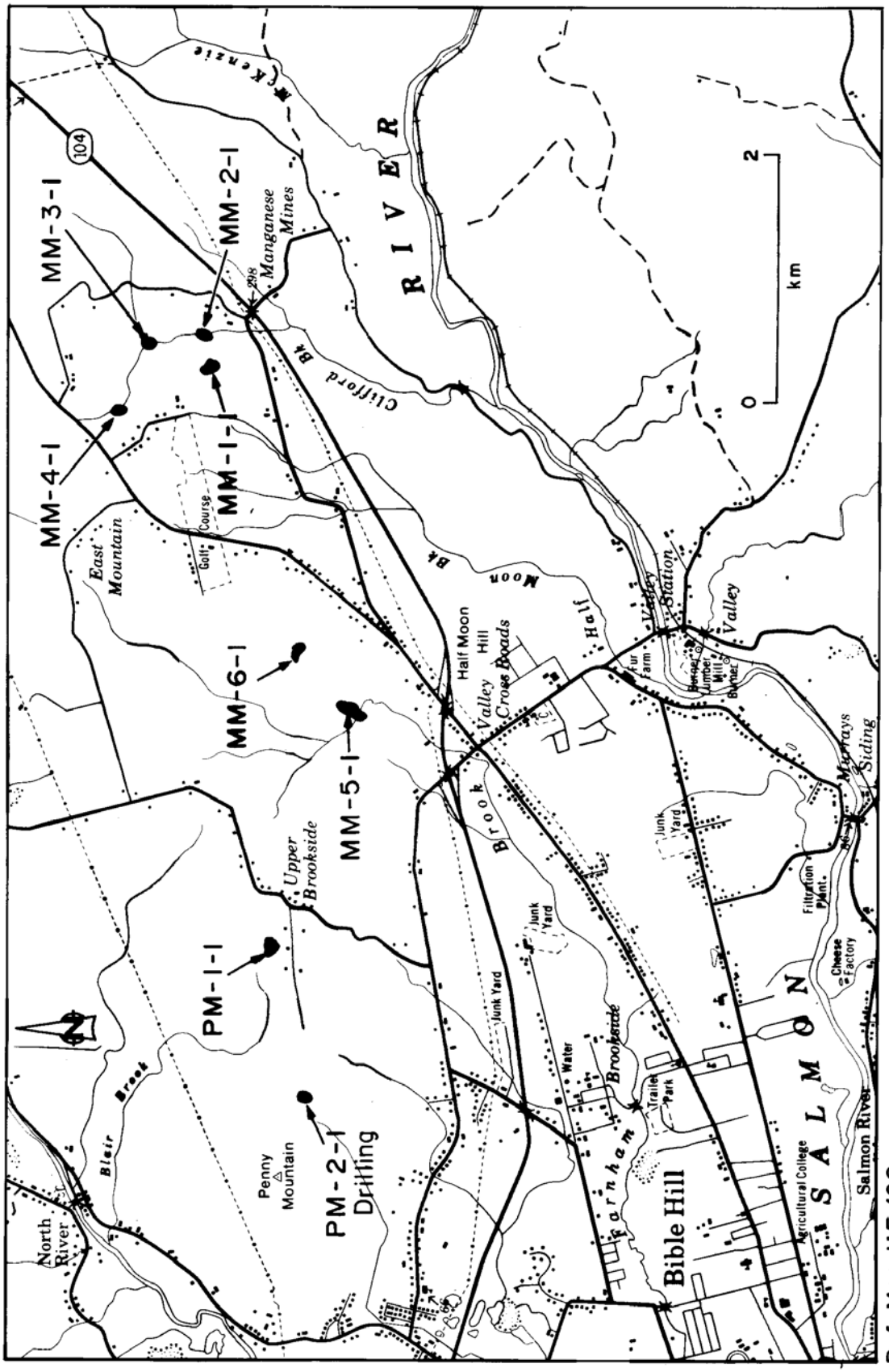


Figure 22. Location map of limestone and dolomite occurrences sampled in the Manganese Mines and Penny Mountain areas, Colchester County (11E/06).

MANGANESE MINES (MM-2-1)

This occurrence of limestone is located at Manganese Mines, 527.3 m up Clifford Brook from Trans-Canada Highway 104. Manganese Mines is 11 km east of Truro. The limestone outcrops in the Brook and in a 9 m high embankment which hangs over the Brook. It outcrops on both sides of and in the Brook (Fig. 22).

Description

The occurrence is light, reddish-grey, hard, dense, massive, medium grained, slightly metamorphosed, Windsor Group limestone. This is thought to be a Pembroke Formation limestone (Stevenson, 1958) which is a limestone conglomerate overlying the laminated limestone which is the lowermost limestone in the Windsor Group (Fig. 23). The bedding is very poorly developed and highly fractured with a reddish-brown, rough, weathered surface. There are red seams of hematitic material along with calcite filled cavities and seams of calcite crystals. Towards the bottom, the limestone becomes conglomeratic. It appears to be striking N 35° W and dipping 44° SW on the western side of Clifford Brook; but, on the eastern side of the Brook, the limestone occurs in a mound and appears to strike N 68° E and dip 53° SE.

The limestone is at least 12 m thick with very little overburden. The surrounding area is wooded, but is easily accessible.

Figure 23. Outcrop of Pembroke Formation limestone found outcropping on Clifford Brook at Manganese Mines, Colchester County, 11 km east of Truro (MM-2-1).

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
MM-2-1	41.00%	4.50%	1.32%	52.20%	0.30%

MANGANESE MINES (MM-3-1)

This occurrence is located at Manganese Mines, 11 km east of Truro. The limestone outcrops on the northern side of a small brook which runs into Clifford Brook and is found at the junction of the two brooks. This occurrence is located 387 m up Clifford Brook from MM-2-1 and 914 m up Clifford Brook from the road which runs between Route 4 and Manganese Mines. The limestone outcrops in a 4.6 m high hill (Fig. 22).

Description

The occurrence is reddish-grey, hard, massive, dense, medium grained, in part conglomeratic, Pembroke Formation, Windsor Group limestone (Stevenson, 1959). It contains a large amount of red silty staining throughout. The bedding is very poorly developed with a rough, reddish-brown, weathered surface. The dip and strike could not be measured because of the small areal extent of the outcrop.

There is very little overburden. Thickness could not be determined. The surrounding area is hilly, only lightly wooded and is easily accessible.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
MM-3-1	38.85%	8.55%	2.58%	48.75%	0.37%

MANGANESE MINES (MM-4-1)

This occurrence of limestone is located at East Mountain, 11 km east of Truro and 1.6 km northwest of Manganese Mines. The limestone can be found outcropping in an old quarry which is located 106.7 m south of Route 4 behind the house of V. R. MacCulloch on Clifford Brook. The walls of the quarry reach a height of 10.7 m in places. The quarry is found 4.2 km northeast of the Half Moon Hill intersection along Route 4 (Fig. 22).

Description

This is a grey, hard, dense, massive, medium- to coarse-grained, Windsor Group limestone, probably belonging to the B Subzone (Bell, 1929). The bedding is indistinguishable (Figs. 24 and 25). The weathered surface is light grey and rough. Numerous fractures can be seen throughout. The calcite veins are numerous and range up to 10 cm in thickness. The limestone is very cavernous. It appears to be striking N 10° W and dipping 53° NE(?). In other sections it appears to be flat lying.

The limestone is at least 12 m thick with very little overburden. The surrounding area is open and easily accessible for drilling which would be required for further information.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
MM-4-1	43.00%	1.28%	1.26%	53.90%	0.88%

MANGANESE MINES (MM-5-1)

This occurrence of impure limestone is located southwest of Manganese Mines which is 11 km east of Truro. The limestone outcrops in Farnham Brook and on both sides in small embankments. The outcrop can be found 823 m upstream from Trans-Canada Highway 104 at Half Moon Hill. A logging road runs beside the Brook. The limestone forms a 6 m embankment on the northern side of the Brook (Fig. 22).

Description

This is a dark grey to black, hard, dense, medium grained, argillaceous, siliceous, laminated, Windsor Group limestone belonging to the A Subzone (Bell, 1929) (Figs. 26 and 27). The bedding is very well developed with a light grey, smooth, weathered surface. The limestone contains many minor folds and crenulations in the bedding. There are small veins and stringers of white calcite throughout the outcrop area. Some slippage is seen along the bedding planes with a few small spatterings of pyrite. The limestone also contains a few fossils which appear to be pelecypods. It contains a few thin arenaceous layers throughout. It strikes N 13° W and dips 20° NE. This is a channel sample.

The limestone is at least 7.6-9 m thick with no more than a few metres of overburden covering the rock. The area is only lightly wooded and is easily accessible.

Figure 24. Small quarry of massive, B Subzone, Windsor Group limestone located northwest of Manganese Mines, Colchester County (MM-4-1).

Figure 25. Closeup of Figure 24 showing the massive nature of the limestone northwest of Manganese Mines, Colchester County (MM-4-1).

Figure 26. Laminated, basal Windsor Group limestone found near Manganese Mines, Colchester County (MM-5-1).

Figure 27. Closeup of laminated, basal Windsor Group limestone shown in Figure 26, near Manganese Mines, Colchester County (MM-5-1).

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
MM-5-1	28.10%	33.10%	5.87%	28.60%	2.40%

MANGANESE MINES (MM-6-1)

This occurrence is located 3.2 km west of Manganese Mines and 8 km northeast of the Town of Truro. The limestone is found outcropping in the side of the hill on an old farm road which runs to the top of the hill. It is northwest of Route 4. The limestone can only be found outcropping on the farm road (Fig. 22).

Description

The occurrence is light grey, hard, dense, slightly metamorphosed, slightly conglomeratic, Windsor Group limestone, with a red staining. This limestone is similar to that found at occurrence MM-2-1 which is called the Pembroke Formation (Stevenson, 1958). The bedding is massive and very poorly developed with a light brown, nodular, weathered surface. Small clusters of calcite crystals can be found throughout. The strike and dip could not be measured due to the massive nature and limited extent of the limestone.

There appears to be very little overburden, but there is no indication as to the thickness of the limestone. The surrounding area is only lightly wooded, mainly with evergreens, and is easily accessible.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
MM-6-1	43.05%	1.46%	0.40%	54.90%	0.35%

PEMBROKE RIVER AREA

PEMBROKE RIVER (Pb-1-1)

This occurrence is located on a small brook which flows southwestward, south of the farm of Elwood Graham. This area is located 2.7 km northeast of the Glenbervie crossroads. The limestone begins to show in the brook 644.7 m upstream from the Pembroke road and can be traced as rubble along

the brook for a distance of 393 m. The limestone outcrops very little, but appears to run in 9-12 m high banks along the side of the brook (Fig. 11).

Description

The occurrence is light brownish-grey, hard, porous, medium grained, slightly fossiliferous, massive, Windsor Group limestone. The bedding is very poorly developed with a light brown, rough, weathered surface. Numerous empty cavities (shell cavities?) can be seen throughout. There is no indication as to the dip and strike because of the massive nature and limited areal extent of the limestone. The ridge in which the limestone is found is trending N 65° E.

The overburden is only slight, but there is no indication as to the thickness of the limestone. The area is heavily wooded and is not easily accessible.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Pb-1-1	42.65%	1.47%	1.77%	53.85%	0.61%

PEMBROKE RIVER (Pb-2-1)

This occurrence of highly siliceous limestone is located southwest of Glenbervie in the Upper Stewiacke Valley. This limestone is found on the Pembroke River, 159.4 m downstream from the bridge which crosses a farm road which is located 1.4 km south of Glenbervie. The road crosses the River 0.6 km west of the Glenbervie-Upper Stewiacke road. This farm road runs to the Johnson farm and ends at this farm. The limestone outcrops in and on both sides of the Pembroke River (Fig. 11).

Description

The occurrence is mainly a light grey, hard, dense, siliceous, slightly fossiliferous, dolomitic, Windsor Group limestone (Fig. 28). The bedding is well developed and blocky with a light brown, smooth, weathered surface. The limestone varies a great deal from top to bottom. On the bottom, the limestone is oncolitic and laminated in spots. The lower part also contains some pyrite and chalcopyrite associated with the laminated section plus numerous cavities partially filled with calcite. Nearer the top, the limestone becomes dense, more dolomitic and slightly fossiliferous, containing a few brachiopods. It strikes N 15° W and dips 11° NE. The limestone is underlain by a green and red siltstone which grades upward into the limestone.

The limestone does not appear to be greater than 6 m thick with 6-7.6 m of overburden. The surrounding area is mainly open and accessible.

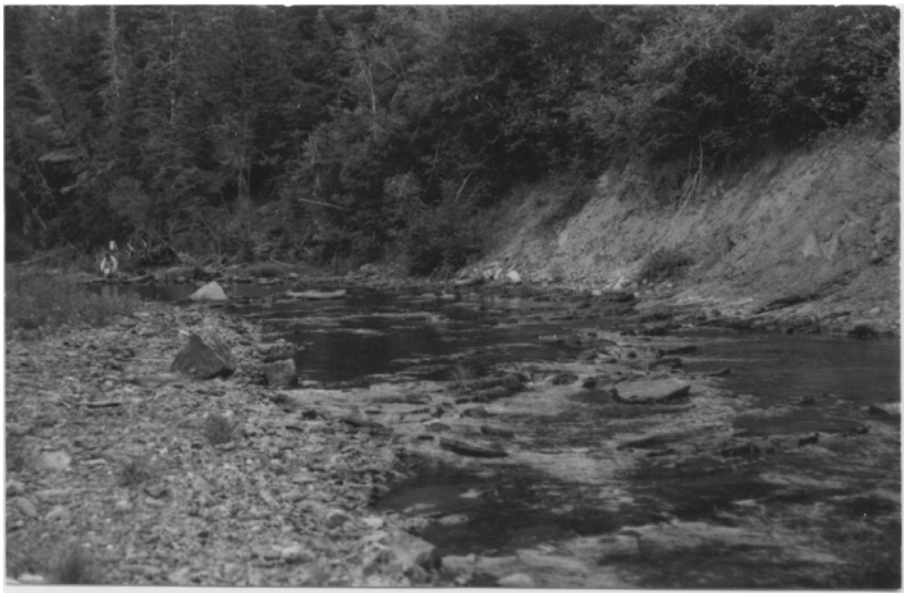


Figure 28. Outcrop of siliceous, dolomitic Windsor Group limestone found along the Pembroke River, near Upper Stewiacke, Colchester County (Pb-2-1).

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Pb-2-1	31.10%	26.80%	7.70%	21.30%	12.10%

PEMBROKE RIVER (Pb-3-1)

This occurrence is located 2.6 km southwest of the Glenbervie intersection and 1.4 km west of Pb-2-1 and 2 km west of the Glenbervie-Upper Stewiacke road. The limestone can be found outcropping in several locations on the property of Paul Johnson. The limestone outcrops in Mr. Johnson's cellar, behind the house, and in a small brook to the west of the house (Fig. 11).

Description

The occurrence is light brownish-grey, hard, dense, medium grained, oolitic, siliceous, Windsor Group limestone. The bedding is very well developed and the limestone was at one time used for flagstone. The weathered surface is light brown and smooth. The limestone is composed almost entirely of oolites. It is flat lying and can be found over the whole area surrounding the Johnson farm.

There is no indication as to the thickness of the limestone. The overburden is very slight, no more than 1.5-3 m in depth. The surrounding area is easily accessible and is mainly open fields.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Pb-3-1	34.10%	19.80%	2.08%	42.80%	0.40%

PEMBROKE RIVER (Pb-4-1)

This occurrence is located approximately 4 km southwest of Glenbervie. The limestone outcrops on a brook which crosses an old logging road which runs west from the Johnson farm (see Pb-3-1). The brook crosses this road 1.2 km west of the Johnson farm. The limestone can be found 0.4 km down the brook from the road. The limestone outcrops on the eastern side of this small brook at the base of an 18-21 m embankment (Fig. 11).

Description

The occurrence is dark grey, hard, slightly porous, argillaceous, siliceous, medium grained, Windsor Group limestone. The bedding is well developed with a grey, smooth, weathered surface. It is striking N 50° E and is dipping vertically.

There was no indication as to the thickness of the limestone because of the small outcrop area. The overburden is only slight.

There was a lime quarry in the area, worked during the late 19th Century and early 20th Century, but the area has grown in, and the quarry could not be found. The area is heavily wooded and very inaccessible.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Pb-4-1	31.70%	22.30%	5.83%	38.70%	0.84%

PEMBROKE RIVER (Pb-5-1)

This occurrence is located on the property of Donald Graham at Glenbervie. This area can be found 1 km west of the Glenbervie-Burnside road at the end of the farm road which runs west 0.3 km

northwest of the intersection at Glenbervie off the Burnside road. The limestone can be found outcropping the full length of the hill, 30.5 m behind the Donald Graham farmhouse. The limestone can be traced from the saw mill, N 40° E onto the property of Walter Graham. The limestone was quarried at one time, but only to a small extent (Fig. 11).

Description

The occurrence is light brown, very hard, dense, medium grained, oolitic, highly siliceous, Windsor Group limestone (Fig. 29). The bedding is well developed with a dark brown, smooth, weathered surface. The rounded grains of silica can be seen with the naked eye. The limestone is oolitic at the top of the section, but becomes more fossiliferous towards the bottom of the section. Brachiopods are the main fossil type. It strikes N 40° E and dips 24° SE.

The limestone is at least 9 m thick with very little overburden. The limestone outcrops all along the southern side of the hill. The area is easily accessible, but the limestone is very siliceous.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Pb-5-1	26.70%	37.10%	1.68%	32.70%	0.91%

PEMBROKE RIVER (Pb-6-1) (DIAMOND DRILLING)

This occurrence is located 2.25 km north of the Village of Glenbervie. The limestone can be found outcropping 45.7 m north of an abandoned road which runs from Eastville to Graham Hill, north of Glenbervie. This outcropping is south of the farm house of Boyd Hamilton on the southern side of a small brook which runs into the Pembroke River. The area is 487.7 m west of the Boyd Hamilton farm road. The area surrounding the limestone is open where trenching has been carried out. An adit has also been put into the limestone for galena which is found associated with the limestone. Drilling was carried out on this area by Dome Exploration Company in 1960-1961 (Dome Exploration Company (Canada) Ltd., 1960) (Fig. 11).

See Chapter 4 and Appendix 1 for information concerning diamond drilling and chemical analyses in the Pembroke River area.

Description

The occurrence is dark grey, hard, dense, massive, highly fossiliferous, Windsor Group limestone belonging to the B Subzone (Bell, 1929) (Fig. 30). The bedding is very poorly developed and highly fractured. The weathered surface is light brown and rough showing the fossils which stand up on

Figure 29. Siliceous limestone found west of Glenbervie, Colchester County (Pb-5-1).

Figure 30. Highly fractured, fossiliferous limestone found north of Glenbervie, Colchester County (Pb-6-1).

this surface. Numerous stringers of calcite can be seen throughout. The fossils in this occurrence are very numerous and well preserved and include brachiopods, pelecypods, gastropods, cephalopods and bryozoans. No particular orientation of the fossils was noticed. Some sections of the limestone are very fossiliferous although other sections show very few fossils and are very compact. The galena is found as stringers and pods throughout, partially replacing some of the fossils. The galena is very abundant throughout the outcrop area. It appears to be striking N 56° E and dipping almost vertically. This, however, may be due to fracturing and not to bedding.

If the above is bedding, then the limestone appears to be between 30.5 m and 42.7 m thick with very little overburden in the vicinity of the trenching.

The area is lightly wooded and is easily accessible. There is no indication as to the areal extent, because outcrop away from the trenching is very sparse.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Pb-6-1	42.45%	2.50%	1.07%	53.60%	0.35%

PENNY MOUNTAIN AREA

PENNY MOUNTAIN (PM-1-1)

This occurrence of siliceous limestone is located at Penny Mountain which is approximately 7 km northeast of Truro. The outcrop can be found in an old farmhouse foundation at Upper Brookside (Fig. 31). This area is 0.32 km west of the Upper Brookside road. There is very little outcrop showing in the area, but there is a great deal of rubble (Fig. 22).

Description

The occurrence is dark grey, hard, brittle, laminated, fossiliferous, argillaceous, highly siliceous, Windsor Group limestone (Fig. 32). The bedding is very well developed with a light grey, smooth, weathered surface. The bedding ranges from 0.6-5 cm. A few calcite veins can be seen cutting the limestone. The fossils found were brachiopods. The strike and dip could not be determined due to the lack of outcrop area.

There is no indication as to the thickness of the limestone. The overburden is at least 3 m thick. The surrounding area is open fields and is easily accessible.

Figure 31. Limestone can be seen outcropping at the base of an old foundation at Penny Mountain, Colchester County (PM--1).

Figure 32. Rubbly nature of the limestone shown in Figure 31, Penny Mountain, Colchester County (PM-1-1).

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
PM-1-1	26.75%	32.80%	8.64%	29.80%	0.80%

PENNY MOUNTAIN (PM-2-1) (DIAMOND DRILLING)

This limestone occurrence can be found on Penny Mountain, located approximately 6 km northeast of Truro. The outcrop area is on the northern side of Penny Mountain in an open field. This area is 1310.6 m west of PM-1-1 and 1713 m west of the Upper Brookside-Brookside road. Numerous small pits have been dug all over the top of the hill with small areas of outcrop in these pits (Fig. 22).

Description

The occurrence is light reddish-grey, hard, dense, medium grained, massive, Windsor Group limestone, probably belonging to the Pembroke Formation (Stevenson, 1958), which is Lower Windsor Group (Fig. 33). The limestone appears to have been slightly metamorphosed. The bedding is indistinguishable with a light grey, nodular, weathered surface. Some slickensiding can be seen. The outcrop has a red iron staining throughout. The limestone bed is trending N 70° W and appears to be dipping 70°-80° S.

Lafarge Canada Inc. drilled 17 drillholes on this occurrence during 1984 and 1985. A conservative estimate of reserves derived from this program suggested the existence of approximately 500 000 t of high-calcium limestone with a content of 50% CaO at this location. See Appendix 1 for detailed analyses of 78 m of drill core (Lafrenière and Clark, 1986).

The drilling program by Lafarge (Lafrenière and Clark, 1986) intersected limestone at a depth of 76 m below the surface in some drillholes. The entire side of the hill appears to be underlain by the limestone. There is very little overburden. The surrounding area is open and easily accessible.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
PM-2-1	43.40%	0.52%	0.53%	54.80%	0.41%

Figure 33. Lower Windsor Group limestone found at Penny Mountain, Colchester County (PM-2-1).

PRINCEPORT AREA

PRINCEPORT (Pt-1-1)

This occurrence is located along the eastern shore of the Shubenacadie River, 1 km northwest of Princeport (Fig. 34). The limestone is found on the shore of the River below the high tide level and outcrops in a mound trending N 28° W into the River. It cannot be found outcropping above the high tide level. The mound averages approximately 9 m across at the top (Fig. 5).

Description

The occurrence is dark grey, very hard, massive, slightly fossiliferous, Windsor Group limestone. The limestone varies in colour from yellowish brown to reddish brown. There are numerous small cavities throughout the limestone. The bedding is very poorly developed with a dark grey to black, pitted, weathered surface. The few fossils found are brachiopods. The strike and dip could not be obtained because of the massive nature of the limestone.

The thickness or areal extent of the occurrence could not be determined. The overburden away from the Shubenacadie River appears to be very extensive. The bank of the River at this point is 12-15 m high.

Figure 34. Limestone outcropping below high tide level on the Shubenacadie River near Princeport, Colchester County (Pt-1-1).

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Pt-1-1	43.60%	1.20%	2.03%	49.45%	4.50%

SMITHFIELD AREA

SMITHFIELD (Sf-1-1)

Smithfield is located approximately 7 km northeast of Middle Stewiacke. The limestone outcrops in a quarry 610 m west from where the Chapman Brook crosses the Middle Stewiacke-Greenfield road. The quarry is 45.7 m north of an abandoned farm and road which at one time joined up with the Middle Stewiacke-Camden road. The road is now impassable and is completely grown in at various locations (Fig. 35).

Description

The occurrence is a dark grey, hard, laminated, argillaceous, medium grained, Windsor Group limestone belonging to the A Subzone (Bell, 1929). The bedding is very well developed with a light

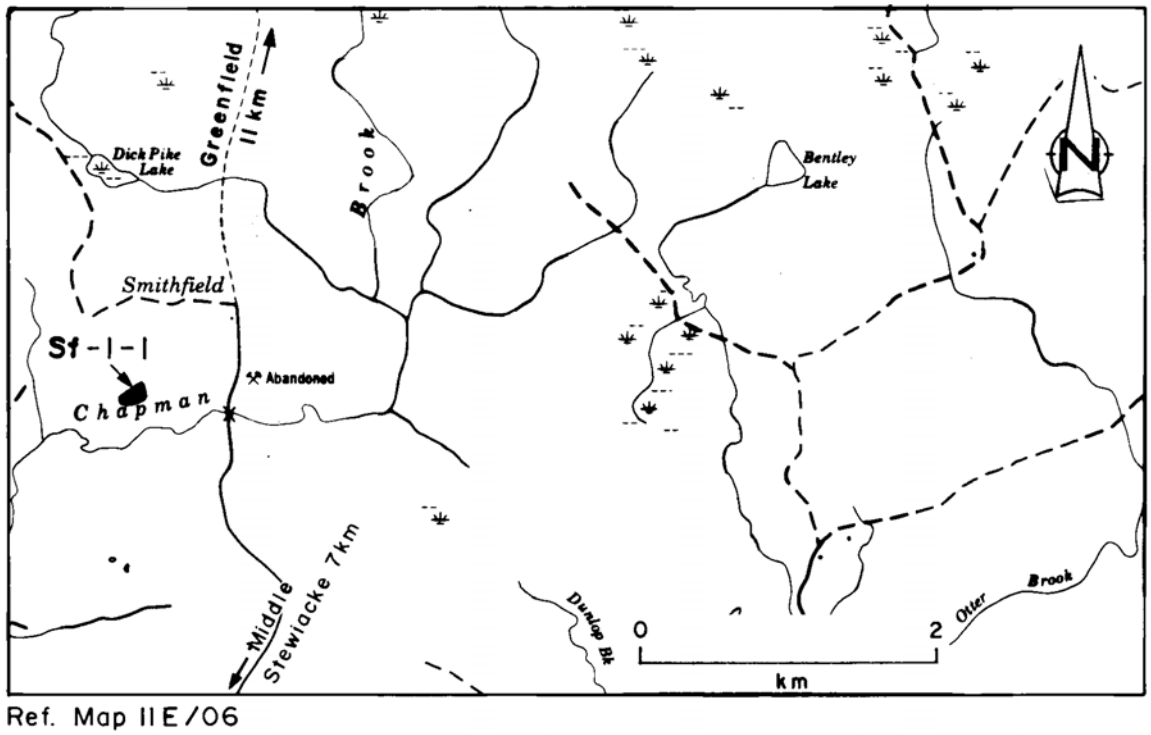


Figure 35. Location map of limestone occurrence sampled in the Smithfield area, Colchester County (11E/06).

grey, mainly smooth, weathered surface (Figs. 36 and 37). A few clusters of small calcite crystals can be seen in the rock. It strikes N 63° E and dips 35° SE.

The limestone outcrops in an old quarry which has a 3-4.6 m face. This limestone can be traced along for several hundred metres west of the quarry, but very little outcrop can be found except in the quarry. The limestone is at least 4.6 m thick with little overburden. The surrounding area is mainly open fields and is easily accessible.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Sf-1-1	40.15%	5.30%	2.80%	50.40%	0.54%

Figure 36. Small quarry of basal Windsor limestone located at Smithfield, Colchester County (Sf-1-1).

Figure 37. Closeup of the limestone at Smithfield, Colchester County, showing the laminated nature of the basal limestone (Sf-1-1).

STEWIACKE AREA

STEWIACKE (Sw-1-1)

This occurrence is located outcropping along the St. Andrews River. This dolomite can be found along the northern side of the River where the River comes closest to the Stewiacke-Lanesville road, 1 km east of the Stewiacke turnoff on the West St. Andrews-Alton road. This occurrence is 152.4 m east of a saw mill. The dolomite outcrops at the base of a 4.6 m bank and in small amounts in the River. The outcrop area is very small. Stevenson (1959) considered this area to be in the Pennsylvanian (Riversdale Group) (Fig. 38).

Description

The occurrence is hard, dense, fine grained, Windsor Group dolomite (Fig. 39). The bedding is not well developed and is thickly bedded ranging up to 20-25 cm in thickness. The weathered surface is light brown and smooth. Some surfaces contain calcite. It also contains a few small cavities. The strike and dip could not be measured because of the small areal extent.

There is no indication as to the thickness of the dolomite. The overburden is approximately 4.6-6 m. The surrounding area is only lightly wooded and is easily accessible.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Sw-1-1	42.25%	7.85%	5.40%	27.90%	16.20%

STEWIACKE (Sw-2-1)

This occurrence is located on the St. Andrews River, approximately 3 km southwest of the Town of Stewiacke. This area can be reached by driving south on St. Andrews Street in Stewiacke and driving to the end of the road. The dolomitic limestone outcrops in the River, 897 m downstream from where the road ends. The outcrop covers only a small area. The limestone can be traced as float for 183-213 m down the River (Fig. 38).

Description

The occurrence is grey, very hard, dense, massive, fine grained, siliceous, dolomitic, Windsor Group limestone. The bedding is very poorly developed with very little bedding shown. The weathered

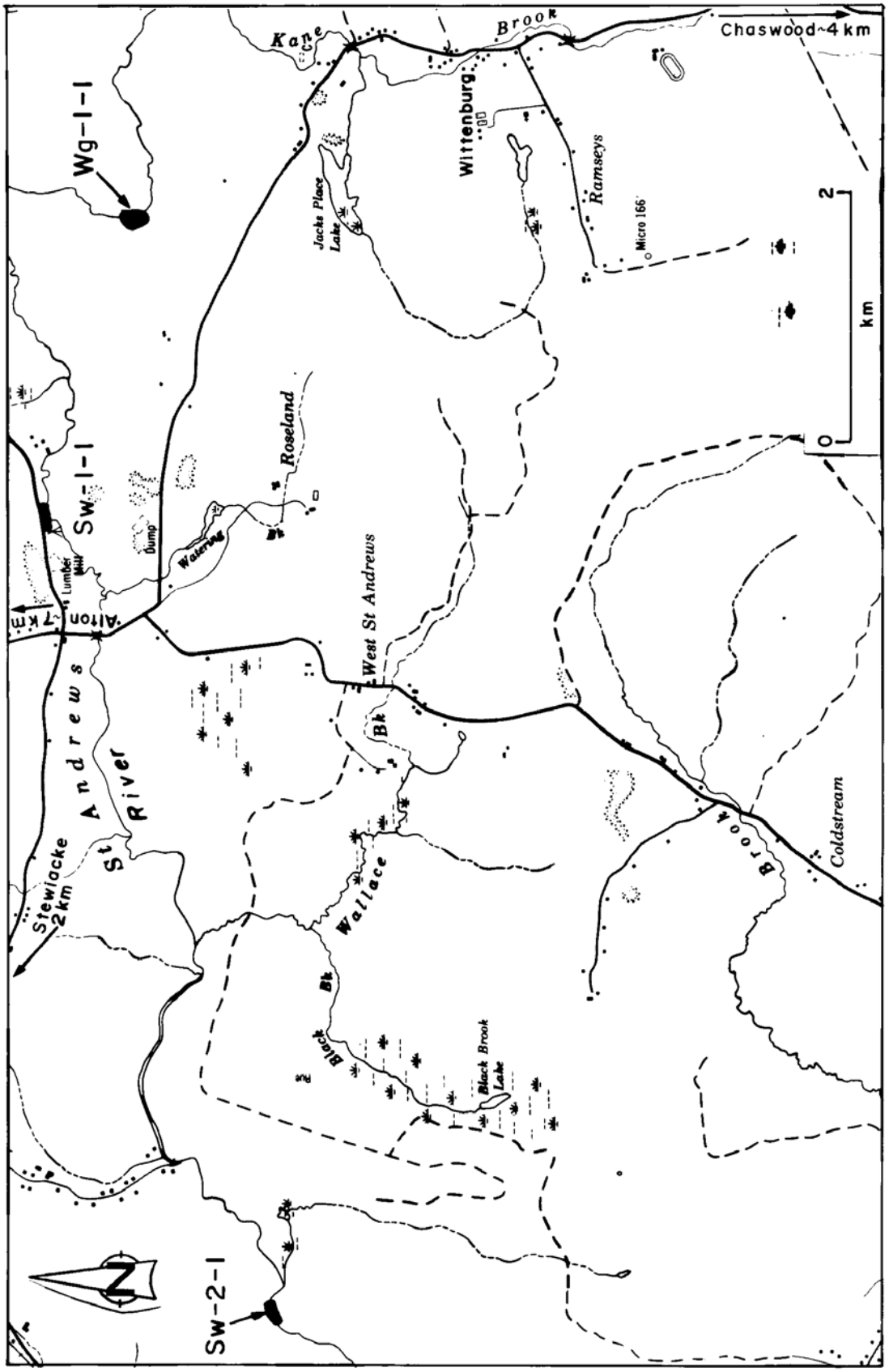


Figure 38. Location map of limestone and dolomite occurrences sampled in the Stewiacke and Wittenburg areas, Colchester County (11E/03).

Figure 39. Thickly bedded dolomite found on the St. Andrews River, east of Stewiacke, Colchester County (Sw-1-1).

surface is light brown and mainly smooth except where it has been pitted by the River. Black clayey seams can be seen throughout. There is no indication as to the dip and strike due mainly to the massive nature and small areal extent of the outcrop.

There is no indication as to the thickness of the limestone. The overburden is not great near the River, but it becomes progressively thicker away from the River. The surrounding area is heavily wooded and is not easily accessible.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Sw-2-1	32.85%	25.10%	5.78%	22.00%	13.85%

STEWIACKE (Sw-3-1)

This occurrence is located 4.8 km northwest of the Town of Stewiacke. The limestone outcrops on the southeastern branch of Withrow Brook which runs westward into the Shubenacadie River north of Fort Ellis. The upper end of the limestone is located 507 m up the southeastern branch of Withrow Brook from where it joins the northern branch and is 925 m east of the Stewiacke-Riverside road which runs along the Shubenacadie River (Fig. 40).

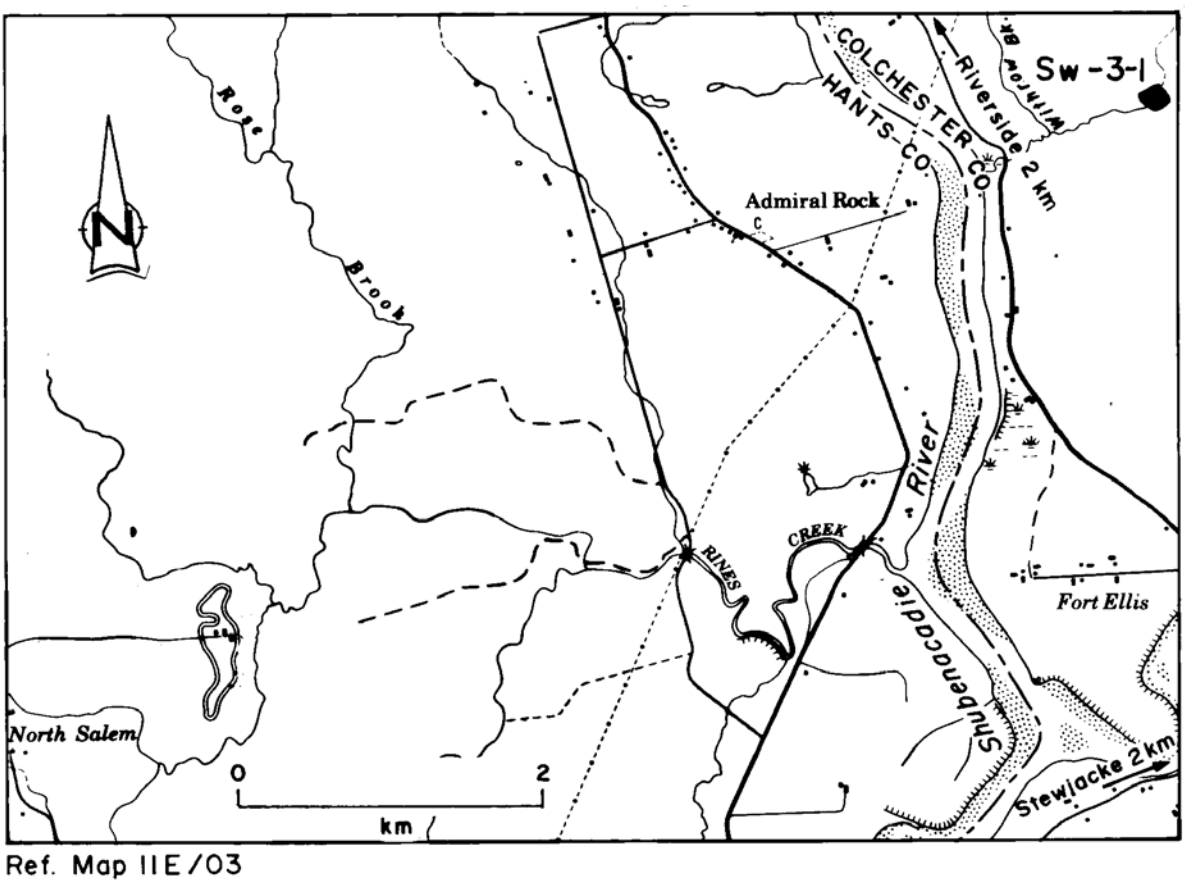


Figure 40. Location map of limestone occurrence sampled in the Stewiacke area, Colchester County (11E/03).

Description

The occurrence is brown, soft, slightly porous, siliceous, argillaceous, massive, dolomitic, Windsor Group limestone. The bedding is very poorly developed with a soft, brown, smooth, weathered surface. At the upper end of the limestone, the strike is N 25° W and the dip is 10° NE. Nearer the bottom of the section the limestone strikes east and dips 11° N. The limestone outcrops only in Withrow Brook and in the bank of the Brook and can be traced along this Brook for a distance of 192 m.

There is no indication as to the thickness or areal extent. The overburden appears to be 3-4.6 m thick. The surrounding area is heavily wooded and is not easily accessible.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Sw-3-1	40.65%	10.06%	4.42%	33.40%	11.50%

UPPER ECONOMY AREA

UPPER ECONOMY (Ec-1-1)

This occurrence is located 2 km north of Upper Economy on the road running from Upper Economy to Pleasant Hills. The limestone can be found outcropping in the ditch on the western side of the road, in the small brook which runs adjacent to the road, and also in a small quarry which is 128 m due west of the road, behind an old foundation. The limestone also outcrops on the road (Fig. 41).

Description

The occurrence is dark grey, hard, dense, medium grained, fossiliferous, Windsor Group limestone (Fig. 42). The bedding is well developed with a light brown, smooth, weathered surface. A few thin calcite veins are present. The fossils found are brachiopods (Fig. 43). The individual bedding layers range up to 5 cm in thickness. The limestone in the old quarry is lighter in colour, more porous and slightly more dolomitic than that found in the brook and on the road. It strikes generally N 20° E and dips 44° NW. Towards the bottom of the section, the limestone swings around and strikes N 60° W and dips almost vertically towards the northeast.

There is no indication as to the thickness, however the limestone can be traced along the ditch, across strike, for a distance of 103.6 m. The overburden appears to be slight. The surrounding area is open fields and easily accessible.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Ec-1-1	40.50%	5.67%	3.32%	40.50%	8.90%

WITTENBURG AREA

WITTENBURG (Wg-1-1)

This occurrence is located approximately 2.4 km northwest of Wittenburg which is on the Chaswood-Alton road. The limestone outcrops in the St. Andrews River and can be reached by an old road which runs north from the Wittenburg-Alton road. The outcrop is 1 km up this road, where it reaches the River. The limestone can be traced along the River for 183 m, striking almost perpendicular to the flow of the River. It is 5.8 km southeast of the Stewiacke turnoff from the Chaswood-Alton Road (Fig. 38).

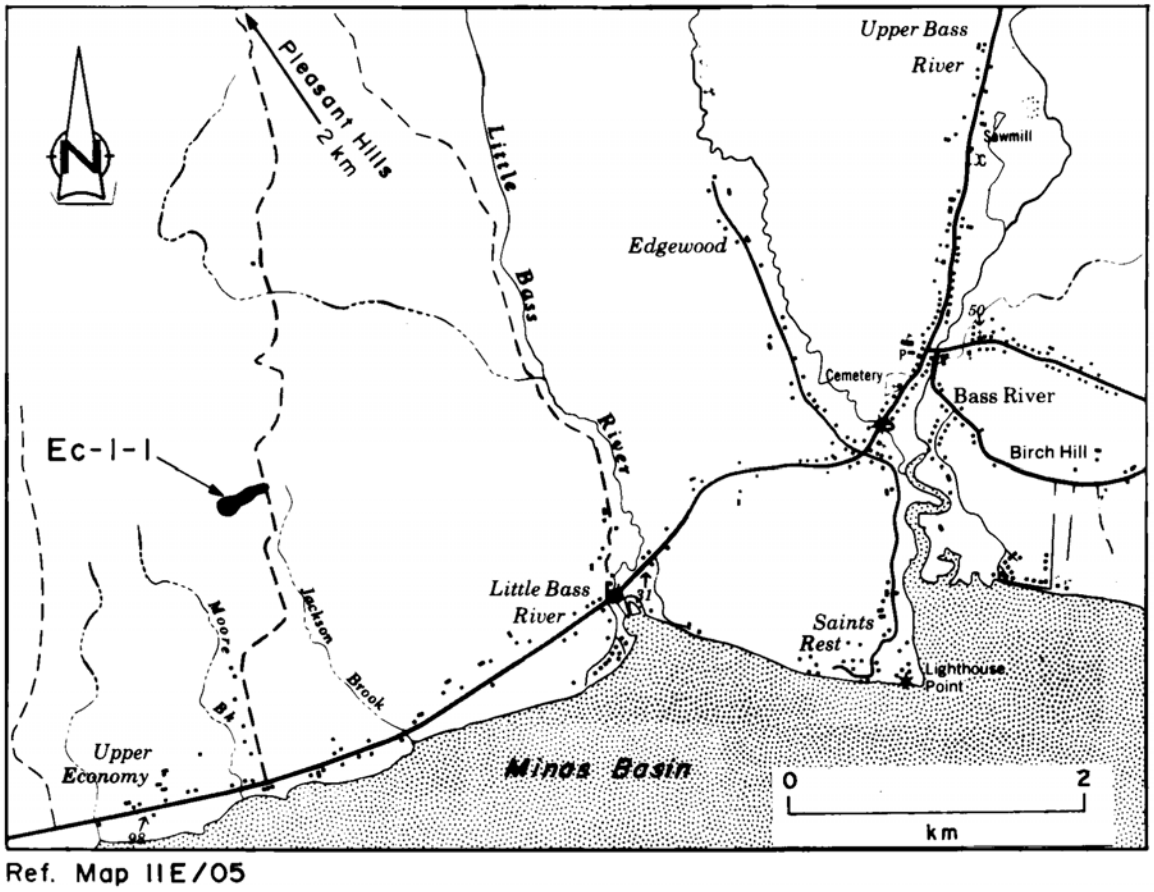


Figure 41. Location map of limestone occurrence sampled in the Upper Economy area, Colchester County (11E/05).

Description

This occurrence varies from light brown, soft, slightly porous, argillaceous, medium grained dolomite to a grey, hard, dense, medium grained dolomite to a grey, hard, dense, medium grained, dolomitic, Windsor Group limestone. The bedding is not well developed and has a light brown, smooth, weathered surface. The dolomite is found at the bottom and changes into limestone at the top of the section. The limestone strikes N 54° E and dips only slightly towards the southeast.

The limestone outcrops entirely in the St. Andrews River and is covered by approximately 3-4.6 m of overburden on either side of the River. There is no indication as to the thickness of the limestone. The surrounding area is heavily wooded, but the area is easily accessible by the old road.

Analysis

Sample	L.O.I.	SiO_2	R_2O_3	CaO	MgO
Wg-1-1	38.15%	12.60%	5.12%	36.70%	6.85%

Figure 42. Small quarry of limestone found on the western side of the Pleasant Hills-Upper Economy road, Colchester County (Ec-1-1).

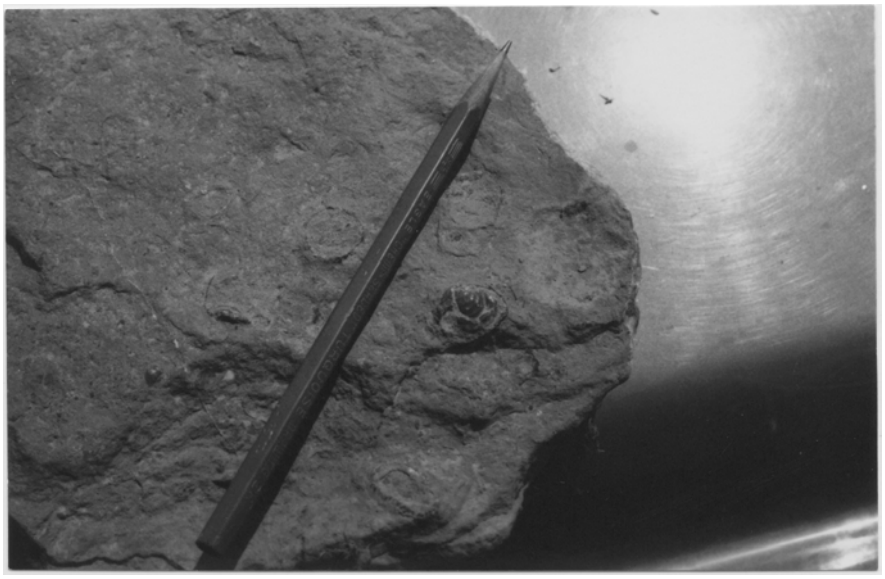


Figure 43. Brachiopods found in the limestone shown in Figure 42, north of Upper Economy, Colchester County (MM-5-1).