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# ***"CONSERVATION DRIVE"***

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A self-guided auto-tour through the Moira Valley to help acquaint residents and visitors alike with the history, beauty, recreational potential, and conservation achievements and problems of the watershed.



The "Colonel Roscoe Vanderwater Conservation Area" located near Thomasburg, owned and developed by the Moira River Conservation Authority



Sponsored

by

**THE BELLEVILLE KIWANIS CLUB**

and

**THE MOIRA RIVER CONSERVATION AUTHORITY**

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— LEGEND —

STOP ..... 1  
 SCALE: 1 INCH = 4 MILES

## STOP NO 1.

### O'HARA MILL CONSERVATION AREA.

Leave Belleville via Hwy 14 to Foxboro, continue North on County Rd. 1 to Madoc, proceed westerly from Madoc on Hwy. No. 7 for about 1 mile, turn right at the side road and continue for 1¼ miles, turn left and continue for about 1 mile.



The O'Hara Mill, renovated and preserved by the Moira River Conservation Authority as a historic site.

The central point of interest in this 35 acre Conservation Area is the muley type sawmill, believed to be the only one of its kind in Ontario. The mill was built in 1846 or 1847 by James O'Hara and operated by the O'Hara family until 1908. The mill represents one of the first power saws which was a direct development of the manually operated pit saw. These were called upright or muley saws and consisted of a saw set vertically in a wooden frame and moved up and down by a crank connected to the shaft of the water wheel.

The property was purchased by the Moira River Conservation Authority in 1954 and the mill and mill machinery were salvaged and renovated. The flume and dam were also renovated and the pond was enlarged. The mill is operated periodically through the summer months as a demonstration of an early sawing technique.

Other points of interest are the mill pond, picnic areas, the nature trail, and the reforestation demonstrations.

(Return to Madoc, follow Highway No. 7 east for about 3½ miles, turn right and follow the side road southerly to stop No. 2).

## STOP NO. 2.

### MOIRA LAKE — OUTLET — (Downey Rapids).

(Bridge crossing Moira River)



Indicates the extremely low water level and poor flow at the mouth of Moira Lake in late summer.

Moira Lake is one of the major lakes in the Moira Watershed, covering an area of approximately 2,150 acres. The lake is fed by the west branch of the Moira River, and has a drainage area at the outlet of approximately 229 square miles. Moira Lake is well developed for recreation and has approximately 200 cottages and resorts on its shores. Considerable fishing is done for small and large mouth Bass, Pike, and Muskellunge. Each year the Department of Lands and Forests stocks lakes such as this, in order to improve the fish supply.

There are several management problems to heavily used inland lakes, such as fluctuating water levels and pollution. Pollution occurs in the forms of algae, sewage, and industrial wastes. Pollution in these forms can seriously injure the lakes value for fishing and recreation. Fluctuating water levels can be a serious problem as too high or too low water levels are undesirable. High spring water levels may cause considerable property damage during the spring freshet. However, too low water levels reduce the lake's value for fish and recreation, and increases the probability of serious pollution.

During the late summer there is almost no flow through the outlet of Moira Lake. In order to raise and stabilize the low summer water level at a desired level, the Moira River Conservation Authority is planning to construct a small seasonal dam, about 200 feet upstream from the bridge, in the fall of 1964.

(Proceed north on this side road back to No. 7 Highway and through to Queensboro. Distance approximately 7 miles).

### STOP NO. 3.

#### THOMPSON'S HOUSE AND MILL — QUEENSBORO.

(Historic House and Grist Mill located on the banks of the Black River).



The Thompson House, built about 1850, by a wealthy lumberman.

This house was built about 1850 by Daniel Thompson, a wealthy lumberman, and indicates the prosperity in the lumber industry at that time. The house was originally about twice its present size with a large wing extending to the rear. The house was timber framed, similar to a barn, with virgin white pine. The doors were hand made and fastened with wooden pegs. The baseboard and the various mouldings in the house were also hand made and the carpenters and cabinet makers lived in the house for two years during its finishing stages.

Just across the road from the house is a water powered grist mill still being operated by Mr. John Thompson, the present resident in the "Thompson House". The mill wheels, called "Little Giants", were installed over 100 years ago.

A water powered sawmill was also operated near the grist mill and remnants of it can still be seen. The grist mill was the site of the first Post Office in the Village of Queensboro. Queensboro was named by Daniel Thompson after Queensboro, Ireland, as this was the last place he saw before immigrating to Canada.

(Continue easterly from Queensboro following guide signs and map to stop No. 4).

#### STOP NO. 4.

#### ARMSTRONG'S PLANTATION.

(Plantation on the east side of the Road).



Trees planted on the shallow soil of the Precambrian-shield help check erosion, build up a top soil, and make the land more productive.

This is an example of a local man's contribution to Conservation in reforesting 100 acres of sandy land. The project commenced in 1955 and since then 115,400 trees of pine, spruce and hardwoods have been planted. The species range in age from "0" (nursery stock) to "9" years. As a part of good management, a fire break has been cultivated around the plantation and a pond has been constructed to provide a source of water for fire protection. Later on, this plantation will be thinned to increase the growth rate and to remove the poorer quality trees. Also, trees to be kept for saw timber will be pruned to provide knot-free lumber.

Projects such as these assist in making marginal Agriculture land productive and provide a valuable renewable resource for future generations. In addition, the possibility of soil erosion is reduced, the top-soil is improved, and the receding water table is built up. To encourage such projects the Moira River Conservation Authority provides a tree planter, and subsidies for successful plantings.

(Proceed southerly on the side road to Highway No. 7, turn left and continue east for about 1½ miles to stop No. 5).

## STOP NO. 5.

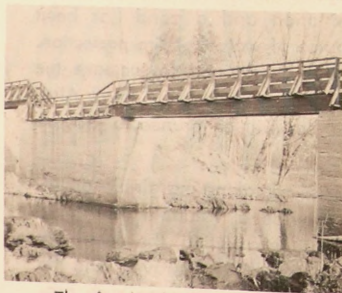
### THE PRICE CONSERVATION AREA.

(Conservation Area and Automatic Recording Gauge on the Skootamatta River).

This conservation area is comprised of approximately eight acres on the east and seven acres on the west side of the Skootamatta River. The area on the east side of the river was donated to the Moira River Conservation Authority by Mr. Lloyd H. Price and other members of his family in 1956. This Conservation Area features recreational facilities, including picnic tables, fireplaces etc. in a most interesting setting. One of the most interesting is the view from the foot bridge that crosses the river. The development of this area was started in 1958 and is continuing as rapidly as the limited resources of the Authority will permit.

### SKOOTAMATTA RECORDING GAUGE AND WEIR.

Another point of interest, though not directly associated with the Price Conservation Area, is the weir and automatic recording gauge directly across No. 7 Highway from the entrance to the Conservation Area. It was built by the Authority to provide continuous stream flow data on the Skootamatta River. At this point the Skootamatta River drains an area of approximately 280 square miles. The central notch in the weir is just large enough to allow normal summer flow. The weir promotes a more constant channel capacity, and with the gauge, represents one of the most accurate water recording systems in Ontario. The gauge measures fluctuations in water levels as well as stream flow data. The records obtained from the instruments housed in the small structure on the river bank are essential for the design of efficient flood control and water conservation structures in the Moira Watershed.



The footbridge across a scenic section of the Skootamatta River.



The Automatic Recording Gauge and Weir across the Skootamatta River at Actinolite.

(Proceed easterly on Highway No. 7 for about  $3\frac{3}{4}$  miles, turn right at the side road and continue southerly to stop No. 6).

## STOP NO. 6.

### RED PINE PLANTATION.

The sign at this point was erected in 1963 to commemorate the initiative and foresight of the Hungerford Township Council which planted these trees in 1937. This 173 acre property was purchased by the Moira River Conservation Authority from Hungerford Township in 1958 and has been managed since 1953 by the Tweed District of the Department of Lands and Forests.

This forest demonstrates the rapid growth of red pine on light sandy soil and the results of good forest management. The trees have been thinned and pruned to provide increased growth and better quality timber. In addition a fire break has been cultivated around the plantation to reduce the fire hazard. At one time this was a relatively unproductive sandy hill subject to wind and water erosion. Now it represents one of the most productive sections in this area.



Interior View of the Red Pine Plantation, thinned and pruned to increase the growth rate and improve wood quality.

(Continue southerly following guide signs and map to stop No. 7).



## STOP NO. 7.

### PRECAMBRIAN SHIELD.

This rocky area, running through the northern part of the Moira Watershed, is representative of the oldest part of the continent, the Canadian Shield. It contains a variety of igneous and metamorphic rocks such as granite, gneiss and marble, which are of the precambrian age. It is in the Shield that the valuable minerals are found and many have been found in this area. Minerals such as gold, talc, iron, actinolite, and marble, have all been mined in this part of the Shield.

Sedimentary rocks of limestone, shale, and sandstone were laid down over the Precambrian rocks in the Paleozoic era. On this watershed they are mostly limestone with some thin bands of limy shale and sandstone, and were formed in the Ordovician Period. The sedimentary rocks have been worn away in past ages so that much of the Shield, which was formerly covered by them has been left bare. Some patches of limestone are left lying on the Shield. These are called outliners, formations of younger rock detached from the main body. There is a line clearly marked in many places by a high cliff, separating the southern Ordovician rock from the northern Precambrian rock. This is called a Cuesta.

With deep soil found in only a few places, the Shield is covered mostly by forest and there is comparatively little agriculture. Attempts to clear this type of land for agricultural purposes have met with very little success as the thin soil, when exposed, dries out rapidly and erodes. Thus, what little soil there once was may be eroded away and the area may grow up to undesirable dry scrub.

The principle of conservation here, is to purchase such barren land and try to reforest it before dry scrub grows in, or the soil becomes too thin for successful planting to a desirable tree species.

(Proceed westerly to Highway No. 37, then southerly through Tweed to Thomasburg, turn left off Highway 37 and continue for 2 miles to stop No. 8).

## STOP NO. 8.

### COLONEL ROSCOE VANDERWATER CONSERVATION AREA.

This 430 acre Conservation Area is named in honour of the late Colonel Roscoe Vanderwater through whose interest and initiative the Moira River Conservation Authority was formed. This conservation area was officially opened in 1960 and is still being developed. At present the following items are available: conservation demonstrations, camping and picknicking facilities, fishing, swimming, boating, play areas, and nature trails.

As you drive south from the entrance gate there are many points of interest. First, on the left, is a reforestation project of red pine, white pine, and spruce, planted in the spring of 1964. Opposite this on your right is an older plantation of red and white pine, planted in 1960. Next, on the left, is the workshop and the equipment storage building and beside it a small ticket booth. The Authority charges an admission fee of 35 cents per car on week-ends and holidays from the 24th of May to Labour Day. Following on the left is a demonstration farm pond. This is a water conservation project, which can be used for live stock watering, fire protection, fish production, recreation and irrigation. At the south end of the pond is the entrance to a nature trail that has been developed with the co-operation of the Quinte Field Naturalists Club. Across from this is picnic area No. 1, followed by picnic areas 2 and 3. Next on the left is a reforestation demonstration of pine, spruce, larch, and hardwoods, South of the demonstration forest is an area allotted to the Belleville Boy Scout Association where the activities of camping and hiking are enjoyed. Further on to your right is a small camping area and following this is a play area, picnic areas, and the Memorial Map. Next on the left is a supply of pure cold spring water on tap, and a little further on your right are more picnic areas, a beach, and a boat launching ramp.

The most recent development south of the boat launching ramp is an extensive camping area with 40 campsites.



Campers at the Colonel Roscoe Vanderwater Conservation Area.

(Proceed easterly from Stop No. 8, along the concession road to the first side road, turn right and proceed southerly past Chisholm's Mills, and along the Shannonville sideroad a distance of about 8 miles, turn right and proceed westerly for about 3 $\frac{3}{4}$  miles).

## STOP NO. 9.

### AGRICULTURE ON ERODED LIMESTONE SOILS.

The bedrock in the southern section of the Moira Watershed is composed primarily of ordovician limestone with some shale. This area is called the limestone plain. On the limestone plain the relief is due to the flat rock and the thin covering of brown soil has a depth of only a few inches to two feet over the bedrock. Where it has been cultivated there is hardly any recognizable topsoil. Besides being too thin to work, the soil has the disadvantage of being excessively drained. It erodes slightly each year and the small amount of top soil decreases until in some cases the underlying limestone bedrock is exposed. This type of land, like much of the northern precambrian Shield, represents marginal agriculture land. At its best in agriculture, it can only produce pasture land with a very low carrying capacity.

As well as gradual erosion this type of soil, if left, often grows up to worthless dry scrub such as juniper, sumac, or prickly ash. Before it was cleared, much of it produced hardwoods which suggests it should perhaps be returned to hardwoods again. However, successful hardwood plantations have not yet been achieved. In many cases the soil is so thin that it is often very difficult to plant trees successfully.

This type of land represents a very difficult land use problem, in which there appears to be no easy solution. To reforest this area would be a slow and continuous task, but it is the only apparent method of salvaging the soil and keeping the land productive.



Trees growing in the crevices of limestone rock help to break it down and will eventually aid the formation of a top soil.

(Continue westerly to Highway No. 37, turn left and proceed southerly to Corby's Distillery at Corbyville, Ontario).

## STOP NO. 10.

### POLLUTION REDUCTION.

(Corby Distillery, opposite a small weir dam in the Moira River).

In recent years the Moira River Conservation Authority has worked in close co-operation with Ontario Water Resources Commission in an attempt to reduce water pollution in the Moira Watershed. The Authority samples the Moira River and its tributaries during the summer in order to detect any serious sources of pollution. The Authority also has laws regulating the dumping of material in streams or on flood plain lands.

Industries which use thousands of gallons of water daily, are often a source of pollution to rivers and streams. The Corby Distillery, at Corbyville, uses about 2½ million gallons of water per day. Most of this water is used for cooling purposes and is later discharged into the Moira River. In former years, there was always a serious danger that the distillation residues would be returned to the river in the effluent. In order to reduce the industrial waste in the effluent, the Corby Distillery plant embarked upon an extensive pollution reduction program, and at present, they have succeeded in completely eliminating grain residues from the waters returned to the Moira River.

Serious stream pollution can kill fish, ruin our drinking water, encourage algae, lower property value, and destroy our recreation areas. In many highly industrialized areas of Ontario this has already occurred. In the Moira Valley, pollution can still be stopped, if effective control measures are taken now.



Fish kill resulting from low oxygen, due to serious water pollution.

(Proceed southerly to Belleville a distance of about 3¼ miles to stop No. 11).

## STOP NO. 11.

### COLLEGE STREET DAM SITE.

(Just north of College Street along the Moira River).

There have been 76 floods in Belleville since 1846, seven of which were of major importance. The floods which caused the greatest damage were caused by ice jams at, or near the mouth of the Moira River. The most disastrous flood occurred in March 1936, property damage was heavy, public services were dislocated, traffic was stopped and all business was at a standstill in much of the industrial and commercial part of the city. Several hundred people were made homeless.

The Moira River Conservation Authority investigated the causes of floods and the best method of preventing them in Belleville. A hydraulics survey was made and an ice control dam at College Street was recommended. An engineering firm was employed to survey the site and design a suitable dam. This was done and revised after the Hydraulics Division of the University of Toronto had constructed a working model with simulated ice jams. The city of Belleville authorized the Authority to construct a dam if the Federal and Provincial Government would pay 75 percent of the estimated cost of \$400,000. However, the maximum grant that could be obtained was 50 percent and no further action was taken. It is doubtful if the College Street dam will be built until the need for it is demonstrated by another serious flood.



Flooding of Front Street, 1918, due to ice jams at the mouth of the Moira River.

(Stop No. 11 at the site of the proposed College Street dam, is the end of the "Conservation Drive".)

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