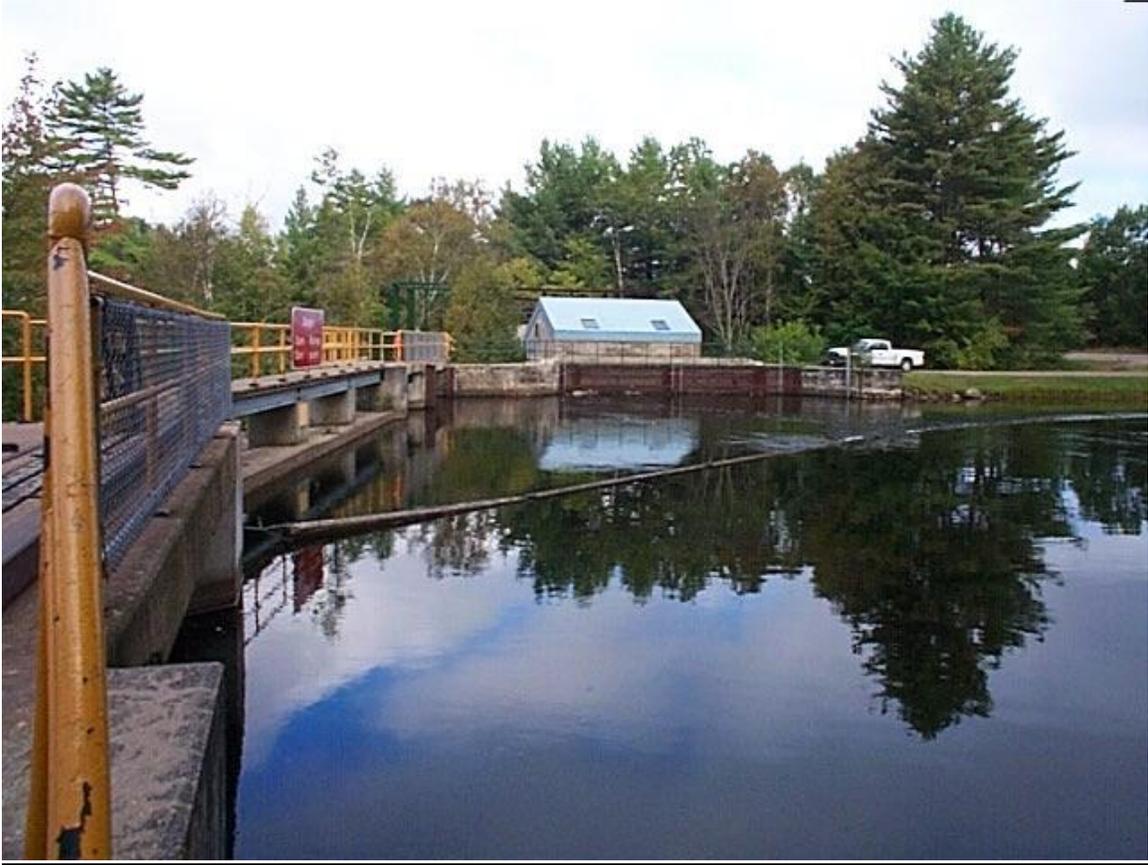


**Water Management Plan**  
**For Waterpower**  
**Elliott Falls Generating Station**



**March 2005**

**WATER MANAGEMENT PLAN FOR WATERPOWER**

**for the**

**Elliott Falls Generating Station**

**on the Gull River**

**OMNR Bancroft District, Southern Region**

**Elliott Falls Power Incorporated**

**for the 10-year period April 1, 2005 to March 31, 2015**

In submitting this plan, I declare that this water management plan for waterpower has been prepared in accordance with the *Ontario Ministry of Natural Resources, Water Management Planning Guidelines for Waterpower*, as approved by the Minister of Natural Resources on May 14, 2002.

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Kearon Bennett, President, Elliott Falls Power Incorporated  
I have authority to bind the corporation.

Date

I certify that this water management plan has been prepared in accordance with the *Ontario Ministry of Natural Resources, Water Management Planning Guidelines for Waterpower*, as approved by the Minister of Natural Resources on May 14, 2002, and that direction from other sources, relevant policies and other obligations have been considered. I recommend this plan be approved for implementation.

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Monique Rolf von den Baumen-Clark, District Manager, Bancroft District  
Ministry of Natural Resources

Date

**Approved by:**

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Ron Running, Regional Director, Southern Region  
Ministry of Natural Resources

In 1994, MNR finalized its Statement of Environmental Values (SEV) under the Environmental Bill of Rights. The SEV is a document that describes how the purposes of the EBR are to be considered whenever decisions that might significantly affect the environment are made in the ministry. During the development of this water management plan, the ministry has considered its SEV.

This water management plan (WMP) sets out legally enforceable provisions for the management of flows and levels on this river within the values and conditions identified in the WMP.

In instances where, due to emergency energy shortages, the Independent Electricity System Operator (IESO) requests that owners of the waterpower facilities and associated water control structures seek relief from certain provisions of this WMP, the Ministry of Natural Resources (MNR) will consider those requests expeditiously and, after consultation with the IESO, may allow short-term relief from certain provisions.

The mandatory provisions of this WMP will be waived, as appropriate, when the dam owners (which may include other dam owners, such as MNR) are requested to do so by a police service or other emergency measures organization.

This plan does not authorize any other activity, work or undertaking in water or for the use of water, or imply that existing dams(s) meet with safe design, operation, maintenance, inspection, monitoring and emergency preparedness to provide for the protection of persons and property under the *Lakes and Rivers Improvement Act*. Approval of this WMP does not relieve the dam owners from their responsibility to comply with any other applicable legislation. For the purposes of this plan, an operational plan means a plan for the management of flows and levels.

Approval of this plan does not grant a dam owner the right to flood Crown land or the land of any other person without first obtaining the Crown's or that person's consent, nor does it authorize any infringement of the rights of the Crown or of any other person.

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## **1.0 Introduction**

### **1.1 Plan Goal and Principles**

It is the intent of this Water Management Plan (WMP) to follow the goals and principles set out in the *Ontario Ministry of Natural Resources (OMNR), Water Management Planning Guidelines for Waterpower (2002)*.

The goal of water management planning is to contribute to the environmental, social and economic well-being of the people of Ontario through the sustainable development of waterpower resources and to manage these resources in an ecologically sustainable way for the benefit of present and future generations.

The following principles will guide planning through the preparation, review, approval and implementation of a WMP.

- Maximum net benefit to society
- Riverine ecosystem sustainability
- Planning based on best available information
- Thorough assessment of options
- Adaptive management
- Timely implementation of study findings
- Aboriginal and treaty rights
- Public participation

A more detailed description of these principles is available in the *OMNR, Water Management Planning Guidelines (2002)* on page 13.

### **1.2 Terms of Reference for Water Management Planning**

This WMP has been prepared according to Terms of Reference for the Elliott Falls Generating Station which is included in the Scoping Report for this facility (Appendix B).

### **1.3 Water Management Plan Objectives**

The objectives of the WMP for the Elliott Falls Generating Station are to:

- a) Review, document and understand the hydro facility operations relative to environmental, social and economic benefits;
- b) Establish the level of control that the facility exercises over levels and flows;
- c) Determine the zone of influence of the hydropower facility;
- d) Document resource values and environmental, social and economic issues within the zone of influence of the hydropower facility;
- e) Establish whether a change in hydropower operation (water levels and discharge flows) would have a net environmental, social and economic benefit;
- f) Fulfill the legislative requirements of Section 23(1.1) of the *Lakes and Rivers Improvement Act*; and
- g) Be consistent with the goals and principles as outlined in section 4.0 of the *OMNR, Water Management Planning Guidelines for Waterpower (2002)*.

## 2.0 Physical and Biological Description

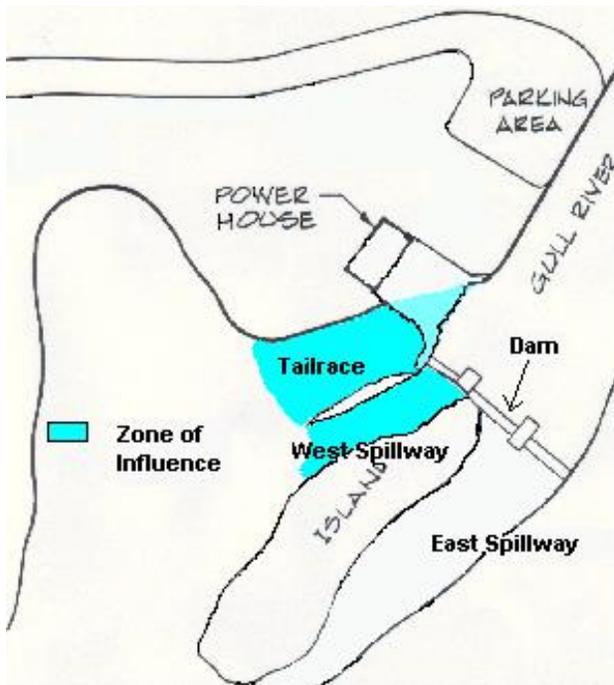
The Elliott Falls Generating Facility and dam are located in the Bancroft District of the Ministry of Natural Resources, on the Gull River, north of Norland. The facility is located on private land lot 9 concession XI of the Laxton geographical township and south of Moore Lake in the Gull River Watershed. This watershed consists of a series of lakes and rivers below the southern edge of Algonquin Park and covers approximately 1,350 square kilometres. A map of the Gull River watershed can be found at Appendix A. The Gull River watershed also forms the upper west corner of the Trent River watershed which flows into Lake Ontario and supplies water for the Trent-Severn Waterway. The Trent-Severn Waterway is an interconnected series of lakes and river channels that provides a navigable water link between Lake Ontario and Georgian Bay of Lake Huron. The waterway passes through two watersheds, that of the Trent River and Severn River. The water levels and flows are managed by the Trent-Severn Waterway (TSW), a National Historic Canal under Parks Canada; an agency of Environment Canada.

No in-stream surveys have been conducted but fish species in Gull River include smallmouth bass, largemouth bass and rock bass. Rainbow trout have been stocked on several occasions in the Gull River but it is not known if they still persist in the river.

### 2.1 Hydropower Facility Zone of Influence

The “zone of influence” refers to the portion of the watershed that may experience changes in water levels and flows as a result of the hydro facility operation.

With respect to water levels upstream of the facility, water levels in the reservoir are not manipulated for hydro power production. The Water Power Lease Agreement issued by MNR recognizes Trent Severn Waterway’s right to regulate flows and levels and states



that TSW will determine the daily flows that will be available for use by the waterpower facility. Upstream levels in the reservoir are maintained within the predetermined seasonal levels as managed by the TSW. TSW also determines the amount of flow that is subsequently utilized for waterpower production. Since the operation of the Elliott Falls waterpower facility does not regulate the upstream water levels, the zone of influence is immediately upstream of the hydro facility and downstream of the tailrace and west spillway to where these two channels meet. Figure 1 illustrates the zone of influence.

*Figure 1 – Zone of Influence*

## **2.2 Resource Values and Issues**

During the scoping phase of the planning process, the steering committee identified values associated with the “Zone of Influence” that have been included in the Scoping Report (see Appendix A).

During the scoping phase of the water management planning process, no issues were identified associated with the operation of this facility as it pertains to flows and levels.

## **3.0 Waterpower Facility and Other Water Control Structures**

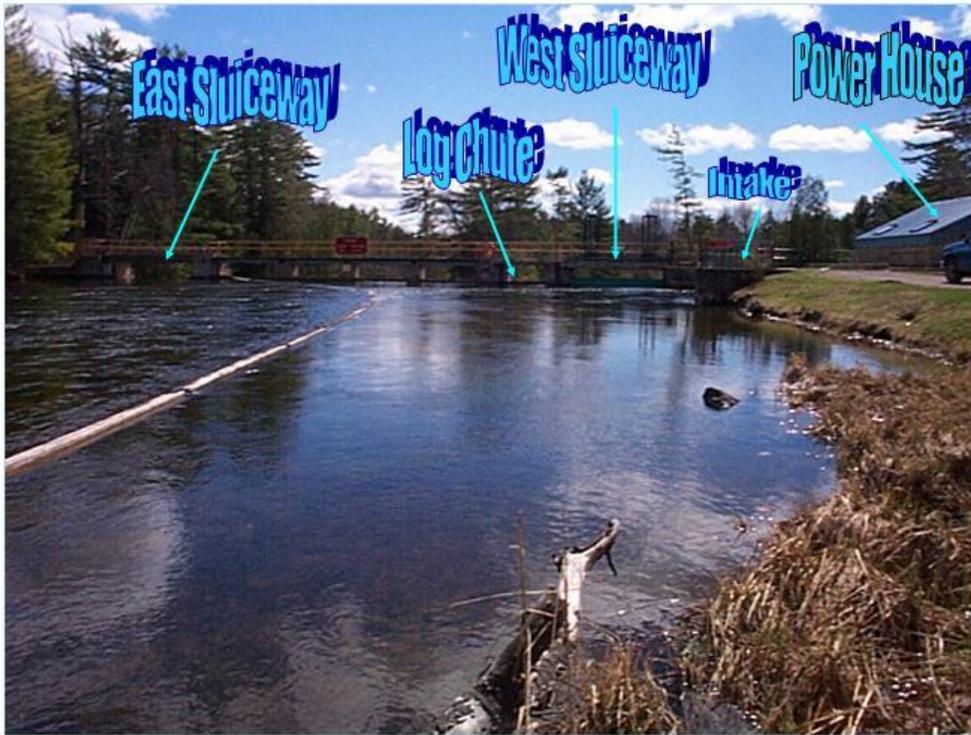
### **3.1 Brief Description of Waterpower Facility**

The Elliott Falls waterpower generating station was built at the beginning of the century (est. 1904) to supply power the old Raven Lake Portland Cement Company. The cement company ceased operations in 1914 but power was still produced for the surrounding area until 1928. In 1931 the plant was sold to Ontario Hydro but, in spite of many moves to reactivate it, it was never found to be economically viable. The plant was taken over by the Ministry of Natural Resources in the 1960's. The hydropower site was leased to Elliott Falls Power Corporation and redeveloped within the confines of the old powerhouse structure in 1989.

The generating station comprises two vertical semi-Kaplan turbines (variable pitch propellers with fixed guide vanes) connected to induction generators capable of generating 400 kW each. The maximum plant output is approximately 750 kW under ideal head and flow conditions. Ideal head and flow conditions are when the water level upstream of the dam is at the highest (summer) elevation and the flow in the river is approximately 22 cms (including the residual flow requirement). Each turbine can operate with flows approximately between 4 cms and 10 cms. Combined the plant can produce power when flows are a minimum of 4 cms and reaches maximum capacity at 20 cms. The electrical controls, switchgear and power transformer are all housed indoors in a building constructed within the confines of the ruins of the former powerhouse. Connection to the grid is via a buried transmission line that leads from the powerhouse to the point of interconnection at Highway 35, adjacent to the site.

### **3.2 Brief Description of the Elliott Falls Dam**

Elliott Falls Dam, which is owned and operated by the Trent-Severn Waterway, is a concrete buttress dam with two main sluiceways and a log chute with a centre concrete gravity dam overflow spillway. The west sluiceway has been retrofitted to house an underflow gate that is owned and operated by Elliott Falls Power Corporation. The other sluiceway contains stoplogs that are operated by the Trent-Severn Waterway (TSW). Figure 2 below indicates the locations of the various structures at the dam site.



*Figure 2 – Site Layout*

## **4.0 Current Operations**

Current operations reflect conditions of the Water Power Lease Agreement with the Province of Ontario and within the overall management direction of the Trent-Severn Waterway. Trent-Severn Waterway's Elliott Falls Dam regulates the water level in the Gull River to meet the needs of navigation within the waterway. The Elliott Falls Hydroelectric Generating Station operates on flow diverted from the Gull River at the dam. The amount of flow available, which can subsequently be utilized for hydro generation, is determined by the Trent-Severn Waterway. An additional factor impacting the amount of flow available to produce power is that a minimum flow of 1.5 cms is maintained over the falls through the east spillway by TSW for the maintenance of scenic values from May 21<sup>st</sup> to October 15<sup>th</sup>. The hydro generation function is not a priority for the operational of this dam thus is not a factor in flow determination for Trent-Severn Waterway. The waterpower lease agreement prevents Elliott Falls Power from controlling flows and water levels thus the hydroelectric generating installation has no influence on flows or water levels in the Gull River.

The generating station is currently operated manually by a part-time operator who adjusts the plant to comply with instructions provided on a daily basis by the TSW. The TSW specifies the required range of water levels for the headpond (i.e., water level just upstream of the dam) and/or the flow in the river as measured at the Environment Canada streamflow gauge on the Gull River just downstream of Elliott Falls. Flows through the two turbines are adjusted daily or as required to maintain the water level and/or flow within the specified range(s). Manual, periodic adjustment provides good results as the flow in the Gull River is sufficiently regulated by the TSW and, as such, changes in flow are predictable.

A by-pass gate installed in the west sluiceway of the dam is operated automatically to maintain flow in the river when one or both turbines shut down. In the event of a power grid failure (black out situation) the bypass gate can be operated using a small portable generator. In the unlikely event that the operator is unable to get to the site for an extended period during a power grid failure (e.g. due to extreme weather conditions or an accident), water behind the dam will rise and spill over the existing overflow spillway (as designed) ensuring that the upstream water level does not exceed acceptable maximum levels.

Power generation will occur as long as sufficient flow is available to run one turbine. In addition to the 1.5 cms maintained over the spillway an additional minimum flow of 4.0 cms must be available to operate the turbine. Flows in excess of 20.0 cms are above the maximum capacity of the turbines which results in excess flow being conveyed through the spillways. In the event of low flows, the generating station is shut down and flow is managed by the TSW through stoplog manipulation. On occasion the TSW has requested that Elliott Falls Power utilize their by-pass gate to pass the flow. Elliott falls Power does not manipulate the stoplogs on the dam and as per the Water Power Lease "Use of water will be run of the river only and no 'ponding' or 'surging' of the plant will be permitted."

#### **4.1 Maintenance as it is Related to Operations**

Minor maintenance is performed as required throughout the year which often involves periodic shutdowns to service the equipment. Shutdowns are achieved through the closure of the intake to the turbine(s) and then directing the required flow through the by-pass gate.

### **5.0 Information Gaps, Priorities and Programs**

The Trent-Severn Waterway monitors and records water levels on Moore Lake and flows in the Gull River for the purpose of managing the waterway and providing direction to the generating station. Elliot Falls Power Incorporated does not regulate upstream water levels or downstream flows thus there is no requirement for a rule curve or additional recording of water flows or levels.

### **6.0 Operating Plan**

The Elliott Falls generating facility will continue to generate power under the direction of the Trent-Severn Waterway and in accordance with the lease agreement with the Province of Ontario. The lease agreement will be in effect for the entire term of this plan.

### **7.0 Plan Enforcement and Compliance**

The Trent-Severn Waterway monitors Moore Lake levels and flows in the Gull River in order to meet the management objectives within the waterway. The Elliott Falls Generating Station operates under daily direction provided by the Trent-Severn Waterway and by the conditions of the lease agreement with the Province of Ontario. Elliot Falls Power Incorporated does not influence water levels or flows in the Gull River thus there are no requirements for reporting flows and levels by the facility operator.

## **8.0 Provisions for Plan Reviews, Amendments, and Plan Renewals**

This plan has a term of ten years, from April 1<sup>st</sup>, 2005 to March 31<sup>st</sup>, 2015. The first plan review will commence no later than March, 2013. Subsequent reviews of the plan will be carried out as required and as determined by the MNR and the waterpower producers. The review will involve public consultation through the *Environmental Bill of Rights* Registry (EBR) postings where required. An unscheduled plan review may be required at any time if an issue develops that justifies a comprehensive reassessment of the whole plan.

Amendments to the WMP can also be made during the term of the plan provided the outcomes remain consistent with the goals and objectives of the WMP.

Three categories of amendments are provided:

- Administrative
- Minor
- Major

The amendment process involves:

- a) Submission of a request for an amendment.
- b) Review of the request by the MNR District Manager, with advice from the Steering Committee.
- c) Acceptance or denial of the request.
- d) If acceptance, assignment of a category to the amendment.
- e) Completion of all applicable planning requirements, including public consultation.
- f) Record-keeping requirements.

### **8.1 Amendment Request**

Any request must be accompanied by sufficient information to allow the MNR Regional Director to determine whether the proposed amendment should proceed, and whether the amendment should be treated as administrative, minor, or major. The amendment request must contain the following information:

- A brief description of the proposed amendment.
- The rationale for the proposed amendment and a discussion of its significance.
- If new operations are proposed:
  - A brief description of the proposed operations and a description of the previously approved operations in the water management plan which will be changed by the proposed amendment.
  - An outline of the applicable planning requirements for the proposed operations, including public consultation, based on the planning requirements for similar operations in a water management plan.

## **8.2 Review of Amendment Request and Categorization of Amendments**

The MNR Regional Director is responsible for determining whether an amendment should proceed, and for categorizing the amendment as administrative, minor, or major. In making this determination, the Regional Director will assess the appropriate extent of public consultation and MNR review and approval necessary.

The Regional Director considers the following factors in determining whether to grant the request for an amendment, and in determining the appropriate category for the amendment:

- Whether there are legitimate time constraints which must be met for reasons of public safety, biological or industrial necessity, or public convenience and necessity.
- Whether there has been previous notification that the requested amendment will be required, and the degree to which planning and public consultation has taken place previously (e.g. decisions deferred in the water management plan; amendments required after public consultation in other planning processes).
- The adequacy of the information concerning the resource features, land uses and values potentially affected and the anticipated potential effects of the requested operations.
- The number of previous requests for similar amendments.

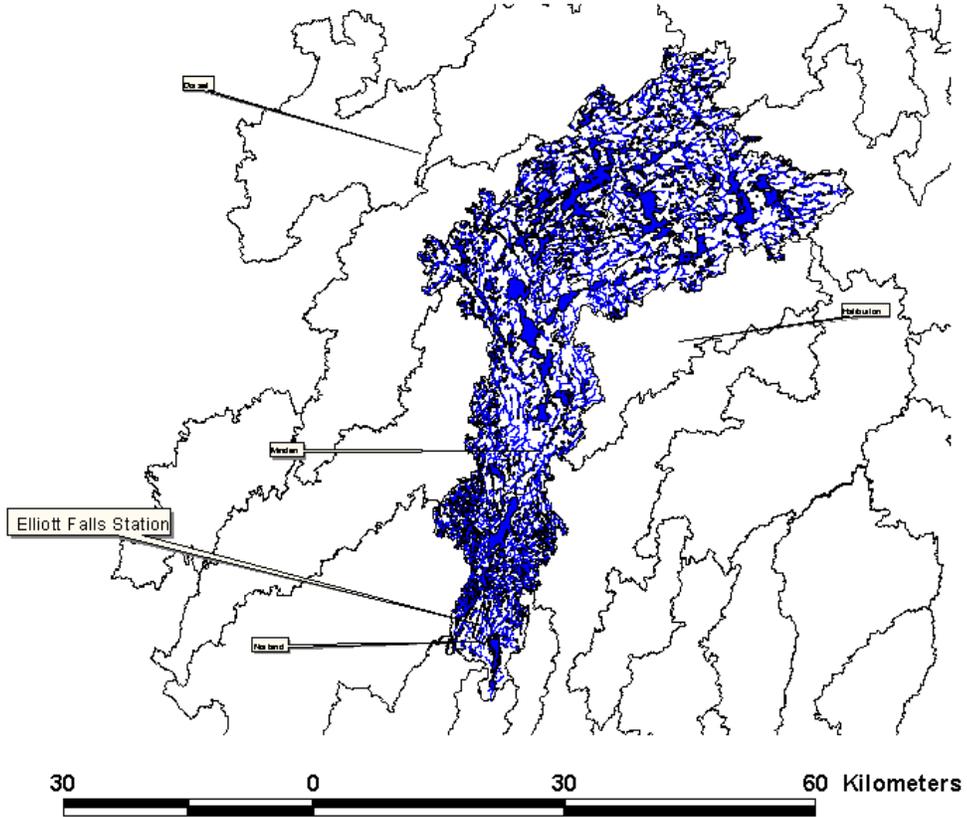
The decision on the amendment request, and the appropriate category of amendment, will normally be made within 30 days of receipt of the request. The MNR Regional Director will prepare a written decision, and any disagreements with the categorization of the amendment, will be recorded in that written decision.

## **8.3 Amendment Records and Distribution**

All approved amendments will form part of the approved water management plan. A copy of each approved amendment will be filed with the approved water management plan at the appropriate MNR district office immediately upon approval. A record of all amendment requests and all approved amendments will also be maintained.

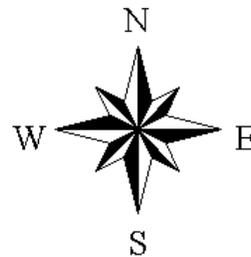
Appendix A

# Elliott Falls - Watershed Map



## Legend

-  Stream
-  Waterbody
-  Watershed



**Appendix B**

**Water Management Planning  
Scoping Report**

**Elliott Falls Hydroelectric Generating  
Station**

**Lot 9 Concession XI Laxton Township**

**Compiled by the Steering Committee**

**February 2005**