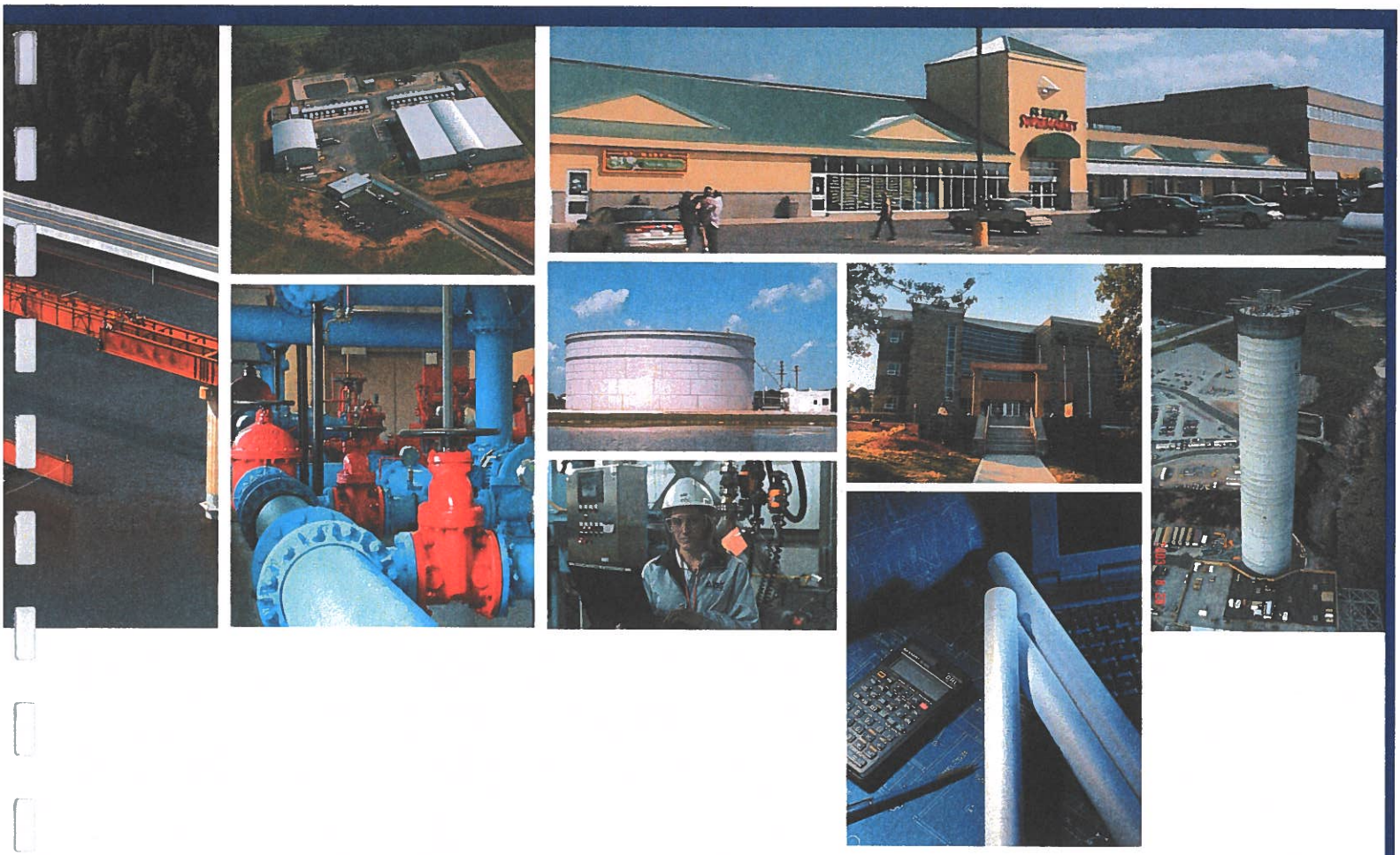

# Glen Falls Floodways
# Preliminary Design Report


**ADI Limited**



**Project: (85) 0094-271.1**
**Date: February 1, 1999**


CANADA'S 50 BEST MANAGED COMPANIES

# GLEN FALLS FLOODWAYS
# PRELIMINARY DESIGN REPORT

**Prepared For:**

The City of Saint John

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FILE: (85) 94-271.1
DATE: February 1, 1999

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## 1.0 INTRODUCTION

The Glen Falls area has been subject to flooding conditions during severe storms for many years. During the 1970's, several studies were commissioned by The City of Saint John to determine possible remedial measures that would help alleviate the flooding during storm events. One of the recommendations of the reports was the construction of floodways in the Glen Falls area.

A floodway, as defined by a March 1976 report by Proctor & Redfern Limited entitled 'Water Management Study Marsh Creek Watershed', is "... a designated flooding area where, during severe floods, flood waters are stored, or contained, at known water surface elevations." A floodway is essentially an excavated area that serves as additional storage capacity for flood waters during the storm event. The major benefit of a floodway is the ability to contain the flood waters in an undeveloped area, so that the impact on existing developed areas can be minimized.

The City of Saint John has recognized the floodway as an effective method of alleviating the flooding in the Glen Falls area and has purchased land in the Marsh Creek and Coldstream Brook area for the construction of these floodways. Their purpose will not only be to alleviate flooding but, to provide compensatory storage to allow further development in the flood plain area. This report outlines the preliminary design of the floodways and provides an implementation strategy for the phased construction of the areas as funds become available.

## 2.0 PRELIMINARY DESIGN

One of the first steps was to carry out a topographic survey of each of the properties identified for the floodways. All available information on existing utilities, such as water, sanitary, and storm services, were gathered and incorporated into a site plan along with the survey information to determine the best possible configuration of the floodways.

Test pits were dug at various locations over the site to gather information related to subsurface conditions. Soil samples were analysed and groundwater levels were monitored to determine soil characteristics that would aid in the design. Generally, the soil had been found to be a very soft silty type material.

The available area was estimated to be approximately 11 hectares, with an available storage volume of approximately 140 000 $m^3$. The total area was divided into three (3) separate floodways, which can be seen on the overall site plan in Appendix A. The

volume calculations were based on a typical setback of 7.5 metres from a developed property, and 6.0 metres elsewhere. The average depth of water in the floodway during a severe storm event will be approximately 1.2 metres.

The total construction cost is estimated at $1.52 million. Included in the cost estimate are the construction of access roads required during the excavation process, any culverts required to convey the flow between the existing watercourse and the floodways, and fencing required between the floodways and developed areas. As well, additional landscaping around the perimeter of the floodway was included in the estimate to act as an aesthetic buffer between developed areas. A breakdown of the costs associated with each phase of the project is given in the following section.

## 3.0 IMPLEMENTATION STRATEGY

The three (3) individual floodways have been divided into a total of seven (7) phases. The construction of each phase of each floodway must occur in the same sequence as outlined on the attached site plan for the floodway to function properly. For example, Phase 2B cannot be completed before phase 2A, since phase 2A contains the only access to Marsh Creek. As well, each individual floodway is assigned a priority based on the ease of construction and the best cost/benefit ratio. The relative size of each phase within each floodway can be modified to some extent based on the need at the time and the available funds.

The first priority will be to construct Area 1; the area bounded by Coldstream Brook to the east and Golden Grove Road to the south. This area has the lowest construction cost per cubic metre of volume and all land is presently owned by The City of Saint John. This area has been shown as being divided into three (3) phases.

The second priority will be to construct Area 2; the area to the north of Marsh Creek bounded by Simpson Drive to the west and Broadway Avenue to the north. This area has also been shown as being divided into three (3) subareas to allow for construction to be phased. Most of the area is bounded by existing residential properties, therefore the cost per cubic metre of storage volume is marginally higher than that of Area No. 1, due to the fencing and landscaping requirements.

The third priority will be to construct Area 3; the area to the northwest of Marsh Creek bounded by Todd Street to the north. This is the smallest of the areas and has not been divided into phases. Because of the shape of the area and the fencing and landscaping requirements, the cost per cubic metre is the highest of the three floodways.

**TABLE 1**
**Comparative Phase Costs**

| Phase | Area No. | Estimated Cost | Estimated Cost per Cubic Metre |
|---|---|---|---|
| 1 | 1A | $ 330 000 | $ 9.64 |
| 2 | 1B | $ 210 000 | $ 8.91 |
| 3 | 1C | $ 225 000 | $ 11.28 |
| 4 | 2A | $ 190 000 | $ 11.52 |
| 5 | 2B | $ 230 000 | $ 12.70 |
| 6 | 2C | $ 185 000 | $ 12.03 |
| 7 | 3 | $ 150 000 | $ 13.14 |
| | Estimated Total Cost = $ 1 520 000 | | Average = $ 10.92 |

It is recommended that construction begin with Area 1A as shown on the overall plan in Appendix A. The estimated cost of this phase is $ 330 000. Depending upon available funds and, the volume of storage required at the time, the limits of each phase can be modified as required. The sequence of construction, however, is recommended to remain the same.

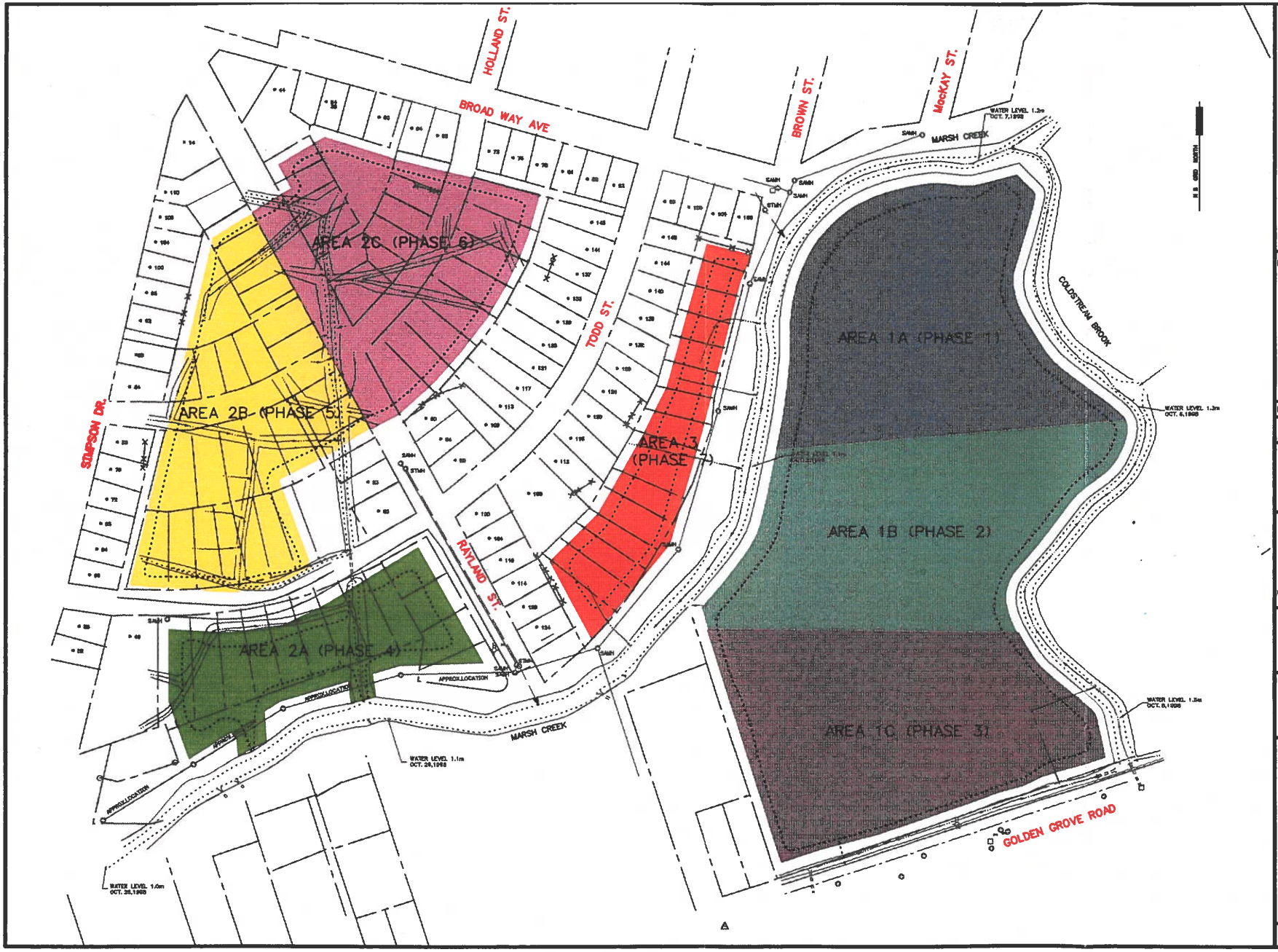
## 4.0 SCHEDULE

Topographic surveys, soils investigations and preliminary design drawings and cost estimates have been completed. Final drawings, complete with technical specifications will be submitted by February 15, 1999.

| ADI Quality System Checks: | | | |
|---|---|---|---|
| Submitted by: | G. P. Wasson (name) | | (signature) |
| Project No.: | (85) 94-271.1 | Date: | 99.02.04 (yr / mo / da) |
| Issue status: | Final | Revision #: | 0 |

# APPENDIX A

## Overall Site Plan




NOTES

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| No. | By | Date | Revision |
|---|---|---|---|

PRELIMINARY

Consultant JOB# 94-271.1

ADI Limited
Saint John, NB, Canada
Engineering, Consulting, Procurement and Project Management
Charlottetown, Moncton, Saint John, Truro, Vancouver, Sydney, St. John's, Halifax, Fredericton and Sussex, NB

MUNICIPAL OPERATIONS DEPARTMENT

CITY OF SAINT JOHN

ENGINEERING DIVISION

PROJECT TITLE
CITY OF SAINT JOHN
GLEN FALLS
FLOODWAYS

DRAWING TITLE
OVERALL SITE PLAN
GLEN FALLS
FLOODWAYS

APPROVAL

Contract No.

Scale N.T.S.

Drawn By J.D.M.

Date 99.02.01

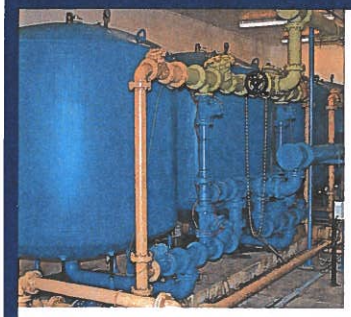
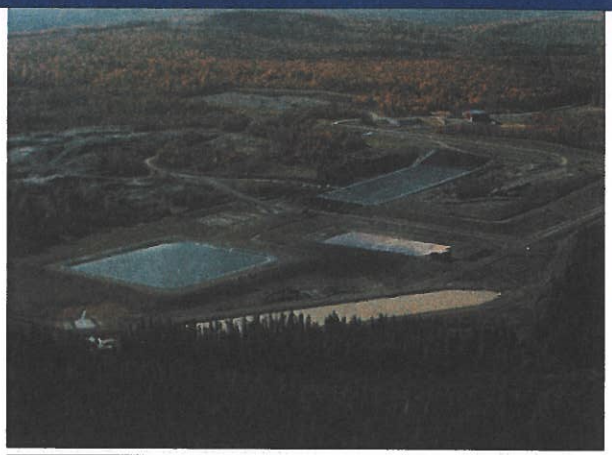
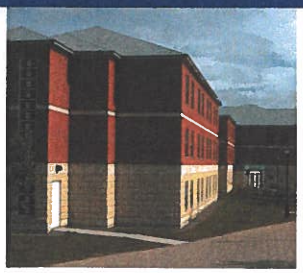
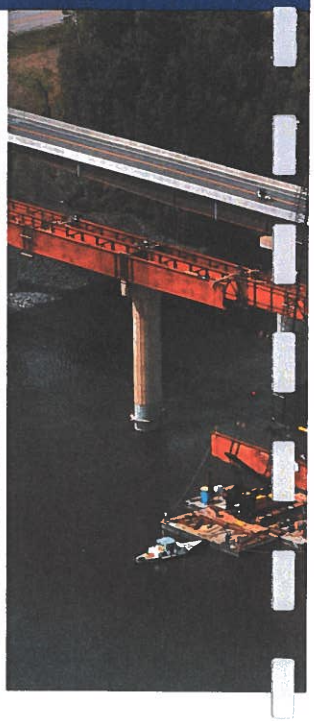
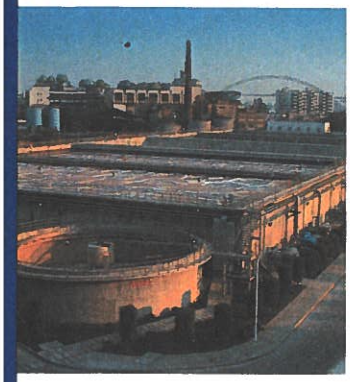
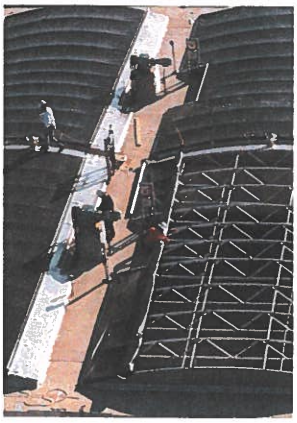
Checked By

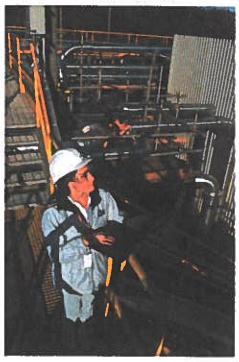
Project Engineer

Chief City Engineer

Sheet 1 of 1

File



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