

Grand River Conservation Authority

Laurel Creek Conservation Area

MASTER PLAN

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Section 1: The Context

1.1 PROPERTY CONTEXT

The Laurel Creek Conservation Area, situated in the rapidly expanding City of Waterloo, is located in the northwest corner of the city between the urban cityscape of Waterloo and rural countryside of the Township (Figure 1.1) (Appendix 1, Map 1.1). It covers an area of approximately 293.3 hectares. However, urban development has now completely encircled the property, creating an atmosphere no longer so rural. The property is bordered by Laurelwood Drive to the south, Conservation Drive to the North, both Westmount Road and Bearinger Road to the east, and Beaver Creek Road runs through the west side of the property.

The property is also located in the center of the Laurel Creek watershed, an area of approximately 74 km² in the Regional Municipality of Waterloo. The watershed is characterized by many land use types. Urban land use consists of a broad range of types including high to low density residential, industrial, commercial and institutional. Still, an upper portion of the watershed consists mostly of agricultural land use (cash crops and pasture land), with considerable woodlots and wetlands. The majority of the Laurel Creek watershed is located within the City of Waterloo, but it also reaches into the Townships of Wellesley, Wilmot, and Woolwich, and to the south, the City of Kitchener (Appendix 1, Map 1.2).

Laurel Creek drains from west to east starting in the Township of Wellesley, and finally draining into the Grand River in Bridgeport. The creek drains most of the lands within the City of Waterloo, thus making much of the watershed highly urbanized.

There are two main properties that make up the Laurel Creek Conservation Area: the Conservation Area lands, east of Beaver Creek Road, and the Nature Centre lands, west of Beaver Creek Road (Figure 1.1) (Appendix 1, Map 1.3). The Conservation Area lands are used mostly for camping and recreation. Also, within the Conservation Area lands is the Laurel Creek Reservoir that covers a surface area of 101 hectares, and provides 1.5 trillion litres of water storage at its maximum capacity. The Nature Centre lands are used mostly for educational purposes, hosting a variety of environmentally based programs for young students and the public. Also on the property are a gatehouse, workshop, two washroom facilities, a boat ramp, and shelters.

Future Property Context

The land surrounding the Laurel Creek Conservation Area is rapidly developing. In April 2004, construction at the corner of Bearinger Road and Northfield Drive began for the realignment of Westmount Road. Due to this construction a portion of the Laurel Creek Conservation Area property was sold by the Grand River Conservation Authority to the City of Waterloo for commercial land. Also land to the southeast of the Laurel Creek Conservation Area owned by the University of Waterloo is planned for development, including academic buildings, parking lots, and roads. This area is known as the University of Waterloo Research and Technology Park. However, a significant portion of land in this area will not be developed. This is the Environmental Reserve land, also owned by the University of Waterloo. Lastly, residential developments have now completely encircled the Laurel Creek Conservation Area. Recent developments have arisen north of the Conservation Area beside

Conservation Drive. Generally, the surrounding land use has the potential to play a major role in the function of the Laurel Creek Conservation Area.

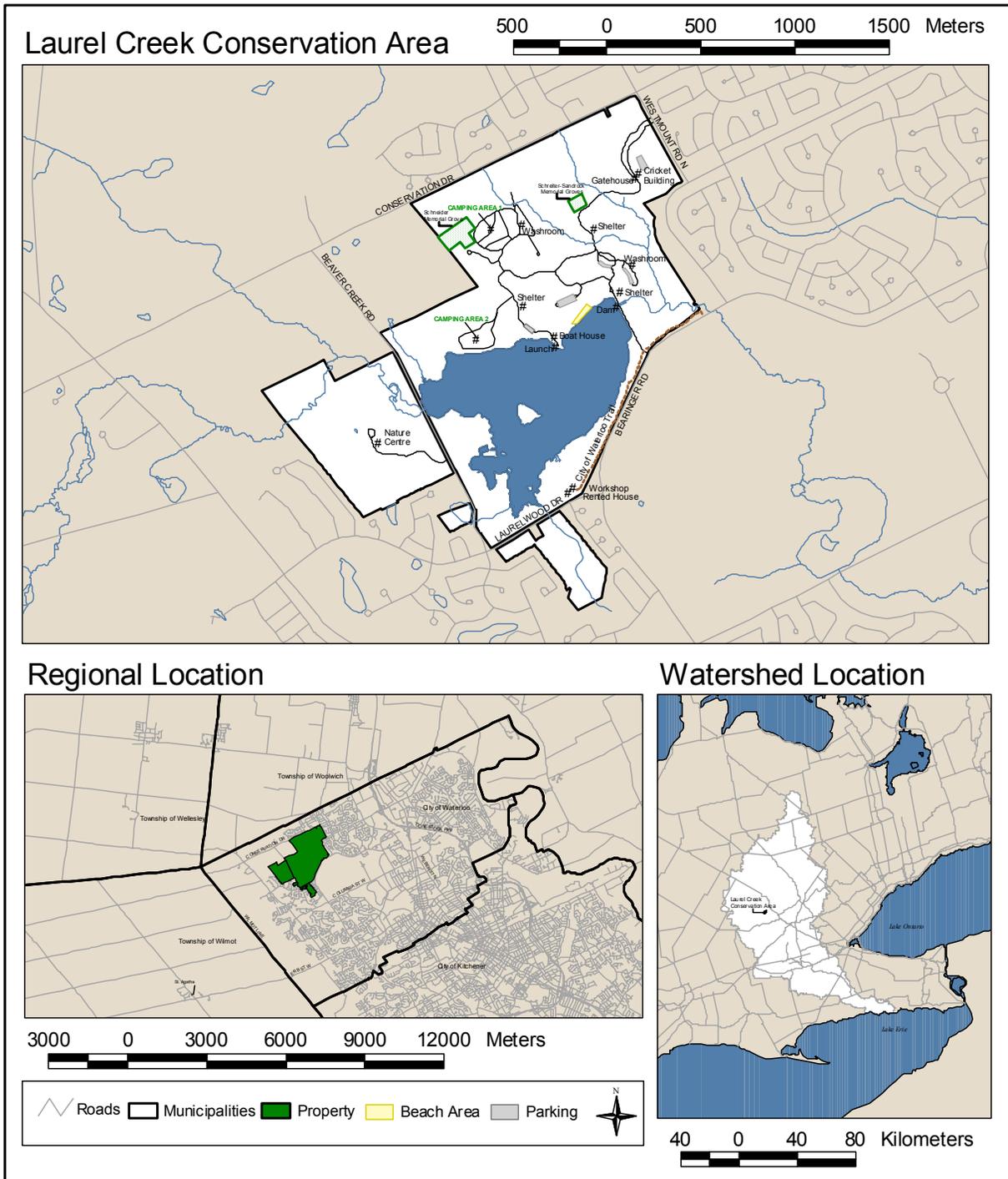


Figure 1.1 Location Map

1.2 PROPERTY HISTORY

Land acquisition for the property began in 1964, and by 1965 approximately 300 hectares of land were purchased. Clearing of the reservoir site began in 1965, and by 1966 the dam was complete. The Laurel Reservoir was constructed in order to mitigate flooding on Laurel Creek and to augment flows during low flow periods. After the Reservoir was constructed, two additional properties were acquired for source area control. These included a 1.6 hectare wetland west of Beaver Creek Rd in 1971, and another wetland south of Bearing Rd., a 12.3 hectare woodlot, in 1975.

The opening of a “Conservation Education Field Centre” in 1973 marked Laurel Creek Conservation Area’s first year of outdoor education. Later that year, a 750 ft. nature trail boardwalk was constructed for the use of the outdoor education centre. However, it was removed in 2001, due to deterioration and lack of maintenance. 1974 saw two portable classrooms rented out to the Separate and Public School Boards. In that year, 10,000 children visited this site. Recent visitation records are provided later. Today, the workshop compound sits at this location.

In 1975, 48.5 hectares on the west side of Beaver Creek Rd were acquired to act as a drainage buffer to the Reservoir. In that same year, the Grand River Foundation launched a campaign to raise funds for a more substantial nature centre. The campaign was a success, and a nature centre was completed by 1976. The Laurel Creek Nature Centre was officially opened on September 24, 1977 and was celebrated with the opening of a 32 metre boardwalk connecting the lands to the north of Laurel Creek. To provide local students with an opportunity for outdoor/ environmental instruction, the Nature Centre operates under a contractual agreement with the Waterloo Region District School Board and the Waterloo Catholic District School Board. Outside the school year, the Nature Centre offers programs to community groups, like Guides and Scouts, as well as summer day camps. In 1990 an addition to the Nature Centre building was constructed.

Since the early 1980’s Laurel Creek Conservation Area has not changed significantly; however, its surrounding environment and infrastructure has changed drastically. From the early 1980s to the early 2000s, the Laurel Creek Conservation Area neighbourhood has transformed from rural countryside to suburban. This change has influenced the management, and role of the property, because the majority of user interests have changed. These new realities will be reflected in the future management of Laurel Creek Conservation Area.

1.3 PLAN PURPOSE

The Laurel Creek Conservation Area Master Plan serves as a reference document for the future management of the property. A previous plan was written in 1981, and therefore this plan is an update. This Master Plan is intended to provide “big picture” context and direction for the day-to-day management of the property. It outlines the primary goals and objectives for the property, as well as new and current management practices that accomplish those goals and objectives.

1.4 GOALS AND OBJECTIVES

Conservation Area Goals:

1. To continue to use the reservoir for flood control, and to make appropriate use of the lands around the reservoir.
2. To conserve, protect and enhance the natural environment of the site.
3. To provide a venue for outdoor recreational enjoyment.

Conservation Area Objectives:

1. To protect/restore ecological function through ecological restoration projects.
2. To develop a reliable and safe water recreation facility, preferably a splash pad.
3. To accommodate anticipated increases in camping.
4. To enhance property security related to trespassing.
5. To encourage a cleaner reservoir and beach by removing Canada Geese feces.
6. To minimize and mitigate environmental degradation caused by recreational use.

Nature Centre Goals:

1. To conserve, protect and enhance the natural environment of the site.
2. Provide a program and facility to present quality outdoor education.

Nature Centre Objectives:

1. To protect/restore ecological function through ecological restoration projects.
2. To continue to promote environmental awareness through education and experience.
3. To enhance property security related to trespassing.
4. To minimize and mitigate environmental degradation caused by recreational/educational use.

1.5 PLAN STRUCTURE

The Laurel Creek Conservation Area Master Plan is a *Comprehensive Site-Specific* Master Plan. It identifies the overall objectives for the property, with respect to social, economic, and natural heritage attributes. These objectives are addressed in eight different sections. The sections include: (1) The Context; (2) GRCA Policies and Master Planning Process; (3) Physical Conditions and Biophysical Resources; (4) Existing Uses; (5) Management Practices; (6) Issues, Opportunities, Stakeholder Input; (7) Recommendations; (8) Plan Implementation.

Section 2: Grand River Conservation Authority and the Master Plan Process

2.1 INTRODUCTION

Two themes are presented in Section 2, an introduction of the Grand River Conservation Authority (GRCA), and an overview of the Master Plan Process. A brief history of the GRCA is given, including the organization's mission, vision, and values, strategic plan and focus. Secondly, the Master Plan Process is outlined, including how a Master Plan is developed through various stages.

2.2 THE GRAND RIVER CONSERVATION AUTHORITY

In the 1800s, the Grand River provided transportation, water supply, and waterpower, attracting settlement to the valley. Deforestation and urban settlement combined to aggravate flood and drought conditions. Water quality in the river deteriorated to the point where it was a public health concern. To deal with these problems a group of eight municipalities banded together to form the Grand River Conservation Commission in 1932. In 1942, the Commission completed the Shand Dam, the first multi-purpose dam in Canada, built for flood control and low flow augmentation to improve water quality during the dry summer months. It also started planting trees around reservoir sites to help restore the watershed.

Resource problems were not unique to the Grand River watershed. Prior to World War II, renewable natural resources were exploited to encourage industrial expansion and economic growth. As a result of public concern about the state of the environment in Ontario, the Province passed the Conservation Authorities Act in 1946. The Act was based on three principles:

- Initiative for the establishment and support of a conservation authority must come from the local people (all watershed municipalities).
- The best unit for dealing with renewable resource conservation is the watershed.
- If initiative and support were shown locally, the Ontario government would provide technical advice and financial assistance in the form of grants.

The GRCA is a corporate body established to enable municipalities to jointly undertake water and natural resource management on a watershed basis - for the benefit of all. The broad goal of all conservation authorities in Ontario is specified in Section 20 of the Conservation Authorities Act: *The objectives of the Authority are to establish and undertake in the area over which it has jurisdiction, a program designed to further the conservation, restoration, development and management of natural resources other than gas, oil, coal and minerals.*" (RSO 1990, c. 27). Under the terms of the Act, the Grand Valley Conservation Authority was formed in 1948. The practicality of two conservation organizations operating in the same watershed was closely scrutinized in the 1960s. To avoid potential conflict over roles and responsibilities and to eliminate duplication of programs the Grand River Conservation Authority was established in 1966 through the amalgamation of the Grand River Conservation Commission and the Grand Valley Conservation Authority.

Since 1966, the GRCA, its member municipalities, and the community, have accomplished much in bringing back environmental health and sustainability to the watershed. Brown Trout populations in the upper Grand River have been revitalized due to better water quality and fish habitat and spawning restoration projects. Streams have been improved by projects focused on stream runoff and bank erosion, tree planting, and water quality. The GRCA has promoted educational and recreational activities that allow people to experience the Grand River and its watershed. The combination of programs undertaken by the GRCA and its partners over the last 60 years has created a story of recovery in the Grand River from years of degradation and industrialization. In 1991, the GRCA established its mission, vision, and values (listed below).

Vision

“To be a leader in ensuring a healthy and sustaining relationship between the natural environment of the Grand River watershed and the demands on this environment by all forms of life.”

Mission

“To work with partners to conserve the natural processes and resources that support a safe and healthy environment for future generations in the Grand River watershed.”

Values

“Openness, clarity, understanding, sensitivity, action, holism, integrity, accountability, trust, flexibility, fairness, preparedness, creativity, innovation.”

2.3 MASTER PLAN PROCESS

A Master Plan describes an overall development concept including present uses and future land development plans for a property. All Master Plans are related to an authority’s watershed plan or conservation and recreation land management plan, while also contributing to subsequent stages of planning by specifying site development and operations planning guidelines for the area of land in question.

Different levels of Master Plan detail will be required for different properties. They can be prepared on a site-specific basis, or alternatively, one plan can be prepared for an entire class of properties. Furthermore, site specific Master Plans can be comprehensive or focused. A *comprehensive* Master Plan is a strategic document that identifies the overall objectives for a property, with respect to social, economic, natural heritage and environmental attributes. A *focused* Master Plan would be less comprehensive. It would not consider a large number of alternative uses, and would not require significant public input.

There are a number of key components included in most Master Plans. They include a general introduction and history of the property, followed by a detailed ABC inventory (Abiotic, Biotic, and Culture), some information about past, present and potential future uses, and then proposed plans that are followed by a suggested implementation process. An approach to developing a Master Plan is outlined below. Depending on the size and nature of the property, this process can often times take a couple of years.

Developing A Master Plan

Steps involved in developing a Master Plan are outlined below.

1. Determine the class of plan applicable to the subject property.
2. Gather existing relevant data, management records, Master plans, relevant sections from thematic and/or subwatershed plans, reports, and policies.
3. Identify information gaps that need to be addressed for the appropriate class of plan.
4. Develop and implement a work plan to address information gaps.
5. Develop and implement a strategy for staff and community involvement in the planning process appropriate to the subject Master Plan.
6. Establish the goals and objectives for the management of the subject property.
7. Describe the property's physical, natural, and cultural heritage attributes and context, its history and past management, and its current use.
8. Identify management opportunities and constraints presented by the subject property's physical, social, environmental and cultural attributes.
9. Identify and reconcile potential or current conflicts related to goals/objectives, constraints/opportunities, current or potential use.
10. Create, and show in map form, zones of land use; develop and apply generic and/or specific land use policies to the various zones.
11. Identify threats to the long-term sustainability and ecological health of the property, and recommend mitigating strategies.
12. Recommend policies, strategies, and actions that protect the sustainability and ecological integrity of the property and optimize benefits to the watershed and its community.
13. Compile all of this information according to the appropriate template into an informative and readable Master Plan.
14. Ensure that the plan is compatible with adopted plans or strategies of the Grand River Conservation Authority; the expectations of staff, the board, and the community; and, relevant municipal, provincial, national, and international strategies.
15. Present the Master Plan to the board of the Grand River Conservation Authority for approval.

Historically, most Master Plans provided a twenty year horizon for management activities and development, as well as to set the context for routine property operations. Generally, a Master Plan's time frame is dependent upon its recommendations. A plan usually will take five, ten or twenty years to implement all recommendations.

Key to developing any Master Plan is the involvement of multiple internal professionals, as well as private and public stakeholders. In general, society has a growing demand for outdoor recreation, and therefore, is visiting and using parks more often than in the past. Also, in general, society has a higher expectation of being involved in community matters. There is much knowledge in the community to be brought to the planning process. Therefore, it is vitally important to have their input into the Master Plan Process. Input from citizens is required, whether municipal representatives, school board councils or representatives, and sometime, private companies. Also, GRCA staff with backgrounds in planning, forestry, parks management, business, and ecology, provide input to the Master Plan Process.

Section 3: Physical Conditions and Biophysical Resources

3.1 INTRODUCTION

Section 3 outlines the physical and biophysical characteristics of the Laurel Creek Conservation Area. Within these two sections, the following specific topics will be reviewed: climate, topography, geology, hydrology, soils, mammals, fish, amphibians, reptiles, and birds.

3.2 PHYSICAL CONDITIONS

The environmental physical conditions of the Laurel Creek Conservation Area are outlined using the following five site characteristics: climate, topography, geology, soils, and hydrology.

3.2.1 CLIMATE

Waterloo Region's climate is characterized by variable annual temperatures and less variable total monthly precipitation. Annual average temperature is approximately 6.7°C, and total annual precipitation is 907.9 mm. As well, precipitation is typically lower in the fall and winter months, while the summer and late spring months experience higher amounts of runoff due to the effect of winter snow melt. Refer to Figure 3.1, and Table 3.1 for specific climate data. Wind direction generally ranges in origin from northwest around to southwest.

3.2.2 GEOLOGY

The underlying bedrock of Waterloo Region is a result of mud deposition from an ancient sea that existed during the late Silurian and early Devonian time about 400 million years ago (Appendix 1, Map 3.1). Known as the Salina Formation, the bedrock has been deeply buried by subsequent glacial deposits and only becomes exposed near Paris, in Brant County. This Salina Formation consists of brown dolomite and limestone, grey dolmitic shales, anhydrite, gypsum and salt.

Closer to the surface are the surficial geologic forms. Present surficial geologic features include Tavistock Till, Glaciofluvial Ice-contact deposits, Maryhill Till, Modern Fluvial deposits, and occasional organic deposits (Appendix 1, Map 3.2). These deposits are the result of the Salina Formation, and it is these deposits that influence the present soils.

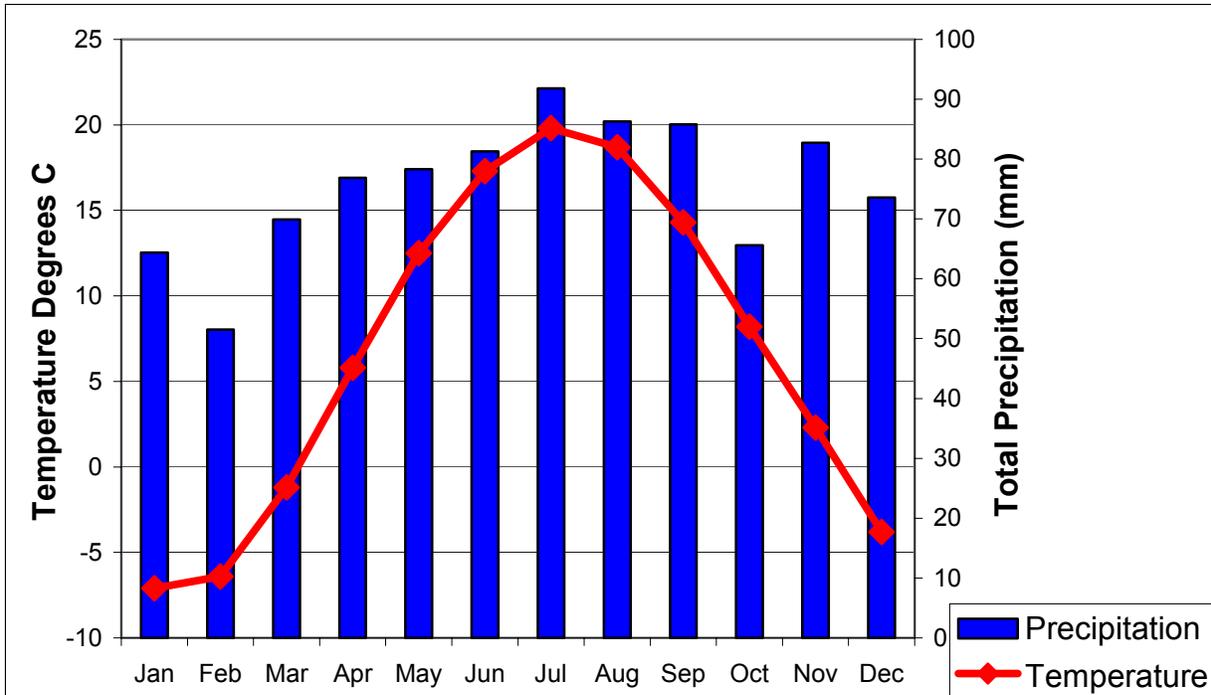


Figure 3.1 General Climate for Waterloo Region (1971-2000 Climate Normals, Environment Canada, 2003)

Table 3.1 General Climate Summary for Waterloo Region (1971-2000 Climate Normals, Environment Canada, 2003)

Temperature:	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Daily Mean (°C)	-7.1	-6.4	-1.2	5.8	12.5	17.3	19.8	18.7	14.3	8.2	2.3	-3.8	6.7
Precipitation:													
Precipitation (mm)	64.4	51.5	69.9	76.9	78.3	81.3	91.8	86.3	85.8	65.6	82.7	73.6	907.9

3.2.3 SOILS

Generally, the soils at the Laurel Creek Conservation Area are deep, permeable, medium to fine texture, moderately well drained to imperfectly drained, and have good water retention. These soils consist primarily of sand deposits ranging from silty and sandy loam to coarse and medium outwash sands (Appendix 1, Map 3.3). Deep organic soils have developed on the site in poorly drained depressions. These highly fertile soils have 30% or more organic matter and are in excess of one metre in depth. In poorly drained depressions and at the toe of slopes, silty clay loams occur frequently. These soils tend to have high water tables and are very susceptible to freezing.

3.2.4 TOPOGRAPHY

Laurel Creek Conservation Area is situated in the Waterloo Moraine, which is one of the most distinctive relief features in the Region. These deposits, locally known as the Waterloo Sandhills, consist mainly of

sandy and silty deposits within intermittent layers of gravel and clay. Therefore, the overall topography is characterized by a variety of landscapes.

3.2.5 HYDROLOGY

Laurel Creek

Laurel Creek, a tributary of the Grand River, originates in a concentration of swampland and marshes in the southeastern section of Wellesley Township. The creek flows in an easterly direction through the City of Waterloo and the Village of Bridgeport, where it joins the Grand River. Laurel Creek and its tributary, Clair Creek have a total drainage of 76.5 square kilometres, and a total length of 21 kilometres (Appendix 1, Map 1.2).

Within the Nature Centre Lands, Laurel Creek meanders through the southern portion of the upland woodlot then turns southward to parallel Beaver Creek Road where a small pond has been created by the impoundment of the waters for the Laurel Creek Conservation Area. At this location Laurel Creek and the pond are subject to extreme variations in elevation and flow. Laurel Creek frequently overflows its banks in the spring. Conversely, the pond experiences drawdown from late fall into spring due to normal operating procedures. Laurel Creek then enters the Laurel Creek Reservoir across Beaver Creek Road at the northeast end of the Reservoir. Downstream of the reservoir the creek meanders across a low-lying part of the Conservation Area and exits the site under the bridge on Bearinger Road, near the intersection of Westmount Rd. For further information refer to Appendix 1, Map 3.4.

Laurel Creek Reservoir

The Laurel Creek Reservoir is quite shallow, turbid and relatively slow in its average turnover rate. Forty percent of the reservoir has depths ranging from 1.5 to 3 metres while the remaining sixty percent averages around one metre. Emergent and submergent stumps occupy most of the waters south of the island where the depth is often less than one metre from the surface.

The Laurel Creek Reservoir is maintained at the constant regulated level of elevation of 342.4 metres throughout the late spring and summer months. During the late fall the Reservoir is drawn to an elevation of 339.2 metres and maintained at that minimum level until the danger of peak spring flood is past.

Ground Water Recharge

The Waterloo Moraine is an important groundwater recharge area where higher than normal amounts of surface water infiltrates into the soil and is conveyed as groundwater through underground aquifers. Recharge that occurs in the northwestern portion of the Laurel Creek watershed contributes to the discharge of Laurel Creek and Beaver Creek, and the area in the vicinity of Erbsville. Appendix 1 Map 3.4 outlines recharge areas that are highly significant, significant, and less significant, in the Laurel Creek Conservation Area neighbourhood.

3.3 BIOPHYSICAL RESOURCES

This section is divided into two subsections, Flora, and Fauna. In each section, a general overview and inventory of species is presented.

3.3.1 FLORA

The Laurel Creek Conservation Area is located within the Alleghenian zone, also known as the mixedwood plain, and the character of this vegetation zone is determined primarily by the climate. The other vegetation zone in the Grand River watershed is the Carolinian zone that borders the Alleghenian zone and extends southward from Cambridge.

This section reviews the flora of the Laurel Creek Conservation Area, including species found on both the park lands and the Nature Centre lands, as well as surrounding lands. Therefore, a review of each property is presented. A detailed planted species inventory is found in Appendix 2 Inventory A. As well, a vegetation communities map is found in Appendix 1, Map 3.5.

Conservation Area Lands

Since the construction of the dam, 75 percent of the Conservation Area lands have been planted to conifer plantations and parkland groves. Approximately 10 percent is naturally wooded and the remainder is a mixture of playing fields, campground, marsh and meadow. The reservoir covers approximately forty percent of the property. Due to the diversity of the landscape, including lowland, upland, reservoir, and wetland systems, the vegetation is complex. Plantations on the site include the following species: red pine, jack pine, European larch, Norway spruce, white spruce, poplar, green ash, white ash. Between Laurel Reservoir and Bearinger Road the vegetation consists of dry upland deciduous forest. Herbaceous perennials are dominant on the dryer soils while shrubs dominate the wetter areas at the reservoir interface and along the creek, downstream of the reservoir. Wetland plant species occur in areas where the gradient of the land/water interface is fairly gradual (5:1 slopes or less). This wetland vegetation extends almost uninterrupted along the entire southern shores of the reservoir creating an extension of well protected habitat for many species of shorebirds and waterfowl. Wetland vegetation on the north shore occurs at the inlet and on either side of the beach and launch areas, but is not nearly as extensive as the south shore growth.

Nature Centre Lands

The Nature Centre lands are slightly less complex and diverse, but this may be due to its smaller size. Vegetation community types on the Nature Centre property include: forest lands, hedgerows, meadows, plantations, woodlands, hardwood swamp, and thicket swamp. Historically, the majority of trees planted have been white cedar and white pine. As well, there is some natural aspen and sugar maple regeneration in the plantations. A few small areas contain recent conifer plantings. The Board of Education and the Boy Scouts along the west and south fence line and along the entrance laneway planted white pine seedlings in the mid 1990s. Older conifer plantations are located elsewhere on the Nature Centre property. Meadows, also known as old field communities, occupy the majority of the Nature Centre property. These communities are zones of succession, and are dominated by common grasses and forbs (primarily European grasses). Pioneer tree and shrub species are scattered throughout including, red-osier dogwood, trembling aspen, white ash and wild raspberry. Remnant agricultural hedgerows within the Nature Centre property still remain and are dominated by common, short-live species (trembling aspen, balsam poplar, and black locust) which spread from root sprouts. Other species include black cherry, basswood, hawthorn and red-osier dogwood. The hedgerows provide linkages from the central wetland community to the larger Laurel Creek forest to the north of the property.

Invasive Species

A wide variety of invasive plants are found on or near the Laurel Creek Conservation Area property. Several common invasive species are found in the meadows of Nature Centre. They include autumn

olive, hawkweed, white clover, buckthorn, teasel, crown vetch, and a variety of European grasses. These invasive species are typical of areas that have been heavily influenced by human activities. Throughout the Conservation Area lands, invasive species are also common. Examples include Manitoba maple, Norway maple, Scots Pine, European white birch, dame's rocket, garlic mustard, Canada thistle, common lilac, St. John's-wort, and black locust. Dame's rocket, a garden-escapee, is considered a potentially troublesome species, and tends to occur side-by-side with garlic mustard. Occurrences of Scots pine at the Conservation Area are limited to hedgerows and are well contained, due to maintenance on adjacent areas. Canada thistle is a difficult weed to eradicate due to its creeping underground stems. Manitoba maple is generally recognized as a potential problem in southern Ontario and eastward where it has spread widely into urban parks, ravines and natural areas from points of introduction. It has been widely planted and is now a weedy tree, readily established in disturbed sites everywhere. Norway maple is a widely planted boulevard tree that is now a common canopy tree species in urban ravines and natural areas in southern Ontario. The occurrence of black locust at Laurel Creek is contained within a plantation buffering the mixed forest to the north of the Nature Centre. St. John's-wort and sweet clovers are weedy species commonly found in fields and waste places. Common lilac generally does not spread much beyond its point of introduction.

Provincially Significant Wetlands

Sections of both the Conservation Area and the Nature Centre lands contain portions of the Sunfish Lake Laurel Creek Provincially Significant Wetland Complex (Appendix 1, Map 3.6). The entire wetland complex in and outside of the Laurel Creek Conservation Area is 181 hectares in area, and contains a variety of plant species. Dominant vegetation forms are as follows 31% deciduous, 27% mixed conifer and deciduous, 12% coniferous, 12% tall shrubs, 10% submergents 5% robust emergents, 3% herbs, <1 narrow-leaved emergents. According to the 1997 Provincial Policy Statement, "development and site alteration will not be permitted in significant wetlands. The obligation to protect a portion of a Provincially Significant Wetland within a suburban park is a great opportunity, and also a constraint on access and development.

3.3.2 FAUNA

Mammals

A variety of mammal species have been seen throughout the Laurel Creek Conservation Area property over the years. Examples of observed wildlife are listed in Table 3.2. In recent years, Nature Centre staff have also reported several bat species including hoary bats (*Lasiurus cinereus*) and red bats (*Lasiurus borealis*) in numerous locations throughout the Laurel Creek Conservation Area. Coyotes (*Canis latrans*), although much less common to the property, have been witness occasionally in past years. Also, a variety of mammal burrows and dens have been found on the property, indicating that wildlife at Laurel Creek Conservation Area is not just passing through, but calling it home.

Amphibians and Reptiles

The park provides habitat for an abundance of leopard frogs and garternakes. The snapping turtle population appears to be strong, and many were seen crossing roads during their breeding season. Other amphibians heard or observed include gray tree frog, spring peeper, wood frog, green frog, American toad, red-backed salamander, and red spotted newt.

Table 3.2 Mammal Species Observed at Laurel Creek Conservation Area.

Common Name	Specific Name
White-tail deer	<i>Odocoileus virginianus</i>
Groundhog (Woodchuck)	<i>Marmota monax</i>
Mink	<i>Mustela vison</i>
Eastern Cottontail	<i>Sylvilagus floridanus</i>
Red Squirrel	<i>Tamiasciurus hudsonicus</i>
Grey Squirrel	<i>Sciurus carolinensis</i>
Eastern Chipmunk	<i>Tamias striatus</i>
Raccoon	<i>Procyon loter</i>
Hoary Bat	<i>Lasiurus cinereus</i>
Red Bat	<i>Lasiurus borealis</i>
Red Fox	<i>Vulpes vulpes</i>
Muskrat	<i>Ondatra zibethicus</i>
Striped Skunk	<i>Mephitis mephitis</i>
Potentially Occur	
Meadow Vole	<i>Microtus pennsylvanicus</i>
Moles	
Opossum	<i>Didelphis virginiana</i>
Little Brown Bat	<i>Myotis lucifugus</i>
Big Brown Bat	<i>Eptesicus fuscus</i>

Table 3.3 Herptofaunal Species Common to Area

Common Name	Specific Name
Gartersnake	<i>Thamnophis sirtalis</i>
Snapping Turtle	<i>Chelydra serpentina</i>
Painted Turtle	<i>Chrysemys' picta marginata</i>
Spring Peeper	<i>Pseudacris crucifer</i>
Leopard Frog	<i>Rana pipiens</i>
Gray Tree Frog	<i>Hyla versicolor</i>
Wood Frog	<i>Rana sylvatica</i>
Green Frog	<i>Rana clamitans</i>
Bull Frog	<i>Rana catesbeiana</i>
Western Chorus Frog	<i>Pseudacris triseriata</i>
American Toad	<i>Bufo americanus</i>
Red-backed Salamander	<i>Plethodon cinereus</i>
Red-spotted Newt	<i>Notophthalmus viridescens</i>

Fish

The Laurel Creek Reservoir supports a resident warm water fish community of bullheads and various panfish species, and is considered to be under-producing due to water level fluctuations (winter drawdown). Panfish species include pumpkinseed (*Lepomis gibbosus*), bluegill (*Lepomis machrochirus*), and rock bass (*Ambloplitis rupestris*). An electrofishing survey was completed for forty metres of Laurel Creek in the vicinity of Baringer Road in 1995. The water temperature at the time of the survey was 28.6°C. Table 3.4 outlines the results of this survey. These types of fish are common to warm water environments, and therefore, one would be unlikely to find cold water species such as trout at this specific location of Laurel Creek. Also, Table 3.5 presents a short list of common fish species found in a stretch of Laurel Creek through the Nature Centre lands.

Table 3.4 Laurel Creek Fish Survey Results

Common Name	Specific Name	Amount
Rainbow Darter	<i>Etheostoma caeruleum</i>	95
White Sucker	<i>Catostomus commersoni</i>	68
Common Shiner	<i>Laxilus cornutus</i>	88
Brown Bullhead	<i>Ameiurus nebulosus</i>	47
Fathead Minnow	<i>Pimephales promelas</i>	1
Common Carp	<i>Cyprinus carpio</i>	45
Total		344

Table 3.5 Laurel Creek Fish Species located along Nature Centre lands

Common Name	Specific Name
Johnny Darter	<i>Etheostoma nigrum</i>
Rock Bass	<i>Ambloplites rupestris</i>
White Sucker	<i>Catostomus commersoni</i>
Common Shiner	<i>Laxilus cornutus</i>
Creek Chub	<i>Semotilus atromaculatus</i>

Invertebrates

A variety of invertebrate species are common to the area, and many of them play an important role in the Nature Centre's education program. Studies are conducted to teach young students about the many invertebrate species found in the water. Table 3.6 list invertebrate species common to the Nature Centre land, and ones that are discussed in the education programs. The common invertebrate specie, the stonefly, which is an indicator of water quality, is not listed in Table 3.6, because it is no longer present in this stretch of the creek.

Table 3.6 Common Invertebrate Species Observed in Laurel Creek on the Nature Centre land

Common Name	Specific Name
Observed in Laurel Creek	
Freshwater clam	
Pill clam	
Orb snail	<i>Coretus corneus</i>
Northern Clearwater Crayfish	<i>Orconectes propinquus</i>
Caddis fly larva	
Mayfly nymph	
Damselfly nymph	
Observed in the Pond	
Orb snail	<i>Coretus corneus</i>
Pond snail	<i>Fossaria dalli</i>
Daphnia Water flea	
Side-swimmer	
Back-swimmer	
Water Boatman	<i>Corixidea sp.</i>
Water Strider	
Giant Water bug	<i>Abedus herberti</i>
Water Scorpion	
Crawling Water beetle	<i>Haliphus canadensis</i>
Predaceous Diving beetle	<i>Coleoptera dytiscidae</i>
Damselfly nymph	
Dragonfly nymph	

Birds

A diversity of breeding and non-breeding birds have historically been sighted within the general area. Undoubtedly, the most unique bird habitat in the Laurel Creek Conservation Area occurs along shoreline portions of the reservoir, particularly its southwest corner. The shallow, reedy boundaries and numerous tree stumps in this area provide a niche for waterfowl and shorebirds. This area of the property has the largest list of conservation priority bird species. Also, reports from onsite GRCA staff suggest that migrating birds frequently use this area as a staging area during spring and fall migration seasons. A number of forest woodlots also provide exceptional habitat for a number of bird species. Thirdly, fields that have been able to function naturally are now attracting some bird species.

An inventory of the bird species that inhabit the Conservation Area property was conducted in June of 2000 by GRCA staff and local students. Bird observations during other work on the site but outside of the surveys were also recorded. Information on species has also gathered from reports by Stantec Consulting Ltd. and Ecoplans Limited. A detailed list of bird species is found in Appendix 2, Inventory 2.

Section 4: Existing Uses

4.1 INTRODUCTION

Section 4 reviews existing uses at the Laurel Creek Conservation Area by both the public and the GRCA. This includes recreational, educational and operational uses. The second component of this Section 4 is a review of current management practices for both the Nature Centre and the Conservation Area.

4.2 PUBLIC USE

Even though the Laurel Creek Conservation Area is open seasonally, the property receives a great deal of year round use from the public. Section 4.2 presents a market analysis for the property, explaining where most users come from, as well as a review of attendance figures, and the different types of public activities at the Conservation Area, and the Nature Centre.

4.2.1 MARKET ANALYSIS

In 2001, on three occasions over the course of the summer months in the year 2000 fifty-two surveys were completed, investigating public uses on the entire Laurel Creek Conservation Area property. The survey was also used to examine the public market, specifically where were people coming from. Based on survey results, the over whelming reason why people came to Laurel Creek Conservation Area was because of its location. Whether people were camping or just visiting for the day, most people were attracted to the property because of its location. According to the survey, the majority of visitors are from the cities of Kitchener and Waterloo. Other regional locations include Elmira, Cambridge, and Guelph. There were also some visitors who drove from such further locations as Elmwood, Toronto, Barrie, Windsor, and London. Table 4.1 presents the survey results.

Table 4.1 Visitor Market Location Analysis from Survey Participants

Market Location		
City	Groups	% Total
Waterloo	19	37
Kitchener	11	21
Cambridge	5	9
Elmira	5	9
Guelph	2	3
Toronto	2	3
London	2	3
Other	5	15

4.2.2 CONSERVATION AREA ACTIVITIES

The Conservation Area is host to a variety of activities for the public. These include camping (seasonal and day), swimming, canoeing, hiking, picnicking, and sports such as baseball, soccer, and cricket. Two ball diamonds and a cricket pitch are available on the property. Throughout the summer months, day use groups and community programs use available pavilions frequently. Camping tends to be the most prominent activity, and often other recreational activities result from a family going camping. However, camping is only open during warmer months when the property is officially open (approximately May 1 to Thanksgiving). During the winter months cross country skiing is very popular throughout the property. Overall, walking and hiking tend to be the most common form of recreation year round.

User Survey

A survey was conducted to determine the magnitude of various activities in the park. As previously mentioned, campground surveys were done on three occasions over the course of the summer months in the year 2000. The first survey was on June 24, then August 9, and the final survey was conducted on August 25. Each surveying period was between two and three hours in length, and depending on conditions, between nine and twelve groups were interviewed at their campsite. The results of the survey are outline below in Table 4.2. The numbers listed in Table 4.2 do not represent individual's activities, but groups that were conducting a certain activity. Therefore, for example, a total of 18 groups were swimming.

Table 4.2 Survey Recorded Activities by Number of Groups on the C.A.

Activity	June 24, 2000	August 9, 2000	August 25, 2000	Total
Relaxation	8	6	12	26
Camp Fires	6	2	11	19
Swimming	4	5	9	18
Hiking	6	5	6	17
Biking	6	4	5	15
Dog Walking	3	4	6	13
Nature Appreciation	5	2	5	12
Picnicking	4	3	3	10
Fishing	2	0	5	7
Paddling	1	2	4	7
Baseball	0	0	1	1

The survey shows quite clearly that most people visit the Conservation Area just to relax. People want to get out of the city; they want to get “outdoors.” People feel they can escape the hectic city and appreciate nature at Laurel Creek Conservation Area, even though the park is inside the city. Many people attend the Conservation Area for more active recreation. Popular activities include hiking, biking, swimming, and occasionally, fishing, and dog walking. Swimming has always been a popular activity at the park, however, in recent years, the swimming conditions have deteriorated and swimming has declined. Activities that also occur, but were not listed include cross country skiing, soccer, and bird watching.

Special Events

Throughout the year, the conservation area hosts a variety of special events. The largest event of the year is the Dragon Boat Festival, which is held in the mid-summer. The event, hosted by the Elmira Kiwanis Club, attracted approximately 1,550 participants, 150 volunteers & vendors, and 1,300 spectators in 2003. Year 2003 started with the Canoe Extravaganza hosted by Adventure Guide in Waterloo. It was held on May 3rd and 4th, and it attracted five hundred day use patrons that weekend. Next came the Brick Duathlon on May 11th, organized by Ed D'Agostino as a charity event for the Children's Benefit fund of the Kitchener Waterloo Foundation. That event averages approximately 600 participants plus volunteers. Following the Brick Duathlon, the next major event is the Schreiter Sandrock Memorial Grove Ceremony; it is hosted by the Schreiter Sandrock Funeral Home. The event occurred on June 1st, 2003, and attracted approximately 500 people. It is important to note that the Conservation Area is increasingly being used for special events.

The Conservation Area is also used frequently by a number of local and regional clubs. For example, a Youth Day Camp runs from July through August, Monday to Friday. It is run by the St. Andrew's Presbyterian Church, and approximately 700 children participant in the program throughout the summer (plus councilors).

Attendance

Since the LCCA opened in 1964, public use (as recorded by attendance) has gradually increased (Figure 4.1). However, there have been definite high and low attendance years. GRCA annual total attendance records date back to 1972, when the annual total attendance was 29,986. Since then, in general, the annual total attendance has increased by approximately 20,000. From 1975 to about 1993, attendance declined slowly, but since then, attendance has rapidly increased, peaking in 2000, at 57,002. In the year 2002, 52,767 recorded people attended the LCCA. This number is broken down into 36681 camping users, and 15312 day users.

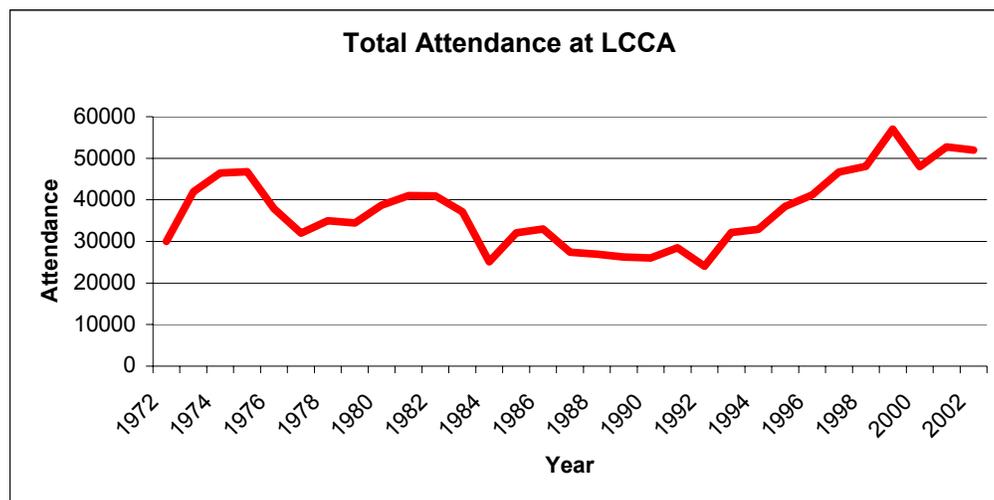


Figure 4.1 Conservation Area Total Attendance Record

The main reason why annual total attendance has increased since 1972 is because of a significant increase in camping attendance. Since, 1972, camp attendance has increased by approximately 34,000 (Figure 4.2). Over a twenty year period, from 1972 to 1992, camp attendance showed a generally slow increase, but in 1993, camp attendance jumped, from 14,454 to 36,681 in 2002. This more rapid increase in camp

attendance has generally been the result of an increase in camping sites, both seasonal and non-seasonal. Figures 4.2 and 4.3 present the historical attendance record for the park, however values for the year 1996 are missing.

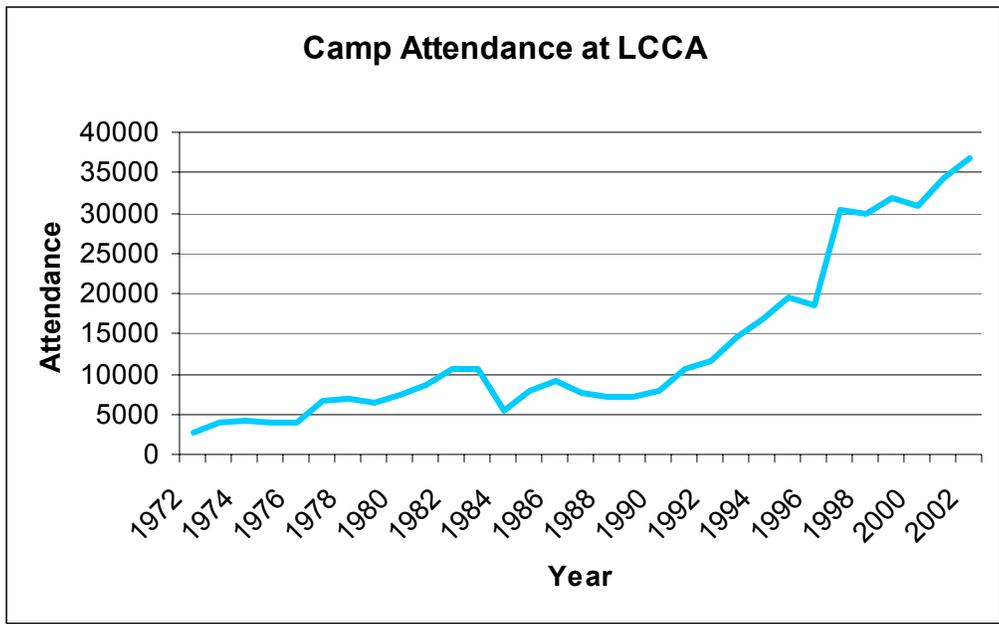


Figure 4.2 Camping Attendance Records

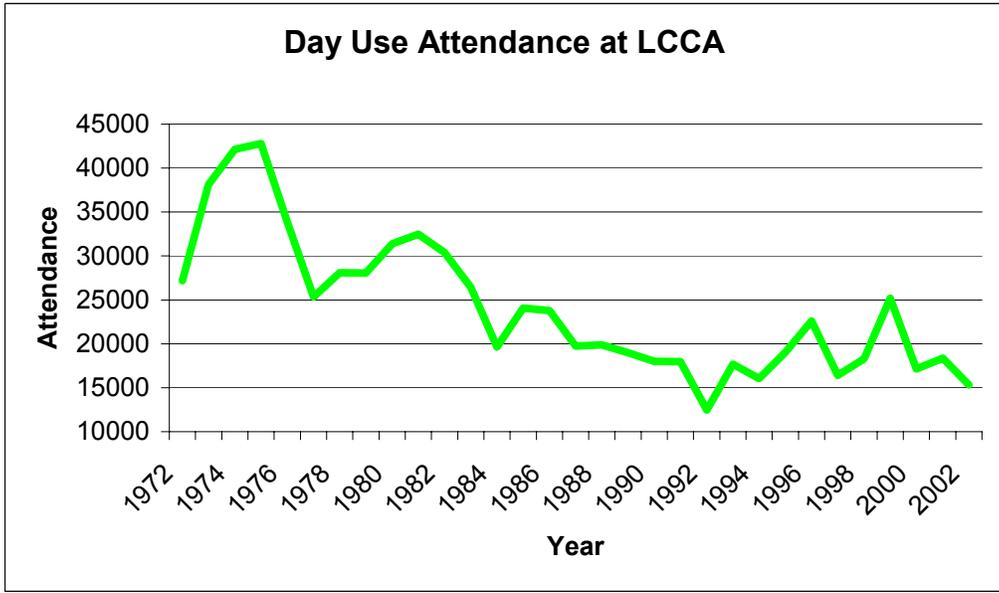


Figure 4.3 Day Use Attendance Records

While camping attendance has increased rapidly, day use attendance has done the opposite. Since 1972, day use attendance has had an overall gradual decline, influenced by a few years of sharp decline (Figure 4.3). Between 1972 and 1977, attendance rapidly jumped, but was followed by a quick decline of almost 18,000. Since 1977, attendance has had an overall decline, occasionally this is a short increase in attendance, but then that is followed by longer periods of decline. Day use attendance since 1972 has declined by approximately 17,000. One theory being suggested as the cause of a decline in day use attendance is trespassing and visitors not paying the day use fee, therefore, resulting in no record.

4.2.3 NATURE CENTRE ACTIVITIES

It is very common to see people using the Nature Centre lands, in addition to those present at scheduled programs and school classes. The centre is used by dog walkers, families, cyclists, joggers, hikers, naturalists, cross country skiers, and snowshoers. There are the regular dog walkers who arrive at the Nature Centre weekdays before 9:00 AM. There is no public access during school hours for safety of the students. But, there are always a couple of hikers and dog walkers accessing the property during this time. On a regular weekday after school hours there are likely a dozen dog walkers and or hikers depending on the weather. On weekends, the front entrance usually has several cars present. If it is a nice day, there are likely twenty groups coming and going. Most of the people seen are referred to as those parking at the front gate, and or entering the laneway. It is too difficult to tell how many walkers access the property from the nearby houses, but it is likely a large amount and percent of the visitors. Therefore, the majority of users are from Waterloo and specifically the local community. Similar to the Conservation Area, location is a significant attraction, as is the presence of natural environment. One person mentioned that he preferred the Nature Centre property, because it is less crowded.

Public users of the Nature Centre lands are more passive than users of the Conservation Area lands. This is due to the type and amount of activities provided at the Conservation Area as opposed to the Nature Centre. People using the Nature Centre lands tend to visit the property more for walking or hiking, and nature appreciation.

Outdoor Education Programs

A long-term partnership with the Waterloo Region District School Board (WRDSB) and the Waterloo Catholic District School Board (WCDSB) enables school classes to take part in curriculum based environmental education at the Nature Centre throughout the school year. In addition, community programs are available year round. The Nature Centre offers programs for Brownies, Guides, Pathfinders, Beavers, Cubs and Scouts. Nature Centre staff also provide the opportunity to have an environmental birthday party. This program allows a group to partake in activities such as bird watching, snow shoeing or cross country skiing, and a variety of nature crafts.

Attendance

The majority of people who visit the Nature Centre attend the property because of some event, whether a school board program, birthday party, community event, or a special program. In the year 2003, approximately 57% of the people who visited the Nature Centre were participants involved in a WCDSB program (6,455). Birthday parties made up the second most popular event at the Nature Centre in 2003 (1,564), followed by community group events (1,477). Refer to Table 4.3 for a detailed summary of the participation for years 2002 and 2003.

Table 4.3 Nature Centre Monthly Report for December 2003

WCDSB Classes	2002 Monthly		2003 Monthly		2002 YTD		2003 YTD	
	a	b	a	b	a	b	a	b
Elementary	13	308	18	438	248	6095	263	6402
Highschool	7	143	2	53	63	1483	33	744
Self Serve	0	0	0	0	2	50	9	190
Total	20	451	20	491	313	7628	305	7336
a = # classes b = # students								
Community Groups	2002 Monthly		2003 Monthly		2002 YTD		2003 YTD	
	a	b	a	b	a	b	a	b
Birthdays	2	34	1	12	51	734	77	1564
Community Groups	1	52	1	55	36	959	49	1477
Off Site	1	25	0	0	11	593	12	581
Total	4	111	2	67	98	2286	138	3622
a = # groups b = # participants								
Special Programs	2002 Monthly		2003 Monthly		2002 YTD		2003 YTD	
	a	b	a	b	a	b	a	b
Program	0	0	1	12	10	365	10	383
Drop Ins	0	0	0	0	0	120	0	357
Total	0	0	1	12	10	485	10	740
a = # groups b = # participants								
Day Camps	2002 Monthly		2003 Monthly		2002 YTD		2003 YTD	
	a	b	a	b	a	b	a	b
Week Program	0	0	0	0	8	192	7	192
1 Day Program	3	34	6	99	8	224	13	320
Total	3	34	6	99	16	416	20	512
a = # groups b = # individuals								
Total Attendance	2002 Monthly		2003 Monthly		2002 YTD		2003 YTD	
	a	b	a	b	a	b	a	b
WCSSB Classes	20	451	20	491	313	7632	305	7336
Community Groups	4	111	2	67	95	2286	138	3622
Special Programs	0	0	1	12	16	470	10	740
Day Camps	3	34	6	99	16	416	20	512
Total	27	596	29	669	437	10815	473	12210
a = # groups b = # participants								

4.3 GRCA USE

Conservation Area

When the GRCA purchased the property in 1964, the purpose of the land acquisition was for the construction of a reservoir to mitigate flooding on Laurel Creek and to augment flows. The GRCA still uses the land for flood moderation, but the property is used for a variety of activities. Laurel Creek Conservation Area is used by the GRCA to provide outdoor recreation opportunities, including camping and special events.

Still, the most important feature on the Conservation Area for use by the GRCA is the Laurel Creek Reservoir. The reservoir provides for moderation of flow in Laurel Creek, which flows into the Grand River. Management of the reservoir is discussed later, in section 4.4.1.

Camping and special events are important revenue streams for the park, which is sustained financially only by gate receipts. Both seasonal and nightly camping is provided by the GRCA. Admission and associated camping fees are discussed in section 4.4.1.

As well, the GRCA often conducts ecological restoration projects throughout the property to enhance its natural setting, thus providing wildlife habitat for a variety of species. Numerous projects focused on reforestation waterfowl and fish habitat are common. Often external organizations and interest groups partake in these projects, donating time, equipment, and funds.

Nature Centre

Reforestation projects and habitat reconstruction historically have been the only active forms of use by the GRCA. On November 3, 2003, an arboretum was established on the property near the entrance on Beaver Creek Road. Future management of the new arboretum is discussed in Section 7.

Section 5: Management Practices

5.1 INTRODUCTION

Although the Conservation Area and the Nature Centre comprise the entire Laurel Creek Conservation Area, the management practices of the Conservation Area and the Nature Centre are quite different. Management practices of the Conservation Area are primarily focused on outdoor recreation, and the Laurel Reservoir. While, management practices of the Nature Centre are primarily focused on outdoor education.

5.2 CONSERVATION AREA

GRCA staff, volunteers, and community members have helped manage the Laurel Creek Conservation Area over the years, and a number of management practices that have occurred have been successful. These practices need to continue. Section 5.1.1 reviews management practices that are key to the property's Master Plan.

5.2.1 STAFF

The Laurel Creek Conservation Area is maintained and monitored by the Superintendent and Assistant Superintendent whose office is located at the front gatehouse. The GRCA employed nine summer staff in 2003 to help maintain the property during peak use periods. The majority of site features, are maintained by both fulltime and summer staff, however, fulltime staff are in charge of the dam and winter snow removal. Site features that are maintained by both summer and fulltime staff include the workshop, trails, shelters, boat areas, and washrooms.

5.2.2 RESERVOIR

The 1981 Master Plan states that the purpose of the Laurel Creek Reservoir was for flood control, low flow augmentation, and pollution abatement. This is still the case in 2004. The Laurel Creek Reservoir is maintained annually to aid in controlling the flow of Laurel Creek. The Laurel Creek Reservoir is kept at the regulated level of elevation of 342.4 metres throughout the late spring and summer months. During the late fall it is drawn to an elevation of 339.2 metres and maintained at that minimum level until the danger of peak spring flood is past. The Superintendent and the Assistant Superintendent routinely record and monitor dam and reservoir levels, and transmit this data to head office in Cambridge.



Figure 5.1 Laurel Creek Reservoir

Key components of the reservoir are a 121 metre long sand beach, and a launch located just west of the beach. Historically, the beach has been a popular site, but in recent years large amounts of geese feces have caused a decline in beach use. Therefore, in an effort to reduce the number of geese near the beach, baiting programs in recent years have been implemented to try to relocate the geese. This is an effort to restore the beach, as well as lower bacteria levels in the reservoir. As well, more water recreation facilities within the region have affected the attendance at the reservoir. No motorized boats are permitted on the reservoir. The majority of users are canoeists and kayakers. Short-term parking is available for three vehicles with trailers near the launch. A power boat is available for use by the Superintendent or Assistant Superintendent.

5.2.3 CAMPING

The Conservation Area operates approximately 137 camp sites and 2 youth group sites. Approximately 50 of the park's sites have service. There are 44 seasonal sites, and usually 93 non-seasonal sites. However, depending on the year and demand, available seasonal sites are more or less. There are three different sizes of sites throughout the property, small, medium, and large. Generally, the sites are not designated for any one style of camping. Type of camping includes tent, trailer and motor-home.

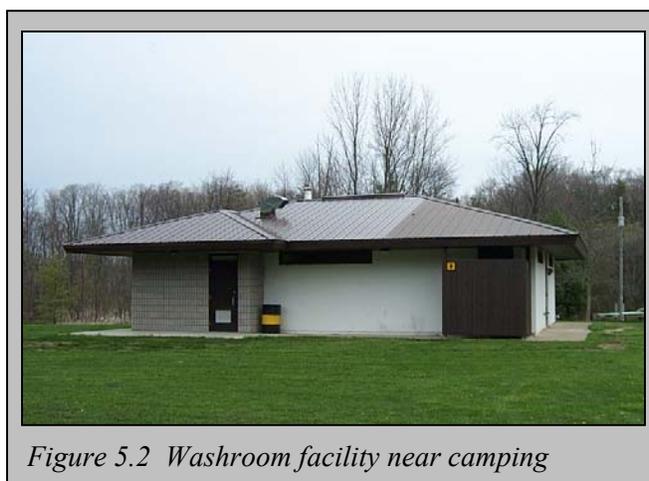


Figure 5.2 Washroom facility near camping

There is one main washroom for the camp sites, and one other washroom facility in the Conservation Area. Both washroom facilities are six hundred square feet. Also, there is one dump station for trailers, three flush toilet facilities, and eight vault privies. Washroom facilities are maintained by fulltime and summer staff.

Garbage containers are placed throughout the area, and garbage bags are provided to the campers upon arrival. Recycling containers are provided for recycling glass, cans, and newspaper.

Firewood is available for purchase at the gatehouse. As well, a pay telephone is provided at the rear of the gatehouse.

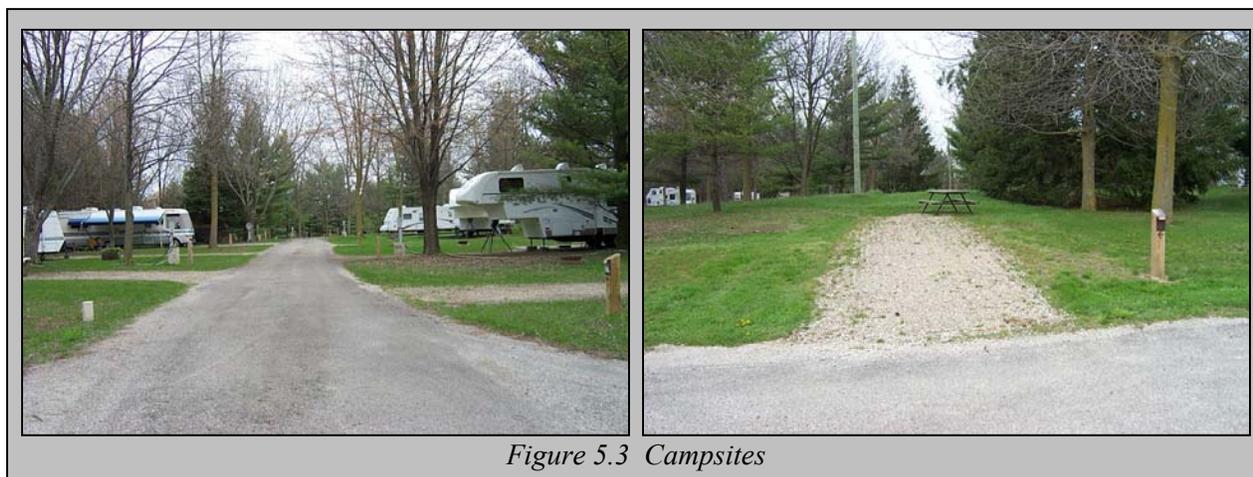


Figure 5.3 Campsites

5.2.4 DAY USE FACILITIES

Three picnic pavilions are provided for rent, on a daily basis, and for family reunions or company picnics. The largest of the three facilities includes washroom facilities.

A small supply of canoes will be available for daily rent for use in the reservoir. A fenced area will be used for storage of the canoes and associated equipment.



Figure 5.4 Pavilions

5.2.5 USER FEES

Due to the variety of activities provided at the Conservation Area, different types of admission fees are required. Table 5.1 outlines a short list of the general fees associated with the Conservation Area. Appendix 3 outlines a more complete list of the Conservation Area fees.

Table 5.1 General Conservation Area Fees for 2004.

Pass Type	Fee
Daily Adult Admission	\$3.75
Seasonal Camping – no hookups	\$1,050.00
Seasonal Camping – with hook ups	\$1,450.00
First Vehicle Season's Pass	\$100.00

5.2.6 FOREST AND OPEN FIELD COMPARTMENTS

A mixture of forested and open field areas needs to continue. Open fields allow for a variety of day use programs, including large group sports and activities. Forested areas allow for nature appreciation, and walking or hiking, an overall quieter atmosphere. Therefore, continued grounds keeping practices are required, including tree planting and reforestation, any previous landscaping practices, and lawn mowing. Tree planting plans, outlining tree species and planting locations will be under the guidance of the Superintendent and forestry staff from the GRCA.

5.2.7 TRAILS

A variety of trails are found on the property. Most are for general recreational purposes, while others are used to connect campsites to washrooms, shelters, and day use areas. Both fulltime staff and summer staff will maintain trails.

5.2.8 MEMORIAL GROVES

GRCA in cooperation with the Grand River Foundation currently has two Memorial Groves at Laurel Creek Conservation Area. They are the Schneider Memorial Grove and the Schreiter-Sandrock Memorial Grove (Figure 5.5). A sign/plaque identifies the two areas within the property, and helps lead to further recognition and possible business. The Schneider Memorial Grove site is a special area in the Conservation Area that has been dedicated to the memory of employees of J.M. Schneider Incorporation and will be maintained as such in perpetuity. Work on the Grove was started in 1976 with two hectares. In 1991, an additional five hectares were added. There is no formal agreement, or set price for trees that are planted in this Grove, however, all money provided is to be used solely for tree purchase, planting, and mowing throughout the area. The Schreiter-Sandrock Memorial Grove was established in 1996. Donations per funeral are used for all capital works, tree establishment and maintenance costs. Unlike the Schneider Memorial Grove, there is a formal agreement in place.

Tree planted in the specific areas do not have names or signs denoting the donors. The areas are maintained throughout the year, receiving lawn mowing and trail maintenance. The area around the signs/plagues is regularly mowed throughout the season. The areas have been allowed to naturalize as much as possible.

The bulk of the tree planting takes place in other areas outside these focal points. It consists of seedlings, saplings and caliper sized trees planted on other GRCA properties. Some tree planting carried out in other GRCA properties is done using the donations received from these memorial groves with no capital money being used. In return for the donations, individuals wishing to enter the conservation areas to view the trees planted can do so free of charge. It is therefore imperative that gate staff be made aware of this and know the location of the planting area.



5.2.9 SUGAR SHACK

The sugar shack will be built primarily of wood and will accommodate the evaporators and an adequate supply of dry firewood. Interpretive panels will be integral with the design of the structure. Both interior and exterior surfaces of the building will be used for display purposes. The building will be locked when not being actively used.

5.2.10 GATEHOUSE

A gatehouse located on the Westmount Road side of the property is used to monitor property users and act as an office for the Conservation Area. The Conservation Area's superintendent can be found at the gatehouse, when he is not performing other duties. The gatehouse is heated during the winter months.

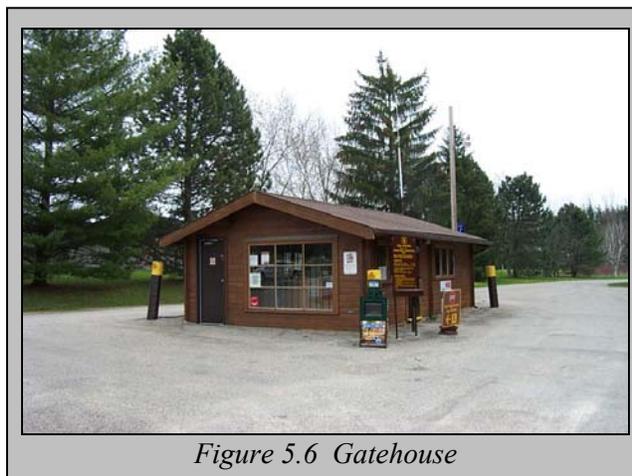


Figure 5.6 Gatehouse

5.2.11 CRICKET BUILDING

Beside the gatehouse is a building used by a cricket club that is used by the local cricket club. In the winter, this building is also used to accommodate the cross country ski program. This building is operated through a partnership with the City of Waterloo and the GRCA. Located in the building are a small kitchen, a large storage room, and an enclosed sunroom-like area for watching the cricket players. During the winter month, the facility is used for the Conservation Area's cross country ski program.

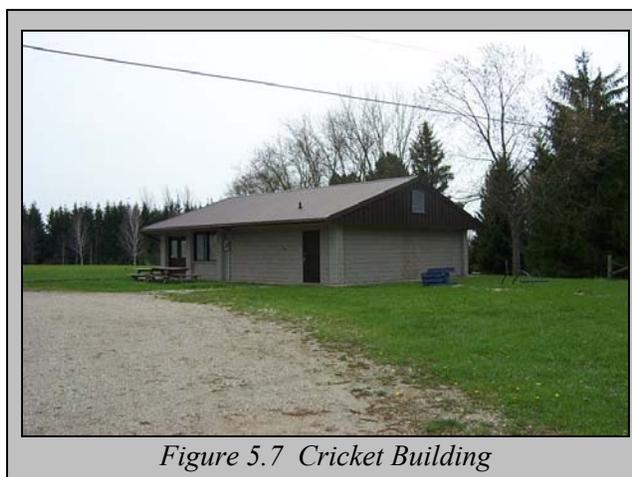


Figure 5.7 Cricket Building

5.2.12 WORKSHOP

Located near the intersection of Laurelwood Drive and Bearinger Road is a workshop where the majority of equipment used to maintain the property is kept. Also, minor equipment repairs and routine maintenance are done here.



Figure 5.8 Workshop Building

5.2.13 RENTAL HOUSE

This building is located beside the workshop. The residence is a modest structure and was originally used by the Superintendent up until a few years ago. It is now rented out to tenants and the money from the house is part of the rental income generated by property.

5.2.14 INTERIOR SIGNAGE

Interior signage is an important component of the Conservation Area. Signs are used to provide location directions, to keep vehicle speeds to a safe speed, and to identify areas of interest. Interior signage must continue, and if a sign is broken by vandalism or accident, they must be repaired by either fulltime or summer staff. A supply of important signs should be kept that the workshop, but less common signs can be found in Central Services at GRCA Head Office.



Figure 5.9 Conservation Area Signage

5.2.15 ROADS AND PARKING

Access is reached from Westmount Road, just south of Conservation Drive. In total there are approximately 4.5 kilometers of two-way tar and chipped roads that services the Conservation Area. Parking for the area consists of five major lots, plus short stay parking in front of washrooms. In total there are approximately 250 parking spaces provided. The largest parking lot provides 120 spaces just back from the beach.

Fulltime staff (Superintendent and/or Assistant Superintendent) are in charge of snow removal from the interior roads during the winter months. However, the fulltime staff are not in charge of road maintenance and repair. Central Services is in charge of road maintenance and repair.

5.3 NATURE CENTRE

GRCA staff, volunteers, and community members have helped manage the Laurel Creek Conservation Area over the years, and a number of management practices that have occurred have been successful. These practices need to continue. Section 5.3 reviews management practices that are key to the property's Master Plan.

5.3.1 STAFF

The Laurel Creek Nature Centre is staffed by a GRCA educational interpreter, as well as staff from the Waterloo Catholic District School Board (WCDSB) and Waterloo Regional District School Board (WRDSB). These staff member's primary responsibility is education to program participants.

5.3.2 EDUCATION PROGRAMS

The GRCA and the WCDSB participate in the administration and day to day running of the Nature Centre, and the WRDSB rents a room for its programs. Throughout the year, there are various programs, some seasonal based, and often others are based on the school board's curriculum. Programs are available for students in kindergarten to grade twelve. These programs are also available to all watershed school boards. Both full and half day programs are available all year round. Throughout the school year environmental day camps are run by the WCDSB. 2004 prices for these various programs are listed below.

Table 5.2 Nature Centre Program Prices

Program		
Birthday Parties	\$75.00 / 2 hours	\$100.00 / 3 hours
Special Family Events	\$5.00 / person	\$20.00 / family
School Program	\$140.00 + GST / half day	\$240.00 + GST / full day

5.3.3. NATURE CENTRE BUILDING

The Nature Centre building is an attractive modern building (Figure 5.10) with two classrooms and a large auditorium. The top floor accommodates two 83 m² classrooms, two offices and a common lounge and kitchen (60 m²). The lower level contains washrooms, storage and mechanical rooms with a multipurpose room at the bottom of the stairs. In the summer of 2004, the building was connected to municipal services from the City of Waterloo.

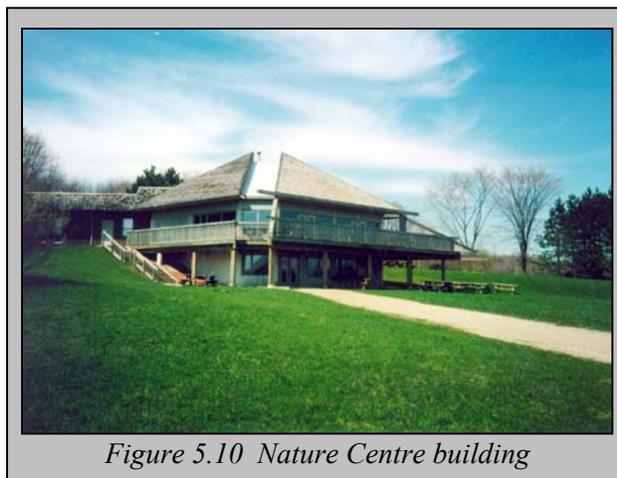


Figure 5.10 Nature Centre building

Landscape surrounding the Nature Centre building will be designed in a manner to give a higher degree of nature. Visitors and users of the Nature Centre building should feel that they are not at school or at a suburban park, but within reason, they should feel like they are outdoors in a natural setting.

A boathouse located near the launch, is used by the Nature Centre for different programs and storage.

5.3.4 TRAILS

A system of trails is provided on the property to link the major components of the site and pass through areas of highest natural value. Trail surfaces will continue to be natural, and not gravel or stone chipped. Where necessary, short boardwalks will be used to cross wet areas and the Creek. Current boardwalks will be monitored for maintenance and repair. This is very important as the boardwalks receive much use by the program's young people. Main trails will continue to be cut back by the GRCA.

5.3.5 FOREST AND OPEN FIELD COMPARTMENTS

Management practices need to allow for clear vegetation zone boundaries. Due to the Nature Centre's program needs the property requires both open field and forest compartments. Open fields are required for large area games, and therefore require removal of woody plant species, such as invasive buckthorn. Although, forest areas are just as important, as they provide sources of education on wildlife, trees and plants, and wildlife habitat. This diversity of landscape is vital to the quality of the Nature Centre and its program, and therefore must remain.

If required some locations, reforestation projects should be encouraged. In doing so, native species should be planted.

5.3.6 PONDS

The ponds on the eastern side of the property will continue to be used for the Nature Centre program, and therefore should be maintained. As well, they are important, as they provide wetland habitat for a variety of wetland flora and fauna species.

5.3.7 ROADS AND PARKING

Entrance to the Nature Centre is from Beaver Creek road. A two way gravel road curves up to and around the back of the Nature Centre building. In conjunction with this road is a turnaround, and parking for approximately twenty four cars. Both parking and the road are maintained annually, and receive snow removal during the winter months.

During the winter and early spring seasons, the Conservation Area Superintendent administers snow removal from the parking lots and roads.

Section 6: Issues, Opportunities, Stakeholder Input

6.1 INTRODUCTION

Understanding the issues, opportunities, and stakeholder opinions allows for adaptive management to adjust to new circumstances. Section 6 reviews a number of key issues facing the Laurel Creek Conservation Area, suggests possible opportunities, and addresses points made from stakeholder input.

6.2 ISSUES

The Laurel Creek Conservation Area is an urban refuge for conservation, outdoor recreation, and education. The land allows the community to gain an appreciation of nature, by walking, swimming, or camping. However, there are a number of issues that are hindering the level of appreciation possible. Laurel Creek Conservation Area is now completely encircled by residential developments, and this has increased the amount of trespassing. These problems and others have resulted in a number of concerns for the GRCA. Security is a major problem, and has resulted in increased costs for security and loss of revenue from people who trespassed instead of paying at the gate. Section 5.2 outlines these issues and discusses how they are influencing the Laurel Creek Conservation Area.

6.2.1 ENCROACHING DEVELOPMENTS

The natural resources in the Laurel Creek watershed are subjected to significant human development pressures, and many environmental processes have become fundamentally altered. For example, a few short sections of Laurel Creek are now required to flow under ground through the city core. Due to development, a variety of issues are now noticed at the Laurel Creek Conservation Area. At the rear of the Nature Centre property, in 2003 and 2004, parts of the property were inundated with up to seven inches of rain and melt water. Historically, this is not unheard of, but the concern in 2003 and 2004 was that the flooding was occurring on trails used for the program. Also, as a result of being completely surrounded by residential development, the Laurel Creek Conservation Area is now increasingly affected by the sounds and congestion of the city. Motor vehicle traffic has increased significantly adjacent to the southern half of the property, and a faster traffic along Bearinger Road may increase the risk of wildlife being road-killed.

As the Region of Waterloo's population continues to increase, these pressures will only become greater. The City of Waterloo's population in the year 2001 was 86,543, and its population in the year 2003 is 102,300. Between 1991 and 2016, the City of Waterloo's population is projected to grow from a population of 71,181 to 109,900 and from 27,071 to 46,000 households. This growth is appearing largely in the form of new subdivisions spreading out from the city centre. Subdivisions with names such as "Conservation Meadows", "Beechwood Neighbourhood" and "Laurelwood Community" have popped up around Laurel Creek Conservation Area and attracted home buyers partly by promoting their proximity to nature and tranquility. Also, as the number of subdivisions increase, there is an increase risk in the number of pets that could wonder off onto the property. Roaming pets can impact wildlife patterns and natural habitat.

6.2.2 TRESPASSING AND VANDALISM

Increasing city population has impacted the amount of vandalism and trespassing at Laurel Creek Conservation Area. Over the past few years, security issues have changed, as the city has enveloped to the two properties. Now it is possible to take the local transit system as a means to reach your vacation or weekend destination. Although this is convenient for some campers, it has raised some new concerns with regard to problems in the camping areas. Charges laid by police have increased over the years. Drinking under age, possession of narcotics, possession of narcotics for distribution, and several assault charges were laid in 2001. This trend may continue as the city grows, and staff will have to be proactive to minimize their occurrences.

On site examination of the Laurel Creek Conservation Area boundaries suggests that trespassing is an issue to be considered. The fencing around the Laurel Creek Conservation Area has been seriously vandalized and few sections remain intact. In most areas, fencing has been twisted and crushed, suggesting that it is frequently climbed over. In some areas, the fence is no longer evident as it has been pressed into the ground or completely removed. In other areas where the fences still stand, openings in lower levels have been cut out and forced open, which suggest entry for pets. These fences will need to be replaced in the near future. At the time of replacement, it would be wise to address these illegal entry points. For example, installation of some type of larger blockade or sign may help. Lastly, an important note to make is that trespassing represents revenue losses. This trend to increased trespassing is also experienced at other conservation areas, but it is especially acute at Laurel Creek Conservation Area.

Related to the issue of trespassing, leash free dog walking has become a user conflict concern on both the Nature Centre lands and the Conservation Area lands. Dogs must be leashed at all times in Conservation Areas. However, it is very common for staff to witness more than ten dogs daily off leash. Owners may have their leash with them, but allow their dogs to roam free. An advertisement for dog walking services was posted January 2004 beside a trail that leads to the Nature Centre property (Figure 6.1). This is symbolic of the high dog walking pressure on the area. Also, a recent leash-free dog walking area on the park lands was proposed to the GRCA. However, this proposal was not in agreement with GRCA staff, as they felt that the proposal did not conform to the purpose and management of the property. Lease free dog walking is of significant concern on the Nature Centre lands, as young school programs use the property all year round. As a result, young school groups are at risk of being either scared, or possibly bitten. Luckily there have only been a few dog attacks over the years, none of which have been serious. Although most people comply with the “stoop and scoop” guidelines, there is still concern about the amount of dog feces collected and its proper disposal. It is quite common on many conservation areas to find feces-filled plastic bags either lying on the ground, or hanging from a tree.

6.3 STAKEHOLDER INPUT

Stakeholders are anyone who has an interest in the Laurel Creek Conservation Area. Stakeholders can be a group or an individual. Examples of important stakeholders for the Laurel Creek Conservation Area include the Laurelwood Neighbourhood Association, the City of Waterloo, the Separate and Public School Boards, KW Field Naturalists, and the Friends of Laurel. Due to their level of interest in the Laurel Creek Conservation Area, these and other important stakeholders were invited to meetings to discuss their concerns and to help shape GRCA’s plans for the Laurel Creek Conservation Area. This section discusses some of the important concerns that were addressed at these meetings. A number of important issues such as possible reconstruction and installation of the boardwalk, the installation of a pool, user fees, trails, and facility and services improvements were discussed. The user surveys that were conducted in 2001 were also sources of useful information regarding recommendations and concerns from the public.

Figure 6.1 Dog walking service advertisement. Located at walkway entrance to the Nature Centre lands.



6.3.1 BOARDWALK

As mentioned in Section 1, the Laurel Creek Boardwalk was removed in 2001, due to its deterioration and concern for adjacent sensitive wetland vegetation and habitat. The boardwalk crossed the south-most bay of the Laurel Reservoir (Figure 6.2). In earlier times, while the boardwalk was in good condition, joggers, walkers, dog walkers, and some bikers used it quite frequently. Not only does the boardwalk allow an opportunity to appreciate nature, it provides access to the park. Consequently, in recent years, there has been strong public interest in the re-development of the boardwalk, in the same location. Specifically, there was interest from the local neighbourhood association, which has suggested a number of proposals relating to the boardwalk. One such proposal was to construct a trail from the gazebo at the corner of Laurelwood Drive and Beaver Creek Road up to the previous location of the boardwalk and across the reservoir and back down to Laurelwood Drive (Figure 6.2). This proposal ultimately was not pursued by the neighbourhood association.

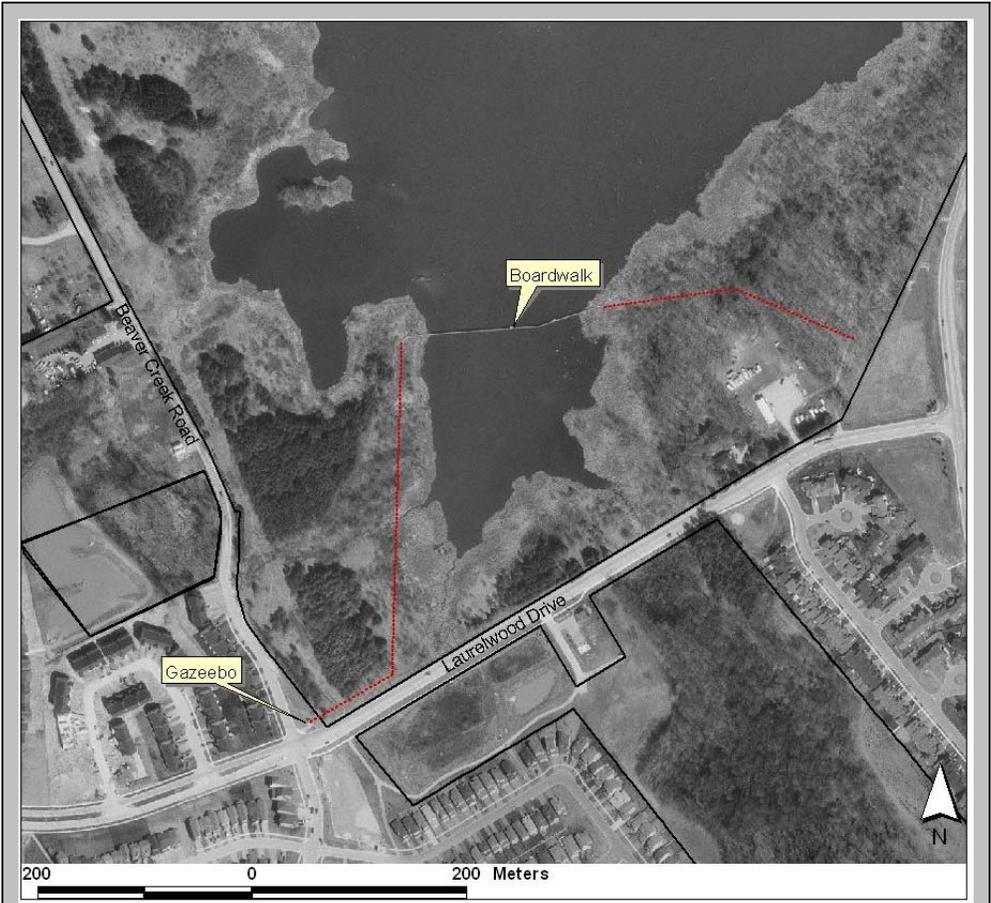


Figure 6.2 Boardwalk location, and proposed boardwalk trail (in red).

6.3.2 SWIMMING CONDITIONS

As a result of unfavourable swimming conditions (Figure 6.3) along the Laurel Creek Reservoir beach, demand for a source of water recreation has surfaced. Every year, due to the shallowness of the reservoir and the rush of water from the spring thaw, the water quickly becomes turbid, making the swimming conditions unattractive. One of the objectives of the 1981 Master Plan states the need to “develop a reliable source of water recreation” indicating that this is not a new issue. A number of proposals and suggestions have been vocalized, but nothing has developed. Due to the increase in nearby residential communities and therefore population, interest in a “community centre-like” water recreation facility has been noticed more. Such a facility would benefit current users and attract new day use programs and youth clubs. Currently, users of swimming facilities often travel elsewhere to locations they feel are better, but if a similar facility was



Figure 6.3 Beach posting at Laurel Creek Reservoir

available at the Conservation Area, then they would not have to travel further distances. A splash pad facility would be appropriate; however, they can be very expensive, often reach prices over \$100,000. As money and funding permits this project will be considered at a latter date. When funding is available, a separate plan will outline the specifics and cost of such a project.

Associated with the poor swimming conditions is the problem of goose droppings across the beach swimming area. According to the survey results, many people were disillusioned by the swimming area and requested actions to be taken to remove the waterfowl and clean up the beach and water. Canadian Geese stage at the reservoir, and their feces that affect the entire beachfront. This has lowered the already low beach usage, because as one visitor stated, *“there’s nowhere to lay or sit in the sand.”*

Many past users of the beach feel that they will no longer visit the Laurel Creek Conservation Area for swimming, unless some sort of water recreation facility is built. One opportunity that can arise from this problem is shoreline wetland restoration. If a new water recreation facility is developed, there would no longer be a need for a beach, therefore, the beach could be removed and turned into a wetland. Again, the problem is cost. Such a project would require much money as well as time and monitoring.

6.3.3 USER FEES

Day pass user fees are causing many problems at the Laurel Creek Conservation Area. Many people feel that they should not have to pay for a short evening walk on the property. There is the perception that society pays for conservation authority lands through their taxes, and therefore they should have free access to the conservation areas. This is not the case; instead there is a lack of monetary support for outdoor recreation from any level of government. Common suggestions related to user fees include reduced rates, annual passes, and free walking passes for neighbourhood residents. As well, quite often people suggest a drop box (a place to deposit ones admission fee), but as previously mentioned past experiments have shown poor results at other conservation areas. Neighbourhood users are looking for less expensive access, however, the conservation area must be a self-sustaining operation, and therefore requires fees for admission.

Still, there are some who think they should pay. Results from the user survey show that there are many people who are not bothered by a day use fee. Some people suggested slightly lower rates, but the majority of people did not mind having to pay a user fee. The overall consensus seems to be either lower rates, or some sort of annual walking pass.

6.3.4 FACILITY AND SERVICE IMPROVEMENTS

An occasional comment recorded during the user surveys was for facility and service improvements, mostly for washroom facilities. Many users of the Conservation Area felt that the washroom facilities were under-serviced (needed cleaning), and required upgrades. Specific comments included the repair of leaky taps, and temperature control, in the washrooms. Suggestions were not only directed towards the washrooms. Comments directed towards the need for RV hook-ups, more phones and showers, a swimming pool, and store or tuck shop were typical. Two groups suggested that trails be better marked, and that a trails booklet be offered.

As well, many users commented that security was a concern and that Conservation Area staff should patrol and control the property more frequently. These comments were the results of seasonal campers expressing a concern about “party animals” and the potential for property damage and noise.

Section 7: Recommendations

7.1 INTRODUCTION

A list of recommendations has resulted from the Master Plan process. Recommendations are presented for the Conservation Area and the Nature Centre separately. Recommendations will be dependent upon annual budgets.

7.2 CONSERVATION AREA RECOMMENDATIONS

Recommendations include increased seasonal camping, ecological restoration, tree planting, investigation into the potential for a new splash pad, and the installation of a new observation tower. Refer to Appendix 1, Map 7.1 for a layout of the recommendations listed in Section 7.2.

7.2.1 INCREASED SEASONAL CAMPING

Increase seasonal camping opportunities to meet demands and improve campground economics. In recent years, seasonal camping has accounted for approximately two thirds of the camping at Laurel Creek Conservation Area. Therefore, sewers should be installed to help increase seasonal camping, and the size of campsites should be looked at, in regard to accommodating more seasonal camping. Depending on the level of use by more seasonal campers, there may be a need for more larger campsites. However, current small and medium sized sites should still be provided, especially for tenting campers who do not require a larger site. As well, to meet the demands of an increased amount of seasonal users, the hydro system will need to be increased. Also, a new washroom facility will be required to support the increase in use. A system of monitoring campers versus non-campers needs to be developed. One such method that should be tested is the wristband approach. Camping visitors would receive a wristband that they must wear at all times on the property, and when entering and leaving the property.

7.2.2 WATER RECREATION FACILITY

Investigate the potential for a splash pad water recreation facility. Such a facility will have less liability because there will be no risk of drowning in deep water. A facility similar to that in Waterloo Park would be appropriate and attract many local and regional users to the property.

Location will be reliant on road access and available parking. There is the potential, if the splash pad becomes very popular, that more parking would be required. Therefore, initial decisions on the location of such a facility should consider the potential for a new parking lot near the facility.

Since the facility would not be an official pool, a certified lifeguard would not be required. However, staff may still be required to monitor the facility for repairs, safety issues and potential injuries.

7.2.3 ECOLOGICAL RESTORATION

Enhance and protect wetland and sensitive areas along the southern and western sections of the property. Wetland habitat and plant species should be encouraged and allowed to grow naturally. Also, invasive exotic plant species that would hinder the natural function of the wetland should not be introduced. Signs should be used to keep people out of wetland areas, and educate users about the Provincially Significant Wetland (PSW). Trails in and near sensitive wetlands should be monitored. New trampled trails, near the PSW, created by pedestrians should be stopped and discouraged by signs. Such trails should be closed by logs, natural barriers, or in some other suitable manner.

Encourage shoreline wetland enhancement. This will attract a more diverse range of waterfowl and shorebird species, other than Canada Geese. Naturalization of the reservoir's southern shoreline would be an appropriate location, as such a linkage between the southern shoreline and the PSW would be beneficial to wetland function. Coastal wetland plant species could be introduced.

Restore beach area to naturally vegetated shoreline - contingent upon "splash pad" facility. Restoration of this section of shoreline would discourage Canada geese and encourage other species, and would only occur after a splash pad is in use. This recommendation should be re-evaluated after the splash pad is in use for one or two seasons; the beach would only be removed if the splash pad is deemed to have replaced the "draw" of the beach.

7.2.4 TREE PLANTING

Plant trees to screen adjacent subdivisions. Tree planting will be important along Westmount Road where new developments will be occurring in the near future. At this location conifer planting on top of a berm will be suitable. As well, as residential developments increase along Conservation Drive, tree buffering would aid in reducing noise, and potential security issues.

7.2.5 OBSERVATION TOWER

Install an observation tower at some location in from Beaver Creek Road to facilitate nature appreciation and education. The structure must consider safety and liability. It can not be too high off the ground for people to injure themselves. The type of construction material should be considered, as there is the risk of vandalism. Thirdly, there is the issue of access to this tower. The tower may encourage people to park along the side of the road, which could create a concern or hazard. Also, with the tower not located right beside the road, a new trail may be required. The creation of a new trail may be difficult due to the wetland located along Beaver Creek Road. Wetland vegetation will influence the size and location of a trail, and its existence. Funding availability may influence the type of structure built, including its size and materials. Also, support from local and regional naturalist groups, and local communities will be important during the implementation of this project. Their assistance and advice will be valuable.

7.3 NATURE CENTRE RECOMMENDATIONS

The Master Plan process has recommended the following for the Nature Centre: reduce trespassing and off leash dog walking, new and repaired water study platforms, tree planting and continued arboretum development, allow a natural succession zone, and municipal services at the Nature Centre building. Refer to Appendix 1, Map 7.2 for a layout of the recommendations listed in Section 7.3.

7.3.1 REDUCE TRESPASSING AND OFF LEASH DOG WALKING

Reduce trespassing and off leash dog walking during school hours. However, this is a difficult issue to manage. During school hours, visitors not participating in a program are not permitted on the property. GRCA staff in the past have encouraged people to walk over at the Conservation Area. However, many users of the Nature Centre prefer to walk there, because of the Conservation Area user fees.

Install fence sections to help reduce trespassing. Since in certain locations the public has direct access to the property from their homes, there needs to be fences in these locations. One such location is at the storm water management (SWM) pond where a paved walkway from the subdivision leads to a trail onto GRCA property. Also, some homes have a gate that provides access the GRCA lands.

7.3.2 LAUREL CREEK WATER STUDY PLATFORMS

Build two new water study platforms on the banks of Laurel Creek, and replace two old ones. Key to water studies along Laurel Creek is water study platforms. They help reduce stream bank erosion from students, and they also help prevent students from falling into the Creek. These platforms allow students to monitor aquatic life from the shoreline without disturbing the Creek.

7.3.3 TREE PLANTING AND ARBORETUM

Plant trees to screen adjacent subdivisions. Specific trees should be planted to act as wind and noise buffers. Tree species that are planted near the SWM pond should contain a high tolerance for water, as this is typically a wet low lying area. Trees planted along the southern boundary of the property may be conifer type species such as White Cedar, or White Spruce.

Further develop the arboretum with additional tree planting. Future management of the arboretum will require monitoring, maintenance and further tree planting exercises. Tree planting projects with the school boards and Scouts Canada should be encouraged. As well, designated tree planting days throughout the year can be scheduled, and this would allow larger groups to participate.

7.3.4 NATURAL SUCCESSION ZONE

Allow natural succession to proceed in the area west of the hardwood swamp, in support of ecology lessons. However, invasive species, especially buckthorn will try to be maintained. Natural succession will be useful in this area because it will assist a number of educational programs.

7.3.5 MUNICIPAL SERVICES

Install municipal water and sewer services to the Nature Centre building. Nature Centre staff are still required to complete on site water testing, although less frequently.

Section 8: Plan Implementation

8.1 INTRODUCTION

Section 8 presents the Master Plan's priorities and how the plan should be phased. Priorities and phasing are suggested for both the Conservation Area, and the Nature Centre.

8.2 IMPLEMENTATION PRIORITIES

A list of priorities has been developed for both Conservation Area and the Nature Centre. These priorities are discussed below.

8.2.1 CONSERVATION AREA

Methods that increase the active use of the property while not disturbing its natural state should be implemented. A gradual increase in seasonal camping should occur. By increasing seasonal camping gradually, there will be less risk to the environment. As seasonal camping increases, visitor access and use needs to be monitored. A system to help monitor property access should be implemented as soon as possible. Due to the loss of admission based revenue, there needs to be stricter monitoring of visitors. Wristbands should be implemented to monitor Conservation Area users, specifically camp users.

Secondly, improvements that enhance the ecological function of the park are important. By creating wetland habitat, a greater diversity of waterfowl species will be attracted to the area, as well, this result in less long term maintenance in this specific area. Also, in the southwest corner of the reservoir, wetland restoration should be planned for over the next three years.

8.2.2 NATURE CENTRE

The number one priority on the Nature Centre property is control of trespassers and off leash dog walkers during school hours. As soon as possible, permanent, larger signs should be erected at all current official and non-official property access points. Unofficial property access points, mainly trails, should be closed immediately to reduce trespassing. Also, the development of unauthorized access points and trails should be monitored by GRCA staff, and if such features arise, they should be removed as soon as feasible.

8.3 PHASING

This phasing plan organizes the future management of the Laurel Creek Conservation Area over a ten year period. Potential time frames are established for each item. Individual time frames are either long (7-10 years), medium (4-6 years), and short (1-3 years) term. These potential time frame periods will be flexible. If an item is a long term item (7-10 years), it does not mean that it will begin in seven years, but it may take seven to ten years to implement. For example, increased seasonal camping will begin as soon

as possible, but will be implemented over a seven to ten year period. Again all recommendations are dependent upon the annual budget. Phasing for both the Conservation Area and the Nature Centre are outlined in this section.

8.3.1 CONSERVATION AREA PHASING PLAN

MAJOR CONCEPT ITEM	MINOR CONCEPT ITEM	COST	Time Frame
1. Increase Seasonal Camping			
	a) Convert 43 current nightly camping sites to seasonal sites (3 way)	\$215,000	Long
	b) Develop 63 new seasonal sites	\$475,000	Short
	c) Install additional washroom facility	\$200,000	Medium
2. Splash Pad			
	a) Install splash pad facility	\$500,000	Long
3. Wetland Enhancement			
	a) Wetland planting	\$10,000	Short
	b) Restore beach area to natural shoreline	\$15,000	Long
4. Tree Planting			
	a) Tree planting along Westmount Rd.	\$10,000	Medium
	b) Tree planting along Conservation Dr.	\$15,000	Medium
c) Observation Tower			
	a) Build and install an observation tower	\$25,000	Medium
	Total	\$1,465,000	

8.3.2 NATURE CENTRE PHASING PLAN

MAJOR CONCEPT ITEM	MINOR CONCEPT ITEM	COST	Time Frame
1. Municipal Services			
	a) Municipal services: sanitary, sewer, and water	Paid by City	Short
2. Water Study Platforms			
	a) Replace current platforms (2)	\$10,000	Short
	b) Build new platforms (2)	\$10,000	Short
3. Tree Planting			
	a) Tree planting near SWM pond	\$5,000	Medium
	b) Conifer buffer	\$10,000	Medium
4. Arboretum			
	a) Continued planting	\$7,500 donated by Friends of Laurel Creek	Short
	Total	\$35,000	