



## LEED EB: O&M Certification Report

To: WVML Board

From: Library Green Team

Date: September 12, 2011

### *Introduction*

In 2006, West Vancouver Memorial Library (WVML) staff initiated an effort to implement environmentally sustainable practices. They formed a Green Team that conceived of better ways to save energy, reduce waste, conserve water, and restrict hazardous chemical use. Staff turned on fewer lights before opening; discovered ways to recycle plastics, Styrofoam, metal, glass, and discarded videos, CDs, DVDs; traded disposable dishes for real ones; switched to environmentally responsible cleaning products; located a green stationary vendor; minimized watering schedules; and even started composting. Their ideas proved effective; utility costs decreased and collective stewardship of the environment united staff members with a common value.

Library administration and board members took note and were inspired to support staff efforts. In 2009, the WVML adopted a Green Buildings Operation Policy to guide decisions regarding purchasing; housekeeping; solid waste management; integrated pest management, erosion control, and landscape management; and plumbing (see appendix 1). Owing in large part to the numerous staff-driven changes, the Library was suited to become an authorized green building and began the process of applying for Leadership in Energy and Environmental Design (LEED) certification.

On June 27<sup>th</sup>, 2011, the WVML was awarded LEED Canada Existing Building Silver certification (LEED EB: O&M, 2009), thereby becoming the first existing building in British Columbia to be LEED EB: O&M certified and the first library in Canada to achieve the status.

### *LEED Certification:*

LEED is a green building rating system that provides internationally accepted certification to facilities of all types that meet high-performance design, construction, operation, and maintenance criteria. LEED was first launched by the US Green Building Council (USGBC) in 1998, a not for profit organization

(made up of companies and organizations from multiple sectors of the building industry) that promotes environmentally responsible, healthy, and profitable buildings. LEED Canada was introduced in 2004 and developed guidelines for Existing Buildings: Operations and Maintenance in 2009. The third party overseeing certification of LEED buildings in Canada is the Canada Green Building Council.

Certification for Existing Buildings concentrates on maximizing the sustainability of current buildings through revised policies and practices. Existing Buildings seeking certification earn green credits in each of six categories:

- Sustainable Sites
- Water Efficiency
- Energy and Atmosphere
- Materials and Resources
- Indoor Environmental Quality
- Innovation in Design.

The following is the LEED Canada EB rating system:

- Certified: 40–49 points
- Silver: 50–59 points
- Gold: 60–79 points
- Platinum: 80 points and above

The WVML collected 54 points (out of a possible 110), which earned the Library a Silver standing.

The process of acquiring LEED certification involved significant attention to detail and documentation of the Library's operation and management. To ensure efficient progress and accurate data, the Library commissioned a building envelope review, or Energy Efficiency Building Assessment, from SHAPE Architecture and employed a qualified LEED project management company, Kane Consulting. This professional guidance, along with the LEED application, was generously funded by a bequest from the estate of Anna Patrick in memory of her husband William Patrick, through the West Vancouver Memorial Library Foundation. The District of West Vancouver supported a mechanical systems assessment from AME Consulting.

Pursuing LEED certification required diligence. The rigor of the process meant not only changes to operational practices, but the adoption of new policies and implementation of capital planning tools. Sustainability has become a core value of the organization, and is now reflected in our 2011-2015 Strategic Plan. We are committed to managing our resources responsibly to enhance our financial stability, social goodwill and environmental leadership. As the first Canadian

library to achieve LEED EB: O&M certification, we are proud to be a leader in environmental stewardship.

#### *WVML Building Construction:*

The Library's building is 56,000 square feet. The original segment, currently the Main Hall, was constructed in 1950. Since this time, the facility has experienced several renovations. The south wing was added in 1957 and the West Wing with roof-top parking in 1977. In 1993, a four-story wing was added to the east side of the building. The front entrance vestibule and top floor storyhouse were constructed in 2005. The building's heating systems are generated by natural gas; electricity heats the building's domestic water.

With each addition, new mechanical and electrical systems were added, and a variety of roofing systems were tied in. These multiple renovations presented challenges to ongoing maintenance, operating costs, and environmental efficiency.

#### *Changes to WVML's Operation and Management:*

The WVML achieved LEED Canada's prescribed green building standards by making the following improvements in each of LEED's six existing building credit categories:

##### **A. Sustainable Sites**

To meet LEED Canada's requirements for a sustainable site, the WVML:

- Developed a building exterior and hardscape management plan that includes the use of green cleaning products, environmentally friendly paints and sealants, and human versus mechanically powered maintenance tools to reduce noise and air pollution.
- Integrated a landscape management and erosion control plan that uses well-established native vegetation or adaptive plantings (such as western sword ferns; mature varieties of maple, cedar and dogwood trees; laurel; periwinkle; boxwood; and St. John's wart) that require little annual maintenance and no watering. An inner courtyard also exhibits self-sustaining plants (including hydrangea, clematis, and rhododendron). There are two flower beds along the North (front) and West edges of the property and eight hanging baskets/pots that contain annuals. Ecologically appropriate vegetation covers 502.9 square metres (5,413.2 square feet) or 59 percent of the Library's unstructured property.
- Used alternative transportation. In early 2010, the WVML conducted an employee transportation survey and found that 52 percent of staff

members utilize a mode of transportation other than a single-occupant vehicle: 33 percent of staff trips were by public transportation, 9 percent by bicycle, 7 percent on foot, and 3 percent by car-pool. The library also exchanged its large bookmobile for a small, more environmentally-friendly Honda Fit.

## B. Water Efficiency

To reduce water consumption, the WVML:

- Improved indoor plumbing fixture and fitting efficiency by installing low-flow fixtures.
- Employed a more efficient irrigation strategy that involves minimal irrigation and regular monitoring for leaks.

Between 2006 and 2010, the WVML reduced overall water consumption by 68 percent (see table 1).

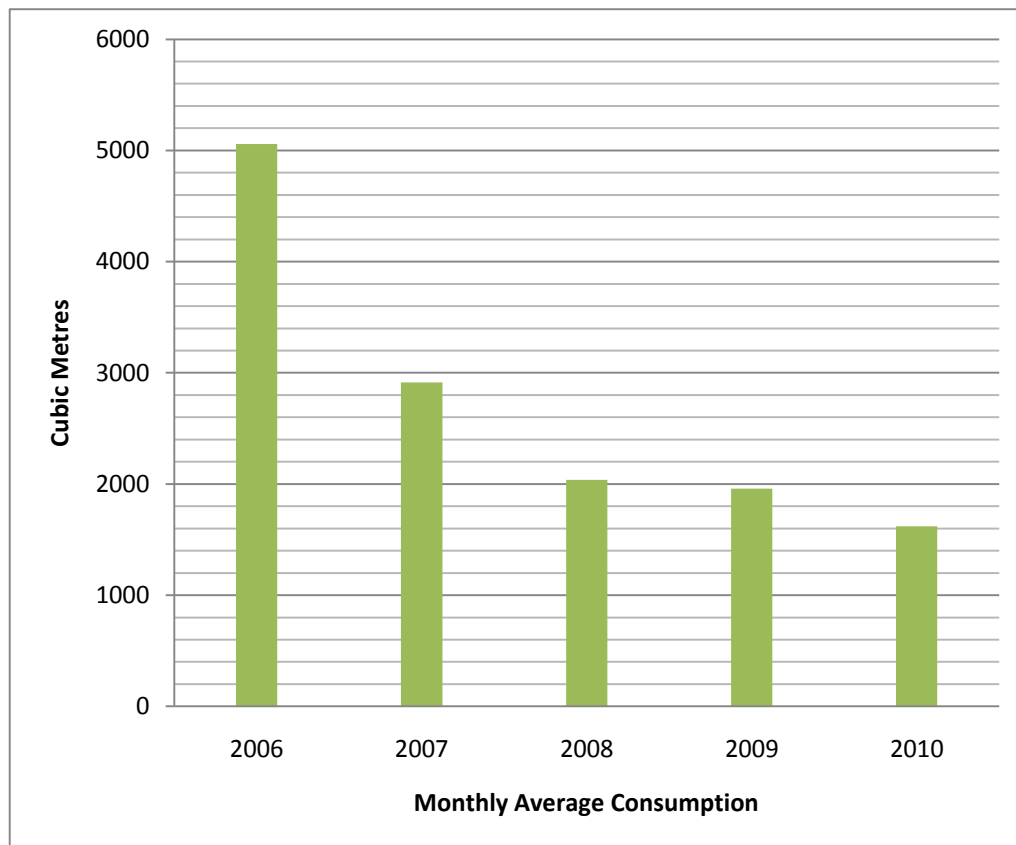


Table 1

## C. Energy & Atmosphere

To reduce energy consumption and atmospheric byproducts, the WVML:

- Optimized energy performance by completing audits of its energy sources. Subsequently, the District of West Vancouver Council approved a capital plan budget to cover energy-saving projects including roof replacement, skylight replacement, upgrading and consolidation of mechanical systems controls, and replacement of clerestory windows—each of which was completed by fall 2011. The Library also applied low-cost energy-saving measures for immediate results; for example, we lowered the electric hot water thermostat, replaced the majority of halogen bulbs with LED bulbs, turned off unneeded lights and equipment, and delayed the morning activation of the HVAC (Heating, Ventilation, and Air Conditioning) unit. Energy performance was benchmarked using Energy Star Portfolio Manager; results indicate that the WVML’s energy performance is 29 percent better than the average performance of similar existing buildings according to the Environmental Protection Agency. The Library monitored our consumption through Pulse Energy management software.

Between 2006 and 2010, the WVML reduced electricity consumption by 34 percent (see table 2). Natural gas usage diminished by 42 percent (see table 3).

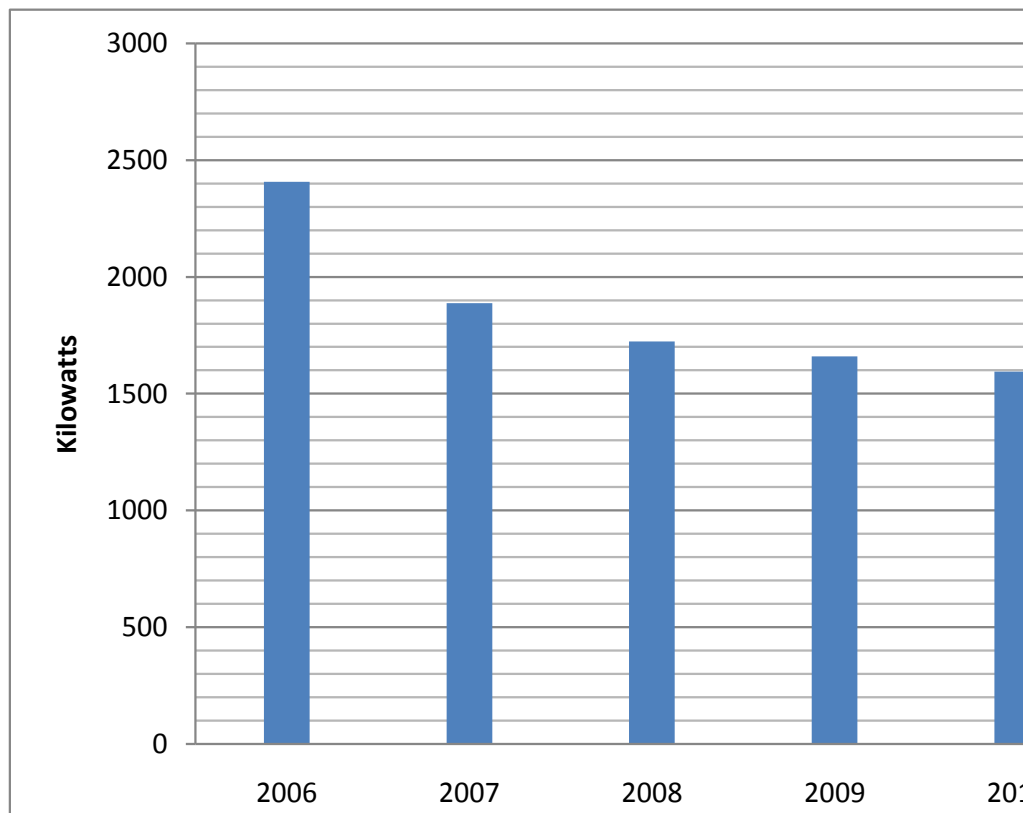
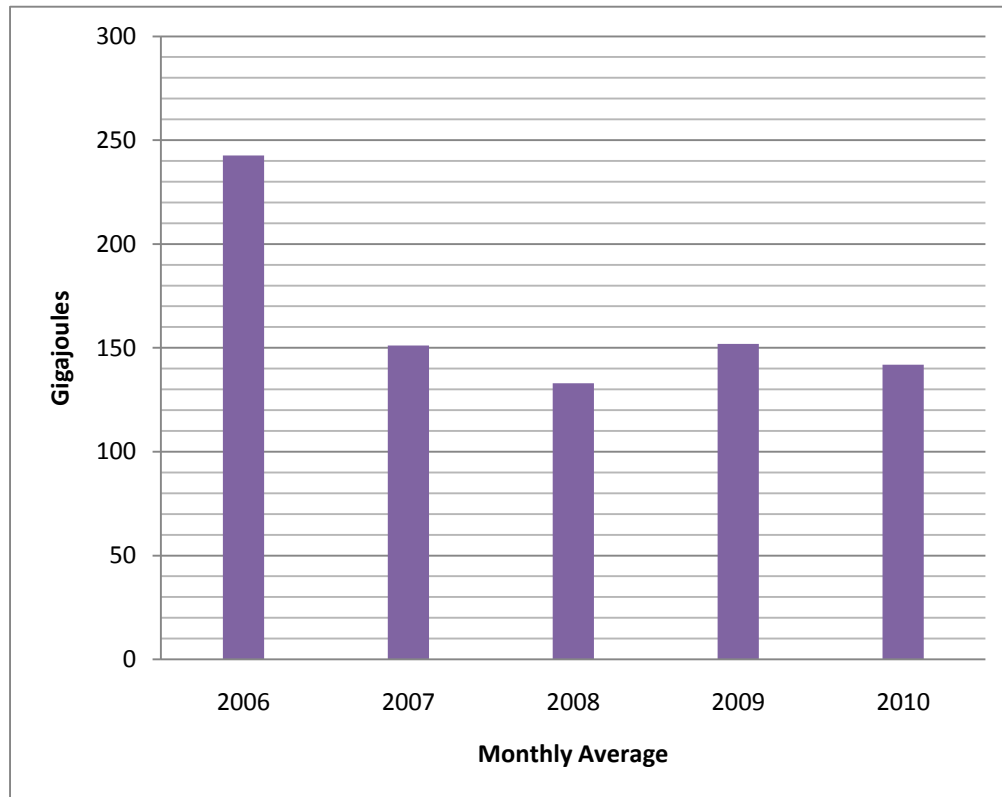


Table 2



**Table 3**

*Note: To correct air system deficiencies and improve air quality, we increased the amount of outdoor air intake into the building in 2010. With this fresh air came an increase in the gas required to heat it to room temperature. This was off-set by our HVAC mechanical control system.*

#### **D. Materials and Resources**

To reduce the environmental impact of materials used for the building's operations, maintenance, and upgrades, the WVML:

- Adopted a sustainable purchasing policy for ongoing consumables, such as paper products, toner cartridges, binders, batteries and desk supplies. At least 60 percent or higher of ongoing will meet one or more of the following criteria:
  - Contain 10 percent post consumer and/or 20 percent post industrial material.
  - Contain 50 percent rapidly renewable materials.
  - Contain 50 percent materials manufactured within 800km of the building or an 800km radius around the manufacturer.
  - Contain 50 percent Forest Stewardship Council certified paper products.
  - Batteries are rechargeable.

- Adopted a sustainable purchasing policy for electronics. At least 40 percent of electric powered equipment such as computers, appliances, printers, scanners, photocopiers, and other electronic equipment covered by Energy Star will be Energy Star labeled and certified.
- Adopted a sustainable purchasing policy for furniture. At least 40 percent of furniture purchases will meet one or more of the following criteria:
  - Be GREENGUARD certified.
  - Contain 10 percent post-consumer and/or 20 percent pre-consumer recycled content.
  - Contain 70 percent salvaged material.
  - Meet one of the other applicable sustainability criteria listed above for ongoing consumables.
- Adopted a sustainable purchasing policy for lighting. At least 90 percent of new lamps purchased for the property (interior and exterior) will contain mercury content below 90 picograms per lumen hour.
- Adopted a sustainable purchasing policy for food. 25 percent of food and beverage purchases will be organic, fair trade, or locally produced within a 160km radius.
- Adopted a sustainable purchasing policy for facility alterations and additions. 50 percent (by cost) of building materials used in facility renovations, retrofits, and new construction will contain one or more of the following criteria:
  - Contain 10 percent post-consumer and/or 20 percent pre-consumer recycled content.
  - Contain 70 percent salvaged material.
  - Contain 50 percent rapidly renewable materials.
  - Contain 50 percent materials that were manufactured within 800km of the building or an 800km radius around the manufacturer.
  - Contain 50 percent Forest Stewardship Council certified wood.
  - Carpet and non-carpet cushion meet the CRI Green Label Plus Carpet Testing Program.
  - Non-carpet finished flooring is FloorScore-certified and constitutes a minimum of 25 percent of the finished floor area.
  - Composite panels and agrifibre products contain no added urea-formaldehyde resins.
  - Adhesives and sealants will meet South Coast Air Quality Management or Bay Area Air Quality Management requirements
  - Paints and coatings will meet Green Seal's Standard requirements.

To- recarpet the Library's Main Hall, for example, we purchased carpet made from 51 percent recycled material installed by a local company. Our used carpet was sent for recycling.

- Adopted a solid waste management policy for consumables (such as paper, plastics, glass, cardboard, food waste, batteries, and metal) and durable goods (such as furniture, electronically powered equipment, and fluorescent light bulbs). At least 50 percent of ongoing consumables, 80 percent of discarded batteries, 75 percent of durable goods, and 100 percent of discarded fluorescent light bulbs (and products containing toxic materials) will be diverted from landfill.
- Adopted a solid waste management policy for facility alterations and additions that requires at least 70 percent of materials generated during facility alterations to be diverted from landfill. During the construction of the WVML's Welsh Hall, 98 percent of carpet, concrete, and drywall waste was recycled.

Our sustainable purchasing and waste management policies divert one third less solid waste from landfills each week.

### **E. Indoor Environmental Quality**

To improve indoor air quality within the building and thereby contribute to the well-being of occupants, the WVML:

- Improved outdoor air introduction and exhaust systems. Increasing the amount of outdoor air circulating within the library reduces occupant exposure to air-borne health hazards.
- Adopted a green cleaning policy that applies to the purchase, use, maintenance, and disposal of all cleaning materials and equipment at the WVML with the goal of reducing exposure of building occupants and maintenance personnel to potentially hazardous chemical, biological, and particle contaminants. Equipment is also ergonomic and limits noise pollution.
- Adopted an indoor integrated pest management plan that includes preventative measures, routine inspection, and progressive solutions that protect human health and surrounding environments.

### **F. Innovation and Design Process**

To increase our sustainability in this category, which addresses building expertise and design measures not covered under the five previous categories, the WVML:

- Installed lamps with reduced mercury.



- Implemented a Sustainability Education and Outreach program. Throughout the year, the library maintains an informative Sustainability webpage, presents numerous environmentally-themed lectures, displays, storytimes and activities, and celebrates Earth Week. In 2009, the WVML shared information about its green practices at the BC Library Association Conference. The Library also began lending Energy Meters that measure plug-in home appliance energy consumption.

*Reflection on the Process:*

Acquiring LEED EB: O&M Certification required considerable demonstration and documentation and, therefore, a true commitment to environmental sustainability. As a result, community and staff are assured of the WVML's dedication to the quality of our city's beautiful surroundings, the health and comfort of our building's occupants, and our planet's future.

Moreover, the changes the Library made in pursuit of LEED certification are fiscally responsible. With our sustainable purchasing policy and recycling program, the Library saves dollars otherwise lost to disposable supplies. The Library's reduced consumption of electricity, gas, and water have resulted in cost savings on utilities. These savings have been applied to infrastructure maintenance, which in turn extends the life of our facility. We are aware that replacement of our facility based on per square foot construction cost of recent new library facilities on the North Shore would require an investment of over \$30,000,000. We are committed to managing our existing resources such that the community will enjoy our facility for many years to come.

*Conclusion:*

The WVML will continue to follow our LEED practices and policies and seek continuous improvement to our sustainability performance. Any new addition to our building will be constructed to LEED standards. We review and embrace opportunities to foster our sustainable site, reduce water and energy consumption, and add to the well being of our building's staff and visitors. We also pursue new ways to better reuse, repurpose, and recycle our materials and resources. However, our concern for the environment extends beyond the management of our facility. As a public library whose mission is to connect people with ideas, information, and the world of imagination, we disseminate theoretical, factual, and innovative information about the ongoing ecological challenges of our era.

Accordingly, the WVML will continue to share our experience with sustainability and be a leader in environmental stewardship for our community. We thank all those who facilitated our efforts to be recognized as the first Canadian library to be LEED EB: O&M Silver certified, including the Library Board, West Vancouver District Council, and West Vancouver Memorial Library Foundation. A list of

service providers that worked with the WVML on this project is attached in appendix 2. Through our changes, care and commitment, we hope to inspire others to make healthy choices for our planet.

The WVML Library Staff Green Team

Chad Arsenault

Julie Backer

Claire Brunings

Ann Goodhart

Lauren Henderson

Sue Kent

Tara Matsuzaki

Gabriele Raasch

Michelle Sproule

# APPENDICES

## Appendix 1: Green Building Operations Policy

### Scope

West Vancouver Memorial Library (WVML) facility strives to be a “green” building with ongoing review and adoption of more sustainable and energy efficient practices. There are many benefits to implementing “green” practices including improving building performance, reducing costs, creating more productive and healthy work and public spaces as well as affording the Library the opportunity to take a leadership role in environmental stewardship for our community. To facilitate achieving WVML’s ongoing commitment to “green” building operations, we will focus on the following areas of sustainable practices:

### Purchasing

West Vancouver Memorial Library (WVML) supports the use of more environmentally responsible products and practices and expects staff to pursue this objective in the acquisition of goods and services for the WVML. More sustainable purchasing will help to reduce environmental and air quality impacts of the materials acquired for use in the operations and maintenance of buildings and we will consider the environment along with price and performance in every major purchasing decision.

### Housekeeping

West Vancouver Memorial Library (WVML) strives to reduce any negative impact that its operation may have on the environment through the implementation and improvement of a ‘green’ housekeeping plan. This plan endeavours to provide a healthy environment to all occupants and to eliminate cleaning products containing hazardous contaminants that impact air quality, human health, building finishes, building systems or the environment.

### Solid Waste Management

The West Vancouver Memorial Library (WVML) supports the practice of recycling and the purchase of products containing recycled material. We will pursue this objective in an effort to reduce or eliminate the amount of waste and toxins that are sent for disposal or incineration and to reduce the carbon footprint caused by the Library and its staff.

### Integrated Pest Management, Erosion Control and Landscape Management

West Vancouver Memorial Library (WVML) strives to reduce any negative impact that its operation may have on the environment and it is the preference of the WVML to reduce or eliminate the use of pesticides whenever possible. Physical/cultural and biological control methods will receive priority consideration for solving any pest problem and chemical control strategies shall be used when the other strategies are inadequate. These alternate strategies will help to ensure the preservation of ecological integrity, enhancement of natural diversity and protection of wildlife while supporting high-performance building operations and integration into the surrounding landscape.

### Plumbing

West Vancouver Memorial Library (WVML) values our natural resources and continues to look for ways to increase conservation within our facility.

## **Performance Metric**

WVML will implement, monitor and evaluate sustainable practices for its facility.

## **Goals**

WVML has set the following targets for sustainability practices in its facility:

### Purchasing

- 60 percent or higher of offices supplies will meet one or more of the following criteria:
  - 10 percent post consumer and/or 20 percent post industrial material
  - 50 percent rapidly renewable materials.
  - 50 percent materials harvested and processed or extracted and processed within 805 kilometres (500 miles) of the building.
  - 50 percent Forest Stewardship Council (FSC) certified paper products.
  - Batteries are rechargeable
  - 40 percent of durable goods such as computers will be Energy Star labelled and certified
  - Purchase low mercury fixtures

### Housekeeping

- Establish a cleaning plan using 'green' cleaning products and methods (i.e. Green Seal certified, Vacuum cleaners have High Efficiency Particulate Air (HEPA) technology)

### Solid Waste Management

- 50 percent diversion of Waste (garbage and recycling)
- 80 percent diversion of discarded batteries
- 75 percent diversion of Durable Goods (re-purposing shelving and other furniture)
- 70 percent diversion for any future renovations

### Plumbing

- Any future plumbing renovations within the West Vancouver Memorial Library will include an economic and environmental assessment of conversion to high performance plumbing fixtures and fittings.

### Integrated Pest Management

- All pest management and landscape management activities will be reported to the Green Committee of the Library Board on an annual basis.

### Measuring and Monitoring

- Staff will develop a long term measuring and monitoring plan for the Green Committee of the Library Board's review within one year of the adoption of this Policy.

#### Procedures and Strategies

WVML will endeavour to research environmentally friendly alternatives to products and services purchased and used in its facility.

#### Responsible Party

WVML staff involved in facility operation and management.

#### Time Period

This policy and performance metrics will be reviewed annually.

## **Appendix 2: Service Providers**

SHAPE Architecture INC  
AME Group  
Kane Consulting  
Canada Green Building Council  
Leyland Construction Ltd  
Lakeview Power Systems Inc  
Control Solutions Ltd  
Western Mechanical Services  
Prism Engineering  
Kirkham Mechanical  
Beatty Floors  
Mills  
Costless Express  
Pacific Mobile Depots, Ltd  
Recall  
Bunzyl Distribution  
Wesclean Distributers  
Ward Electric  
Pulse Energy  
Nu-Life Industries  
APEX Pest Control  
Rose Upholstery