

Fiberglass Tanks for Green Building Applications



Water Storage Tanks and Green Building

When people think of green building, they often think of the more obvious elements they see in design, such as energy conservation and environmentally friendly materials. Project owners and designers sometimes miss less obvious components that are just as important, such as stormwater management, rainwater harvesting, innovative wastewater technologies and water use reduction. Underground fiberglass storage tanks are the increasingly popular choice for many water and wastewater applications, especially for projects that qualify for LEED points. Storage tanks aren't the only products we manufacture that can be incorporated into designs that qualify for LEED credits. For instance, wet wells and lift stations can also be key elements in green building projects.

Xerxes and ZCL are well-known as the leading brands used by the petroleum industry to store motor fuels. We have applied our extensive expertise to manufacturing tanks for the water and wastewater industry, and have become widely accepted as a superior option for the storage or processing of liquids in a wide range of applications. The following pages present just a few examples of how ZCL and Xerxes tank applications can qualify their tanks for available LEED points under the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED®)⁽¹⁾ Green Building Rating System™.

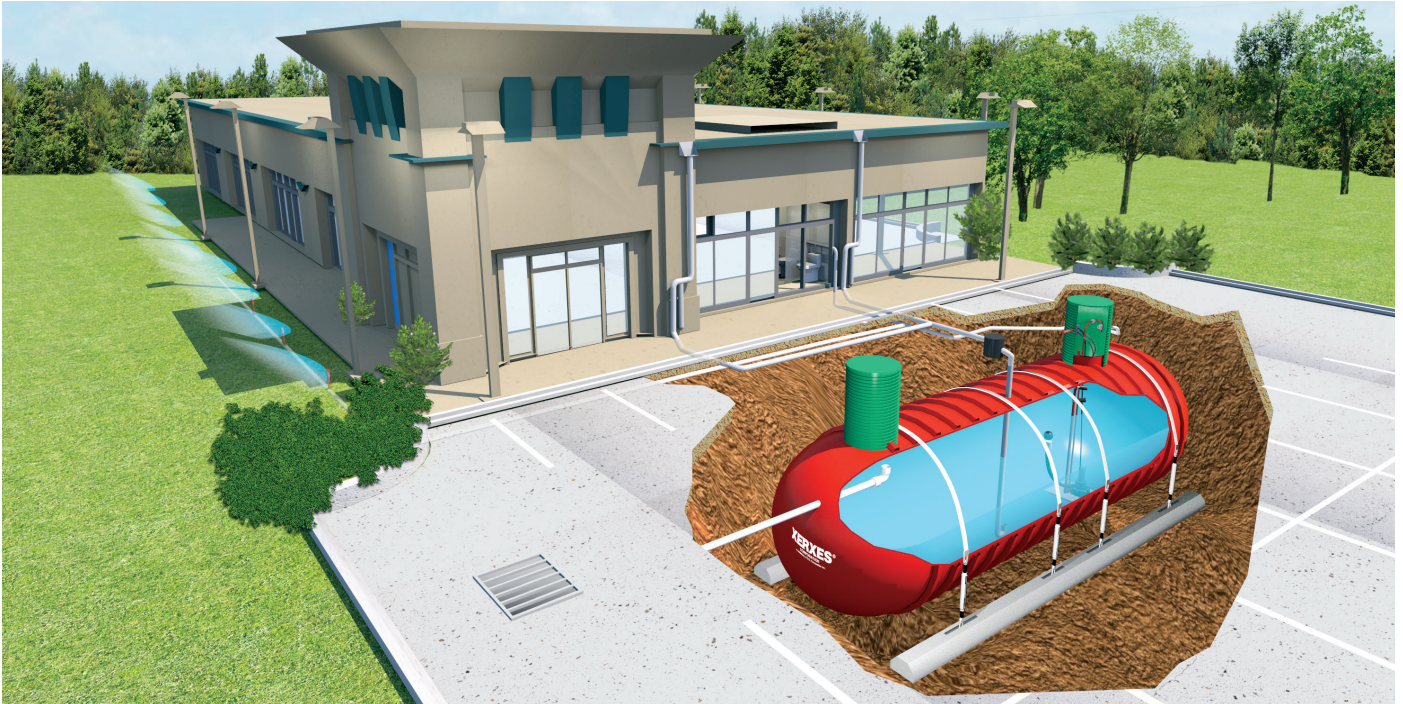
One Company – Two Brands

The Xerxes and ZCL product brands are part of the ZCL Composites group of companies manufacturing underground and aboveground fiberglass tanks for petroleum, water and corrosion market applications. ZCL Composites is a publicly traded company on the Toronto Stock Exchange (TSX: ZCL). Together, Xerxes and ZCL are North America's most popular brand of underground storage tanks, servicing customers from six strategically located North American manufacturing plants – four in the United States and two in Canada. Our extensive geographic coverage gives us unmatched ability to cost-effectively deliver tanks anywhere in North America. With more than 200,000 tanks installed, our position as the industry's leading manufacturer of underground storage tanks strengthens each year.

(1) LEED® is a registered trademark of the U.S. Green Building Council, a nonprofit corporation independent of Xerxes Corporation and ZCL Composites Inc..

(2) LEED® Green Building Rating System™ is a trademark of the U.S. Green Building Council, a nonprofit corporation independent of Xerxes Corporation and ZCL Composites Inc..

Water Efficiency Category: Water Efficient Landscaping



ZCL and Xerxes water tanks can easily fit into a design that qualifies for water efficiency landscaping credits under the LEED Water Efficiency category (Credit 1.1 and Credit 1.2). The intent of these LEED credits is to limit or eliminate the use of potable water, or other natural water resources, for landscape irrigation. Storage tanks are routinely used to collect and store captured rainwater or recycled site water, which is then used for landscape irrigation. Another popular way to use captured rainwater is to irrigate athletic fields within school districts. Using rainwater and/or greywater instead of potable water is one way to reduce the use of potable water for irrigation. Using our water tanks, a system can be designed to conserve as much as 100 percent of potable water for such purposes. The use of rainwater cisterns incorporated into building designs is a practice that has been used for decades. Now, with LEED credits available, architects and building designers are routinely incorporating a state-of-the-art fiberglass cistern, providing the confidence that the collected water supply will be there as needed and not lost through cracks and leaks from less reliable storage products.

LEED Credits for Water Efficiency (WE)

WE Credit 1.1: Water Efficient Landscaping (Reduce by 50%)

WE Credit 1.2: Water Efficient Landscaping (No Potable Water Use or No Irrigation)

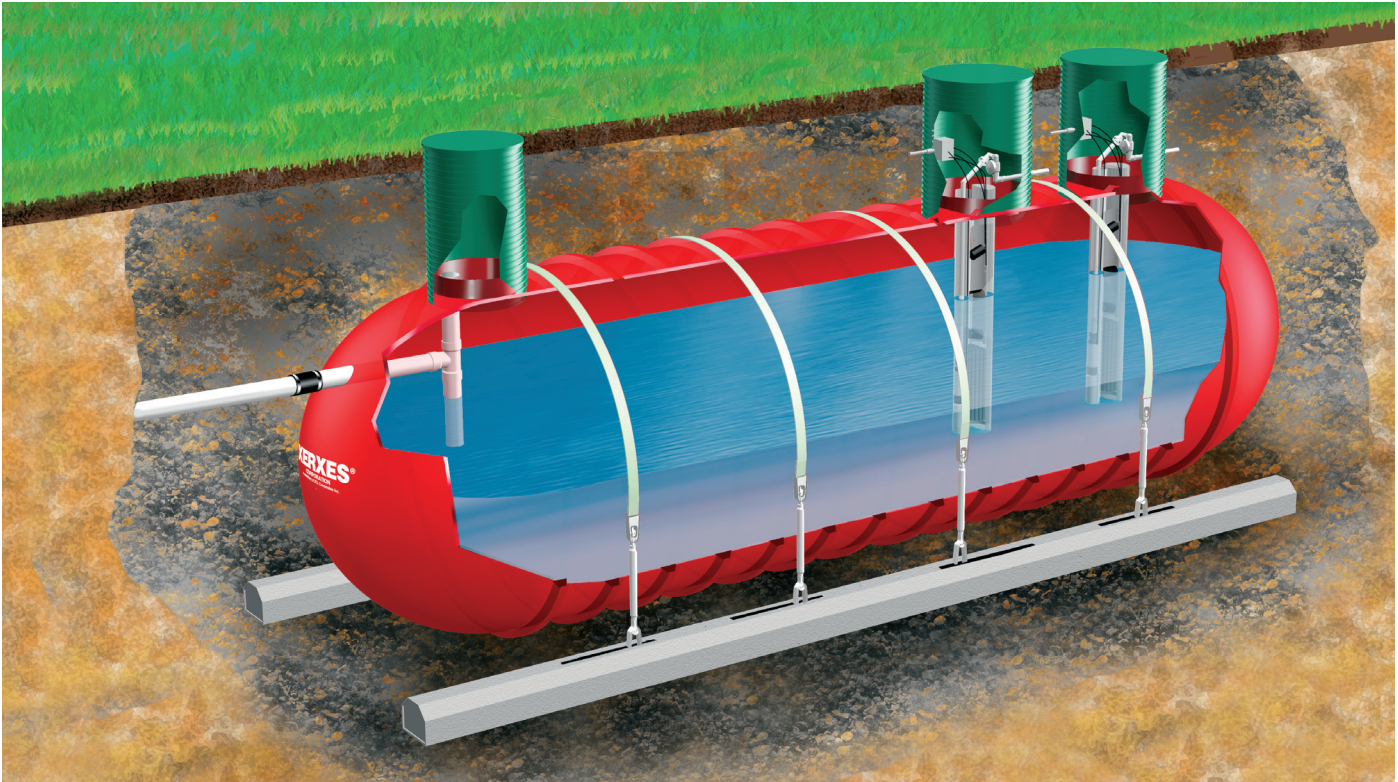
Intent: Limit (50%) or eliminate (100%) the use of potable water, or other natural surface or subsurface water resources available on or near the project site, for landscape irrigation.

Requirements for Credit 1.1: Reduce potable water consumption for irrigation by 50% from a calculated mid-summer baseline case. Reductions must be attributed to any combination of the following items: plant species density and microclimate factor, irrigation efficiency, use of captured rainwater, use of recycled wastewater, use of water treated and conveyed by a public agency specifically for nonpotable uses.

Requirements for Credit 1.2: Achieve WE Credit 1.1 AND use only captured rainwater, recycled wastewater, recycled greywater, or water treated and conveyed by a public agency specifically for nonpotable uses for irrigation OR install landscaping that does not require permanent irrigation systems.

Source: U.S. Green Building Council, April 2009

Water Efficiency Category: Water Use Reduction



ZCL and Xerxes water tanks can be a component of many designs that would qualify for Water Use Reduction credits (3.1 and 3.2) under the LEED Water Efficiency category. Both of these credits have the same intent: to reduce the burden on municipal water supply and wastewater systems by maximizing water efficiency within buildings. Whether the aim is a 20 percent or a 30 percent reduction of water use, our water storage tanks can be used to collect plumbing greywater that can then be used for nonpotable applications, such as toilet and urinal flushing, mechanical systems and custodial uses. Our tanks have been used for such applications in mixed use commercial complexes throughout North America. These facilities typically incorporate separate plumbing lines for greywater and potable water, with filtered greywater being drawn from an underground water cistern. These innovative plumbing designs are increasingly being accepted by recognized plumbing codes.

LEED Credits for Water Efficiency (WE)

WE Credit 3.1: Water Use Reduction (20% Reduction)

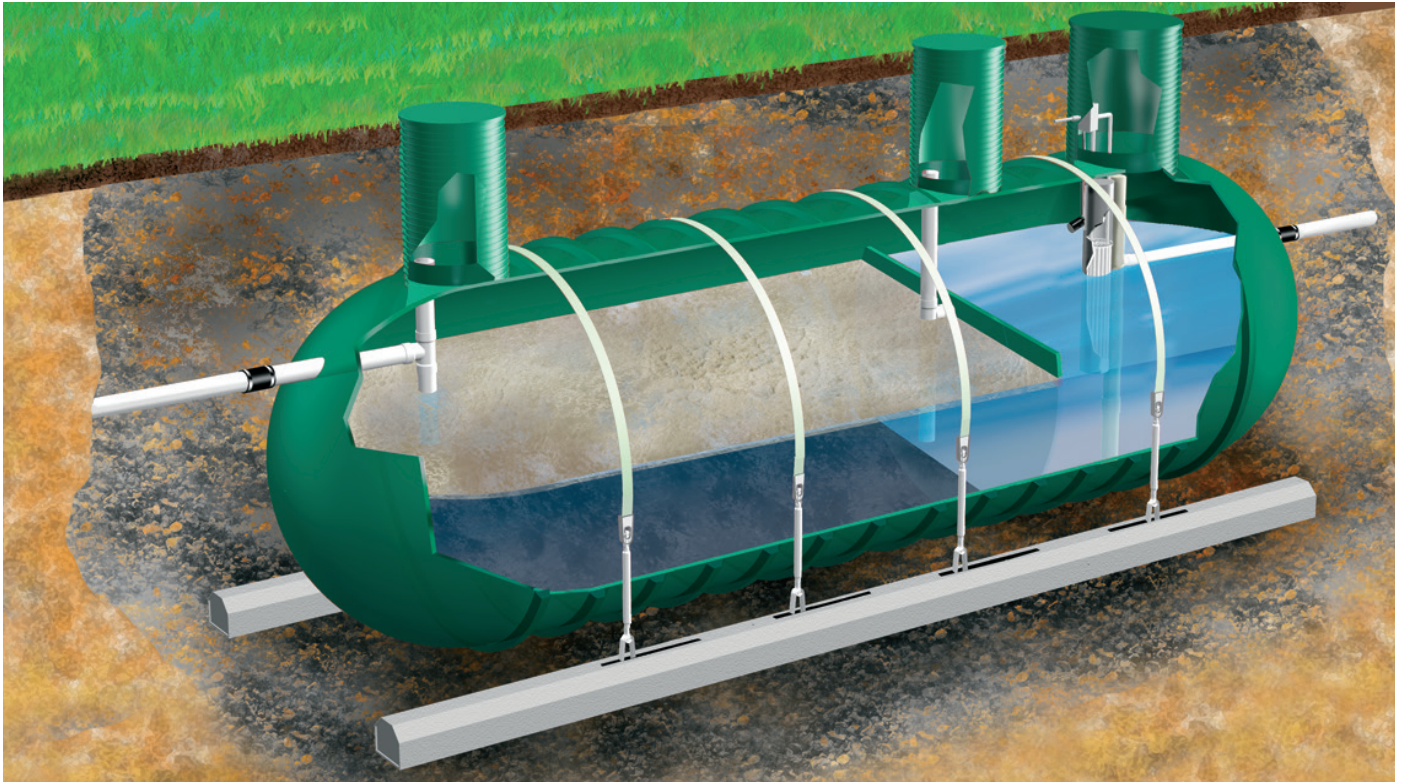
WE Credit 3.2: Water Use Reduction (30% Reduction)

Intent: Further increase water efficiency within buildings to reduce the burden on municipal water supply and wastewater systems.

Requirements: Employ strategies that in aggregate use less water than the water use baseline calculated for the building (not including irrigation) after meeting the Energy Policy Act of 1992 fixture performance requirements. Calculations are based on estimated occupant usage and must include only the following fixtures (as applicable to the building): water closets, urinals, lavatory faucets, showers, kitchen sinks and prespray valves.

Source: U.S. Green Building Council, April 2009

Water Efficiency Category: Innovative Wastewater Technologies



ZCL and Xerxes wastewater tanks are a natural component of systems designed to qualify for the innovative wastewater technology credit available under the LEED Water Efficiency category (Credit 2). This credit requires reducing the use of municipally provided potable water for building sewage conveyance by a minimum of 50 percent or the treatment of wastewater onsite to tertiary standards. The need to address wastewater management has led to the growing acceptance of onsite treatment. Onsite wastewater technology is also an increasingly recognized commercial design concept for which our tanks have long been a critical component. There are a growing number of wastewater system designers and packagers offering complete systems that are designed to address site-specific needs. These wastewater tanks are used as process tanks, dosing tanks, recirculation tanks, collection tanks and holding tanks, all part of a complete wastewater treatment system in such projects as schools, commercial buildings, office complexes and housing developments. As onsite wastewater treatment system designers develop new technologies, our tanks continue to be a part of that evolution.

LEED Credits for Water Efficiency (WE)

WE Credit 2: Innovative Wastewater Technologies

Intent: Reduce wastewater generation and potable water demand, while increasing the local aquifer recharge.

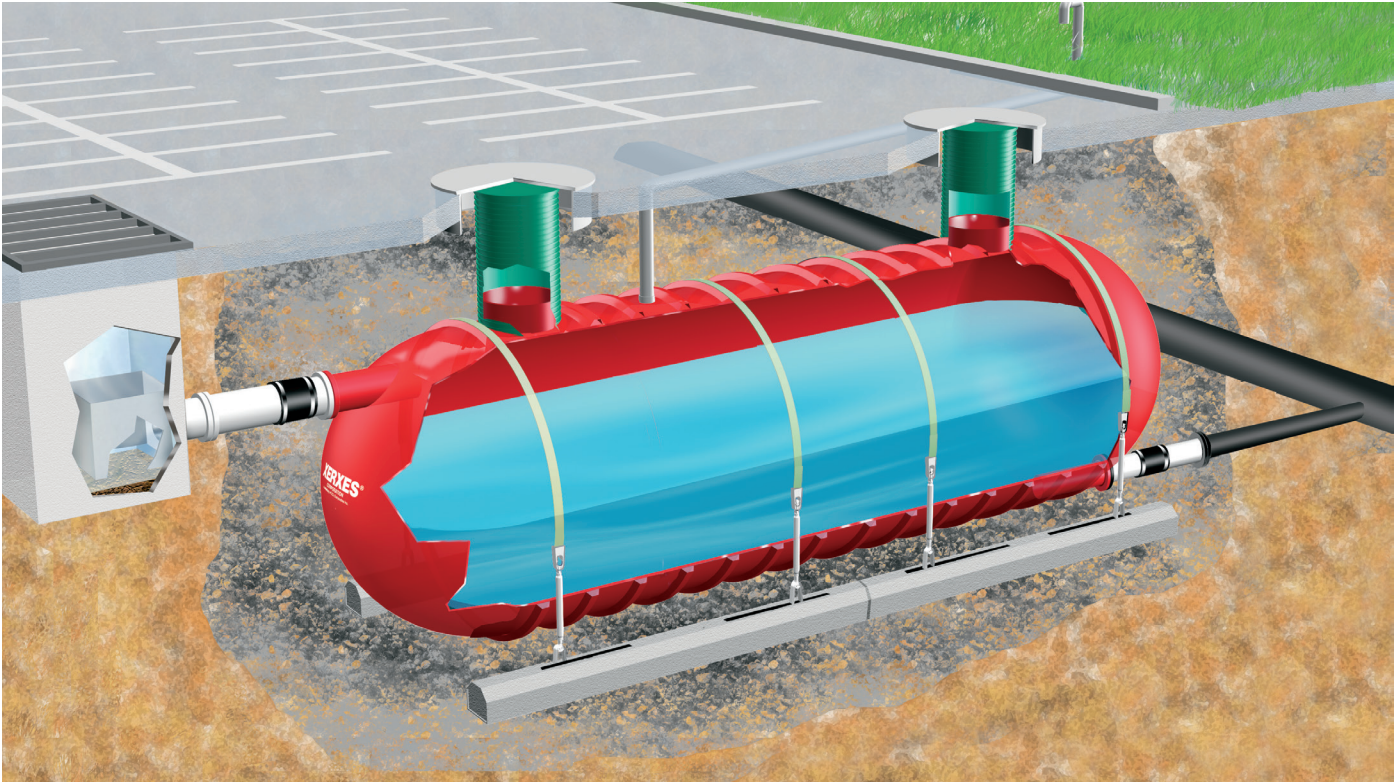
Requirements: Option 1: Reduce potable water use for building sewage conveyance by 50% through the use of water-conserving fixtures (water closets, urinals) or nonpotable water (captured rainwater, recycled greywater, and onsite or municipally treated wastewater).
OR

Option 2: Treat 50% of wastewater onsite to tertiary standards. Treated water must be infiltrated or used onsite.

Requirements: Employ strategies that in aggregate use 20% less water than the water use baseline calculated for the building (not including irrigation). Calculations are based on estimated occupant usage and must include only the following fixtures and fixture fittings (as applicable to the project scope): water closets, urinals, lavatory, showers, kitchen sink faucets and prerinse spray valves.

Source: U.S. Green Building Council, April 2009

Sustainable Sites Category: Stormwater Design



Environmental concerns have changed the management of stormwater runoff. When stormwater runs directly into sewer systems, it can result in either groundwater contamination or overloading of stormwater infrastructure. When allowed to run directly into watersheds, it can be a major source for pollution. To address these problems, many communities now require a specific retention time before allowing stormwater to run into the drainage system. Typically, retention ponds are used to meet this requirement. As part of a stormwater management system, ZCL and Xerxes underground water tanks offer a better alternative, which may also qualify for the stormwater design credits available under the LEED Sustainable Sites category (Credits 6.1 and 6.2). While meeting retention-in-time requirements, developers and property owners can also make better use of property by locating stormwater tanks in parking lots or parking areas. This is a significant benefit with the rising cost of land. ZCL and Xerxes tanks are rated for H-20 loads, therefore, ideally suited for use under parking lots. In addition, the collected stormwater can be used for nonpotable uses such as landscape irrigation.

LEED Category: Sustainable Sites (SS)

SS Credit 6.1: Stormwater Design: Quantity Control

Intent: Limit disruption of natural water hydrology by reducing impervious cover, increasing onsite infiltration, reducing or eliminating pollution from stormwater runoff, and eliminating contaminants.

Requirements: See LEED 2009 for New Construction and Major Renovations November 2011, page 15.

SS Credit 6.2: Stormwater Design: Quality Control

Intent: Limit disruption and pollution of natural water flows by managing stormwater runoff.

Requirements: See LEED 2009 for New Construction and Major Renovations November 2011, page 15.

Source: U.S. Green Building Council, April 2009

Fiberglass Tank Applications & Green Building: The List Goes On



Features of Xerxes and ZCL Tanks

- Constructed of rustproof, long-lasting fiberglass
- Available in NSF 61-listed models
- Manufactured to meet customers' functional requirements
- Designed for H-20 load conditions
- Easy to ship and install
- Available from six manufacturing locations in North America
- Manufactured to applicable requirements of UL and American Water Works Association standards
- Designed with integral ribs for added strength
- Available in single-wall or double-wall models
- Available in sizes from 600 gallons to 60,000 gallons

Existing Buildings Rating System: An Additional LEED Point

In addition to the numerous opportunities outlined in this brochure to establish points using the LEED for New Construction Rating System, USGBC's standard for the upgrade of existing facilities; LEED for Existing Buildings: Operations and Maintenance, also provides a separate and unique opportunity. Credit 4.2 of the Water Efficiency (WE) category addresses Cooling Tower Water Management, and provides a point for the use of makeup water that consists of at least 50 percent nonpotable water. Incorporating our tanks into the design of an existing building is an excellent way to capture the additional point specific to this separate rating criteria.

The List Goes On

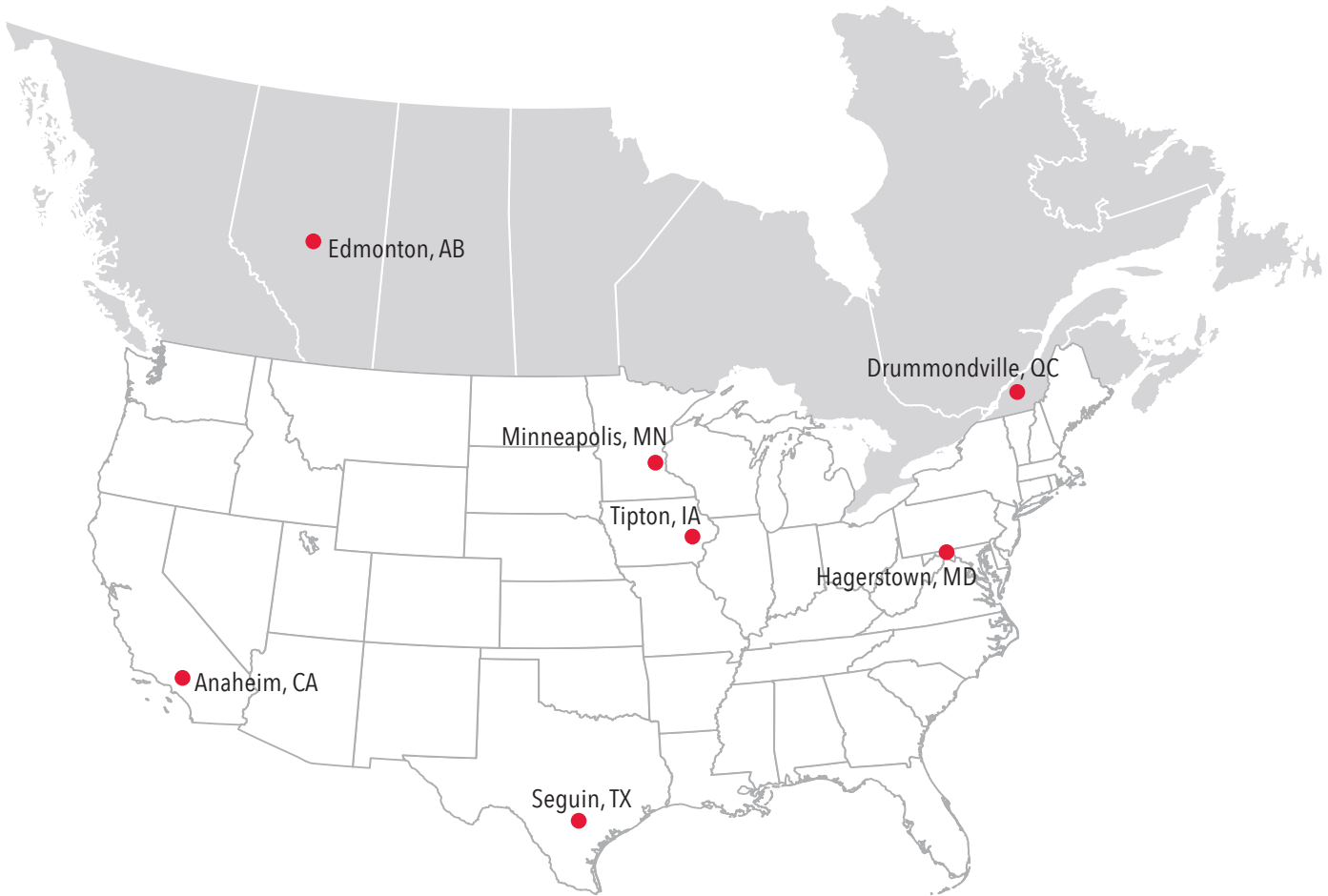
Aside from the design concepts shown in this brochure, ZCL and Xerxes tanks have a wide variety of applications. There are a variety of innovative applications that don't qualify for LEED credits but have important design uses nonetheless, such as fire-protection systems designed to comply with ever-changing fire codes, residential cisterns, car wash water reclaim units, and many others.



National benchmark for green building

The U.S. Green Building Council promotes the design and construction of buildings that are environmentally responsible, profitable and healthy places to live and work. This organization developed and administers the LEED Green Building Rating System that is the nationally accepted benchmark for the design, construction and operation of high-performance green buildings. LEED recognizes performance in six key areas of new construction and major renovations: sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, and innovation and design process. The LEED credit system is an easy way to identify projects and project components that meet this nationally accepted standard. Xerxes tanks can be part of a variety of applications that may qualify for LEED credits.

Source: U.S. Green Building Council, November, 2007



OFFICES

ZCL Composites Inc. Head Office

1420 Parsons Road SW
Edmonton, AB T6X 1M5
Phone: 780.466.6648

US Office

7901 Xerxes Avenue S
Minneapolis, MN 55431
Phone: 952.887.1890

ON THE WEB

www.zcl.com

www.xerxes.com

MANUFACTURING FACILITIES

Canadian Locations

250 rue Rocheleau
Drummondville, QC J2C 6Z7
Phone: 819.474.4114

6907 - 36 Street
Edmonton, AB T6B 2Z6
Phone: 780.465.0726

US Locations

1210 North Tustin Avenue
Anaheim, CA 92807-1617
Phone: 714.630.0012

515 West South Street
Tipton, IA 52772-1505
Phone: 563-886-6172

16404 Elliott Parkway
Williamsport, MD 21795-4082
Phone: 301.223.6933

2001 Proform Road
Seguin, TX 78155-2238
Phone: 830.372.0090

BIOSOLUTIONS

5310 Derry Ave., Suite E
Agoura Hills, CA 91301

818 991 9997

www.biosolutions.org

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