

US EPA ARCHIVE DOCUMENT

GREEN BUILDING



NEW ENGLAND REGIONAL LABORATORY



Letter to the People of New England

EPA New England has a duty as an environmental agency to lead by example. Our new laboratory in North Chelmsford, Massachusetts is a testament to our commitment to "walk the talk" in achieving a high level of environmental performance in all of our daily operations.

The 66,000-square-foot building incorporates an array of environmental features, including energy efficient heating and cooling systems, active solar power, natural lighting, recycled materials, environmentally friendly landscaping, improved indoor air quality measures and support for wind-powered electricity to run the building.

We hope the benefits of EPA's New England Regional Laboratory will extend beyond the site itself, providing inspiration and a concrete example that others can follow and improve upon as new technologies become available. This brochure includes descriptions of the many environmental features in the building and contacts for more information.

I hope you will join us in promoting energy efficiency and creating a better environment for New England.

Robert W. Varney
Regional Administrator
EPA New England

Awards for NERL

LEED Gold Rating (2003)

LEED (Leadership in Energy and Environmental Design) is a rating system developed by the U.S. Green Building Council to encourage and facilitate the development of more sustainable buildings. The NERL was awarded a LEED 1.0 Gold Rating, and was the first laboratory facility in New England, and the first EPA building nationally, to receive a LEED rating at any level.



Presidential Closing the Circle Award (2002)

The Closing the Circle Award was awarded to the NERL at a White House ceremony, for its Model Facility integrated sustainable design.

GSA National Build Green and Beyond Award (2002)

The NERL received a U.S. General Services Administration (GSA) National Build Green and Beyond Award for being a sustainable design model facility.

GSA National Demolition Derby Award (2002)

This award for incorporation of sound environmental policies in demolition and recycling, was given for construction waste management and use of materials with high recycled content during construction of the NERL.

Eagle Excellence in Construction Award (2001)

The Massachusetts Chapter of Associated Builders and Contractors gave this award to Erland Construction as "the best of the best" in the construction industry, in the category "Commercial/Institutional/Industrial Construction Over \$5 Million", for their work on the NERL.

Resources

www.epa.gov/ne/
www.epa.gov/ne/lab

EPA New England Customer Call Center

NE States:(888) 372-7341 • Outside NE:(617) 918-1111

EPA ENERGY STAR® www.energystar.gov

The U.S. EPA ENERGY STAR® program provides information on EPA initiatives to promote energy efficiency in buildings.

EPA Labs 21st Century

www.epa.gov/labs21century

Laboratories for the 21st Century (Labs21), sponsored by the U.S. EPA and the U.S. Department of Energy, is a voluntary initiative program dedicated to improving the environmental performance of U.S. laboratories by improving laboratory energy and water efficiency, encouraging the use of renewable energy sources, and promoting environmental stewardship.





Energy Efficiency

The building and its components have been designed to minimize energy consumption. We worked with our local utility and participated in its energy conservation program, Massachusetts Electric Design 2000plus. Based on these efforts, the laboratory is at least 35 percent more energy efficient than a typical laboratory. The energy efficient systems in the building include: six modular gas-fired boilers, two water-cooled chillers, daylight dimmers, occupancy sensors, tubular skylights, energy-efficient lights, high-efficiency motors and variable flow pumping systems, variable air volume heating and cooling systems with night and low occupancy system setbacks, insulated windows, highly rated insulation, and automated building management and monitoring systems.



Water Efficiency

Water in the building will be conserved with the use of waterless urinals which conserve an average of 40,000 gal. per year/per urinal. Restrooms are equipped with electronic sensors on the plumbing fixtures. Outside, native trees and shrubs requiring little water have been planted, and water diverted from roof drains will replenish on-site wetlands. The lab uses a well on the property to supply a portion of its non-potable water for minor irrigation.



Solar Power

Photovoltaic (solar energy producing cells) awnings shade the office windows on the outside and reduce glare and heat gain, thus reducing the amount of cooling needed. In addition, the awnings supply an average of 2000 watt-hours daily to the building's electrical system. Special skylights with reflective tubing systems bring daylight deep into the building, reducing the need for artificial light.



Green Power

EPA New England made a commitment to power its new laboratory with 100 percent green electric power. Our electricity contractor, Green Mountain Power of Vermont, will generate or purchase wind-powered electricity which matches the electrical consumption of our North Chelmsford lab, estimated at close to 2 million kilowatt hours per year. While this will not generate cost savings, it will help us achieve environmental benefits by reducing greenhouse gases that would have been emitted from conventional power sources.



Landscape Design

The Xeriscape landscaping incorporates many environmental factors including soil type, use of native plants, minimal turf area, water efficient landscaping, and mulches. By using native plants that require little watering and are well-suited to the local environment, we reduce the need for irrigation and pesticides.



Waste Handling & Recycling

Sanitary wastewater from the lab is being sent to the Lowell Regional Wastewater Utility. All wastewater generated in laboratory portions of the building are piped to a state-of-the-art acid neutralization system. This system uses a two-stage neutralization process and a 500-gallon holding tank, which is activated if the wastewater is not completely neutralized during the two-stage process. The building has an extensive recycling program. Food waste and some landscaping debris are composted on site. Paper, cardboard, plastics, glass, cans and batteries are also recycled.



Indoor Air Quality

A healthy indoor environment is a critical safety concern in a laboratory setting. The largest sources of indoor air contaminants are interior building materials, office furniture and equipment. Before any material was used in this building, it was examined for possible effects on indoor air quality in addition to its general environmental impact. Materials with contaminants above EPA-designated levels were not used. Measures taken to ensure indoor air quality at the lab included low volatile organic compound (VOC) products; strict control of formaldehyde; construction materials; off-gassing materials before installation; cleaning of all duct work; replacing of filters before occupancy; and the use of environmentally preferable cleaning materials. Prior to occupancy, an independent indoor air quality consultant tested the building to ensure that it was within EPA-specified requirements. An Indoor Air Quality Control Plan is being implemented.



Environmentally Preferable Materials

Building plans utilized the resources naturally available on the site to avoid generating unnecessary debris and to minimize site demolition. All soil and gravel on the site was stockpiled and graded for later use as fill or loam. Blasted rock outcroppings were crushed with a portable on-site processing plant and totaled approximately 17,500 tons. The crushed stone was used as base material for concrete paving; sub-base for bituminous concrete pavement; backfill for footings, structures and pipe bedding; and for under-drain filter aggregate. Reuse of materials avoided disposal costs and was sufficient to complete the landscaping and fill work with only a minimal amount of fine grading material (sand) brought in for finish grading.

Materials used in construction contained the highest recycled content available. Using them eliminated pollution from extraction of new materials, transportation and manufacturing. Additionally, it reduced the need to dispose of the recovered materials and encouraged recycling in the industry. The following recycled materials were used in construction: fly-ash containing concrete (use of this type of concrete diverted 126 tons of fly-ash from becoming part of the waste stream), steel, gypsum wallboard, ceiling tiles, insulation and hydromulch.

U.S. EPA New England Regional Laboratory (NERL)



Energy efficient insulated windows



Photovoltaic window shades produce energy

Water runoff from the roof replenishes on-site wetlands

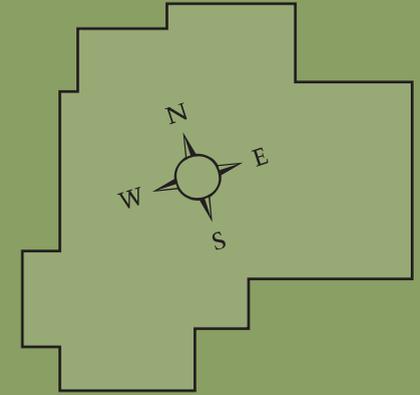


Original boulders provide a natural wall

Xeriscape design uses native plants and minimal lawn

Northside offices reduce required cooling

Southside loading dock maximizes snow and ice melt



Higher set windows allow more natural light deeper into the building

Green Building Contacts for the New England Regional Laboratory (NERL)

Bob Beane
Project Manager, NERL
U.S. EPA

11 Technology Drive
North Chelmsford, MA 01863-2431
(617) 918-8350
email: beane.bob@epa.gov

Carol Wood
Acting Director, NERL
U.S. EPA

11 Technology Drive
North Chelmsford, MA 01863-2431
(617) 918-8300
email: wood.carol@epa.gov

William Ridge
Architect
U.S. EPA

MC 3204R
1200 Pennsylvania Ave. NW
Washington, DC 20460
(202) 564-2165
email: ridge.william@epa.gov

John Buckley
GSA Project Manager
U.S. General Services Administration

O'Neill Federal Building, Room 915
10 Causeway Street
Boston, MA 02222
(617) 565-6207
email: john.buckley@gsa.gov

