

Improving the **ENVIRONMENT**,
strengthening your **COMMUNITY**.



Lakeshore Environmental, Inc.
Scientists • Engineers • Planners

About **US**

Founded in West Michigan, Lakeshore Environmental is a privately owned, full-service environmental consulting firm. Our mission is to provide the finest environmental engineering and consulting services while promoting principles of sustainability. Successful results are accomplished utilizing an experienced multi-disciplinary professional staff and completing environmental tasks in an expedient manner at a competitive rate.



Our Team **INCLUDES**

Aquatic Ecologist/Limnologists
Asbestos Building Inspectors
Certified Environmental Inspectors
Certified Hazardous Material Managers
Certified Professional Geologists
Certified Storm Water Managers
Certified Underground Storage Tank (UST) Professionals
Certified Wastewater Treatment Plant Operators
Certified Water System Operators
Environmental Planners
Fisheries Biologists
LEED Accredited Professionals
Professional Engineers
Professional Wetland Scientists
Registered Landscape Architects
Sustainability Advisors

Case **STUDIES**

Community Health Center **Brownfield Redevelopment**

Lakeshore Environmental, in collaboration with a municipal client, successfully obtained a \$200,000 state grant to perform environmental activities at an abandoned contaminated property slated for redevelopment. The municipality selected Lakeshore as their preferred consultant to manage the following tasks funded by the grant:

- Preparation of a health and safety plan
- Lead-based paint and asbestos surveys
- Subsurface investigations
- Removal of underground storage tanks
- Completion of a baseline environmental assessment and due care plan
- Response activities
- Building demolition

Completion of these tasks enabled a developer to acquire the property with no environmental liability concerns and safely redevelop the land as a multi-use community center for low-income or uninsured citizens seeking affordable medical services.

Residential & Golf Course Developer **Permitting for Golf Course Dewatering**



Several large lakes were proposed for a golf course. Due to the high water table present in the area, dewatering was required during pond construction. Neighboring blueberry farms were concerned that the dewatering would threaten their crops.

Lakeshore Environmental performed computerized groundwater modeling. Specific construction practices were outlined to significantly limit the effect of dewatering on the farms. Lakeshore issued reports outlining:

- Acceptable dewatering methods
- Irrigation drawdown models
- Septic system design
- Wetland permitting and mitigation

As a result of minor adjustments in the construction work plan, the lakes were successfully constructed and have been used for irrigation with no detrimental impacts to area farms.



Auto Parts Manufacturer Regulatory Compliance

The world headquarters of an international automotive supplier contracted Lakeshore Environmental for guidance in preparing permits and programs to meet state and federal environmental regulatory and Occupational Safety and Health Administration (OSHA) regulations.

Lakeshore navigated through the maze of regulatory requirements, minimizing the required submittals. After a series of on-site surveys, interviews and monitoring, the client was provided:

- OSHA compliance and training seminars
- Wastewater monitoring and wastewater quality reports
- Annual SARA Title III (Community Emergency and Community Right-to-Know) reports
- Spill and stormwater contingency plans
- Obtained air quality permits
- A computerized compliance tracking system

Lakeshore’s industrial compliance experts met the client’s immediate needs in a timely and cost effective manner. To facilitate compliance, Lakeshore developed a tracking system to assist with compliance submittals.

Our qualified experts successfully address a wide-variety of environmental projects from initial investigation to closure. Long-standing relationships with municipal, county and state agencies enable us to provide prompt and accurate interpretation of the regulations governing environmental matters.

Petroleum Distributor Leaking Underground Storage Tank Cleanup & Recovery

An equipment malfunction at a retail gasoline filling station resulted in an underground product release. Lakeshore Environmental determined the source of the release, the extent of free product plume and the extent of groundwater and soil contamination.

Lakeshore’s quick response resulted in the immediate recovery of the spilled gasoline. This recovered product was refined and sold as vehicle fuel. Lakeshore conducted the following response activities:

- Monitored public storm and sanitary sewers for petroleum infiltration
- Represented the owner at contentious municipal and public meetings
- Determined horizontal and vertical extents of contamination through monitoring wells and soil sampling
- Inspected adjacent properties for evidence of contamination
- Inspected water usage records
- Investigated buildings for odors
- Designed and installed the system that recovered over 25,000 gallons of unleaded gasoline
- Reduced the owner’s liability through:
 - Reduction of punitive fines
 - Negotiation with insurance adjusters
- Remedied the site to a level of “no remaining contamination”

As a result of the project’s success, Lakeshore wrote the municipality’s first groundwater ordinance, addressing well abandonment and groundwater containment protocol.

Fruit Grower & Food Processor Agricultural Ground Water Discharge Permit

A large-scale fruit grower and food processor sought guidance from Lakeshore Environmental to help develop a sustainable plan to increase crop productivity and recycle wastewater nutrients with a spray irrigation system. Lakeshore assisted the processor through the permitting process associated with discharging wastewater.

- Outlined site-specific sound nutrient management practices
- Improved the efficiency of the wastewater treatment system
- Developed a sustainable discharge management plan
- Obtained a groundwater discharge permit

Lakeshore helped the food processor meet their goals of developing a sustainable and cost-effective plan for wastewater treatment, discharge and nutrient recycling, while promoting environmental stewardship.



Dry Cleaning Superfund Site Groundwater Recovery & Remediation

State regulators awarded Lakeshore Environmental the contract to clean up groundwater contamination. Dry cleaning solvents at this EPA Superfund Site were threatening the quality of the local drinking water supplies and the ecological stability of a "blue ribbon" trout stream and national wild and scenic river. Lakeshore's responsibilities included:

- Installing monitoring wells
- Collecting soil samples
- Producing geologic cross-sections illustrating soil lithology and groundwater flow
- Determining the horizontal and vertical extents of contamination
- Upgrading previously installed recovery equipment
- Continuously monitoring contamination levels, adjusting recovery equipment to maximize effectiveness of remediation efforts
- Working in unison with the state regulators to monitor the extent of contamination
- Measuring groundwater drawdown to define the product capture zone and analyze treatment effectiveness

The project has resulted in the successful capture of the plume and contamination has not reached the river.



Lake Association & Township Lake and Watershed Management Plan

Lakeshore Environmental conducted a comprehensive lake study of a 286-acre lake located in Michigan to assist a Lake Association with the development of a long-term Lake and Watershed Management Plan. The lake contained over 25 acres of Eurasian Watermilfoil (*Myriophyllum spicatum*) and received external inputs of nutrients and sediments from the surrounding watershed. As a result of the study findings, the Lake Association considered a solution including the use of systemic aquatic herbicides, possible implementation of a lake-wide laminar flow aeration system and integration of watershed management practices. During the course of the study, Lakeshore:

- Conducted whole-lake aquatic vegetation surveys of the lake to document the presence and relative abundance of aquatic plant native and non-native species
- Evaluated the overall health of the lake ecosystem and trophic state
- Addressed watershed land use issues such as erosion and sedimentation to improve water quality within the lake
- Developed Best Management Practices (BMP's) to help homeowners protect the lake
- Investigated the feasibility of utilizing a whole-lake aeration system for improving water quality and reducing aquatic vegetation through reduction of sedimentary benthic carbon dioxide
- Developed a 5-year financial budget for the local municipality and Lake Association to utilize for implementation of the suggested improvements

Sustainable Development Consulting Alternative Energy, LEED Certification

Lakeshore Environmental has provided services to businesses, municipalities, non-profit organizations and educational institutions committed to long term viability through environmentally and socially responsible practices. From goal setting, metric development and performance assessment to feasibility studies, certification assistance, planning and reporting, Lakeshore has integrated principles of sustainability at varied levels depending on the needs and desires of our clients.

In the case of an international sand mining company, Lakeshore was contracted to determine the feasibility of converting an existing sand mine into a LEED residential and commercial development utilizing principles of sustainability. Conceptual planning involved:

- A review of zoning documents
- An evaluation of potential environmental concerns
- A renewable energy use assessment

Based on the findings from the conceptual planning, recommendations were made identifying three alternative land-use plans, which incorporated wind, solar and geothermal energy applications, LEED residential and commercial structures, native landscaping, pervious surface features and sustainable sewer and water supply systems.





Case STUDIES

Mine Reclamation Groundwater Investigation, Hydro Study & Wetland Construction

A major aggregate company acquired an abandoned sand pit adjacent to a county drain. Lakeshore Environmental obtained state and local permits that allowed aggregate mining and final restoration. Lakeshore's responsibilities included:

- Obtaining a township special land use permit
- Obtaining an Earth Change permit
- Preparation of interim and final mine reclamation plans
- Preparation of plans for relocation of a county drain
- Filing a joint permit application for drain work, wetland change and creation
- Setting water levels for proposed lakes and ponds
- Preparation of wetland construction plans
- Directing drain construction and outfall installation
- Monitoring wetlands
- Filing final wetland reports

After a period of production, the site was restored and sold. The new owner has installed roads and utilities creating desirable waterfront home sites.

Services **INCLUDE**

ENVIRONMENTAL SITE ASSESSMENTS

- Brownfield Consulting
- Transaction Screens
- Phase I ESAs
- Phase II
- Baseline Environmental Assessments
- Lead-Based Paint Surveys
- Due Care Plans

INDUSTRIAL COMPLIANCE

- Health and Safety Plans
- Air Sampling, Monitoring and Permitting
- Spill Contingency Plans
- Hazardous Waste Management and Reporting
- Annual SARA Reports
- RCRA Closures
- Municipal and Commercial Wastewater Discharge Sampling Operations
- Wastewater Treatment
- Waste Management Plans

NATURAL RESOURCES

- Hydrogeologic Investigations
- Grant Assistance
- Geographic Information Systems
- Environmental Planning
- Mapping
- Invasive Species Management
- Landscape Architecture
- Habitat Restoration
- Groundwater Conflict Resolution
- Wetland Delineation/Permitting
- Dune Permitting
- Endangered/Threatened Species Surveys

SUSTAINABILITY

- Alternative Energy
- Feasibility Studies
- Green Development Consulting
- LEED Certification, Design and Consulting
- Sustainability Assessments

WATER RESOURCES

- Lake Improvement Feasibility Studies
- Aquatic Plant Surveys and Management
- Fisheries Surveys and Management
- Inland Lake and Stream Permitting
- Inland Lake Management
- Watershed Management
- Sediment and Soil Analysis
- Dredging Feasibility Studies and Permitting
- Lake Level Assessments
- Algal Analyses and Management
- Water Quality Monitoring and Modeling
- Lake Depth Contour Mapping
- Special Assessment Districts and Financing

ENGINEERING

- Stormwater Management Solutions
- Soil Erosion Control
- Groundwater Modeling
- Water Supply and Distribution
- Materials Testing
- Soil Compaction Tests
- Foundation Design
- Geoprobe® Soil Borings
- Slope Stability Analysis and Design
- Computer Aided Drafting and Design

STORAGE TANKS

- Leaking Underground Storage Tanks (LUST)
- Underground Storage Tanks (UST)
- Aboveground Storage Tanks (AST)
- Initial Assessments
- Risk Based Corrective Action (RBCA) Evaluations
- Remedial Action Plans
- Corrective Action Plans
- Tank Closures and Removals
- Soil and Groundwater Remediation
- Vapor Extraction Systems
- Air Sparge Systems
- Closure Reports
- Final Assessments

Environmental **RESOURCES**

To report environmental emergencies in Michigan:

1-800-292-4706

To report environmental emergencies in Ohio:

1-800-282-9378

Environmental Regulatory Information

U.S. Environmental Protection Agency

www.epa.gov

Michigan Department of Environmental Quality (MDEQ)

www.deq.state.mi.us

Ohio Environmental Protection Agency

www.epa.state.oh.us

Mapping & GIS Info

Online USGS Topo Quads

<http://store.usgs.gov>

U.S. Natural Resource Conservation Service (NRCS) Soil Survey

<http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>

MDEQ Water Well Viewer

<http://wellviewer.rsgis.msu.edu/>

ODNR Water Well Locators

www.dnr.state.oh.us/water/maptechs/wellogs/appNEW

Water Resources

Michigan Lake and Streams Associations

www.mlswa.org

Michigan Association of County Drain Commissioners Erosion Control Manual

<http://macdc.net/Resources/SoilErosionManual>

Water Info by State

<http://waterdata.usgs.gov/nwis/nwis>

Sustainability

Greenhouse Gas Calculator

www.epa.gov/solar/energy-resources/calculator.html

Green Building and LEED

www.usgbc.org

Bioretention and Rain Gardens

www.co.pg.md.us/Government/AgencyIndex/DER/ESG/Bioretention/bioretention.asp

Miscellaneous

Unit Conversions

www.unitconversion.org/index.html

Engineering Tool Box

www.engineeringtoolbox.com



Contact **US**

Toll Free 800-844-5050

www.LakeshoreEnvironmental.com

MICHIGAN OFFICE

803 Verhoeks St.

Grand Haven, MI 49417

Local 616-844-5050

Fax 616-844-5053

OHIO OFFICE

118 W. Streetsboro St., Suite 127

Hudson, OH 44236

Local 330-351-3806

Fax 616-844-5053



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