

Environmental Site Investigation



Contamination of soils and groundwater from known or unknown sources presents serious challenges and costly burdens to corporations charged with managing these problems. To be effective, site investigations must be designed to yield data appropriate for remediation or management decision-making, and to minimize disruption to business operations at the site.

LimnoTech approaches each project with a focus on strategic planning, communication and negotiation with responsible parties and stakeholders to develop an appropriate investigative program. Our targeted site investigation, data evaluation and modeling skills help clients and stakeholders make remedial and management decisions that comply with appropriate regulations and meet client needs.

LimnoTech Services

LimnoTech's investigation program management and technical support services facilitate solution-oriented investigations. Services include:

- Strategic Planning
- Regulatory requirements evaluations
- Data needs evaluations
- Work plan development
- Site Investigation Programs
- Sampling programs for surface and subsurface soils, sediments, surface water, groundwater, and unknown substances
- Air, groundwater and biological monitoring
- Geophysical surveys
- Remedial Investigation/Feasibility Studies (RI/FS)
- RCRA Facility Investigations (RFI)
- Underground storage tank investigations

Data Evaluation and Reporting

- Hydrogeological characterizations
- Aquifer performance evaluations
- Wellhead protection programs
- Aquifer classifications
- GIS and database management
- Contaminant plume mapping
- Chemical fate and transport modeling
- Human health and ecological risk assessments
- Remedial action evaluations
- Technical assistance in negotiations

LimnoTech Experience

LimnoTech's environmental site investigation experience includes:

- Investigations and/or remedial actions at 13 CERCLA (Superfund) sites, 40 Michigan Part 201/Act 307 sites, 10 RCRA TSD facilities, numerous UST sites, several municipal and industrial landfills, and numerous other commercial and industrial properties.
- State-specific industrial site reclamation projects in Illinois, Indiana, Michigan and Ohio.
- Extensive experience conducting investigations related to organic, chemical, and metals impacts in the soil and groundwater.
- Streamlined soil and groundwater investigations at more than 150 facilities nationwide using geophysical surveys, soil gas surveys, direct-push soil sampling, portable gas chromatograph analysis, and field immunoassay.

The project descriptions on the following page offer a sample of LimnoTech's experience in helping our clients resolve the challenges of ecosystem evaluation and management.



LimnoTech performs slug testing to measure local hydraulic conductivity, a necessary parameter for estimating the fate and transport of contaminants in groundwater

Remedial Investigation, Feasibility Study, Remedial Action for Chlorinated Solvent Impacts, Fayette, Ohio.

LimnoTech is involved in a remedial investigation and feasibility study for a former manufacturing site in Fayette, Ohio. Groundwater beneath the site was impacted by a release of chlorinated solvents, resulting in a plume of trichloroethylene and other chlorinated volatile organic compounds. The site is surrounded by non-industrial development, and the municipal water supply wells were located a short distance downgradient. LimnoTech has provided a range of services including remedial investigation activities; a human health risk assessment; completion of a feasibility study; hydrogeologic investigations for relocation of the municipal water supply wells; design and implementation of interim remedial actions for the site; and bench and pilot tests to evaluate the use of in situ chemical oxidation at the site.

Conceptual Site Model Development and Refinement, New Jersey Meadowlands.

Honeywell International has pursued remedial investigation and cleanup of the former Universal Oil Products (UOP) site in East Rutherford, NJ. LimnoTech has been part of a team supporting Honeywell's investigation and remediation activities. LimnoTech's primary role has been developing and refining a conceptual site model (CSM) of the Ackermans Creek/Berrys Creek system, and as a result providing a better understanding of how contaminated sediments are deposited or transported within the system. A valid working CSM is critical to selection of an effective sediment remedy. In working on this project, LimnoTech has performed physical site characterization; measurements of sedimentation rates; geostatistical and forensic analysis; and hydrodynamic monitoring and model development.

Remedial Assessment and Design Addressing DDT-Impacted Floodplain Sediments, McIntosh, AL.

The pesticide DDT was produced in McIntosh, AL, and residual DDT was discharged to the local river with process wastewaters. The discharge ditch was

overtopped and inundated with floodwaters yearly, leading to residual DDT settling over approximately 60 acres of floodplain sediments. LimnoTech performed clay pad and turf mat studies to evaluate the potential of DDT-impacted sediments being transported from the floodplain. The project expanded into assessment and conceptual design for additional remediation of surface sediments. LimnoTech developed the physical, chemical, and ecological conceptual site model (CSM); performed geostatistical assessments of DDT sediment data; developed a cover remedy approach to reducing



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ecological exposures; and facilitated the remedy approach in negotiations. LimnoTech's CSM demonstrated that the contaminant footprint was stable, and that natural recovery mechanisms were present. The development and confirmation of the CSM led to selection of a sand cover remedy over excavation, saving the client millions of dollars and preserving floodplain habitat while achieving ecological exposure reductions.

Water Quality Studies to Support DO Modeling and TMDL Development for the Grand River in Jackson County, Michigan.

The Grand River in Jackson County, Michigan, had documented occurrences of severe DO depressions and a fish kill in periods of wet weather. LimnoTech conducted monitoring under dry and wet weather conditions to help identify specific point and nonpoint sources (NPS) of oxygen-demanding wastes, low-DO inflows, and total dissolved solids (TDS). LimnoTech designed and conducted reaeration and sediment oxygen demand (SOD) studies for the impaired portion of the Grand River. LimnoTech then completed river monitoring, sampling, reaeration and SOD studies. LimnoTech evaluated the data from these investigations, and these data were used by MDEQ for calibration and confirmation of the Grand River DO model and for development of a Total Maximum Daily Load for factors that deplete dissolved oxygen in the Grand River.