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FOR IMMEDIATE RELEASE

May 19, 2009

Research Being Conducted at West Okoboji Lake

AMES, Iowa – Visitors and residents of West Okoboji Lake may wonder why four lighted regulatory buoys are located east of Emerson Bay and north of Brown’s Bay. They are protecting an instrument called the Lake Diagnostic System (LDS), which is a meteorological station combined with a thermistor chain, a device that measures water temperature at different depths. The LDS was deployed by a research team from the Department of Civil, Construction, and Environmental Engineering at Iowa State University. The team consists of Dr. Chris Rehmann, an associate professor; Danielle Wain, a Ph.D. student; and Mike Kohn and Josh Scanlon, both M.S. students.

The LDS measures wind speed and direction, water temperature, relative humidity, air temperature, solar radiation, and net radiation, and it will remain in the lake until the end of summer. A web site displaying data from the LDS will be launched shortly. Data from this instrument will be used in a project, funded by the National Science Foundation, to study turbulence and mixing in lakes. During the previous two summers, the research team studied the mixing in Ada Hayden Lake, a small lake in Ames.

There also will be three single lighted buoys: one about 300 feet off shore, between Pillsbury and Lime Kiln Points; another between Manhattan Point and Hayward’s Bay; and another at the south end of Brown’s Bay or between Pike’s Point and Doc’s Cove. The first two buoys will each have a thermistor chain to determine water temperatures at several points over the depth. The third buoy will mark where an acoustic velocity meter will be deployed to measure the currents and turbulence.

“We are trying to understand how internal motions within lakes dictate how nutrients and pollutants are transported from the lake’s boundaries into its interior,” Wain said. “There has been much research on how mixing occurs on boundaries but less done on the ultimate fate of the mixed fluid and the heat and contaminants it might carry.”

Dr. Chris Rehmann will be giving a lecture on May 26 at Lakeside Lab at 7:30 pm titled *Under the Surface: Internal Waves, Turbulence, and Mixing in Lakes*, which will discuss the research being performed in West Okoboji Lake. For more information about the research at West Okoboji Lake, contact Chris Rehmann at (515) 294-1203 or rehmann@iastate.edu.