Contact: Diana Gonzalez

IOWA LAKESIDE LABORATORY REGENTS RESOURCE CENTER 2014-2015 ANNUAL REPORT AND 2015-2016 BUDGET

Actions Requested: (1) Receive the 2014-2015 annual report of the Iowa Lakeside Laboratory Regents Resource Center (ILLRRC) and (2) recommend approval of the 2015-2016 budget for the Center.

Executive Summary: The ILLRRC annual report describes the activities undertaken in 2014-2015 to address the Center's Strategic Plan. The proposed budget (Attachment A) describes the planned objectives for 2015-2016. The proposed 2015-2016 budget for the Iowa Lakeside Laboratory Regents Resource Center has been reviewed by the Board Office and the Council of Provosts and is recommended for approval.

Background: For more than 100 years, Iowa Lakeside Laboratory has provided educational opportunities to the state of Iowa; the Regent universities offer science-based courses that allow students to study nature first-hand. The Regent Enterprise recognizes that its educational offerings can address a variety of statewide needs, including lifelong learning, especially for place-bound individuals; economic development; and entrepreneurship.

In September 2006, the Board of Regents approved (a) a name change from the Lakeside Laboratory to the Iowa Lakeside Laboratory Regents Resource Center (ILLRRC) to reflect its expanded functions, (b) a Strategic Plan which defined the mission, vision, and values, as well as short- and long-term objectives for the Center, (c) an increase in annual Regent university allocations from $553,000 to $600,000 for a five-year period,[1] and (d) assigning administrative responsibility for the Center to the University of Iowa through the Associate Provost and Dean of Continuing Education.

The ILLRRC Strategic Plan provided a springboard to expand the opportunities available through the Center (1) to meet the educational needs of northwest Iowa through the following key functions – scientific research, lifelong learning, entrepreneurship, and community involvement; and (2) to develop a model that can be used throughout the state to address unmet educational needs.

The Board also directed the Board of Regents Executive Director or designee and the Regent universities to conduct an in-depth evaluation during the fourth year (2010-2011) to determine both the continued viability of the Iowa Lakeside Laboratory Regents Resource Center and the ability to replicate the model throughout the state. The evaluation led to the development of a new strategic plan for the Center.

The ILLRRC continues to make progress by providing unique educational programs to university students, the public, K-12 students, and by collaborating with local associations and the Iowa Department of Natural Resources. During 2014-2015, the Center addressed its Strategic Plan's goals through the following activities.

[1] The universities' total allocation dropped below $600,000 during the last three years and in the proposed budget.

The Iowa Lakeside Laboratory Regents Resource Center (ILLRRC) is owned by the State of Iowa and operated through the Board of Regents. The 147-acre campus is located on scenic West Okoboji Lake. The bay and adjacent natural areas are used as outdoor classrooms for ILLRRC university courses and outreach program. The campus is open year-round and visitors are welcome during daylight hours.

Grounds and Natural Areas

ILLRRC occupies the entire shoreline of Little Miller's Bay on West Okoboji Lake. Most of the campus is natural land. The campus is divided into three sections: the Ecological Studies Campus, the Residential Campus, and the Teaching Campus.

The Ecological Studies Campus occupies more than three-fourths of the land mass including the entire northern portion. The northwest portion called "The North 40" by faculty and staff is being restored to prairie. Twenty-three acres to the immediate east is reconstructed prairie that was planted in 2002-03. A second-growth woods of box elder and other trees separates these areas from West Okoboji Lake and the Residential Campus.

The Residential Campus includes the ILLRRC office, the facility manager's residence, faculty and student housing, bathhouse, dining hall, and adjacent lawns. A ravine shaded by burr oaks and other trees separates this part of ILLRRC from the Teaching Campus to the south.

The Teaching Campus features a high knoll that slopes down to Little Miller's Bay. Mahan Hall, the library, all laboratories, Tamisiea Cottage, and Main Cottage are located here. The landscape is very naturalistic with prairie and meadows occupying the higher ground and oak woods/savanna growing near the lake. Native plant gardens are being developed near the Waitt Laboratory. A group of dedicated volunteers helps maintain ILLRRC's grounds and natural areas.

A description of surrounding natural areas and why this location was chosen is included in Attachment which includes an excerpt of "The Iowa Lakeside Laboratory" written by Dr. Thomas Macbride.

This year's report focuses on three central themes: public programs, summer college courses, and research. Of particular note are the Young Investigators Project (YI) which received increased funding from the IDNR, recognition from the Regent universities and state and national organizations, new college courses, and two new research projects of national and international significance.

Outreach and Public Programs

Between September 1, 2014 and August 1, 2015, ILLRRC outreach programs served approximately 3,835 learners of all ages. As summarized below, these programs included Pre-K through grade 12 programs, teacher professional development, a college preparation course for high school students, science camps, family programs, and volunteer opportunities.

ILLRRC's outreach programs are primarily sponsored by the Friends of Lakeside Lab. These programs not only share science with the public, but promote awareness about ILLRRC and help generate funds to support both outreach and ILLRRC's scholarship and research programs. The outreach programs also fulfill the Friends of Lakeside Lab's mandate from the Iowa Board of Regents to engage the Okoboji community in lifelong learning opportunities at ILLRRC.

Outreach	**Participants**
Pre-K through grade 12 School Year Programs	1,190
Summer Science Camps	89
High School College Preparation	12
Family Programs	842
Volunteer Opportunities	42
Young Investigators: Teacher Professional Development	1,650
Total	**3,835**

Young Investigators: Teacher Professional Development

Since 2008, ILLRRC has facilitated Nature Connections, a collaborative of early childhood professionals dedicated to connecting children to nature while meeting their cognitive, social, emotional, and physical developmental needs. In 2012, the Nature Connections team initiated a high quality, innovative teacher professional development program titled "Young Investigators: Connecting Children with Nature through the "Project Approach" (discussed above). YI is a three year training program emphasizing a nature based, student centered teaching method. Teachers receive seven days of training over a three year period and follow-up classroom coaching. In 2014/15, YI affected over 150 teachers, associates, and administrators from 19 Northwest Iowa school districts and nearly 1,500 young learners.

Primary partnerships are vital to the project. YI is provided by Nature Connections, a partnership of early childhood educators and professionals, facilitated by ILLRRC, with support from the Friends of Lakeside Lab, ILLRRC's non-profit community support organization. Additional partners include Prairie Lakes Area Education Agency, Upper Des Moines Opportunity Head Start, Creative Ventures, Northwest Area Education Agency, retired educators, and area naturalists. In 2014, the Regents' Center for Early Developmental Education, located at the University of Northern Iowa, and the Iowa State University Early Childhood faculty joined the collaborative and plan to participate in 2015 trainings.

Originally, YI was aimed at reaching every northwest Iowa Early Childhood teacher, administrator, and Pre-K instructors in a series of three cohorts over a five year period. As a result of the success and demand for this program, the Nature Connections team decided in Spring 2015 to extend the training another three years to accommodate a new cohort beginning in Fall 2015, which will include participation from early childhood faculty from Iowa State University and the Regents' Center for Early Developmental Education at the University of

Northern Iowa. Faculty from both ISU and UNI will conduct research on the YI training model. The Regents' Center for Early Developmental Education at the University of Northern Iowa will support a team from the Child Development Center (CDC), including three professors and a doctoral student who will follow the learning progression of the CDC teachers and examine the nature-based project approach through the lenses of special education and literacy education. Dr. Sohyun Meacham and Director Dr. Beth Van Meeteren will also conduct research on the impact of the project approach on literacy development.

The Iowa Department of Natural Resources REAP CEP Board voted to fund the 2015-2016 request of $49,967 for the fourth year of the YI program facilitated by ILLRRC and the Nature Connections team.

Pre-K through grade 12 School Year Programs

In 2014-2015, ILLRRC served 1,190 Pre-K through grade 12 students from approximately 12 school districts across northwest Iowa. The focus was on school programs emphasizing STEM (science, technology, engineering, and math) and hands-on inquiry in the environmental sciences.

Science Camps and High School College Preparation Course

The ILLRRC science camps nurture student's curiosity about nature and use outdoor explorations to stimulate and develop their intellectual, physical, and emotional skills, including STEM preparedness. In 2015, 89 Pre-K through middle school students attended camp at ILLRRC. Additionally, thanks to a grant from the Friends of Lakeside Lab, 10 high school students from across Iowa earned college credit in the High School College Preparation Diatom Course.

Volunteer Opportunities

Since 1999, over 200 volunteers from the Okoboji community have participated in the Cooperative Lakes Area Monitoring Project Coordinated by ILLRRC. Volunteers are trained to collect water samples and field data from nine Dickinson County lakes twice a month during the summer. In 2014-2015, 42 volunteers donated approximately 200 hours. All samples are processed at the State Hygienic Laboratory at ILLRRC.

Community members also volunteer on a weekly basis during snow-free months to assist with ecological restoration projects on the ILLRRC campus, which is also managed as a nature preserve. Volunteers help restore prairie, oak savanna, and lakeshore habitats and donate approximately 640 hours annually.

Family and Community Programs

Family and community programs range from weekly summer Wild Wednesday family science programs, to self-guided nature investigations, programs for Scouts, science literacy programs to regional libraries, and the annual Winter Games People Project held in conjunction with the Iowa Great Lakes Chamber of Commerce. Collectively, approximately 850 learners of all ages participate in these programs.

Faculty Presentations

Tuesday evenings are reserved for public programs which include the GLEON Network, contributions of field stations, importance of parries, diatoms and sustainability.

Artists in Residence

Lisa Johnson is the Director of the Artists-in-Residence Program, ILLRRC, Sculptor and Scenic Artist.

As in past summers, ILLRRC hosted the Artists in Residence program. Four artists were invited for over lapping two week periods to work with ILLRRC faculty and provide programs to the public.

Artists-in-Residence conducted their Open Studio Events on Monday nights in the Pammel Stone Laboratory. The events were open to the public and free, "come as you are, stay as long as you like". The artists were ecologically-focused and working on art, science, and environmental projects. They provided demonstrations and were available to talk about their projects with visitors.

Summer College Courses

Summer enrollments remain stable, supplemented this summer by a formal credit course offered to high school students and a science teacher education course offered by the University of Northern Iowa. The enrollment total was 130. (Science oriented: 86, Teacher Education: 12, and OEI: 32).

During the last several years, the Directors of Academics and Research have proposed new credit bearing workshops which have had variable success. The Ichthyology and Mammalogy courses offered for the first time this summer had enrollments of eight and 10, respectively. Unfortunately, courses in fire safety, public health, writing, and pollination ecology were cancelled.

Field courses at the Regent universities require a minimum of eight students. With one exception planned minimum enrollment was met or exceeded. Student evaluations of their ILLRRC experience is included in Appendix A. The Center provides unique field experiences that are very well received.

The plan this coming year is to more actively involve the campus liaison faculty appointed by the Provosts. A proposed schedule will be submitted for review: 1) Are the proposed courses appropriate? 2) Are there faculty at any of the Regent universities interested in teaching the courses? 3) Are there other courses that should be added or substituted? Advisors are promoting the ILLRRC as a field experience in environmental subjects and the two week sessions allow students to participate in an immersion experience while at the same time allowing for summer employment.

The Center has hired a marketing firm to suggest best methods for reaching faculty and students. Current technology has not been used to acquaint either faculty or students with activities at the Center or to provide a description of the many natural local sites and DNR renovation projects.

A successful work study experience was introduced during the summer session. The work study program was a cooperative program with the Iowa Department of Natural Resources (DNR) partially funded by the Okoboji Protective Association. Six students participated in the program by taking a college course and working on campus and at public boat access ramps. The Iowa DNR provided training and scheduling for the boat ramp inspection and education program portion. The Academic and Research Director and the Facility Coordinator supervised work experiences at ILLRRC.

Research

There are several research projects at ILLRRC, including CLAMP (the longest continuous lake water monitoring project in Iowa), the GLEON Buoy Project, the Nutrient Network Project, and the Psychological Research Consortium. Articles describing the projects are included in Appendix B.

2015 – 2016 PROPOSED BUDGET

IOWA LAKESIDE LAB REGENTS RESOURCE CENTER	FY 11 Actual	FY 12 Actual	FY 13 Actual	FY 14 Actual	FY 15 Actual	FY16 Budget
REVENUE						
Carry forward	$217,794	$153,439	$71,557	$65,554	-$9,103	-$27,569
Regent university allocation	$557,231	$548,338	$562,046[1]	$573,286	$625,144[2]	$592,061
Room and board	$66,300	$67,177	$67,965	$91,071	$73,960	$77,000
Center revenue	$99,271	$73,265	$80,858	$68,994	$101,465	$86,300
Friends support non-credit education program	$30,000	$33,000	$33,062	$48,840	$70,804	$90,800
Course fees	$7,119	$3,640	$1,953	$3,085	$0	$0
TOTAL REVENUE	**$977,715[3]**	**$878,859**	**$817,440**	**$850,830**	**$862,270**	**$818,592**
EXPENDITURES						
Salaries and benefits	$388,851	$403,483	$476,899[2]	$483,415	$483,710	$460,503
Travel and hospitality	$33,455	$41,078	$31,679	$37,829	$54,619	$48,000
Supplies and other	$60,879	$45,025	$59,421	$45,301	$6,830	$23,000
Utilities	$42,622	$35,416	$45,820	$53,679	$49,616	$51,000
Maintenance and repairs	$132,810	$166,667	$94,817	$156,992[4]	$228,224[5]	$171,089
Equipment	$35,267	$18,329	$18,513	$49,698	$47,991	$25,000
Marketing	$389	$1,963	$4,713	$2,122	$493	$5,000
Tuition allocation to ISU/UNI/SUI	$121,496[6]	$58,472	$0[7]	$0	$0	$0
Debt service	$8,507	$0	$0	$0	$0	$0
Scholarship expense		$36,869	$20,024	$30,896	$18,356	$35,000
Operational planning	$0	$0	$0	$0	$0	$0
TOTAL EXPENDITURES	**$824,276**	**$807,302**	**$751,886**	**$859,934**	**$889,838**	**$818,592**
NET BALANCE	**$153,439**	**$71,557**	**$65,554**	**-$9,103**	**-$27,569**	**$0**

[1] Includes 2.5% for approved salary increases, additional courses offered in Summer 2013.
[2] Includes one time additional SUI funding of $40,393.
[3] Received a gift from Lavonne Foote Estate in the amount of $100,000 to improve the campus. This gift was non-operating and was not included in the report.
[4] Includes cost to move donated house $18,000 – Forbes.
[5] Includes additional $129,680 costs related to donated house.
[6] Summer 2008 - 2010.
[7] Reimbursement to ISU/UNI net with Center revenue, payment in FY 2013 for previous summer/winter.

IOWA LAKESIDE LABORATORY REGENTS RESOURCE CENTER 2013 STRATEGIC PLAN

Strategic Planning Committee
Chairperson: Stephen D. Hendrix (Biology, SUI)
Members: Tom Bedell (Friends of ILL), Lee Burras (Agronomy, ISU), Kavita Dhanwada (Biology, UNI), Diana Gonzalez (CAO, Board of Regents), Mike Lannoo (Indiana University School of Medicine), Mary Jean Montgomery (Friends of ILL), Sue Richter (Friends of ILL)

Report Summary

The Strategic Planning Committee reviewed numerous reports, plans, and other documents, all of which showed a consistent vision for Iowa Lakeside Laboratory. These documents, along with discussion by the committee, informed the creation of a new mission statement. This statement incorporates the traditional values and goals of Iowa Lakeside Laboratory with new ones reflecting its role as a Regents Resource Center. Previous reports and this Strategic Planning Committee observed the difficulty of reaching articulated goals; simultaneously those reports make numerous suggestions for improvements, many of which continue to hold merit. The major problem facing ILLRRC in attaining the goals of its mission is the failure to develop an administrative structure that can effectively implement (or discard for any variety of reasons) the many recommendations made previously in reports and by committees like this one. Indeed, ideas to improve ILLRRC continue to be made by numerous individuals associated with ILLRRC who remain passionate about the facility and its possibilities.

Outreach programs are strong, but could be strengthened if vigorous effort is put into initiating recommendations in this report. Academic programs critical to the mission of ILLRRC have struggled to maintain enrollments and a stable offering of courses. Recommendations are made to improve the student and faculty marketing/recruiting efforts for ILLRRC courses at Regent institutions and other colleges and to seek the incorporation of immersion field study courses as a specific requirement in majors at Regent institutions, both of which were identified as major problems facing the academic program. The Strategic Planning Committee also recognized the connection between academics and research at ILLRRC such that simultaneous improvement in both will have significant synergistic effects on attaining the goals of each. Specific recommendations have been made to encourage research at ILLRRC to revitalize this important component of the Lab's mission. An administrative recommendation is that the Executive Director position be reassigned to a different Professional and Staff category and that the position be redefined with appropriate qualifications, requirements, and duties to attain the outreach, academic, and research goals in the mission statement. Also recommended is the creation of an Advisory Board to assist the Executive Director and staff of ILLRRC in reaching its goals.

Introduction

The charge to the committee was to evaluate and suggest ways to improve outreach programs, academic programs, and the present administrative structure to fulfill the mission of ILLRRC. For each topic, the committee was provided a summary of relevant statements from previous reports, plans, and sets of potential recommendations to discuss and evaluate.

The following mission statement was developed and approved by the Strategic Planning Committee. It reflects the many different purposes of ILL as an RRC. The opening paragraph can be used as an abbreviated mission statement; the next two paragraphs summarize objectives and core values.

Mission Statement
The mission of the Iowa Lakeside Laboratory Regents Resource Center (ILLRRC) is to provide facilities and programming as a field station and community resource to support scientific education, research, and outreach programs of the Regent universities and other institutions. The education and research programs as well as collaborative activities of the ILLRRC also address state, national and international needs such as lifelong learning, entrepreneurial education, and economic development.

Science Education, Research, and Outreach Objectives
The ILLRRC offers and encourages science-based courses and learning opportunities that allow students from early childhood through adulthood to study nature first-hand. Core values include integrated research and education and the unique value of immersion learning in a natural setting. An objective of ILLRRC is to be recognized internationally as a premier site for the study of nature in nature. The primary research focus is on the diverse ecosystems that surround ILLRRC, with special emphases on water quality and the biodiversity of pristine or restored environments.

Lifelong Learning, Entrepreneurship, and Economic Development Objectives
Core values include ILLRRC's commitment to collaborations through partnerships and advocacy for the use of scientific research to inform public policy and economic development. To achieve these objectives, ILLRRC provides lifelong scientific and cultural learning opportunities to citizens of Iowa and beyond with on-site and distance learning programs. ILLRRC, in partnership with the Regent Universities, also sponsors on-site entrepreneurial educational workshops for students attending the Regent Universities.

Outreach Programs
The outreach programs are thriving and represent greatly improved, important connections to the Lakes Region community since Iowa Lakeside Laboratory became a Regents Resource Center in 2006. The Education Coordinator has indicated that secondary school outreach programs are at or near maximum enrollment given current staffing. The Okoboji Entrepreneurial Institute is a success. The recent development of a collaborative public arts and science project has increased important connections between the arts, ILLRRC, and the community of northwest Iowa. Finally, an early childhood consortium at the Lab provides unique opportunities for professional development on nature-based teaching and learning.

The Strategic Planning Committee identified five areas to be considered to improve the diversity of outreach offerings at ILLRRC and stimulate the connections between the ILLRRC and Iowa community of teachers, students, and citizens.

Outreach Programs Recommendations

1. Investigate a role for ILLRRC in implementation of the Iowa Core Curriculum and STEM initiatives.
2. Increase workshops that function as outreach for community lifelong learning to enrich citizens, students, and faculty of ILLRRC.
3. Reinvigorate the role of ILL in training and professional development of new and current teachers.

4. Increase course offerings available to high school students eligible to take college courses.
5. Increase internship opportunities in coordination with Friends of Lakeside Lab and other groups.

Academic Programs
The Strategic Planning Committee adopted the following Statement of Curricular Philosophy: "All undergraduate academic courses and outreach programs offered at ILLRRC will take advantage of the immersion learning opportunity available on site and in the surrounding natural ecosystems. All courses will seek to use an inquiry-based approach incorporating the scientific process and emphasizing the study of 'nature in nature'."

Academic courses offered to students at the university or college level at ILLRRC are the *raison d'être* of Lakeside's establishment and continue to be a core component of ILLRRC's mission; they must inform our partnerships with the community and other organizations. The success of these academic programs is linked to the success of research programs because students are attracted by both the quality of the faculty and the nature of the courses. Committed faculty with Lakeside research programs are more likely to be attracted to teach at the Lab, will be more likely to bring students with them, and will help promote the Lab at their home institution. Therefore, implementation of recommendations for Academic Programs and Research should be simultaneous.

Academic programs have struggled to maintain enrollments. Lack of effective promotion of the ILL courses at the Regent universities and colleges is a major problem and present visibility of ILLRRC on the Regent campuses is low. Interactions between the ILLRRC administration and the various academic units at Regent institutions are sporadic, unproductive, and not likely to produce a vibrant academic (or research) program as envisioned in the new mission statement. The Strategic Planning Committee noted that incorporation of field-oriented, immersion courses such as offered by ILLRRC as a specific requirement for academic majors has only occurred in the Environmental Science major at SUI. In the University catalogues, Lakeside courses are scattered throughout large menus (e.g., Environmental Science) or they are mentioned as a group in a large menu (Biology). A number of improvements were suggested.

Academic Programs Recommendations:

1. Educate faculty and advisors in appropriate departments at Regent institutions about advantages/uniqueness of Lakeside courses.
2. Promote the ILLRRC courses directly to students in appropriate classes at Regent institutions and other colleges.
3. Promote the integration of field-oriented, immersion courses as a specific requirement into curricula at ISU and UNI.
4. Continue to diversify outreach programs with additional emphasis on offerings that cross-over between science and the arts.

Research Program

Research has been recognized as a cornerstone of Lakeside Lab's mission as emphasized in its long history at the Lab, as well as by statements in the 2006 Strategic Plan and subsequent annual reports. Noteworthy areas of successful research programs are the water monitoring program conducted by Waitt Hall (and the State Hygienic Lab) and the Diatom Lab which has a rich history with a national and international reputation. Other areas of research, such as prairie ecology, wetland ecology, and limnology, that have had a presence at the Lab in the past, are now largely lacking. Today, the Lab is used primarily by a few researchers as a result of their association with the Lab and a relatively small number of graduate students. Some of the previous documents have offered lists of hurdles to invigorating these other areas of research, while others have suggested ways to improve research productivity at the Lab. Unfortunately, no program to reinvigorate research has been created and executed. Research possibilities are not promoted at the Regent institutions and there is no effort to recruit researchers. Considerable discussion by this Committee and others has been devoted to the problems recruiting researchers and many potential solutions to these problems have been suggested.

Research Program Recommendations

1. Formalize research areas (e.g., Prairie Ecology, Wetland Ecology, Limnology, etc.) not now recognized or emphasized at ILLRRC (such as Water Quality and Diatoms) while simultaneously seeking funding from industries and national, state, and local agencies that benefit from sound, unbiased environmental information. An emphasis on reclamation and restoration of ecosystems and long-term ecological monitoring may be a useful starting approach. The Committee recognized that naming/branding research programs at ILLRRC is important, but did not reach a recommendation on naming research programs.
2. Determine the needs of researchers, particularly with respect to housing and the specifics of their research programs, with the goal of facilitating lab use by faculty, post-doctoral students, graduate students, and undergraduates for research purposes.
3. Pursue the creation of an information/data management portal for legacy data at ILLRRC and for new ecological data as it is created by monitoring and research programs.
4. Investigate mechanisms to incorporate modern molecular techniques into the research capabilities of ILLRRC. Such techniques can be powerful tools to monitor invasive species and should be incorporated into monitoring programs involving the public.
5. Increase programs featuring world-class scientific speakers to stimulate students and faculty intellectually and increase topical workshops to reconnect scientists and scientific information to the community.

Administration

Administration of ILL was envisioned historically as potentially either a one-person position (a possibility included in the 2004 Friends Business Plan) or a two-person position with a Director of Operations and Outreach and a Director of Academics and Research. Regardless, the many roles of the Executive Director(s) are crucial to the success of ILLRRC as envisioned in the new mission statement. An ideal single executive director should have the ability to 1) maintain the present outreach programs and create new ones, 2) promote and enhance academic activities, including creation of innovative courses and attraction of a diverse, vibrant faculty and student population, 3) stimulate research activities with creative programs to attract researchers, 4) maintain and promote positive interactions with the local community, and 5) assist in fund raising activities, and direct the maintenance and improvement of the ILLRRC facilities.

This set of professional abilities demands a person with unique qualifications including strong leadership skills, an established record of successful outreach activities, an outstanding record of original research, qualifications for an academic position in an existing department in a Regent institution, and an established record of fund raising in the scientific and public arenas. In addition, the Okoboji region should be the executive director's primary site of residence.

Given that a change in administrative structure will be a slow process, the Committee makes a long-term and a short-term recommendation.

Administration Long-term Recommendation (to be executed in the next 12 months)
Reclassify the Professional and Staff position from Academic Support to Administration, and redefine qualifications and requirements for the position.

Administration Short-term Recommendation (to be executed immediately)
Appoint an interim Director of Academics and Research to promote and enhance academic activities, and stimulate research activities.

The Strategic Planning Committee recognized that effective attainment of goals in the mission statement will be enhanced by advice from knowledgeable individuals at regular intervals. Therefore, the Committee made the following recommendation.

Create an Advisory Committee of members of the academic/administrative communities of SUI, UNI, and ISU, ILLRRC alumni, and members representing interested groups (e.g., Friends of Lakeside Lab).
The Strategic Planning Committee did not reach any conclusion about the viability of the current Curriculum Committee, although it was generally agreed that the functional role of this entity is dubious.

Charge to the Iowa Lakeside Laboratory Regents Resource Center Planning Committee

Over the past five years the Iowa Lakeside Laboratory Regents Resource Center has attained administrative and financial stability, and made important advances in some critical areas such as educational and scientific outreach programs. An assessment of progress with a strategic view toward positioning ILLRRC to make even greater contributions to the citizens of Iowa and the scientific community is now both timely and needed.

The Planning Committee shall assess progress and propose a strategic vision and goals to enhance each of the following:

1. Mission statement
2. Curricular program for undergraduate students
    a. Curricular philosophy
    b. Outcomes assessment instruments
3. Graduate program

4. Educational and scientific outreach programs
5. Research programs and potential research centers of excellence
6. Administrative structure
7. Usefulness of a potential ILLRRC Advisory Committee
8. Funding, marketing and promotion of ILLRRC

Iowa Lakeside Laboratory Background

- The Lakeside Laboratory campus, established in 1909, is a residential facility located on the shores of West Okoboji Lake. The campus, most of which is a nature preserve used as an outdoor classroom, includes more than 140 acres.
- From 1909 to 1936, the Laboratory was operated by the Iowa Lakeside Laboratory Association of the Alumni and Friends of the University of Iowa.
- In 1936, the Association deeded the property to the State of Iowa Executive Council under provision of the Trust Agreement of April 30, 1936. The agreement states that the Laboratory shall be used for "the accommodation, promotion, support, and maintenance of scientific studies and research in the field of biological sciences."
- From 1936-47, the Laboratory was administered by a Board of Managers representing the State Conservation Commission (now DNR), the State Board of Education (now Board of Regents), Iowa Lakeside Association, the U.S. Fish and Wildlife Service, and the University of Iowa.
- In 1947, the Board of Regents assumed responsibility for the Laboratory. Since then, it has been run cooperatively by Iowa State University, the University of Iowa, and the University of Northern Iowa through the Board of Regents.
- In December 2004, the Board of Regents approved a Business Plan for the Laboratory which focused on increasing the availability of educational offerings, including providing year-round activities.
- Between 1997 and 2006, the credit enrollment at the Laboratory ranged from a high of 185 students in 1997 to a low of 83 students in 2005 and 2006. The lack of substantial scholarship and grant funds has prevented students and faculty from participating more fully at the Laboratory.

Expanded Lakeside Laboratory Functions

The Lakeside Laboratory Regents Resource Center encompasses the following functions which will be provided on a full-cost recovery basis.

- *Scientific Field Research*. The purpose of this function is to continue the Lakeside Laboratory as a field station that supports the science programs, including education, research, and outreach, of the Regent institutions and the Lakeside Consortium.
- *Lifelong Learning*. The purpose of this function is to provide needed learning opportunities to the citizens of northwest Iowa. The Center executive director will work with the programmatic and distance education administrators at each of the Regent universities to determine the need for programs/courses in northwest Iowa. The universities will provide the instruction and faculty. Other postsecondary institutions seeking to offer distance education courses at the Center will work through the Center executive director to ensure that there is no conflict of interest. Cultural offerings that support the liberal arts mission of the Regent universities will be provided as appropriate. Services that support the Regent

universities' programs in social work, health, and similar areas will be provided through the Center.

- *Entrepreneurship*. The purpose of this function is to expand the entrepreneurial educational opportunities for Regent university students. The Center executive director is responsible for working with the Regent universities to provide entrepreneurial workshops at the Center.

- *Economic Development*. The purpose of this function is to address the Board of Regents' role in economic development in partnership with the Iowa Department of Economic Development, the community college system, private colleges, local governments, and regional economic development organizations. This approach will create a model for cooperative rural economic development through educational opportunities and collaborations with other community resources that can be replicated throughout Iowa.

- *Community Involvement*. The purpose of this function is to obtain community support for the Center that will result in endowment funds for the long-term operation of the Center, including tuition and housing assistance for students, faculty research grants, housing assistance for faculty, and acquisition and maintenance of a specialized equipment pool. The immediate goal for the endowment is $600,000.

The Okoboji Lakeside Laboratory

by Thomas H. Macbride

The following material has been drawn from Professor Macbride's article published in the *Proceedings of the Iowa Academy of Science* for 1909. It is an important article for the information it conveys about the new lakeside laboratory's purpose and Macbride's plans for it in the year of its creation.

The establishment of the Okoboji Lakeside Laboratory, founded by the alumni of the State University of Iowa, promises to affect so deeply the future scientific work of our state that some account of its beginning and especially its raison d'etre *may rightly claim the attention of the Academy. The laboratory has been located on the west shore of Lake Okoboji in Dickinson county for the reasons following:*

In the first place the topography of Dickinson county is peculiar, unique. Situated on the western border of the Iowa Wisconsin drift, the region illustrates, as possibly no other equal area in the state, the special characteristics, not only of glacial moraines in general, but in particular the very expression of the Wisconsin moraine. In fact, I think that it must be admitted that the Okoboji lakes and their encompassing hills do indeed form the finest bit of morainic topography to be found on our western prairie. . . .

Secondly, the region having Okoboji for its center is, by reason of the peculiar topography just mentioned, the field of a special floral display difficult to illustrate anywhere else within such narrow limits. We have a forest flora and a prairie flora; and neither in this part of the world has ever been adequately studied. It is believed that the fungal flora of the region, for instance, is especially rich and interesting. We have all kinds of habitat conditions, from aquatic to xerophytic. We have deep water, shallow water, but permanent; marshes, springs; and zerophytic [sic] slopes and hill-tops, some so dry as to offer home to the vegetation of the higher western semi-arid plains. The plankton of the lakes is filled with desmids and diatoms and all manner of algal flora, during July and August rich beyond comparison in all that makes up the tide of life for these simple but fascinating forms.

. . . the factors of ecology and distribution are all here, in large part so far, unexplored and certain to interest for centuries generation after generation of Iowa students.

For similar reasons, the fauna of the lake district will reward our constant study. The varied flora, just described, insures a varied fauna. The waters teem with animal life. Probably the protozoa of the whole valley will be found hiding on the vegetation of these [quiet] lakes and pools. Of course, the avian and vertebrate aquatic fauna are rich, and even the terrestrial vertebrates are likely to prove more than commonly worthy of investigation. While this is writing the papers tell of a mountain lion shot in one of the near-by marshy lakes! It is not believed that carnivores of size are likely to abound, not to such extent at least as to warrant a future visit from our nimrodic ex-president, but it is believed that natural science, in all its branches, entomology, ostracology, ornithology, will be greatly enriched by using such opportunity for research as Okoboji may afford.

(Left) Thomas Huston Macbride, the dreamer whose tireless efforts sustained the laboratory in its first twenty-five years. Just two days before his death in 1934, he completed an article for the *Des Moines Register* describing the laboratory. His support of the research station continues, even from the grave. Recent bequests from his estate will be used in the fall of 1985 to enlarge the laboratory library, construction which will include "pillars [which will] shine among [the] trees . . ." (courtesy Iowa Lakeside Laboratory)

RESEARCH PROJECTS

"Cooperative Lakes Area Monitoring Project (CLAMP) Volunteers Fill Data Gaps For Iowa Great Lakes" – Daniel Kelly – July 9, 2015

"The Okoboji Region of Iowa is home to a group of glacial lakes sometimes called the Iowa Great Lakes. These abundant freshwater resources have supported the continued operation of the Iowa Lakeside Laboratory, a field station that has been open for 106 years.

As time has gone by, scientists at the lab have helped grow the field of limnology and amassed long-term datasets on many of the region's lakes. One of Lakeside's newest programs, at least in terms of centuries, is the Cooperative Lakes Area Monitoring Project (CLAMP), which launched in 1999. CLAMP is supported through donations and most of the work is done by volunteers who care about the Iowa Great Lakes.

'I always tell them that if they can learn how to follow a pancake recipe, they can be clampologists,' said Jane Shuttleworth, outreach and education coordinator at the Iowa Lakeside Lab. She oversees training the citizen scientists to use things like Secchi disks, YSI meters and sampling bottles.

All jokes aside, the work that the volunteers do is important. Because state scientists only make it to the region three times per year and only sample in one spot in each of the lakes, the citizen scientists fill a gap in the record. Instead of sampling just once, CLAMP volunteers go out multiple times per year, and collect more frequent, representative and robust datasets on water quality.

Conditions that the volunteers monitor include dissolved oxygen levels, which are measured using optical sensors on meters they help calibrate. Water clarity is tracked with Secchi disks. The water samples that they gather are analyzed by a spectrophotometer at the Lakeside Lab.

At the end of each sampling season, CLAMP volunteers are invited to a thank-you dinner and that includes review and discussion of the data they collected over the summer. (Credit: Jane Shuttleworth)

'It's the perfect mix between volunteer work and research,' said Shuttleworth. 'We have a certified water chemistry lab. A lot of other citizen scientist programs are not as refined.' She says that chlorophyll concentrations are also extracted in the lab.

The volunteers learn about lake processes and how they change due to environmental fluctuations. The experience also helps volunteers to become better leaders in area lake associations, says Shuttleworth, because it increases their knowledge and appreciation of lakes.

'It's really satisfying to see the questions they ask and the explanations they come up with for data variations,' said Shuttleworth.

The complete dataset that volunteers have amassed now spans 16 years for some of the lakes. Shuttleworth says the data cover enough time that it's possible to see trends. In the near term, they also help investigations looking at changes occurring in the lakes, like introductions of invasive species, algal blooms or installations of sewage pipes to fight nutrient pollution. Many of the data points are available on the monitoring project's website.

'This is a great example of how biological field stations can educate the public,' said Shuttleworth. 'Science has a lot to offer.'

By using volunteers, the cost of the program is cut considerably, she says. All other funding for the program is fundraised locally.

'Water doesn't respect boundaries,' said Shuttleworth. 'Collaboration is a very important point.'"
Top image: Volunteers take Secchi depth, dissolved oxygen and temperature measurements. They also collect water samples for chlorophyll and nutrient analysis. (Credit: Jane Shuttleworth)

"With New Buoy, West Okoboji Lake Joins GLEON" – Daniel Kelly – July 6, 2015

"The Iowa Lakeside Laboratory is a special place. It has existed as a limnological field station for 106 years, while most others only make it to 16.

Located in the Okoboji region, it sits at the center of a string of lakes that are unusual because of their location so close to the Great Plains. It is somewhat remarkable that they're there at all given the drier regions nearby. The crown jewel of these is West Okoboji Lake, a large, deep lake with good, clear water and plenty of activity around it.

For more than a century, the Lakeside Lab has offered courses and research opportunities for students interested in studying West Okoboji and other lakes nearby. These include activities like sampling diatoms and algae, taking Secchi disk measurements or tracking dissolved oxygen levels in the water.

With such an extensive record in place, it didn't take long for researchers with the Global Lake Ecological Observatory Network, or GLEON, to realize the potential of West Okoboji Lake as a new member site. There was just one thing missing – a buoy.

'Since our lake has been well studied – Birge and Juday (legendary limnologists) came here in the 1920s – this lake has been a focus of limnology,' said Michael Lannoo, director of the Iowa Lakeside Laboratory. 'They (GLEON) approached us about the possibility of putting a buoy in.'

Soon after the idea was put forth, Sarah Spaulding, an ecologist with the U.S. Geological Survey and former visiting professor at Lakeside Lab, and Mindy Morales, a doctoral student at Iowa State University, put together a white paper and a prototype proposal for the buoy. Lannoo began meeting with citizen groups around the lake to get their support.

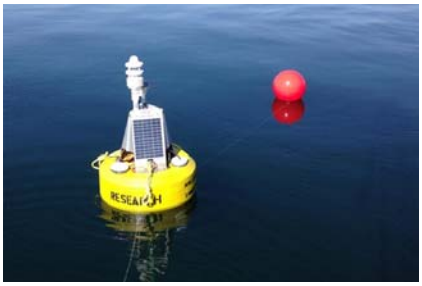
It wasn't difficult to sell the project to the groups because of the benefit to so many. The lab, as well as the lake's health, would benefit scientifically from its data, while boaters and fishermen would benefit because it could let them know when conditions were safe to go out on the water. And researchers around the world could gain access to data on West Okoboji Lake.

Members of the Iowa Lakeside Laboratory help deploy a new data buoy in West Okoboji Lake. (Credit: Doug Nguyen / NexSens Technology)

Community groups that Lannoo met with included the Dickenson County Clean Water Alliance, Friends of Lakeside Lab, Okoboji Foundation and the Okoboji Protective Association. Funding, ultimately came from the State of Iowa Hygienic Lab and the University of Iowa Research and Economic Development Group. Within 10 months, the project had gone from idea to reality, which is remarkably fast.

A NexSens CB-450 Data Buoy is the core of the monitoring platform, supporting a NexSens iSIC-CB Data Logger equipped with cellular telemetry. Connected to this on the topside is a Lufft WS600 Multi-Parameter Weather Sensor that collects measurements on air temperature, humidity, barometric pressure, wind speed and direction and rainfall. Sitting next to it is a solar marine light that acts as a beacon to let boaters know its location on the water when the sun goes down.

On the buoy's bottom side is a YSI EXO2 Multi-Parameter Water Quality Sonde that measures West Okoboji Lake's water temperature, conductivity, pH and dissolved oxygen levels. There is also a Vaisala GMT222 Carbon Dioxide Transmitter fitted with a special membrane to let it collect data on CO2 levels underwater, which is a pretty rare sensor for a buoy. The whole platform was deployed on April 30.



'We got it in the water a lot quicker than we thought we would,' said Lannoo, noting that his team is still learning its ins and outs. 'It's like having a new computer that you've owned for a few days, but not quite having all the software installed.'

A new data buoy serves as the core of the monitoring system in West Okoboji Lake. (Credit: Doug Nguyen / NexSens Technology)

Part of getting used to the buoy is using the WQData LIVE Web Datacenter where its data are displayed online. It partners with the LIVE Datacenter smartphone app to show the buoy's data in a mobile format. That's something the residents living around the lake have been intrigued by as well, says Lannoo, who has been making rounds making presentations on the new buoy to community groups.

'I always ask at meetings – 'You want to know what you got for your money?' said Lannoo. 'Well, pull out your smartphones, download this app and use it.'

Support for the new buoy has been quite good, says Lannoo. He adds that it has infused a lot of energy into the field station and surrounding community, which can't often be said of scientific equipment.

'They (community members) really have adopted it,' said Lannoo. 'It's a point of pride'"

So far, the buoy's data have helped locals, as well as tourists, keep track of conditions on the water. But they haven't revealed any big surprises yet. Lannoo says the oddest things that the buoy's picked up have been anomalies, like storms, but he's hopeful they will reveal other conditions that impact the workings of West Okoboji Lake.

With a database going back almost a century, the buoy is adding real-time, high-resolution monitoring of lake conditions in advance of more short-term changes, says Lannoo. Some of those that scientists at Lakeside Lab are interested in recent invasions of zebra mussels, Eurasian carp and curly-leaf pondweed; the effects of climate change; and more general questions concerning how the lake stratifies.

'We're going to put in a temperature and DO (dissolved oxygen) string,' said Lannoo, which will aid studying West Okoboji's turnovers. The sensors will sit at 2-meter intervals and link all the way to the lake's bottom, a depth of about 30 meters."

Top image: The Iowa Lakeside Laboratory joined GLEON with a new data buoy in West Okoboji Lake. (Credit: Doug Nguyen / NexSens Technology)

About Author Daniel Kelly - Daniel covers monitoring, tech, and everything in between as editor of the Environmental Monitor. He also writes for and edits Lake Scientist and FishSens Magazine.

"Nutrient Network" – Dr. Lori Biederman, Iowa State University

"In June 2015 I established research "nodes" for the Nutrient Network (nutnet.org) and Drought-Net (wp.natsci.colostate.edu/droughtnet/) at Lakeside Laboratory. These global research networks are answering important ecological questions by applying the same methods at sites dominated by herbaceous plants all over the world. The Nutrient Network examines the effect of nutrient (Nitrogen, Phosphorus, and Potassium) enrichment and co-limitation on grassland plant diversity and productivity. Rainout shelters will be used to impose a severe 5-year drought in the Drought-Net treatment plots and community response and recovery will be monitored. In August 2015 I will collect preliminary data and the experimental treatments will begin in May 2016. Data are sent to the experimental PIs and as members we can use the global data to answer questions. There are several other Nutrient Network sites other site in the Midwest, including one in Polk County Iowa."

"The Psychological Research Consortium at Iowa Lakeside Lab" – Ana "Mindy" Morales – Ph.D. candidate, Iowa State University

Inaugural Meeting

On September 17th, 2014, four alumnae of the Iowa Lakeside Lab phycology courses, "Ecology and Systematics of Algae" and "Ecology and Systematics of Diatoms," reconvened at ILL for an intensive five-day collaboration on topics relevant to respective, individual projects involving soft algae and diatoms. Outside of ILL, most researchers work in isolation at their home institutions, where s/he is the only phycologist, without the benefit of sharing the knowledge, experience, and phycological training of their colleagues. Coming together at ILL to work alongside each

other for a concentrated period of time was our effort to proactively address that constraint. Having assembled from four different states, several ecological regions, and various academic and occupational backgrounds, each of us benefitted from the specialized knowledge of our fellow participants. Working together in a setting in which we were able to interact with each other in person and to cooperatively address research questions immediately as they arose was an invaluable opportunity. Thus, we propose to establish the Phycological Research Consortium (PRC) at ILL to coordinate meetings in the future and to extend its benefits to all researchers in the field of phycology.

Initial Accomplishments

Utilizing the MacBride Laboratory, including its state-of-the-art scientific equipment and comprehensive reference resources, we were able to work as a team to identify and name difficult algal specimens in our respective sample materials. Each of us came away from this gathering with answers pertaining to algal identifications in our own work and buoyed confidence in our designations.

The field of phycology is rapidly developing. New species are frequently discovered or re- categorized within different groups. Aside from frequent, exhaustive literature searches, one of the only ways to keep up with these changes is to engage in regular communication with fellow researchers. This gathering served as a forum for exchanging information, which brought each of us toward a more complete comprehension of the newest classifications used in our field.

The benefits of the first meeting of the PRC have already been applied in the field of phycology. For example, a toxic cyanobacteria bloom with potentially severe environmental impacts occurred in a Utah lake just a few weeks after the initial PRC gathering. The identification of the species comprising the bloom was critical to evaluating the damage it may have caused. One PRC member involved in the case consulted with the group and was able to verify identifications, potential toxins being produced, and access important software to study the specimens further. This collaboration, directly resulting from the first meeting of the PRC, is an example of the importance of shared knowledge that the group will strive to cultivate in the future."

2015-2016 Goals for ILLRRC

1. Involve campus representatives in decisions about what is to be taught at ILLRRC and integrate offerings into the University curricula.
2. Plan for two recent gifts ($100,000 each) to be used in renovating the Limnology Laboratory and develop a trail to allow for safe access.
3. Support the initiative for fund raising to stabilize and renovate the stone laboratories.
4. Explore opportunities to construct a collaborative structure for all local entities, governmental and voluntary concerned with water quality. The structure would be located on the current Bedell property (40 acres across Highway 86) to be deeded to the ILLCCR for the study of water, environment, and sustainability issues.
5. Hire an academic leader to supervise all ILLRRC activities.

Lakeside Laboratory Course Evaluation Summary

Norms for Summer 2015 and Summation for Summers 2010-2015

The students responded to 18 multiple choice questions using the following:

Strongly agree = 6; Moderately agree = 5; Slightly agree = 4; Slightly disagree = 3; Moderately disagree = 2; Strongly disagree = 1

Item	All 11 courses 2015			All Courses (2010-2015)		
	N	Mean	Median	N	Mean	Median
1. I learned a lot in this course	91	5.70	6.00	368	5.76	6.00
2. The course was well organized	91	4.90	6.00	368	5.28	6.00
3. The objectives for the course were clearly defined.	91	4.60	6.00	366	5.36	6.00
4. The assigned readings were important for understanding the course objectives.	68	6.00	6.00	314	5.28	6.00
5. The homework, labs and field work were useful for understanding the objectives.	91	5.70	6.00	362	5.71	6.00
6. The syllabus for the course provided a good guide to course requirements.	90	5.20	6.00	345	5.31	6.00
7. The computer resources were adequate.	85	6.00	6.00	347	5.48	6.00
8. The laboratory equipment was adequate.	90	6.00	6.00	359	5.31	6.00
9. The instructor helped me understand the course material.	91	5.90	6.00	368	5.70	6.00
10. The grading procedures followed for the course were clear and fair.	86	5.80	6.00	349	5.51	6.00
11. The exams were fair.	65	5.30	6.00	279	5.55	6.00
12. The instructor was well prepared.	91	5.20	6.00	359	5.61	6.00
13. The instructor was interested in my progress.	91	5.70	6.00	368	5.69	6.00
14. The feedback I received on assignments improved my understanding of the material.	77	5.67	6.00	345	5.45	6.00
15. Help was available if I had questions.	90	6.00	6.00	363	5.79	6.00
16. My questions about the course materials were answered clearly by the instructor.	90	5.70	6.00	334	5.70	6.00
17. Overall, the instructor is an effective teacher.	90	5.90	6.00	365	5.70	6.00
18. Would recommend this course offered by this instructor to other students.	90	5.90	6.00	365	5.64	6.00