

Lake Huron Environmental Science Research Station

Saginaw Valley State University
April 12, 2023



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SVSU Highlights

- SVSU offers areas of study in 33 of the hottest 50 jobs in Michigan.
- College of Education has the 3rd highest pass rate for the MTTC teaching licensure exam among colleges of education in Michigan.
- Nursing students enrolled at SVSU have a 92% first-time pass rate, 12% national average and 13% above the Michigan average.



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Introduction

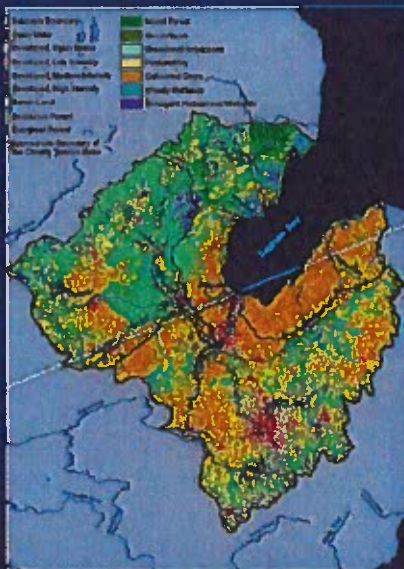
- SVSU wants to construct a world class environmental science research station in partnership with Dow and a non-profit organization called Bay Sail.
- The purpose of the partnership is to build a multi-use environmental sciences research station along the Saginaw River on 6-acres. The land will be provided by Dow.
- This will be the first university operated research station on Lake Huron (*university operated research stations exist on each of the other four Great Lakes*).
- The facility serves both an academic and community purpose.
- The facility will become home to the Saginaw Bay Environmental Science Institute and the Dow Science and Sustainability Education Center.

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The Saginaw Bay Watershed

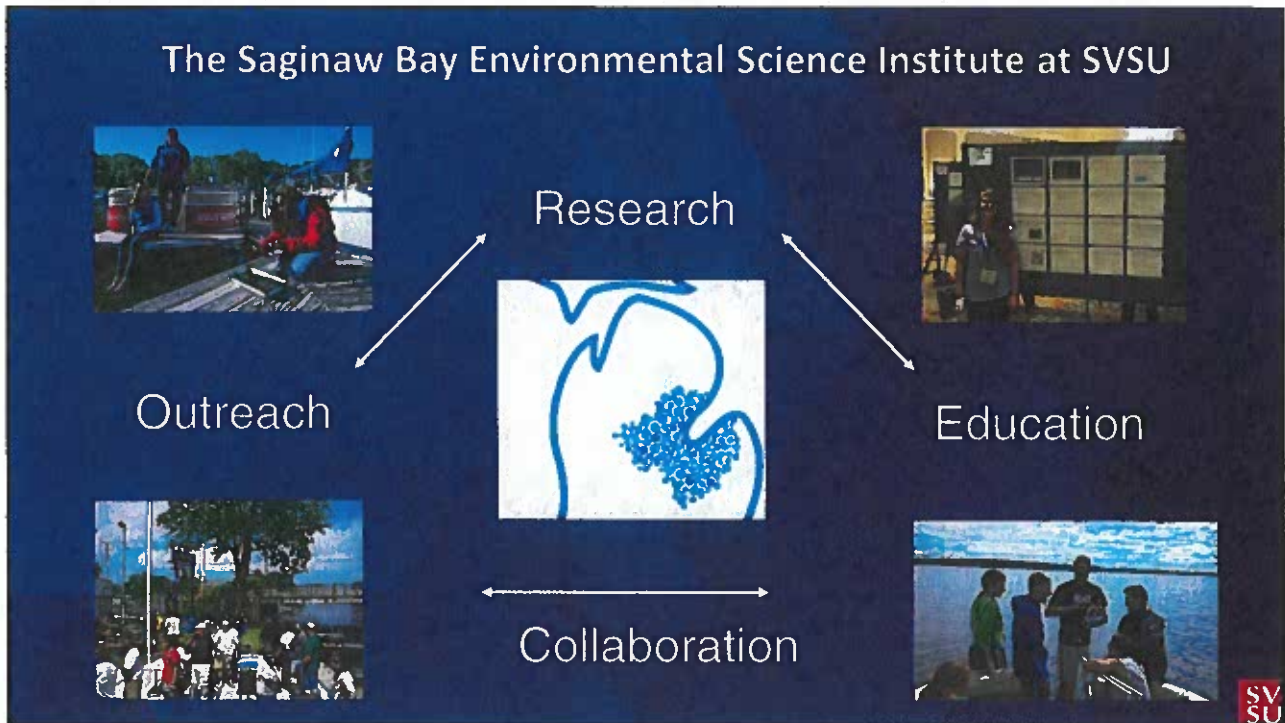
a tremendous resource that is important on a global level



- ❖ 8,700 square miles, all or part of 22 counties
- ❖ ~ 7,000 miles of rivers and streams
- ❖ Home to:
 - Over 1.4 million people
 - More than 138 endangered or threatened species
 - Migrating birds on the Mississippi Flyway
 - Significant agricultural and industrial resources supporting Michigan's economy

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Needs for Research Station



- Our program needs:
 - Larger space for research
 - Location with direct access to the water system
 - Spaces for expanding K-12 educational outreach, as well as undergraduate and graduate coursework
 - Facilities for continuing to attract leading scientists from around the county

SVSU

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SBESI Research Areas

- Sediment and Nutrient Transport
- Land use effects on stream/bay ecology
- Beach bacteria monitoring & source tracking
- DNA fingerprinting of invasive species
- Walleye population genetics
- UAV hi-res imagery of invasive vegetation



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The Dow Science and Sustainability Education Center



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SVSU Mobile Science Research Laboratory



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Transformational Outcomes

- Research Station will:
 - Expand research capabilities
 - Leverage additional funding from state / federal agencies and private foundations
 - Increase quality of undergraduate and graduate learning
 - Increase K-12 educational outreach
 - Welcome new collaborative partnerships



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Partnerships

Bay and Saginaw Area Storm Water Authorities)
 Bay City State Park
 Bay County, Huron County, Tuscola County, Saginaw County Health Departments
 Bay County Department of Environmental Affairs and Community Development
 Bay County Soil Conservation District
 BaySail
 Cass River Greenways
 Central Michigan Cooperative Invasive Species Management Area
 Central Michigan Health Department (Arenac and other counties)
 Central Michigan University
 Chippewa Nature Center
 College of Charleston
 Delta College
 District Health Department #2 (Iosco and other counties)
 GLISTEN
 Great Lakes HABs Collaborative
 Great Lakes Winter Network
 Hammond Bay Biological Station [USGS]
 Huron Conservation District
 Huron Pines

KawKawlin River Watershed Association (KRWA)
 LimnoTech
 Michigan Department of Agriculture & Rural Development
 Michigan Department of Environment, Great Lakes, and Energy
 Michigan Department of Health and Human Services
 Michigan Department of Natural Resources
 MSU Institute of Water Research
 National Oceanic & Atmospheric Association
 Oakland University
 Partnership for the Saginaw Bay Watershed
 Saginaw Conservation District
 Saginaw Bay Watershed Initiative Network
 Saginaw Bay Cooperative Invasive Species Management Area
 Saginaw Basin Land Conservancy
 Saginaw Chippewa Indian Tribe of Michigan
 Spicer Group
 Tuscola Conservation District
 The Nature Conservancy
 United States Environmental Protection Agency
 United States Fish and Wildlife Service
 United States Geological Survey
 United States Natural Resources Conservation Service
 University of Dayton
 University of Michigan Water Center
 Wayne State University



Questions?

Thank you.



CAPITAL OUTLAY TESTIMONY | 12APR23

Dr. George Grant, Jr. – President, Saginaw Valley State University

[Slide 1]

Good Afternoon,

Thank you, Madam Chairwoman, and members of the committee for the opportunity to speak with you this afternoon. My name is George Grant Jr. and I serve as the President of Saginaw Valley State University. I began my job this year, on January 1st. It is an honor to be here today with two members of our team at SVSU: Dr. Andrew Chubb, Dean of the College of Science, Engineering and Technology, as well, Dr. David Karpovich, H.H. Dow Endowed Professor of Chemistry, and the Director of the Saginaw Bay Environmental Science Institute.

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[Slide 2] SVSU is a Regional Public University located in the Great Lakes Bay Region, which comprises Midland, Bay, and Saginaw Counties. **Our Region is home to 600 businesses that seek SVSU graduates each year.**

Saginaw Valley has more than 90 academic programs, which range from teaching to accounting to engineering to nursing. In fact, **we offer areas of study which lead to 33 of the current hottest 50 jobs in Michigan.**

SVSU has approximately 7,000 students, we're proud of the quality of our academic programs and allow me to give two quick examples. In our College of Education, we have the 3rd highest best pass rate among all colleges of education in Michigan on the MTTC teaching licensure exam. In our College of Health and Human Services, our nursing students have a 92% first-time pass rate, which is 12% above the national average and 13% above the statewide average.

[Slide 3] Today, we are here to testify about our Capital Outlay request for the Lake Huron Environmental Science Research Station. **This request is for \$10M to construct a world class environmental science research station in Bay County.** This building is a win for our students, environmental researchers, and our supportive community partners. We are very appreciative of our community partners, including the Bay Area Chamber of Commerce, Bay Future, Midland Business Alliance, Saginaw County Chamber of Commerce and Saginaw Future. As well, we are also appreciative of our partners on this project: Dow, BaySail and the Saginaw Basin Land Conservancy.

To speak more about the history of the environmental science program at SVSU is Dr. Andrew Chubb.

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Dr. Andrew Chubb – Dean, College of Science, Engineering and Technology

Thank you, Dr. Grant. As President Grant mentioned, my name is Andrew Chubb and I serve as the Dean of the SVSU College of Science, Engineering and Technology. As the Dean of the College, I am very proud of our faculty and the programs they lead. Programs like the Saginaw Bay Environmental Science Institute. So why SVSU for this type of program?

[Slide 4a] One reason is because of our location, which is less than 15miles from Lake Huron. SVSU is one of only five public universities in Michigan to be located within this distance from one of the Great Lakes. Another reason is our college has a core group of dedicated faculty, like Dr. Karpovich, who have experience with environmental research. The final reason is this type of program is very important, not only to SVSU, but also to our community and state.

[Slide 4b] The Saginaw Bay Watershed is the largest watershed in Michigan and the second largest watershed in the Great Lakes Basin. **It is important to study this watershed because the area is home to over 1.4 million people and contributes extensive agricultural and industrial resources in support of Michigan’s economy.** The Watershed is home to over 138 endangered and threatened species, features a world-class fishery, and is a stopover for migratory birds on the Mississippi Flyway. Its importance reaches far beyond its borders to Lake Huron and beyond. It is a globally important ecosystem on par with the Everglades and the Amazon Rainforest.

SVSU’s proximity to the Saginaw Bay means that we are ideally situated within the watershed to make first-hand, real-time observations of this vital ecosystem and to monitor its health.

[Slide 5] **The Saginaw Bay Environmental Science Institute, led by SVSU faculty and supported by internal funding, was established in 2013 to focus on research that directly impacts the restoration of Saginaw Bay and demonstrates the commitment SVSU has to supporting this work.** Its formation came about organically as a group of researchers from different departments and different colleges came together to collaborate on the environmental research that they were all doing. This collaborative spirit remains an essential part of the Institute, which has provided intensive experiential learning in the form of Saginaw Bay research for many SVSU students and high school student interns while attracting leading scientists from around Michigan and beyond.

[Slide 6] Since its inception, the scope of the Institute has expanded to the greater watershed. **We need a much larger space for our research, a location with direct access to the water system, and spaces for expanding our K-12 educational outreach, undergraduate and graduate coursework, and facilities for continuing the attraction of leading scientists from around the country.** Hence, we are here today, asking for funding to expand the operations of this very successful Institute into the Lake Huron Environmental Science Research Station.

To speak more about the expansion of programs and positive impact from the Lake Huron Environmental Science Research Station is Dr. David Karpovich.

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Dr. David Karpovich – H.H. Dow Endowed Professor of Chemistry and Director of the Saginaw Bay Environmental Science Institute

Thank you, Andrew. My name is David Karpovich, and I serve as the H.H. Dow Endowed Professor of Chemistry and Director of the Saginaw Bay Environmental Science Institute (or SBESI). I am excited to be here to testify for funding to expand upon the positive impact we have made thus far in our Region and the State of Michigan.

[Slide 7] Over the past 10 years, the SBESI’s research efforts have attracted millions of dollars in external research funding from state and federal agencies as well as private foundations. This research has resulted in several major outcomes including state-of-the-art beach bacteria monitoring and the formation of the Saginaw Bay Monitoring Consortium, the first coordinated, long-term water quality program in the Saginaw Bay Watershed. It is fully funded by the EPA with Great Lakes Restoration Initiative funds, and it is a collaborative effort.

[Slide 8] Since 2014, the Dow Science and Sustainability Education Center at SVSU (or Dow SSEC) has connected SVSU faculty and students with area teachers and high school students through its summer research internship program – there have been over 230 participants to date. In addition, another estimated 9,000 high school students have been indirectly impacted by the program from teachers taking their experiences back to the classroom.

[Slide 9] In 2016, in collaboration with Dow, the SVSU Mobile Research Lab began service as a research and outreach vehicle. It has reached an estimated 19,000 visitors (mostly K-12) while also facilitating water quality research as part of the Dow SSEC at SVSU.

[Slide 10] Now, in 2023, SVSU is again collaborating with Dow to develop the Lake Huron Environmental Science Research Station. This Station will allow SVSU to expand our research capabilities which will greatly benefit our students and the region. It will also help leverage additional funding from state and federal agencies as well as private foundations. The enhanced access to Saginaw Bay will enable us to drastically scale up our K-12 outreach through the Dow SSEC, and the improved experiential learning opportunities will better prepare our undergraduate students for employment and research positions upon graduation.

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At SVSU, we are equipping the next generation of scientists to solve environmental challenges and to develop solutions that use Michigan’s unique resources in a sustainable manner.

[Slide 11] We are collaborative rather than competitive. Accordingly, we have brought together a long list of agencies, organizations, and institutions who have worked with us. Our strong collaborations benefit our students and the region.

The Lake Huron Environmental Science Research Station will provide enhanced physical access to the resource, enable better real-time observation capabilities, and serve as a

research destination for students and scientists. It will also welcome a broader audience of citizen scientists, resource managers, and K-12 students with opportunities to learn about and participate in Saginaw Bay and Great Lakes restoration efforts. Finally, this facility will be the first university operated environmental science research station on Lake Huron.

The SBESI has made a large impact in our Region and our State over the past 10 years; we look forward to your support in helping to grow our impact through the Lake Huron Environmental Science Research Station.

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[Slide 12] Thank you, David. Again, SVSU appreciates the opportunity to testify in front of you today. We are proud of our 60-year history, and we look forward to supporting our Region and State with this project. I look forward to working with each of you on this project. You can count on Saginaw Valley State University as part of the Michigan Renaissance. Thank you.

FISCAL YEAR 2024
CAPITAL OUTLAY PROJECT REQUEST

Institution Name:

Saginaw Valley State University

Project Title:

Lake Huron Environmental Sciences Research Station

Project Focus:

Academic
 Research
 Administrative/Support

Type of Project:

Renovation
 Addition
 New Construction

Approximate Square Footage:

10,000 sq. ft.

Total Estimated Cost:

\$10 million

Estimated Duration of Project:

2023-2025

Is the Five-Year Plan posted on the institution's public internet site?

Yes
 No

Is the requested project the top priority in the Five-Year Capital Outlay Plan?

Yes
 No

Is the requested project focused on a single, stand-alone facility? If No, Please Explain

Yes
 No

Describe the project purpose.

Saginaw Valley State University (SVSU) is seeking \$7.5 million in state support to assist with a 10,000 sq. ft. building.

The proposed Lake Huron Environmental Sciences Research Station will be a multi-purpose research facility that contains traditional, general-purpose classrooms, larger meeting spaces, along with research laboratories, and faculty offices. This capital improvement project is intended to construct the first university environmental sciences research station on Lake Huron to assist with providing data and information for various academic and research purposes.

Describe the scope of the project.

A Lake Huron Environmental Sciences Research Station which is located on the waters of the Saginaw Bay and operated by SVSU will offer many various collaborative opportunities with local, state, and federal partners (County Public Health, EGLE, EPA, USGS, NOAA, TNC, MSU-IWR, etc.). Saginaw Bay and Lake Huron are very important in the Great Lakes ecosystem and economy. Currently, no university-operated research station exists on Lake Huron.

The ecosystem dynamics on Lake Huron are not well understood because of large data gaps for the Lake and various watersheds. Various projects at SVSU, including a recent EPA-funded project, are working to address major data gaps on Lake Huron. This Research Station will involve multiple agencies to study nutrient and sediment transport from tributaries to open water, which would provide key information for the EPA's anticipated delisting of the Saginaw River and Bay Area of Concern by 2030.

A research station on Lake Huron would complement the efforts of many various agencies and universities by enabling direct access for onsite, real-time observations of the Lake and its ecosystem. The real-time observations and monitoring afforded by an on-site research station will provide data and information necessary to adaptively manage the ecosystem for resiliency to various changes. Along with the research activities related to Lake Huron restoration, a research station would serve as an outreach site for the community to showcase the ecosystem and the efforts of the Saginaw Bay Environmental Science Institute of SVSU.

The station would also serve as an educational setting for SVSU classes as well as visiting high-school student programs. Students in the Environmental Science and the Environmental & Sustainability programs at SVSU will benefit from classes held on-site at the Research Station, taking advantage of the direct access to the ecosystem they are studying. Similarly, experiential programs that bring high school students to the Research Station, such as summer internships, will benefit from the accessibility to Lake Huron. The availability of the research station as a teaching location will benefit students at all levels and showcase environmental science education on Lake Huron.

The station would also serve as an educational center for K-12 programs, hosted by SVSU or other entities. Engaging K-12 students with environmental science and STEM benefits the region in numerous ways, including providing the initial stages of workforce development in these areas.

Program Focus of Occupants

The academic programs in the Lake Huron Environmental Sciences Research Station will include those studying in both the Environmental Science and the Environmental Studies & Sustainability programs; as well as various other science programs at SVSU.

Please provide detailed, yet appropriately concise responses to the following questions that will enhance our understanding of the requested project:

- 1. How does the project enhance Michigan's job creation, talent enhancement and economic growth initiatives on a local, regional and/or statewide basis?**

The creation of the first environmental sciences research station on Lake Huron is going to be a magnet for freshwater researchers from all over the world. As well, this research station will attract the brightest undergraduate students to want to study environmental sciences at SVSU. Finally, students enrolled in the program will be entering some of the highest demand jobs in Michigan.

Workforce and Talent Development

As a regional public university, Saginaw Valley State University (SVSU) has a proven commitment to job creation, talent enhancement and economic growth within the Great Lakes Bay Region (Saginaw, Bay, and Midland). Many graduates from SVSU prefer to live and work locally. They are heavily invested in their communities and deeply invested in the future of the region – professionally and economically. An investment in SVSU is really an investment in the

future success of Mid-Michigan. Students who complete coursework in this research station will likely go onto work for companies and organizations which seek graduates in environmental sciences: EPA, EGLE, County Departments of Public Health, Dow, DuPont, as well as many various small organizations and companies located in our Region and State.

Community Partnerships

Community partnerships are an integral part of the culture at Saginaw Valley State University. In 2020-21, over 3,200 SVSU students completed an internship or co-op assignment in business, education, or healthcare. Organizations, such as Dow, DuPont, Consumers Energy, Bay County Health Department, the Nature Conservancy, and EGLE provided internships opportunities to SVSU students. A Lake Huron Environmental Sciences Research Station will offer many various community partnerships with local, state, and federal partners (County Public Health, EGLE, EPA, USGS, NOAA, TNC, MSU-IWR, etc).

Experiential Learning

Outside of the traditional classroom, SVSU currently has experiential learning environments that enhance student learning. Within the Lake Huron Environmental Sciences Research Station, there will be various laboratories constructed on-site. As well, a mobile research station laboratory and a pontoon boat will be located on-site for students to be able to engage in real time experiential learning on the shores of, or on Lake Huron, as well as in the greater watershed that feeds the lake. These laboratories and opportunities will also attract other academic researchers, providing additional opportunities for SVSU faculty and undergraduate students.

Co-Curricular Opportunities

SVSU has a strong tradition of student engagement, both on campus and in the external community. Environmental science is a broadly interdisciplinary field, with a wide variety of student organizations whose interests overlap. Registered Student Organizations such as the Chemistry Club (an American Chemical Society student chapter), Biology Club, Geography Club, Cardinals for Future, Cardinals for Public Health, Climate Stick Club, Law Club, History Club, and Model United Nations all stand to benefit from the opportunities offered by this facility. The Research Station also will facilitate cross-disciplinary projects, such as engineering design projects related to environmental research, by providing workspace near where the prototypes would be field-tested.

2. How does the project enhance the core academic and/or research mission of the institution?

Saginaw Valley State University's mission is to transform lives through educational excellence and dynamic partnerships, unleashing possibilities for impact in our community and worldwide. In addition, SVSU values:

- Passion for academic exploration and achievement
- Supportive environments focused on student success
- Diversity and inclusivity
- High standards for ethical behavior and financial stewardship
- A safe, friendly, and respectful campus climate
- Community engagement

Our vision is to be renowned for innovative teaching, experiential learning and state-of-the-art facilities and be the first choice for those striving for personal and professional success.

Saginaw Valley State University enjoys an outstanding reputation within the Great Lakes Bay Region - a reputation built on strong academic programs and a dedication to serving the people and businesses in this area. SVSU embraces its role as a regional university in attracting and developing world-class talent to compete in a global economy.

We take great pride in our accomplishments to date, but as we look to the future, our vision is to respond to the evolving needs of regional employers and to prepare outstanding graduates from our distinctive programs differentiated on the basis of innovative teaching and experiential learning made possible in large part by state-of-the-art facilities. SVSU has a strong record of engaging students in undergraduate research, a high impact practice that provides multiple benefits for retention and career readiness. This Research Center would provide additional avenues for students to pursue research and be better prepared for post-graduate study or careers. Our graduates will be problem solvers, collaborators, and decision makers who will be ready for careers that contribute to the future success of the region and our state.

The project will enhance the core academic and/or research mission of SVSU as follows:

First, the new research station will assist with facilitating student success through the integration of academic and experiential learning, as well as access to applied research on Lake Huron. This location of this facility will allow us to offer learning opportunities which would not be able to be offered on our current campus. The new station will also create opportunities through access to modern, flexible, and collaborative learning spaces which will also have state-of-the-art technologies.

Second, this research station will become the home for two key academic programs: the Environmental Science program in the College of Science, Engineering and Technology, and the Environmental Studies & Sustainability program in the College of Arts and Behavioral Sciences. Students in both programs will greatly benefit from having access to facilities which meet the learning and research needs of these programs, and the hands-on experiences generated as a result.

Finally, this new building will help enhance our STEM outreach programs with various K-12 schools throughout our Region. Between the new facility and the partnerships that SVSU has with regional STEM programs, this facility will provide access to students and teachers who want to learn more about environmental sciences. One of the five strategic goals of the University is that our community engagement activities will drive regional and institutional success both locally and worldwide. In 2015, SVSU received the Community Engagement Classification by the Carnegie Foundation for Advancement of Teaching, a distinction attained by less than 10 percent of U.S. colleges and universities. This STEM outreach will help our institution with continuing to receive this classification into the future.

All the activities highlighted, and the resources invested in providing our students with a quality educational experience are consistent with the mission of the University. This new facility aligns well with the University's strategic efforts to increase enrollment, particularly in STEM programs.

3. How does the project support investment in or adaptive re-purposing of existing facilities and infrastructure?

Due to this facility being a new facility, there will be minimal re-purposing of existing facilities and infrastructure. The on-campus classrooms and

laboratories and facilities which will no longer be used by the Environmental Science program will be re-purposed for use by other high demand programs in the College of Science, Engineering and Technology, such as Chemistry, Biology, and Physics.

4. Does the project address or mitigate any current health/safety deficiencies relative to existing facilities? If yes, please explain.

No.

5. How does the institution measure utilization of its existing facilities, and how does it compare relative to established benchmarks for educational facilities? How does the project help to improve the utilization of existing space and infrastructure, or conversely how does current utilization support the need for additional space and infrastructure?

This new site on Lake Huron would assist with moving specific laboratories to one unified location off-campus and free up laboratory and classroom spaces for other programs in the College of Science, Engineering and Technology.

Noted below is a summary of the Fall 2022 *SVSU Classroom Utilization Report* with key performance measures. Pioneer Hall, Science East & Science West are where a majority of our environmental sciences classes are currently held.

<u>Fall 2022 – Classroom Utilization</u>		
ALL SVSU CLASSROOMS		
	56%	Peak Time
	(M-Th 8:30-4:20)	
	35%	(M-F 8:00 AM- 10:00 PM)
PIONEER HALL, SCIENCE EAST, & SCIENCE WEST		
	71%	Peak Time
	(M-Th 8:30-4:20)	
	44%	(M-F 8:00-10 pm)

Definition: Class Seat Utilization (%) = % of seats occupied compared to total seat capacity

The benefit of this facility location is the proximity to the environmental issues being studied.

6. How does the institution intend to integrate sustainable design principles to enhance the efficiency and operations of the facility?

SVSU building projects have followed LEED standards since 2006 for new construction and major renovations. Several efforts that are designed into our projects are:

- High recycled content building materials
- Environmentally friendly finishes
- High performance glass for optimized energy performance and thermal comfort
- Regionally sourced and manufactured materials

- Energy efficient mechanical building systems with building automation to optimize energy consumption
- Installation of energy efficient LED lighting with use of occupancy sensors and lighting control systems
- White roofing to reduce cooling cost
- Water efficient plumbing fixtures
- Utilize daylight for natural and solar orientation
- Rainwater management for irrigation

7. Are match resources currently available for the project? If yes, what is the source of the match resources?

Yes. SVSU will commit University resources of \$2.5 million (25%) from capital project reserves, however we will also be seeking alternate funding.

8. If authorized for construction, the state typically provides a maximum of 75% of the total cost for university projects and 50% of the total cost for community college projects. Does the institution intend to commit additional resources that would reduce the state share from the amounts indicated? If so, by what amount?

No. The project is estimated to cost \$10 million. SVSU will commit \$2.5 million to the realization of this project which accounts for 25% of the total cost. The requested State of Michigan share is \$7.5 million (or 75%).

9. Will the completed project increase operating costs to the institution? If yes, please provide an estimated cost (annually, and over a five-year period) and indicate whether the institution has identified available funds to support the additional cost.

Yes, we project yearly operational costs for this facility to be \$70,000 (\$350,000 over a five-year period). The additional operating costs will be added to the University's general fund operating budget.

10. What impact, if any, will the project have on tuition costs?

Tuition costs will not be affected as the result of this project.

11. If this project is not authorized, what are the impacts to the institution and its students?

This would continue the current logistical issues that we continue to have for our academic and research delivery in environmental studies. Currently, both the mobile research laboratory station and pontoon vessel are located on-campus (20 miles from Lake Huron), which requires additional time and resources to access the lake for research.

12. What alternatives to this project were considered? Why is the requested project preferable to those alternatives?

The only alternative to this project is to continue with our research and studies through our on-campus sites in University Center. This requested project is preferable because it is located off-site, next to the natural resource which the academic programs and researchers would be studying.