Economic Development Incentive Grant 2013-14 Annual Report

Institution Name(s): University of Wisconsin – Milwaukee; University of Wisconsin-Whitewater	Project Title: Water Technology Accelerator (WaTA) Supporting Wisconsin's Water Industry
Principal Investigator: David Garman	**Person submitting Report: Eric Leaf**
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Grant Award Amount: $3 million	**Report Date: 7/18/2014**
Grant Funding Spent (to date): $269,116 ($2.64 million encumbered but not charged yet)	**Date project began: 12/2013**
	Date project ends (projected): 6/30/15

I. Status Report

Fundamentals

- The global water technology market—currently worth $483 billion—is the world's fastest growing market. Experts predict it could double in value by 2035. Southeast Wisconsin already owns over 4% of this market. To remain ahead of stringent global competition and to further increase its market share, Wisconsin's water industry needs innovative research that generates technological breakthroughs across all sector segments, and it is looking to academic partners to develop these breakthroughs and to train creative minds and talent that will become future water business and research leaders.

- In response to this need, UW-Milwaukee, UW-Whitewater, and water industry partners have launched a Water Technology Accelerator (WaTA) to develop new intellectual property (IP) and technologies with direct commercial application as identified by Wisconsin water companies.

- Phase I of WaTA consisted of a Catalyst Grant Program focused on early stage research and the development of new water technology IP with direct commercial application for Wisconsin's water industry. It was supported by equipment acquisition and a high performance computing cluster, as well as lab build out to facilitate research.

Catalyst Grant Program

- Late 2013 the School of Freshwater Sciences put out a call for proposals to UW-Milwaukee and UW-Whitewater faculty soliciting research projects in early stage water technology development. Twenty-three proposals were submitted between both universities. Each proposal was reviewed by an advisory committee made up of university faculty and administrators and industry experts. Proposals were reviewed for scientific innovation, patentability, potential market, industry partnerships, and other factors. The committee consisted of:
    - David Garman, Dean, SFS, UWM
    - Brett Peters, Dean, College of Engineering and Applied Science, UWM
    - Brian Thompson, President, UWM Research Foundation
    - Mark Harris, Interim VP for Research, UWM Academic Affairs
    - J. Val Klump – Associate Dean, Research, SFS, UWM
    - Dean Amhaus, President and CEO, The Water Council

- Bob Heideman, VP of Research and Development, A.O. Smith
- Timothy White, Water Technology Business Manager, Kohler Company
- Shajan John, President, Mahattil International LLC
- Yann Moreau, Research and Innovation Director, Veolia North America

- In Spring 2014 the advisory committee selected nine projects to fund. The average grant was $110k. $1 million in research awards were made to the following projects:
  - On-Site Rapid Label-Free Detection of Low level E. Coli (Junhong Chen, David Garman; $120,000)
  - Handheld Meter for Real-Time Detection of Heavy Metal Ions in Drinking Water (Junhong Chen; $120,000)
  - Real-Time Optical Sensors for Wastewater-Treatment Process Control (Peter Geissinger, Alan Schwabacher; $100,000)
  - Accelerated Juvenile Growth and Reproduction Cycle Compression of Red Claw Crayfish for Aquaculture (Jerry Kaster, Fred Binkowski; $105,000).
  - Toward Commercialization of Novel Nanofiber Membranes with Anti-Fouling Ability (Li Ying; $120,000)
  - Biological Control of Flavobacterium Colunmare in Aquaculture Systems (Sandra McLellan, Mark McBride; $115,000)
  - Dynamic Monitoring of Plant Growth and Performance; Development of a Novel, Autonomous Wireless Dendrometer Band System (Stefan Schnitzer; $100,000)
  - Novel Macroporous Materials for In Situ Water Cleaning (Marcia Silva, Junhong Chen; $125,000)
  - Engineering the Next Generation of Biosand Filters (Shangping Xu, Sandra McLellan; $100,000)

- Research projects began in March 2014. The UW-Whitewater Institute for Water Business and the UWM Center for Water Policy are working with the principal investigators of each project to assist with market research and regulatory assessment around each technology. Projects are slated to continue through June 2015, with potential IP transferred to the UWM Research Foundation after that date.

Equipment Update and Lab Build Out

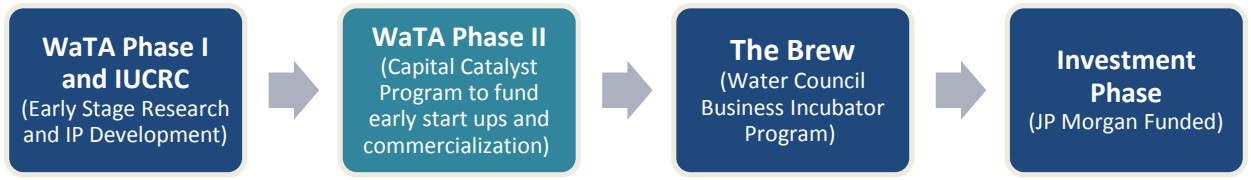
- $1.3 million of equipment to support water technology development and other water research has been secured or is in process of being secured to time with the completion of labs that will house it. This equipment will be housed in the $20 million Global Water Center or in the new $53 million home of the School of Freshwater Sciences, which was completed and handed over to UWM at the beginning of July. An additional $1.5 million of equipment is also being purchased through the building project budget. These funds, combined with $2 million of DNA sequencing equipment that was secured through private donations, will make the tools and facilities available to researchers and partners at SFS among the best in the world.

Computing Cluster

- The $700k high performance computing cluster to support genomics and modeling work is being developed and facilities are being built on campus to house it. In addition UWM has agreed to take on permanent full-time staff to operate the cluster after the duration of the Incentive Grant in June 2015.

Sustainability and Phase II

- UWM is currently negotiating with the Wisconsin Economic Development Corporation to fund a phase ii of the WaTA through its Capitol Catalyst program. The focus of Phase II will be technology transfer from the University of Wisconsin to industry. Phase II will provide grants to small businesses and startups licensing or growing out of UWM water technologies or the water technologies developed at other UW System campuses, providing direct funding to bring them to market. This program will become part of a continuum of programs that move water technology from the universities to fully commercialized applications, each with different funding sources:



- Funding from WEDC could be as high as $750k. UWM will need to match those funds from other sources to secure the grant.

II. Updated Goals/Performance Metrics and Assessment Plans

Please see spreadsheet.

III. Project/Program Budget and Expenditures

Please see attached budget document.

IV. Changes

No substantial changes to report at this time.

Water Technology Accelerator Supporting Wisconsin's Water Industry

12/1/13-6/30/15

			Budget	Expenditures 12/1/13-6/30/14	Expenditures 7/1/14-6/30/15	Remaining Budget	Notes
1	Catalyst Grants in Water Technology						
		9 Catalyst Grants	1,000,000	50,269		949,731	$940,000 encumbered, not charged yet
2	Support Facilities and Equipment	Integrated Technologies & Engineering Lab	1,000,000	1,000,000		-	
		Global Water Center Accelerator Labs	1,300,000	1,300,000		-	
		Global Water Center Equipment	1,300,000	218,848		1,081,152	$1 million encumbered, not charged yet
		Computational Cluster	700,000			700,000	$700,00 encumbered, not charged yet
	Subtotal		5,300,000	2,569,116	-	1,781,152	
	Campus Offsets						
		Integrated Technologies & Engineering Lab	(1,000,000)	(1,000,000)		-	
		Global Water Center Labs	(1,300,000)	(1,300,000)		-	
	Campus Off-Sets Subtotal		(2,300,000)	(2,300,000)	-	-	
	Total Budget Funded Through UWS Incentive Grants		3,000,000	269,116	-	2,730,884	$2.64 million encumbered

UW System Incentive Grant
General Outcomes/Goals Reporting Matrix
2013-14

Incentive Grant Program Name: **Water Technology Accelerator (WaTA) Supporting Wisconsin's Water Industry**
Funding Allocation: **$3 million**

#	Performance Outcomes Descriptions	Assessment Plan Description	Projected Goals 2013-14	Actual 2013-14 Outcomes	Projected Goals 2014-15
1	**Develop Intellectual Property (IP) w/ Commerical Application**	Patent Applications from IP submitted by UWM Research Foundation	NA	NA	5
2	**Support Wisconsin's Water Industry Through IP Transfer**	Patents Licensed to Corporate Partners through Research Foundation		1	1
3	**Attract Ongoing Research Revenue**	Grants Attracted - Private Sources (Annually)		$300k	$600k
		Grants Attracted - Government Sources (Annually)			$400k
4	**Engage the Water Research Community in IP Development and the Water Industry**	Researchers (PIs) Working on Water Tech Grants with Corporate Collaborators	5	9	8
5	**Place High Quality Graduates into Industry Positions**	Students Pursuing Water-Related Science and Tech Degrees	NA	NA	15 percent Increase Over 2013-14
		Graduate Students who worked on IP Development Projects placed into Industry Positions		NA	12

UW System Incentive Grant Program
Required Program Goals/Outcomes Reporting Matrix
2013-14

Economic Development Goals and Results

Economic development program" means a program or activity having the primary purpose of encouraging the establishment and growth of business in this state, including the creation and retention of jobs, and that satisfies all of the following:

1. The program receives funding from the state or federal government that is allocated through an appropriation under ch. 20
2. The program provides financial assistance, tax benefits, or direct services to specific industries, businesses, local governments, or organizations.

Performance Categories	Goals		Actual Outcomes 2013-14	Accomplished Goal? Yes or No	Notes
	Projected 2013-14	2014-15			
# of Jobs Created	5	8	5	Yes	UWM Verified
# of Jobs Retained	NA	NA			Grant is focused on Technology Development; expected to impact jobs through Technology Transfer
# of Businesses Assisted	5	8	5	Yes	Can be confirmed through Letters of Verification submitted by commercial partners

Additional Goals/Outcomes	Goals		Actual Outcomes 2013-14	Accomplished Goal? Yes or No	Notes
	Projected 2013-14	2014-15			
Small Business Startups	0	2	1	Yes	Exceeded goal for this stage of project.
Venture Capital/Investment in Wisconsin's Water Industry	0	$500k	$300k	Yes	Exceeded goal for this stage of project.
New Technologies in Use by Water Industry	0	1	NA	Yes	Exceeded goal for this stage of project.

UW System Incentive Grant Program
Required Program Goals/Outcomes Reporting Matrix
2013-14

Development of a Skilled and Educated Workforce

Programs that have as their objective the development of an educated and skilled workforce, such as the following:

a. Increasing the number of bachelor's, master's, and doctoral degrees awarded in fields for which occupational demand is high or in fields that the board and the department of workforce development jointly determine to be high-demand fields.

b. Increasing the number of opportunities available to students to gain work experience in their fields through internships or cooperative work experiences.

c. Increasing or enhancing research and development.

	Goals		Actual Outcomes 2013-14	Accomplished Goal? Yes or No	Notes
	Projected 2013-14	2014-15			
# of Bachelor's degrees awarded in high-demand fields					
# of Master's degrees awarded in high-demand fields					
# of Doctoral degrees awarded in high-demand fields					
# of internships created (paid)					
# of internships created (unpaid)					
# of cooperative work experiences (paid)					
# of cooperative work experiences (unpaid)					

Increasing or Enhancing Research and Development Reporting

Goals	Anticipated Completion Dates	Actual Completion Dates	Accomplished Goal? Yes or No	Notes

UW System Incentive Grant Program
Required Program Goals/Outcomes Reporting Matrix
2013-14

Improve the Affordability of Higher Education

Programs that Improve the Affordability of Higher Education for Resident Undergraduates, including:

a. Reducing the time required to obtain a degree
b. Increasing the opportunities available for high school pupils to earn credit toward a postsecondary degree; and
c. Improving the transfer of credit between institutions of higher education.

Reducing the Time required to obtain a Degree

Goals	Anticipated Completion Dates	Actual Completion Dates	Accomplished Goal? Yes or No	Notes

Increasing the Opportunities available for High School Pupils to earn Credit toward a Postsecondary Degree

Goals	Anticipated Completion Dates	Actual Completion Dates	Accomplished Goal? Yes or No	Notes

Improving the transfer of Credit between Institutions of Higher Education

Goals	Anticipated Completion Dates	Actual Completion Dates	Accomplished Goal? Yes or No	Notes
			NA	