

# Idaho Incubation Fund Program

## Final Report Form

**Proposal No.** IF12-001  
**Name:** Warren Barrash  
**Name of Institution:** Boise State University  
**Project Title:** Device for Subsurface Environmental Monitoring, Ready For Prototype

### Information to be reported in your final report is as follows:

1. Provide a summary of overall project accomplishments to include goals/milestones met, any barriers encountered, and how the barriers were overcome:

1A invention improvements have been made such that the packer device is commercial grade, including: shape guide material and connection, tube-to-hub connectors, hub design refinement, water exchange opening placement, tubing selection, bonding, release tool.

1B invention components and specifications have been documented.

1C invention has been tested under long field campaign conditions with issues exposed and improvements made in collaboration with TechHelp (see 1A above).

1D licensing – Solinst, who supported this proposal and expressed interest in sublicensing, subsequently declined to pursue sublicensing. We have discussed sublicensing with RocTest, another vendor of packers for engineering applications who also owns the company that designs and manufactures the fiber-optic transducers we use with the packer system. This company expressed interest but noted the application is outside their current sphere and they were interested maintaining communication going forward but not interested in acting on a sublicense possibility at this time. To make more efficient use of limited time, we have since revised our licensing strategy to be included as a development that will result from high-profile demonstration of the method that uses the invention, while we continue to demonstrate and publicize the invention and the method (see 5A below). Also by focusing on using the method as a business development direction and marketing strategy for the invention, we can save limited time in the short-term by postponing the need to negotiate a Conflict Management Plan with Boise State

University at this time including engaging a private lawyer and having several rounds of draft iterations etc.

1E business planning has advanced significantly with assistance from: MBA and senior-level entrepreneurship classes at Boise State University that adopted our invention and business model for class projects and provided reports we have been using as guides and reference material; campus experts from Tech Transfer (Mary Andrews and Lyn Moore); on-campus Small Business Development Center advising (Kevin Learned), hiring of professional consultants (Tom Harrison Group) who we met through the MBA class (see 5B below), and State of Idaho business development staff.

1F spin-off (including meetings resulting from contacts in 1E and from participation in Tech Transfer Office events highlighting entrepreneurship at Boise State) and professional association meetings included face-to-face or on-line meetings with venture capitalists, PR professionals, industry representatives or managers and officers, research leaders in similar emerging technologies, government-industry group of seasoned, hands-on technical experts interested in best practices and emerging technologies, and several national professional meetings. Some follow-up from these is discussed in 5A below.

2. Describe the current state of the technology and related product/service:

2A invention is currently at commercial grade;

2B new hydrologic testing method (hydraulic tomography – “parent” research direction under which the invention was conceived) that uses the packer invention technology is ready for full-scale demonstration/application at real contaminated sites to gain significant attention for additional site applications (initially as service contracts through Boise State University) to build the record and attention to support commercialization with either venture capital or a partnership with a major company for commercial development of the method and for sale of services, parts (including the invention), and training (see 5A below).

3. List the number of faculty and student participants as a result of funding:

Faculty – 2 as lines in budget: Warren Barrash and Michael Cardiff (project team in Geosciences), and 1 as contractor from TechHelp New Product Development Lab: Blake Young (TechHelp);

Students – 1 as line in budget: Josh Eckert (Geoscience undergrad), 2 as contractors from TechHelp New Product Development Lab: Jordan Lanning and Sam Howell (Mechanical Engineering undergrads working at TechHelp).

4. What are the potential economic benefits:

Potential economic benefits are royalties to Boise State University, jobs with services and vending of components and training, possible establishment of manufacturing of the packer systems in Boise or Idaho, and taxes from the sales and income of the above.

5. Description of future plans for project continuation or expansion:

5A market development:

5A1 Generate demonstration projects at real contaminated sites for major clients and/or agencies through service contracts. One such opportunity is in proposal development with the active participation/assistance of the industrial sponsor (a major company in Italy) for expected start-up in late Summer 2012. This project will demonstrate our method and use of the invention at a large industrial complex in Italy that is actively undergoing remediation of groundwater contamination. This company is interested in finding, applying, and acquiring new technologies.

5A2 The anticipated project in Italy will provide an opportunity for the CTO from a potential sublicensee (RocTest – see 1D above) to observe the packer system in action at the site in Italy because the CTO is stationed in Switzerland (assuming approval for such a visit by the sponsor of the project in Italy). Recall that RocTest is the parent company of FISO who is the supplier of the fiber-optic transducers we use with the packer systems for the hydraulic tomography method – so this is potentially a double market-development opportunity for them.

5A3 Barrash recently joined the ITRC working group ( Interstate Technology & Regulatory Council <http://www.itrcweb.org/homepage.asp#teamlst> ) that includes more than 60 participants from state and federal environmental agencies, major environmental/engineering services companies, academics) on site characterization methods for sites with DNAPLs (class of major high-liability unsolved groundwater contamination sites). Barrash will continue participation which is raising the awareness about our method and the component technologies among policy makers, technology selectors, and project managers for site applications. Interest in applying our method has already been expressed by one state.

5A4 continue to publish and present our work on hydraulic tomography and details of the method including the significant performance and logistical advantages due to the invention;

5B complete business plan; develop partnership(s) with established major players for site work and/or technology development with broad method application and component sales. Use service contracts until demand or partnership interest supports commercialization.

6. Please provide a final expenditure report (attached) and include any comments here:

7. List invention disclosures, patent, copyright and PVP applications filed, technology licenses/options signed, start-up businesses created, and industry involvement:

Completion of documents for US patent and filing by patent attorneys in association with BSU with US patent filing by patent attorneys on the MHPS on September 14, 2011. International Patent Cooperation Treaty (PCT) application filed by patent attorneys in association with BSU for the MHPS on November 16, 2011.

Notifications of patent filings have been submitted to federal grant sponsors (NSF, Army Research Office) by the Tech Transfer Office at Boise State University.

A new company (Barrash Cardiff & Kitanidis LLC [BC&K] ) was formed in Idaho in

project quarter 1 to market the MHPS and to provide hydrologic engineering services using the MHPS.

We are pursuing expressed interest by a major industrial company and possible interest by a well-established international hydrologic engineering and fiber-optic technology company and subsidiary (FISO/Roctest) for development and possible partnerships and sublicensing agreements.

8. Any other pertinent information:

This grant has been immensely beneficial in providing support to test and develop improvements in the invention; to develop business contacts and context; and to explore a variety of options for exposure and commercialization. We now have a commercial grade product that we and increasingly, others, know works with significant advantages and we are pursuing commercialization through demonstration and expanding awareness and contacts. We expect to have traction (multiple contracts for method application and business commercialization with venture capital or a partnership), perhaps in the 9-to-18 month timeframe.

**FINAL EXPENDITURE REPORT**

<b>A. FACULTY AND STAFF</b>		
Name/Title	\$ Amount Requested	Actual \$ Spent
<b>B. VISITING PROFESSORS</b>		
Name/Title	\$ Amount Requested	Actual \$ Spent
<b>C. POST DOCTORAL ASSOCIATES/OTHER PROFESSIONALS</b>		
Name/Title	\$ Amount Requested	Actual \$ Spent
<b>D. GRADUATE/UNDERGRADUATE STUDENTS</b>		
Name/Title	\$ Amount Requested	Actual \$ Spent
<b>E. FRINGE BENEFITS</b>		
Rate of Fringe (%)	\$ Amount Requested	Actual \$ Spent
<b>PERSONNEL SUBTOTAL:</b>		
<b>F. EQUIPMENT: (List each item with a cost in excess of \$1000)</b>		
Item/Description	\$ Amount Requested	Actual \$ Spent
1.		
2.		
3.		
4.		
<b>EQUIPMENT SUBTOTAL:</b>		
<b>G. TRAVEL</b>		
Description	\$ Amount Requested	Actual \$ Spent
1.		
2.		
3.		
<b>TRAVEL SUBTOTAL:</b>		

<b>H. PARTICIPANT SUPPORT COSTS:</b>			
Description		\$ Amount Requested	Actual \$ Spent
1.			
2.			
3.			
<b>PARTICIPANT SUPPORT COSTS SUBTOTAL:</b>			
<b>I. OTHER DIRECT COSTS:</b>			
Description		\$ Amount Requested	Actual \$ Spent
1.			
2.			
3.			
<b>OTHER DIRECT COSTS SUBTOTAL:</b>			
<b>TOTAL COSTS (Add Subtotals):</b>			
<b>TOTAL AMOUNT REQUESTED:</b>			
<b>TOTAL AMOUNT SPENT:</b>			