

# Development of a modular, web-based, blended-learning Scientific Project Management Training Course

---

Submitted by: Leon Carl, Regional Director, Midwest Region

---

## Short Course Title: Scientific Project Management

## Descriptive Course Title: Modular Web-based Project Management Course for U.S. Geological Survey Science/Technical Leads and Project Managers

### Lead Subject Matter Expert

Name: Victoria Christensen [vglenn@usgs.gov](mailto:vglenn@usgs.gov)  
612-759-3187 (cell)  
2280 Woodale Ave  
Mounds View, MN 55112  
Role: TEL and blended course development  
Supervisor: James Stark [stark@usgs.gov](mailto:stark@usgs.gov)

### Contributing Subject Matter Experts

Name: James Morris [jrmorris@usgs.gov](mailto:jrmorris@usgs.gov)  
614-430-7702  
Director, OH-MI WSC  
6480 Doubletree Avenue  
Columbus, OH 43229-1111  
Role: Oversight and advice on Project Management  
Supervisor: Leon Carl [lcarl@usgs.gov](mailto:lcarl@usgs.gov)

Name: Douglas Verdouw [dverdouw@usgs.gov](mailto:dverdouw@usgs.gov)  
701-250-7403  
825 Interstate Avenue  
Bismarck, ND 58503  
Role: Budgeting and Basis+ demos  
Supervisor: Gregg Wiche [gjwiche@usgs.gov](mailto:gjwiche@usgs.gov)

## **ROI – Return on Investment**

The estimated savings in travel cost (airfare, per diem, and time in travel) for 30 participants plus two trainers for each course offering would be approximately \$50,240, making a TEL course a clear benefit to the USGS. In addition there would be improvements in timeliness and efficiency in completing projects.

## **Brief Curriculum Vitae for each Subject Matter Expert**

See Appendix 1.

## **Problem Statement**

Project Management was identified as a priority skill needed by U.S. Geological Survey staff by the Midwest Regional Leadership Team in and in the Achieving Cost Efficiencies for Science report: [Science Work Processes: Considerations and Recommendations for Improving U.S. Geological Survey Science](#). Improvement in Project Management skills is needed to maximize efficiencies in conducting and communicating our scientific data collection and research. The Midwest Region chartered a team in 2013 to develop a project management training course that will have a positive, measurable impact on science activities and will provide a be a cost-effective strategy for improving management skills throughout the USGS. Although project management courses exist, they do not provide the specific and customized information needed by USGS scientific project managers. There is a growing need for USGS project managers to successfully manage projects, use common terminology, improve the quality of communication and collaboration, and efficiently and consistently plan and execute work. A Scientific Project Management Course will help reduce cost overruns, late delivery, and poor performing projects as well as improve customer and cooperator interactions.

## **Course Summary**

This course serves as an introduction to project management for scientists and technical staff in the USGS. The eight modules cover project initiation, execution, and closure, as well as fundamental science practices, working with teams, and leadership.

## **Previous Presentations**

In February, 2013, Jim Morris taught Project Management to staff at the Minnesota Water Science Center (MN WSC). Jim used course materials from his graduate project management course. The MN WSC personnel evaluated the course and it was useful to early-career project chiefs and newer personnel. Other comments included incorporating

more specific USGS examples and including dynamic exercises. These and other suggestions were incorporated into the course outline.

## **Existing Course Materials**

- The MWR Project Management Training Team detailed course outline (updated 2014)
- Project Management PowerPoint slides from Jim Morris' Graduate course (updated 2013)
- Program and Project Management Powerpoint slides from Bill Werkheiser's Microsoft Project based training (updated 2004)
- Basis+ training Powerpoint Slides: <http://internal.usgs.gov/ops/basis/>

## **Intended Audience**

The target audience would be entry-level project chiefs (for example, in Water Science Centers, a hydrologist GS-7 to GS-9) or project managers that are new to the USGS. During the first three years, the audience may include more experienced project chiefs, to introduce them to the common project management terminology.

## **Anticipated Results and Benefits**

A Scientific Project Management Course would advance the project management core competency within the USGS and would provide standardized training in the processes, practices, and tools available to project managers. The course would promote collaboration, communication, and knowledge sharing among students. The course would promote the use of common terminology to improve the quality of communication and collaboration as well as training project managers to efficiently and consistently plan and execute work. Benefits include a significant reduction in cost overruns, late delivery, and poor performing projects and an improvement in customer satisfaction. It is estimated that two course offerings would occur per year, with 15 participants each. The delivery of this course in a TEL format would be the most cost-effective method of training multiple scientist and technical staff from multiple centers.

## **Applicability of Course to Multiple USGS Mission Areas**

Project Management is a fundamental skill needed in all USGS Mission Areas. Consistent training in scientific project management across USGS disciplines will support the USGS goals of science quality and integrity. The training's modular design can be customized by discipline or Science Center, offering flexibility and specific training according to discipline or Science Center need.

## How the Course Will Support the USGS Science Strategy

USGS can make enormous scientific contributions by integrating our science mission areas (ecosystems, energy and minerals, core science systems, global change, hazards, environmental health, and water). The USGS Science Strategy strives to better incorporate integrated science into USGS practices and culture. This requires common training, terminology, and core practices in Scientific Project Management to better communicate among scientists, Science Centers, Regional and Headquarters staffs. A uniform and consistent training course in Scientific Project Management will offer an opportunity to help USGS scientist and project managers to achieve solutions to the increasingly complex issues that the USGS is asked to address.

## Timeline

Task	Staff	FY 2014				FY 2015							
		June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	
Evaluate existing materials	Christensen	■											
Develop new ppts examples and activities	Christensen PM team	■	■	■									
Scripts for ppt presentations	Christensen		■	■	■	■							
Review of ppt by PM training team	PM training team				■	■							
TEL Certification of SME, travel to Denver	Christensen				■								
Record animations for software demos (basis+)	Christensen VerDouw				■	■							
Incorporate video into ppt	Christensen Morris						■						
Convert Modules to TEL format:	MN IT staff												
Module 1 – Course Overview	Federer/ Van Heel						■						
Module 2 – Initiating a Project	Federer/ Van Heel						■						
Module 3 – Fundamental Science	Federer/ Van Heel							■					
Module 4 – Planning the Project	Federer/ Van Heel							■					
Module 5 – Working with a Team	Federer/ Van Heel								■				
Module 6 – Executing the Project	Federer/ Van Heel								■				
Module 7 – Closing the Project	Federer/ Van Heel									■			
Module 8 – Leadership	Federer/ Van Heel									■			
Draft evaluation questions	Lane Christensen										■		
Course Announcement	Lane												■

## Estimated Project Budget

This proposal requests 50% of the time and effort to develop a Project Management TEL course as indicated below.

Lead SME (Christensen): 1000 hours (salary and benefits)	\$50,000
MN WSC IT staff (under the direction of Christensen): 520 hours	\$20,780
SME (James Morris): 40 hours (in kind)	\$ 0
SME (Doug Verdouw): 40 hours (basis+ presentation)	\$ 2,000
Travel (2 trips to Denver, CO):	
Airfare	\$ 1,000
Per diem (\$222X10 days)	<u>\$ 2,220</u>
<b>TOTAL COST:</b>	<b>\$76,000</b>
Funds Requested from OED	\$38,000
Funds Provided by Midwest Region	\$33,000
Funds To Be Provided by MN WSC	<u>\$ 5,000</u>
<b>TOTAL FUNDING:</b>	<b>\$76,000</b>

## Estimated Number of Course Modules

There will be 8 course modules as listed in the Timeline.

## Course Updates

Course updates are anticipated every 2 years or more often if financial systems or software changes.

## Written Supervisory Approvals

See Appendix 2.

## Appendix 1. Curriculum Vitae for each Subject Matter Expert

### *Short Curriculum Vitae: VICTORIA GLENN CHRISTENSEN*

**EXPERTISE:** 20 years' experience in project management and past experience in financial management. Current projects include Fish Mercury in Voyageurs National Park Lakes, Water-Quality Benefits of Perpetual Conservation Easements, Environmental Effects of Agricultural Practices, Kabetogama Lake Nutrient Cycling.

#### **EDUCATION:**

**B.A. 1988** Hamline University, St. Paul (Management)  
**B.S. 1995** University of Kansas, Lawrence (Geology)  
**M.S. 1997** University of Kansas, Lawrence (Water Resources, Civil Engineering)

**U.S. Geological Survey Training Courses:** Biogeochemistry of Small Watersheds, Quality Control Sample Design and Interpretation, Statistical Methods for Environmental Data Analysis, Sediment Data Collection Techniques, Basics of Working With the News Media, Motorboat Operator Certification Course, Chirp (Sub-Bottom Profiling) Training Course, Basic Hydrologic Data Analysis Using S-PLUS

**Other Courses:** CE-Qual-W2 Hydrodynamic Water-Quality Modeling

#### **EXPERIENCE**

**1995 – 2014** Hydrologist and Project Chief, U.S. Geological Survey, Lawrence, KS and West Fargo, ND  
**1996** Teaching Assistant, University of Kansas, Lawrence, KS, Department of Geology  
**1993 – 1995** Research Assistant, University of Kansas Center for Research, Inc., Lawrence, KS  
**1992 – 1993** Assistant Comptroller, United Way of Douglas County, Lawrence, KS  
**1990 – 1992** Senior Environmental Billing Coordinator, Twin City Testing Corporation, Saint Paul, MN  
**1984 – 1993** Supervisor, Marshall's, Inc., Roseville, MN and Overland Park, KS

#### **OTHER APPOINTMENTS AND AWARDS:**

Mentor, USGS Mentoring Program (2013-14); Executive Board, NDSU Women's Club (2004-2010); President, NDSU Women's Club (2005-06); Member, Red River Basin Water-Quality Team (2002-2012); USGS Focus on Mission Award (2006); USGS STAR Award for high-quality report and proposal writing (2004); Member of the Geology Advisory Council at Northwest Missouri State University (2002); Trainer for Basic Hydrological Data Analysis in S-PLUS Course (2001); Advisor for Statistical Methods for Environmental Data Analysis Course (2001); USGS STAR Award for key role in the development of statewide real-time water-quality program in Kansas (2001); USGS STAR Award for publications, presentations, and innovative work on real-time water-quality (2000); USGS STAR Award for completing 5 significant reports in 6 months (2000); USGS Special Service Award for completion of hydrologic data records (1998); W.A. Tarr Award for meritorious work in Earth Sciences (1995); President-Sigma Gamma Epsilon, Kansas Chapter of the National Honor Society for the Earth Sciences (1994-95).

#### **RECENT PUBLICATIONS (of 50 full-length publications — see more at <http://profile.usgs.gov/vglenn>)**

Christensen, V.G., and Kieta, K.A., 2014, Assessment of conservation easements, total phosphorus, and total suspended solids in West Fork Beaver Creek, Minnesota, 1999–2012: U.S. Geological Survey Scientific Investigations Report 2014–5002, 16 p., plus app., <http://dx.doi.org/10.3133/sir20145002>.  
Christensen, V.G., Maki, R.P., and Kiesling, R.L., 2013, Evaluation of internal loading and water level changes: implications for phosphorus, algal production, and nuisance blooms in Kabetogama Lake, Voyageurs National Park, Northern Minnesota: Journal of Lake and Reservoir Management, vol . 209, p. 202-215.

**Short Curriculum Vitae: JAMES R. MORRIS**

---

**EXPERTISE:** Civil engineer and manager with 39 years' experience in positions of increasing responsibility in science, management, and administration of public agencies. Qualified by a consistent record of achievement in:

- Strategic Management and Planning
- Project and Program Management
- Information Technology Program and Management Information System Development
- Employee and Team Development

**EDUCATION:**

**B.S.1980**            **Ohio State University, Columbus (Civil Engineering)**  
**M.S. 1982**            **Ohio State University, Columbus (Civil Engineering)**  
**C.P.M. 1991**         **State of Arizona (Certified Public Manager)**  
**F.E.I. 2013**         **Federal Executive Institute (Leadership in a Democratic Society)**

**Other Relevant Professional Information:** 18 years teaching experience, college-level math, civil engineering, and project management, Franklin University, Phoenix College, Ohio Certified Public Managers Program, and Ohio State University

**EXPERIENCE**

**2003 - 2014**         Director, USGS Michigan and Ohio Water Science Centers, Lansing, MI and Columbus, OH  
**1992 - 1999**         Deputy Director, Chief of the Division of Water and Chief of the Division of Real Estate and Land Management, Ohio Department of Natural Resources, Columbus, OH  
**1986 – 1992**         Chief, Flood Management Section, Arizona Department of Water Resources, Phoenix, AZ  
**1978 – 1986**         Unit Supervisor and Project Engineer, Division of Water, Ohio Department of Natural Resources, Columbus, OH  
**1975 – 1978**         United States Army, Construction NCO, Artillery Surveyor – Ft. Stewart and Ft. Benning, GA

**Short Curriculum Vitae: Douglas A. VerDouw**

---

**EXPERTISE:** Administrative Officer with 11 years of experience providing professional guidance in the areas of payroll, procurement, budgeting, finance, property, and human resources. In addition to the North Dakota Water Science Center, I have provided assistance to Yucca Mountain (2007), Western Region Research (2008 – 2009), Iraq Water Resources (2011), Astro Geology (2013 – 2014), and the Great Lakes Restoration Initiative (2012 – 2014).

**EDUCATION:**

**B.S. 1981**            **University of Mary, Bismarck, ND (Business Administration)**  
**B.S. 1986**            **University of Mary, Bismarck, ND (Accounting, Computer Information Systems)**  
**M.S. 2000**            **University of Mary, Bismarck, ND (Management)**  
**M.S. 2004**            **University of Mary, Bismarck, ND (Business Administration)**

**Other Relevant Professional Information:** Certified Public Accountant (1999)

**EXPERIENCE:**

**2003 - 2014**        Administrative Officer, North Dakota Water Science Center, Bismarck, ND  
**2001 - 2003**        Accounting/Budget Specialist, North Dakota Department of Human Services, Bismarck, ND  
**1991 - 2001**        Auditor, North Dakota Office of State Tax Commissioner, Bismarck, ND

**Appendix 2. Written Supervisory Approval**

---



**United States Department of the Interior**

U.S. GEOLOGICAL SURVEY

Ohio Water Science Center

6480 Doubletree Avenue

Columbus, OH 43219-1111

**MEMORANDUM**

To: Allan Ward  
Program Manager – Scientific/Technical Training and OED Operations

From: James R. Stark /s/ James R. Stark  
Director, Minnesota Water Science Center

Subject: U.S. Geological Survey (USGS) Scientific Project Management Course

This correspondence is to convey supervisory approval for Victoria Christensen to dedicate 1000 hours, 50%, or 500 hours of which will be met for the subject initiative listed above. If initiative funding is awarded, 50% of Ms. Christensen's time will be funded by the Midwest Area and the MN WSC. This correspondence also conveys supervisory approval for assistance from MN WSC IT staff (Tom Van Heel and Joe Federer) for the conversion of course materials into TEL format.

Questions regarding this initiative should be directed to the subject matter expert, Victoria Christensen, at 701-277-0682, [vglenn@usgs.gov](mailto:vglenn@usgs.gov)

Cc:  
T.J. Lane, TEL Program Manager, OED



United States Department of the Interior  
U.S. GEOLOGICAL SURVEY  
Ohio Water Science Center  
6480 Doubletree Avenue  
Columbus, OH 43219-1111

MEMORANDUM

To: Allan Ward  
Program Manager – Scientific/Technical Training and OED Operations

From: Leon Carl  
Regional Director, Midwest Region

Subject: U.S. Geological Survey (USGS) Scientific Project Management Course

This correspondence is to convey supervisory approval for Jim Morris to dedicate 200 for the subject initiative listed above. If initiative funding is awarded, Mr. Morris' time will be funded by the MI-OH Water Science Centers.

Questions regarding this initiative should be directed to the subject matter expert, Victoria Christensen, at 701-277-0682, [vglenn@usgs.gov](mailto:vglenn@usgs.gov)

Cc:  
T.J. Lane, TEL Program Manager, OED

May 20, 2014

Memorandum

To: Leon Carl  
Regional Executive, Midwest Region

From: Gregg J. Wiche  
Director, North Dakota Water Science Center

Subject: Development of a web-based, blended-learning, modular Project Management Training Course

This correspondence is to convey supervisory approval for Doug VerDouw to dedicate 40 hours for the subject initiative listed above. If initiative funding is awarded, Mr. VerDouw's related salary costs will be covered during the further development of this Course.

Questions regarding this initiative should be directed to the subject matter expert, Victoria Christensen, Hydrologist, Minnesota Water Science Center ([vglenn@usgs.gov](mailto:vglenn@usgs.gov), 701-277-0682)

cc:  
Victoria Christensen