

Michael McDonough

From: Drewitz, Matt (BWSR) <matt.drewitz@state.mn.us>
Sent: Monday, July 11, 2016 2:48 PM
To: Susan Thornton
Cc: Michael McDonough; Mike Banker
Subject: RE: LCCMR Hearing Questions follow up for 005-A

Susan,

In response to your earlier follow up question, I have gotten in touch with Dr. Snyder for some additional context and also reviewed his previously submitted proposal. Your question related to how the datasets of 005-A: **Enhancing Targeted and Measurable Watershed Restoration and Protection** and the U of M Project **High Resolution Climate Projections to Aid Planning Efforts** could work together.

Both of these projects are important for understanding and managing water dynamics in Minnesota, although with different data inputs/outputs and associated landscape scales (square miles vs site specific). In relation to conservation practice implementation, Dr. Snyder's project could be helpful for the following

- Having more regional climatic data could help the need for different or more robust design standards for certain conservation practices that hold back, retain, or treat surface water runoff. Hence, data from Dr. Snyder's project could help inform SWCD and Watershed District staff designing and planning projects to engineer those projects to accommodate future flows predicted by climate models.
- Dr. Snyder's data could help inform water quality models like the Hydrologic Simulation Program Fortran (HSPF) model that is typically run at a major watershed scale (HUC-8). Better rainfall inputs could enhance the model's outputs, which in turn could realize more realistic water quality goals at this larger scale.
- Data from Dr. Snyder's model could help with culvert, ditch, and road designs by State and local organizations so that water conveyance infrastructure can handle future flow regimes while maintaining stable channels and preventing localized flooding or road and bridge wash-outs.

Dr. Snyder's project would improve precipitation inputs to large scale water quality models as well as help designers of water quality BMPs and stormwater infrastructure predict future flow regimes in the face of climate change. In contrast, our project fills a critical gap in developing fine-scale models and tools by accurately describing how water flows across the land at a detailed scale. These models and tools are used for targeting and siting water quality improvement projects, as well as measuring the water quality pollution reduction impacts of conservation actions.

The climate data is one additional piece of the water quality management pie and could help inform our project. But, the data outputs alone from Dr. Snyder's project would not allow the targeted tools mentioned in our proposal to be usable, as a hydro-modified DEM and resultant water flow network is required for these tools (ex. ACPF/PTMA, etc.).

The two proposals are complimentary to each other because they work on vastly different scales and are not duplicative in any way. Dr. Snyder's proposal is not appropriate for practice scale work, while our project does not work for larger scale climate change predictions. If the two projects were both funded, Minnesota would have a very powerful combination of future-looking climate models and an accurate description of water flows that would benefit all facets of water management in Minnesota.

Thanks again for your consideration of our project proposal. If you have any additional questions, please drop me a line.

Sincerely,

Matt Drewitz

From: Susan Thornton [mailto:susan.thornton@lccmr.leg.mn]
Sent: Thursday, June 23, 2016 12:28 PM
To: Drewitz, Matt (BWSR) <matt.drewitz@state.mn.us>
Cc: Michael McDonough <michael.mcdonough@lccmr.leg.mn>; Mike Banker <mike.banker@lccmr.leg.mn>; BeckerKudelka, Angie (BWSR) <angie.beckerkudelka@state.mn.us>; Thomas, Doug (BWSR) <Doug.Thomas@state.mn.us>
Subject: RE: LCCMR Hearing Questions follow up for 005-A

Matt,

Thanks but wrong answer. The Peter Snyder proposal was done at the request of the agencies to provide localized climate data for natural resource management.
How will these two data sets work together?
Susan

Susan Thornton
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From: Drewitz, Matt (BWSR) [mailto:matt.drewitz@state.mn.us]
Sent: Wednesday, June 22, 2016 4:34 PM
To: Susan Thornton <susan.thornton@lccmr.leg.mn>
Cc: Michael McDonough <michael.mcdonough@lccmr.leg.mn>; Mike Banker <mike.banker@lccmr.leg.mn>; BeckerKudelka, Angie (BWSR) <angie.beckerkudelka@state.mn.us>; Thomas, Doug (BWSR) <Doug.Thomas@state.mn.us>
Subject: LCCMR Hearing Questions follow up for 005-A

Susan,

Very much appreciated the opportunity to speak yesterday about the project 005-A: *Enhancing Targeted and Measurable Watershed Restoration and Protection*. I wanted to follow up on a couple questions that came up yesterday regarding the project. Julie Westerlund, DNR, did some research and provided me with some additional information to following:

- Rep. Wagenius inquired about project #E-135 (http://www.lccmr.leg.mn/proposals/2016/2016_proposals_by_topic_area.html) that was submitted by Peter Snyder last year from the U of M. This project deals with a large climate models and Snyder's project looks at downscaling those models to a smaller scale. This project is much different than project 005-A that I spoke to yesterday and does not involve hydro-modification of the LiDAR DEM. The data outputs from Snyder's project are very different and would not be useful for the work we would like to accomplish with our project.
- Michael asked us yesterday about how project 005-A relates to work that Steve Kloiber is working on regarding the National Wetlands Inventory (NWI) project. Julie Westerlund spoke with Steve yesterday and he said he has done testing and that the data were "relatively insensitive" to hydro-modification for his project, but he would

Attachment #2

welcome using data from project 005-A to help validate and improve his work. Steve has not created a hydro-modified DEM with the NWI project.

If you have any additional questions or would like any further clarification on project 005-A, just let me know. Again, thank you for your consideration.

Sincerely,

Matt Drewitz

Matt Drewitz
BWSR Reporting and Outcomes Coordinator
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Attachment #2

Diana Griffith

From: Bob Ebsen <bob@wildlifesciencecenter.org>
Sent: Monday, July 11, 2016 4:21 PM
To: Diana Griffith
Subject: Wildlife Science Center Proposal 2017
Attachments: LCCMR Budget July 2016.xlsx; Wildlife Science Center Activity Guide.doc; Wildlife Science Center main proposal.docx

To Whom It May Concern,

Thank you for the opportunity to submit the Wildlife Science Center's proposal. Please let me know if you need any additional information.

Peggy Callahan
651-464-4994
peggy@wildlifesciencecenter.org



PROJECT TITLE: "Real Wildlife, Real Conservation, Real Impact"

I. PROJECT STATEMENT

There is a growing disparity between the time kids spend indoors wired to technology and the time they spend outside experiencing and learning from the environment. According to marketing research conducted by Childwise, children ages 5-16 spend between 6-8 hours on "screen" each day compared to 3 hours in 1995. In addition, Nature Conservancy data suggests that 10 percent of youth say they spend time outdoors every day. The poll also showed youth that appreciated natures were those that had a personal experience in nature; clearly getting kids a meaningful experience outside is critical to getting them engaged in conversation about environmental issues.

Children are naturally drawn to animals – Wildlife Science Center programs foster this curiosity and wonder while teaching respect for all living things. Our approach to environmental education is a simple one, we use the natural world and all of its components to reinforce educational objectives set by the State of Minnesota. We reference state and national education standards when designing programs and strive to enhance what teachers are already covering in the classroom. Numerous studies have shown that when objectives are reinforced with real-life experiences, the students have a greater level of understanding and retention. Our programs not only tap into children's natural attraction to animals, but we leverage student's affinity for technology to bridge the gap between screen time and outdoor time, and introduce a means to benefit from both.

The Wildlife Science Center uses live wild animals to generate interest, inspire participation, illustrate systems, and explore the interface between natural systems and humans systems in order to move toward the goal of informed environmental decision making by youth.

"Teaching children about our natural world should be treated as one of the most important events in their lives." –Thomas Berry

II. PROJECT ACTIVITIES AND OUTCOMES

Activity 1:

Introduce 7500 new students to environmental education programming through off-site education programs, using live animal ambassadors and existing curriculum.

Description:

WSC encourages the expectation on the part of those who work with and influence children that all students, regardless of gender, race, family background or previous academic record can be "good" at school and it is this expectation that forms the basis of all our programs.

Typically group sizes on or off-site range from 30-180, although class size is sometimes as small as six for special education students. The largest number of students participating at once was 10,000, through a virtual field trip where 67 schools from 20 states were linked via satellite in partnership with "Bell LIVE!" an educational science program from the Bell Museum of Natural History.

Goals for the Wildlife Science Center's Education Program

The goals of the programs are as follows:

- To provide equal access to programs for students of all socioeconomic and cultural backgrounds, and of all developmental abilities;



Environment and Natural Resources Trust Fund (ENRTF)

2016 Main Proposal

Project Title: "Real Wildlife, Real Conservation, Real Impact"

- To make a connection between a student's natural affinity for animals and science.
- To use scientific research to create a *living classroom* for all students;
- To provide examples of science careers which are gender-fair and without ethnic or racial bias;
- To communicate a multi-disciplinary ethic of environmental conservation.
- To expose non-traditional students and those who may not be college bound to the field of science and the complexities of the natural world;
- To offer teachers a useable curriculum that can be suited to meet the diverse needs of their student's levels and abilities while supporting key teaching objectives.
- Most of WSC's students visit only one or two times per year, hence we are dependent upon teacher/student feedback. Teacher evaluations are overwhelmingly positive, and the letters we receive from both teachers and students provide assurances that we are achieving our goals of providing fun, accessible science.

Activity 2:

The Wildlife Science Center seeks funding to bring an additional 10 schools on-site each year for three years. Using the educational framework outlined above, WSC's on-site programs are made more impactful by the diversity and number of resident wildlife. WSC is home to the largest population of captive wolves in the lower 48, and the only facility in Minnesota to house both endangered red wolves and Mexican wolves as a part of the national effort to reintroduce these species. In addition, WSC houses black bears, all three wild cats, all of MN's wild dogs, raptors and other small, local carnivores, plus a porcupine.

Activity 3:

Evaluation Plan

Measurement of results

- WSC tracks both quantitative and qualitative data from all who attend programs. We use this information to improve our offerings in the future. ; WSC serves between 15,000-20,000 students annually through both on and off-site program; this program would serve to expand our impact.

Assessments evaluate each student's progress towards program objectives and provide information to make program adjustments. This assessment comes in two forms:

- Instructors assess the understanding of scientific method displayed in the actual project that each student conducts
- The overall experience of the student is assessed, since it must be positive and supportive in order to be lasting. Every effort is made to foster a positive experience throughout the program.. Science is taught under the guise of fun.



Project Strategy:

Schools and school districts, community project leaders aka Mpls Parks and Rec, Camp Sunrise-will provide assistance in identifying and reaching target audiences;
Wildlife Science Center Staff and education specialists will provide the teaching along side the school and program teachers;

Project Impact:

WSC:

- Offers programs that enhance and illustrate classroom lessons;
- Adjust the content and pace the educational program to meet the specific needs of the audience;
- Receives an overwhelmingly positive response of visiting teachers;
- Provides instruction that ensures teachers are both willing and able to use a variety of material to develop interest in science and to increase their knowledge of science;
- Dispels the "white-lab-coat-only" myth about science;
- Teaches field techniques for collecting data that encourages interaction and offers new information to teachers to take back to the classroom;
- Offers women biologists/instructors who act as gender-fair role models in science;
- Teaches using the wolf as an umbrella species, not a stand-alone animal, that leads naturally into ecosystem-based education;

Our curriculum employs hands-on experiences and examples relevant to students, uses gender-fair, multi-cultural materials and includes science concepts tailored to students' developmental levels. This type of programming is in high demand, since wolves are an excellent method that teachers can use to spark students' interest in learning. WSC offers both on and off-site interactive presentations and overnight camping experiences to Minnesota youth by partnering with schools interested in bringing science education to life.

Past results

- Our extremely high rate of return (86%) serves as our best indicator of success. Our goal is to maintain a 75% return rate, with attendance comprised of 38% children of color and 55% female. WSC serves between 20,000-30,000 students annually through both on and off-site programs;
- Each student learns group interaction skills as well as independent learning.

Students incorporate the following skills into their experience: posing questions, hypothesizing, design, conduct and present an experiment, critical thinking to connect evidence and explanations, and finally to communicate these all to fellow students

WSC strives to maintain high return rates and rates of diversity while continuing to present accessible science programs to students of all ages.

Timeline requirements:

This project has a three year timeline in order to reach the target number of schools and students through on and off-site programs, using ambassador animals and experiential learning.

2016 Detailed Project Budget

Project Title: Real Animals. Real Conservation. Real Impact.

IV. TOTAL ENRTF REQUEST BUDGET for 3 years

BUDGET ITEM	AMOUNT
Personnel: Project Coordinator - 50% FTE salary only; 36 months; (\$35,000 annually) Education Specialist2 - 75% FTE salary only; 36 months; (\$37,500 annually) Additional benefits and taxes - (15,375 annually) Personnel Additional benefits and taxes paid for by the Wildlife Science Center in-kind support.	\$ 263,625
Professional/Technical/Service Contracts: Augment current STEM based curriculum focused on predator/prey relationships, biodiversity, wildlife management, physical and behavioral adaptations, and Minnesota wildlife using up-to-technology including equipment to live stream video \$12000, 10 trail cams \$2700, Laptop plus protective case \$1500, 2 Flat screen TVs plus sound system \$1500, 10 microscopes \$6000, 10 digital tablets plus cases \$3500, *Outreach Education Artifact Box \$1000, Resource books for classrooms \$2800, Cameras for student use \$1500 Marketing support; (\$5000 annually = \$15000 total over 3 years). Project data collection and evaluation (\$15,000 annually = \$45000 total over 3 years)	\$92,500
Equipment/Tools/Supplies -	
Acquisition (Fee Title or Permanent Easements): <i>In this column, indicate proposed number of acres and name of organization or entity who will hold title.</i> N/A	N/A
Travel in MN: Roundtrip mileage from the Wildlife Science Center to the location of the outreach program using the federal mileage compensation rate (Estimated 60 miles roundtrip at the current federal mileage compensation rate of \$0.54 per mile for 75 programs over a three year period =	\$2,430
Additional Budget Items: Liability insurance (\$6250 annually)	\$ 18,750
TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND \$ REQUEST =	\$ 377,305

V. OTHER FUNDS

SOURCE OF FUNDS	AMOUNT	Status
Other Non-State \$ To Be Applied To Project During Project Period: Foundation Grant \$10,000 pending Member support \$5000 pending	\$15,000	Pending
Other State \$ To Be Applied To Project During Project Period:		N/A

In-kind Services To Be Applied To Project During Project Period: Staff and education volunteer time	N/A
Funding History:	N/A
Remaining \$ From Current ENRTF Appropriation:	N/A