

1.01 PROJECT SUMMARY SHEET

PROJECT TITLE NAME: The Prairie Waters Education and Research Center

**NAME AND ADDRESS, TELEPHONE AND E-MAIL OF LEAD PROJECT SPONSOR/
SUBGRANTEE:**

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STATE: North Dakota **WATERSHED:** Statewide

HYDROLOGIC UNIT CODE: NA

HIGH PRIORITY WATERSHED:(YES/NO): NO

TMDL UNDER DEVELOPMENT: PENDING ____ **IMPLEMENTATION** ____

PROJECT TYPES WATERBODY TYPES NPS CATEGORY

- | | | |
|---|---|---------------------------------------|
| <input type="checkbox"/> STAFFING & SUPPORT | <input type="checkbox"/> GROUNDWATER | <input type="checkbox"/> AGRICULTURE |
| <input type="checkbox"/> WATERSHED | <input type="checkbox"/> LAKES/RESERVOIRS | <input type="checkbox"/> URBAN RUNOFF |
| <input type="checkbox"/> GROUNDWATER | <input type="checkbox"/> RIVERS | <input type="checkbox"/> SILVICULTURE |
| <input checked="" type="checkbox"/> I&E | <input type="checkbox"/> STREAMS | <input type="checkbox"/> CONSTRUCTION |
| | <input type="checkbox"/> WETLANDS | <input type="checkbox"/> RESOURCE |
| | <input type="checkbox"/> OTHER | EXTRACTION |
| | | <input type="checkbox"/> STOWAGE/LAND |
| | | DISPOSAL |
| | | <input type="checkbox"/> HYDRO |
| | | <input type="checkbox"/> OTHER |

PROJECT LOCATION: STATEWIDE X **LATITUDE** ____ **MIN.** ____ **LONGITUDE** ____ **MIN.**

SUMMARIZATION OF MAJOR GOALS: The purpose of this proposal is to continue the funding of the highly successful Prairie Waters Education and Research Center. The Center is a statewide resource for water education, research, and management. This center has four main areas of focus: educational activities for students, teacher workshops, professional workshops, and research on aquatic biological resources. It has partnered with a variety of government agencies to enhance their programs as well as local schools to provide quality educational activities. This Center is based in a former school building, thus providing a physical presence for the Center.

**FY2020 319 Funds requested: \$390,000; Match \$260,000; Other Federal Funds \$0;
319 Funded Fulltime Personnel: 1.62**

Length of proposal: 33 months from Oct. 1st, 2020 to June 30th, 2023

Total Project Cost: \$650,000

PROJECT DESCRIPTION:

We aim to raise awareness of non-point source (NPS) pollution through the activities of our Center dedicated to water education. We are a learning center dedicated to water education that serves a wide variety of clientele including students, teachers, and resource personnel.

Prairie Waters is dedicated to collaboration working with agencies such as the Department of Environmental Quality (DEQ), the State Water Commission, the North Dakota Game and Fish, the North Dakota Department of Parks and Recreation, and state Soil Conservation districts to produce a set of activities that cover a range of water issues in relation to NPS pollution. This center works with currently established educational entities such as Project Wet, River Watch, and Envirothon to provide educational experiences about water issues to a wide range of clients. Activities related to the Center include

- Educational activities for school groups
 - Bringing in school groups to the Center for educational activities related to water and NPS pollution.
 - Doing outreach programs for schools and other educational entities.
 - Acting as a support center for the River Watch program in North Dakota.
- Provide workshops for teachers in water education.
- Provide a site for workshops for resource professionals.
- House a research lab that addresses water issues in North Dakota.

This proposal is being written to extend the 319 grants awarded to Prairie Waters in past years. Our current award will take us to September 30, 2020, three months into fiscal year 2020. We anticipate that this proposal will add 36 months of operation which should take us to Sept 30th, 2023. We are very appreciative of the support from the 319 program.

2.0 STATEMENT OF NEED

2.1 Non-point source pollution is a problem that can have many negative effects on the state's water resources. It is important that the causes and effects of NPS pollution are well understood by citizens of our state. Knowledge of not only what NPS pollution is,

but also how the amount of NPS pollution is affected by a wide variety of water issues ranging from flooding, to farming practices, to drought, to wetland drainage is important. Our Center examines these components of NPS pollution in a variety of ways. The Center gives K-12 students hands on activities that demonstrate many features of NPS pollution. An excellent example of this is the River Watch program which is organized and run by the Center. The program engages high school students in doing river chemistry monitoring on rivers and streams in North Dakota. We have recently entered into a collaboration with the International Water Institute to assist them in their training of River Watch school groups in macroinvertebrate collection techniques for water monitoring. We also partner with other entities in the state that focus on NPS to deliver quality education to both youth and professionals. The Center addresses Task 1 for the Information and Education Objective in the North Dakota NPS Management Program Plan: 2015 - 2020. We deliver a balanced statewide program that addresses NPS issues and work with local resource managers to better understand the implications of NPS pollution.

An important focus of all our activities with students will be active participation in their learning and, whenever possible, getting them outside and either next to, on, or in the water. Educational research has shown that these types of active learning experiences do a better job of engaging students and lead to a better understanding of scientific principles.

Another need this Center fulfills is to provide teachers the information and activities to help educate their students on water related issues. Even many high school science teachers with a strong Biology background have little formal training in water issues. Most elementary school teachers have very little science training at all. By providing teachers with workshops and having them participate in activities with their classes we facilitate teacher knowledge in water issues in general and NPS in particular.

The Center also acts as a place to bring resource professionals together for workshops and discussion related to NPS pollution. We have held workshops for NRCS and Soil Conservation District personnel on several NPS issues from Bio Assessment techniques to proper water quality sample collection.

While there may be some concern about overlap between the Center and the other NPS educational programs such as Project WET, Envirothon, and ECO Ed. camp; we see this as a synergistic relationship that has strengthened all programs. We held a joint summer workshop with Project WET where we brought over 30 teachers together for watershed information and training. We have become involved in the Envirothon program, helping to prepare and run the aquatics portion of the program. For the past six years we have helped with the Ransom County ECO Ed. program. In addition, we

have helped with the Cass County ECO Ed., the Adams County Eco-ed, and the Slope/Hettinger County ECO Ed. programs.

2.2 The Center targets a wide audience with three main areas. The first, school groups, are an excellent audience for our Center because these students are the future of our state and instilling knowledge of water issues will produce a more concerned and informed group of citizens. The second area, teachers and educators, are also important targets for our Center. Elementary education teachers especially have little or no training in NPS pollution and water issues education. To put it bluntly, teachers are more likely to teach subjects that they are familiar with and understand themselves. Providing them with information and support will greatly increase awareness and lead to more classroom activities on water issues. The collaborations with other programs such as Project Wet, Envirothon, and River Watch play a strong role in reaching both school groups and educators. Finally, working with resource personnel, farmers, and producers will allow us to provide a service to several state agencies and to North Dakota's agricultural businesses.

3.0 PROJECT DESCRIPTION

As stated earlier, the Center has four main areas of focus. A further description of those areas follows plus you can visit our website: <http://www.vcsu.edu/prairiewaters/>.

Educational activities for school groups – Our work with school groups is a combination of onsite activities at Prairie Waters and outreach programs to accommodate schools who may not be able to travel to Prairie Waters. A variety of activities are done at the Center, others are hands-on field trips to any one of several aquatic resources in the near vicinity of the Center. Examples of some of the subjects covered in our activities are watersheds, aquatic macroinvertebrates, flooding, fish, biomonitoring, stream erosion, and wetlands studies to name a few.

Primarily our efforts have centered on “one-time” engagements with school groups. For instance, the Enderlin third graders may come out to our facility for a day and we do 4 – 6 different activities with them. We usually see them once a year. In our proposal we started a pilot program to do more long-term interactions with particular school groups. The idea is instead of just once a year, set up a sequence of several trips with a group of students to do more in depth education on specific topics related to water quality and NPS. This is beneficial in several ways:

- We schedule these in late fall through the winter and early spring. This is normally a time where we are not well utilized.
- It will strengthen our working relationship with the schools. Not only does it involve the teacher but we will need to have buy in from the administration also.

- Most importantly it will be a better educational experience for the students. We will be able to go more in depth and stress areas related to NPS.

This past school year (18-19) we worked with Litchville-Marion school to bring their 3rd – 6th graders, a total of 38 students into this program. They come out six times, once a month from November to April. It worked out well and we are repeating it again this year. As we work out the details we are hoping to expand it to other schools. There are several other centers that have had success with this type of arrangement. Sully's Hill National Game Preserve has an arrangement with Devils Lake schools and the Prairie Wetlands Learning Center in Fergus Falls has an onsite 4th and 5th grade program where students from Fergus Falls schools come out for half a day as part of their curriculum. Our current one-day approach will continue because there are many schools that are just not close enough to Prairie Waters for the multiday approach to work. We hope to see in the future a good blend of the two approaches at our center.

We also do summer programs with kids. We run a couple of day camps that run three days each. One is for 5th and 6th graders and is titled "Splashin Around". The other is a fishing camp for 7th and 8th graders. We also have done activities at the 4-H camp in Washburn in past summers.

One of the prime responsibilities of the Center is to act as the coordination center for River Watch. River Watch is a program that involves a team of high school students in river monitoring. The objectives of the program are as follows:

- Improved citizen awareness and understanding of watersheds and proper land and water stewardship practices.
- Sustainable citizen based, scientifically sound monitoring using standard methods, equipment, and training.
- Availability of useful, reliable, comparable water quality data for analysis, evaluation, and decision making.
- Sound resource management decisions based on quality data and informed discussion.

The students take water quality measurements in a river or stream in their area and are encouraged to examine how certain factors affect the water quality. This program does an excellent job of introducing students to water quality parameters and what they mean in relation to NPS pollution. We provide training for the teacher and students at the Center and are available to visit the school as needed for trouble shooting and support services. In addition, the Center will purchase the supplies needed for the monitoring and supply it to the schools. If a school decides to leave the program we can take back the equipment and provide it to another school. We also cover 60% of the school's cost for travel and substitute teachers, meaning the school is responsible for 40% of the cost. This ensures that schools have a commitment to the program. Current River

Watch participating schools are: West Fargo, Mayville-Portland-Clifford-Galesburg, Fargo Oak Grove, Montpelier, Stanley, and Linton-Hazelton. One of the examples of success for this program has been our River Watch presentations at the 2012, 2014, 2016, and 2018 North Dakota Water Quality Monitoring Council Conference. We had several schools give power point presentations on their projects to a room full of resource professionals; feedback from both the students and the attendees to the conference has been overwhelmingly positive.

We have added a new initiative to River Watch. We recently become aware of an initiative from the Stroud Water Research Center called EnviroDIY (see their website at <https://envirodiy.org/>). This is meant to be a low-cost do-it-yourself environmental science and monitoring program. We are using EnviroDIY primarily as a source of information and components for stand-alone monitoring stations. They developed a low-cost computer board for data logging which we used to design our own stream monitoring system. By combining the data logger with various probes, River Watch groups can have their own monitoring station that is recording long term data over months. The station has a battery that is recharged with a solar panel which enables it to be an unattended station that takes readings at specific time intervals. It has a wifi interface so someone can come around and download the data at a regular interval. We are currently working with a system that takes readings every 2 hours which provides 12 readings per day. One of the drawbacks of traditional River Watch data collecting is that many of the schools have a hard time collecting enough data during the school year. Often they only get out to sample 3 or 4 times in the Fall or Spring. With the data logger, instead of 3 or 4 readings at different points in time, the groups would have many data points to analyze. We experimented with two prototype units in the Fall of 2018 and in August 2019 had a workshop for Teachers interested in using the monitoring station. In the Fall of 2019, we installed 6 stations, one at Prairie Waters in Spring Creek and the other five in various rivers and streams around the state. The rivers or streams are listed below along with the school that is using it.

- The James River near Montpelier; Montpelier High School
- Swan Creek near Casselton; Central Cass High School
- Souris River in Minot; Minot High School
- Hay Creek in Bismarck; Bismarck High School
- Middle Branch of the Goose River; Mayville Portland C-G High School

We are hoping that the data and operation of these stations will help us improve and perfect our system. We are developing a manual on the design and use of the station along with ideas for class activities that utilize the data. We have included funding in this proposal to continue this initiative (see Task 6 in section 3.2 of this document).

Teacher training – The Center provides workshops in water education for teachers. These include workshops for Project Wet and training for River Watch, but also will include other workshops. We will hold at least one River Watch symposium where teachers and their students will come and present their work. This workshop takes place during the school year, most likely in late Fall or early Spring.

We are also looking at developing pre-service workshops for students in our Science education programs and elementary education programs. We see the Center as being a very useful resource for area teachers.

Professional workshops – The site will provide an avenue for agencies to provide training related to water management issues. For instance, we have held a workshop on biomonitoring for Soil Conservation District (SCD) personnel and other resource professionals. This worked particularly well since the VCSU Macroinvertebrate Lab is the contract lab for the DEQ’s aquatic macroinvertebrate biomonitoring program. Other workshops included a daylong seminar titled “Water 101” which covered basic water quality information and a water quality sampling workshop for training professionals on how to properly take a water quality sample. We will work with personnel from the NRCS and the soil conservation districts to identify and provide needed workshops. We have a workshop in either late April or early May with the DEQ establish a certification process for water quality sampling. We will continue to refine this process.

Summary of accomplishments - Below is a summary of the number of people served over the last 4 years. We saw a slight downturn in number of students served in FY 16-17, but so far in FY 17-18 and FY18-19 those numbers have rebounded very well.

FY	Dates of Fiscal Year	Students	Teachers	Other	Total
FY 15-16	July 1, 2015 to June 30, 2016	2,236	158	110	2,504
FY 16-17	July 1, 2016 to June 30, 2017	1,966	189	122	2,277
FY 17- 18	July 1, 2017 to June 30, 2018	2,562	175	64	2,801
FY 18-19	July 1, 2018 to June 30, 2019	2,578	164	118	2,860

Table 1. Overview of participants in Prairie Waters activities by fiscal year.

Here is a list of different activities we have done over the last 4 years.

FY 15-16

- STEM Teacher’s workshop
- Water Sampling Certification workshop
- Prairie Waters and Red River Water Festivals
- Eco Ed camps
- West Fargo 7th grade Bio Blitz
- Midkota and Lamoure Wetland fall, winter and spring visits

- Helga Sorenson Great NW Energy Coop—teacher in-service Williston.

FY 16-17

- 4-H Summer Camp
- Presentation to Jamestown and Valley City Kiwanis
- STEM Teachers Workshop
- Eco Ed camps
- VCSU Elementary science methods students.
- Midkota school came for the wetland fall, winter, spring.
- Water 101 – included professionals from ND Public Service commission, Grand Forks, Foster and McLean SCD, NDDoH, and Ducks Unlimited.
- Water Sampling Certification workshop
- STEM for girls in Jamestown.

FY 17-18

- VCSU and NDSU Elementary science methods,
- Eco Ed camps
- Pilot program with Litchville-Marion grade school
- LaMoure Environmental science is coming for the wetland study.
- Jamestown STEM for girls
- Presented at ND Science and Math teacher’s convention.

FY 18-19

- Water Festival: Oakes, Montpelier, Lisbon, Enderlin, Maple Valley, LaMoure, Hope-Page
- Project WET Wonders of Wetlands Teacher’s Workshop:
- Summer Camps
- Litchville-Marion 3rd-6th grades Elementary Enrichment: monthly trips to Prairie Waters (6 trips)
- Eco Ed activities for five different counties; Barnes, Ransom, Stutsman, Slope/Hettinger and Adams
- Red River Water Festival;
- Water Sampling Certification workshop

VCSU Macroinvertebrate Lab Research – This research lab focuses on aquatic biological resources and water quality in North Dakota. It is currently the identification lab for the DEQ’s aquatic macroinvertebrate biomonitoring program and has had many contracts and grants related to North Dakota waters and water quality. In addition, the lab oversees two popular websites that focus on aquatic macroinvertebrates found in North Dakota waters (www.waterbugkey.vcsu.edu and www.ndfreshwaterinverts.vcsu.edu). These sites were developed by a previous 319 grant and are a valuable resource for the Center. Much of the information, data, and

even biological samples from these projects and future projects would be available for use by the other three areas of focus for the center. *This proposal does not include any direct funding for this component of the Center.* It is the responsibility of the Center Director to find research funds. In the past four years the Macroinvertebrate Lab has brought in approximately \$100,000 in grants and contracts from entities such as the North Dakota Department of Health, the North Dakota Game and Fish, and the Army Corp of Engineers. The fact that the Center and the Macroinvertebrate Lab have separate funding accounts set up with the VCSU Business Office ensures that funding will be separate.

This Center is a part of Valley City State University. The Center is housed at the former Kathryn School, an approximately 14,000 square foot facility. This building has a unique architecture which makes it very conducive to our everyday functions. It has four large rooms with an area of approximately 1800 sq. ft. each. We have turned two of the large rooms into classrooms for onsite educational activities. A third room has been converted to lab space for the VCSU Macroinvertebrate Lab. The fourth room is used primarily for storage. The building also has a large common area in the center of the building. We use this for displays and educational dioramas. We have developed educational displays on such topics as “What is Non-Point Source Pollution?”, “Mussels of North Dakota Rivers”, and “What is the Value of a Wetland?”. Kathryn is located 17 miles south of Valley City in the beautiful Sheyenne River Valley and is within a 10 mile radius of a variety of aquatic resources including the Sheyenne River, Clausen Springs and Clausen Springs Dam, Little Yellowstone, and several large wetlands.

The Center has an advisory board to oversee its work and provide input for future directions. It meets twice a year to review the work of the Center and offer suggestions for future improvement. A list of current board members is included in the Coordination Plan of this document, section 4.1.

3.1 Goal. The mission of the Prairie Water Education and Research Center is to provide a site dedicated to water education, research, and management in North Dakota. In addition, there is currently much concern and emphasis on the quality of Science, Technology, Engineering, and Math (STEM) education. This Center will take an active role in addressing those concerns. An important part of this mission is to have a broad reach across the state. Although we are based in southeast North Dakota we have made a commitment to provide our services across the state. We presented our “Water 101” workshop this past spring in Bismarck for NRCS, SCD, and other professionals in that area. We have presented several workshops in Fort Yates for teachers on the Standing Rock Reservation. We have presented at the Slope /Hettinger county ECO Ed. in Regent, ND and the Adams county ECO Ed. In Hettinger,

ND. We have schools come from as far away as Linton and Starkweather for our onsite activities.

3.2 Objectives/Tasks: Specific objectives and underlying tasks for the FY 2020 Prairie Waters Education and Research Center for the period of Oct. 1, 2020 – Sept. 30, 2023 are defined in this section.

Objective 1. Staff, assess and monitor the success of the Center.

Task 1. Staff the PWERC with a 42% time director, fulltime education specialist, one summer student employee, and 75% time staff person. Dr. Andre DeLorme, Professor of Biology and Director of the VCSU Macroinvertebrate Lab at VCSU, is the Director of the Center. He will receive a summer salary for 2 months from 319 funds (17% of his time) and will have 25% release time in his VCSU contract for Prairie Waters. This 25% release will be an inkind match for the project. He will be responsible for all major Center decisions and grant writing. He is also in charge of the research component of the Center.

The Education Specialist/Presenter is a fulltime position. This person is responsible for designing and delivering educational activities for student groups, developing and implementing teacher workshops, developing displays for the commons area, and day to day activities at the Center. The salary will be 75% 319 funds and 25% VCSU funds.

The Lab Manager/Presenter will oversee the day to day activities of the research lab in the Center as well as help present activities to school groups. This is a full time position with 75% of its time devoted to Prairie Waters; 50% paid by 319 funds, 25% paid by VCSU. The remaining 25% of the time is devoted to research and contract work which will be paid by research grants and contracts.

We will hire one summer student employee working approximately 400 hrs. at \$12 an hour. This would be a 0.20 FTE.

Product: An effective staff of 2.37 FTE for the Center, 1.62 funded by 319, 0.75 funded by in kind or match from VCSU.

Estimated Cost: \$447,686 = \$292,599 from 319 funds; \$155,087 match (\$98,074 – VCSU funds; and \$57,013 - inkind salary match)

Task 2. Advertise the Center to Educators and Schools throughout North Dakota. We will use pamphlets and other mailings along with a website to make educators aware of our facility

Product: Pamphlets and other promotional material plus postage. Travel to meetings.
Estimated Cost: \$1,200 – 319 funds

Task 3. Develop and administer assessment components. We will document all visitors to the Center to gauge the amount and type of usage the Center receives. In addition we will develop questionnaires and other assessment tools to for all workshops and educational activities.

Product: Questionnaires and documentation of usage.
Estimated Cost: \$296 – 319 funds

Task 4. Advisory board. The board will meet twice yearly to oversee the workings of the Center. Many of our board members can provide inkind match for travel and participation in meetings.

Product: Travel and meeting costs.
Estimated Cost: \$550 = \$0 319 funds; \$550 in kind match

Objective 2. Provide educational activities for school groups.

Task 5. Run the River Watch Program in North Dakota. We will focus on maintaining the schools we have and attract other schools with the EnviroDIY initiative. We will provide funds to partially cover the costs of travel, supplies, and hiring substitute teachers at these schools.

Products: Funds for misc. supplies (calibration solutions, repairs, and sampling items) along with 60% of the costs for transportation and hiring of substitute teachers at our 8 participating schools.
Estimated Cost \$14,550 = \$13,250 from 319; \$1,300 In-kind match (school contribution to travel and substitute teachers)

Task 6. Start the EnviroDIY initiative. We will introduce another component to the River Watch program that involves establishing monitoring stations on their stream or river. Includes funding for stations plus travel to workshops and travel for visiting the River Watch schools to advise and help set up the stations.

Products: Equipment to set up monitoring systems. By the time this grant takes place we hope to have 6 stations located at high schools across the state. We would like to add an average of two a year plus maintain the currently operating systems. Also includes funding to attend workshops on the EnviroDIY program.

Estimated costs: \$13,000 = \$13,000 from 319

Task 7. Provide onsite and outreach educational activities to North Dakota K-12 schools. Our goal is to have an annual average of 2500 - 3000 students served.

Product: For onsite activities this includes cost for local transport to area aquatic resources, materials for use in activities, and cost of transporting students to the center. Costs also cover travel for outreach activities.

Estimated Cost: \$35,850 = \$22,250 - from 319; \$13,600 In-kind match (school costs for transportation of students to center; \$3000 match from Barnes County Wildlife Federation).

Objective 3. Provide Teacher training related to water issues.

Task 8. Provide teacher training for River Watch

Product: An in-depth workshop for River Watch teachers in the summers of 2021, 2022, and 2023.

Estimated Cost: \$7,600 = \$5,500 in 319 funds; \$2,100 in kind match, (travel costs)

Task 9. Provide teacher workshops and training for Water education to pre-service and in-service teachers

Product: We will provide at least one workshop each summer for K-12 teachers with a focus on water quality education. These workshops will take place in the summer of 2021-2023.

Estimated Cost: \$6,850 = \$4,150 from 319 funds and \$2,700 in kind match.

Objective 4. Provide a site for Professional workshops.

Task 10. Present workshops and training to Resource professionals.

Product: A water quality sampling certification workshop and workshops/training activities for a variety of resource professionals including soil conservation district and NRCS personnel.

Estimated Cost: \$2,300 – 319 funds

Objective 5. House the VCSU Macroinvertebrate Research Lab.

Task 11. Provide the space for the lab and integrate components of the research, specimens and data for example, into the educational mission of the Center.

Product: Integration of VCSU Macroinvertebrate Lab into the educational aspects of the Center.

Estimated Cost: \$0, The work of the research lab will be funded by outside sources.

3.3 The milestone table below shows the timeline for the different tasks previously described. *All objectives and tasks are the responsibility of Prairie Waters.

Task/ <i>Responsible Organizations*</i>	Output	Quantity where applicable	FY20	FY21	FY22
Objective 1	Staff the Center	2.37 FTE			
Task 1 Staff the PWERC					
Task 2 – Market the Center	Identify and notify potential users of the Center	Try to bring in 2 new schools each year			
Task 3 Develop and Administer assessment	Gather assessment evaluation				
Task 4 Put together an advisory board that will meet twice a year	Create a working advisory board for the Center	8 – 10 people			
Objective 2	River Watch consortium in North Dakota	8 schools involved			
Task 5 Supervise River Watch program					
Task 6 Expand the EnviroDIY initiative with River Watch Schools	Functioning monitoring stations	8-10 schools			
Task 7 Provide onsite and outreach educational activities	On site and outreach educational activities	2500 – 3000 Students			
Objective 3	Workshops for River Watch participants	8 teachers + possibl new			
Task 8 Provide teacher training for the River Watch program					
Task 9 Provide Teacher workshops/training for pre-service and in-service teachers	Improved teacher preparation in water education and NPS pollution	At least one each summer			
Objective 4	Workshops and/or training for Resource Personnel	At least one each year			
Task 10 Provide Workshops for Resource Personnel					
Objective 5	Materials and information for Center use	Continuing			
Task 11 Integrate Research lab into educational aspects of Center					

3.4 Valley City State University is well positioned to sponsor this program. They have made a considerable investment in the Center. VCSU has spent nearly \$100,000 renovating the Kathryn school building to make it appropriate for our mission. They cover the costs of utilities which include electricity, heating costs, internet, and other utilities. In addition, they have agreed to provide a 25% match for the Education Specialist position and the Lab manager position.

Dr. Andre DeLorme is uniquely qualified to lead this project. Raised in North and South Dakota he has a natural affinity for Prairie ecosystems. Early in his career he worked as a naturalist for an Outdoor Environmental Education Center in New York state developing and presenting activities to elementary and middle school aged students. He then taught high school science for nine years, during which he spent several summers working as camp naturalist at different youth summer camps. This gives him insight into the workings of environmental education activities for youth and the needs and barriers faced by teachers in presenting environmental education activities. After obtaining his Ph.D he returned to North Dakota as a faculty member of Valley City State University and started the VCSU Macroinvertebrate Lab. This Lab has done a wide range of projects in North Dakota waters. The lab does macroinvertebrate identification contract work for the North Dakota Department of Health and other government agencies and has had a large National Institute of Health grant for the INBRE program in which they looked at heavy metals and atrazine concentrations and their effects in North Dakota rivers. In 2001 the lab performed Macroinvertebrate sampling for the Environmental Impact Statement for the federal proposed Devils Lake outlet. It also designed and implemented a website covering aquatic macroinvertebrates found in North Dakota waters (funded by a 319 grant), and completed a State Wildlife Grant to survey mussel species in North Dakota. The lab currently does Zebra Mussel sampling for the North Dakota Game and Fish and water quality sampling for the Army Corp of Engineers on Lake Ashtabula. In addition the lab houses the North Dakota Aquatic Macroinvertebrate Collection which is a valuable resource to the Center.

Bonita Roswick is our Education Specialist. She has a BS in Food Science from NDSU and later returned to school to obtain a secondary Biology teaching degree from Valley State University. She has worked as an Associate Chemist at Cargill and an Ag Statistics Enumerator for North Dakota Department of Agriculture. Bonita has brought new and fresh ideas to the Center.

Louis Wieland is our Lab Manager. He has worked in Dr. DeLorme's Macroinvertebrate lab for the past 17 years and has a wide range of experience in sampling aquatic systems. He supervises the Macroinvertebrate samples the lab does for the DEQ and has been in almost every river in the State of North Dakota. He has a great presence with the kids and does an excellent job as a presenter and trouble shooter for the Center. Louis also manages our website content at <http://www.vcsu.edu/prairiewaters/>.

The lab provides many experiences for undergraduate students to do research and present their findings. Over the last fifteen years 18 undergraduate students have given over 28 different poster or talk presentations at regional and national conferences. In those fifteen years the lab has brought in over \$1 million in grants and contracts to VCSU.

4.0 COORDINATION PLAN

4.1 Valley City State University will be the sponsoring organization for this project. Dr. Andre DeLorme, Professor of Biology will be in charge of the project. Valley City State University has supplied the lab equipment, much of the furniture and presentation equipment, the North Dakota Aquatic Macroinvertebrate Collection, and the website for this project.

We have a strong record of working with other entities in delivering NPS education. We have worked closely with the River Watch program in Minnesota to develop our program. In the future we will collaborate with the International Water Institute to improve training and presentation opportunities between our River Watch and their River watch program. We work well with Tina Harding of Project Wet, a program run by the State Water Commission, to coordinate and collaborate on such things as Envirothon, an annual water festival at Prairie Waters, and Project Wet Teacher workshops. We have worked with the DEQ (formerly North Dakota Department of Health) on workshops and training for NRCS, Soil Conservation District, and other resource professionals.

As part of our coordination and assessment plan we have established an advisory board. The purpose of the board is two-fold; to oversee the Center and ensure it is run properly, and to involve representative groups in the activities of the Center. Below is a list of people who are board members and their agency or institution.

Tyler Modlin, Park Manager, Fort Ransom State Park.

Marty Egeland – North Dakota Game and Fish Outreach specialist.

Jim Collins – Department of Environmental Quality; Water Quality Division.

Wesley Wintch – Vice President of Business Affairs at Valley City State University.

Mary Lee Neilson - City Commissioner for Valley City.

Dean Strand – High School Teacher, Mayville-Portland High School

Joelle Manlove – Junior High Teacher, Valley City Public Schools

Julie Ann Racine - Lamoure County Extension Agent

Paul Fisher – Mayor of Kathryn

4.2 A major feature of this venture is the wide-ranging support of governmental, educational, and citizen groups. As an example of this interest, the North Dakota Game and Fish Outreach/Education has given the Center several small grants to summer

students working at the Center. We worked with Lori Frank, former Barnes County Watershed Director, to facilitate and advertise our workshops to SCD and NRCS personnel. In the spring of 2014 we received a grant from the North Dakota Resources Trust to integrate a Wetlands activity in our curriculum. Through this grant we are bringing in five high schools to learn about wetlands. They will make three visits, one in the fall, one in the winter, and one in the spring to see the seasonal differences in wetlands. We have been fortunate in that we were able to collaborate with Jennifer Jewett from the Fish and Wildlife Service to prepare and present this activity. The Barnes County Wildlife Federation has been kind enough to donate \$1000 per year for the purchase of waders for our programs. These are all examples of the support we receive from other entities.

4.3 The Center has a history of working with existing educational activities, several of which are currently supported by 319 funds. As stated earlier we have worked with Project Wet in presenting teacher workshops, running a water festival, and working together on the aquatic component for the Envirothon, another 319 supported program. We have worked with several county ECO Ed groups. Our education specialist, Bonita, is a member of the Coalition for Conservation and Environmental Education (C2E2). We also work with a variety of government agencies such as SCD's, the NRCS, the DEQ, the ND Game and Fish, and the National Fish and Wildlife Service to facilitate training and improve our educational activities.

As stated earlier in this proposal, our goal is not to replace these activities or entities listed above, it is to help strengthen them and act as an instrument to help increase their distribution.

These relationships and connections will be important as this program moves forward. We realize that 319 funds are getting scarce and so we tried to make our budget as lean as possible. We anticipate that we will need to generate a variety of small grants to help cover some of the supplies and equipment we will need to continue our program.

4.4 The Center does not duplicate the activities of any other Center in the area. In fact we believe that there is no other Center in the state that has the focus we have with a building and location dedicated specifically to water issues education.

5.0 EVALUATION AND MONITORING PLAN

5.1 We use both formative and summative assessments as part of our evaluation process. Our formative assessments take place on an ongoing basis and allow us to gauge our success and make needed changes as we go. To accomplish this all clientele are given an opportunity to fill out comment forms and evaluation forms. We have forms for teachers, students and workshop participants to fill out. These forms are read by staff personnel, discussed, acted upon, and then summarized in a final report

which becomes part of our summative assessment. Our summative assessment will take place once a year and will involve an overall examination of the Center. Each year we prepare a report on the progress of the Center. This report includes an overview of the total number of K-12 students that have used the center, the total number of teachers who have undergone some type of training, the number of professionals that have taken part in a workshop at the site, the number of VCSU students involved in the Center either through research or as education majors, and research activities carried out. In addition, an expense report detailing the money received by the Center and the expenses of the Center will be prepared. This data is collected, reviewed, and discussed by the Center Staff. A compilation of this data will be presented to major funding sources, the Vice President of Academic Affairs at VCSU, and the Advisory board. The Director will receive feedback from these entities and implement any needed changes.

6.0 BUDGET

6.1 See the attached tables for our budget. To attempt to have as smooth a transition as possible from the old grant to a new grant we will start our funding year on October 1st and end on September 31. Raises are calculated at 2.5% the first year and 3% for the second and third year. Here is a brief detail of our matching funds:

- VCSU money match – Valley City State University has agreed to pay 25% of the Education Specialist position and the Lab Manager position. Over the 33 months of the grant this comes to \$98,074.
- Barnes County Wildlife – donates \$1000 per year to the Center for the purchase of Waders.
- Building match – VCSU is covering all costs of leasing and maintaining the Center. As a match we are using the projected value of the building on a square foot basis. This value in the Valley City area would be approximately \$10 per square foot per year (see attached letter). The building has an area of approximately 14,000 square feet, however a portion of this will be used by the VCSU Macroinvertebrate lab so we will only use 9,000 sq. ft. of the square footage for our match. Calculating 9,000 sq. ft. times \$10 per sq. ft. gives us a match of \$90,000 per year. In our budget table we only put in the amount needed to cover the 40% match, a total of \$84,663.
- VCSU inkind salary match – This includes the 25% salary inkind for Dr. DeLorme's salary. His contract at VCSU calls for 25% commitment to Prairie Waters during the academic school year. We place the value at \$57,013.
- Other inkind – this is inkind matching of the expenses by the schools, board members, and workshop participants. For the River Watch program, it is 40% of

their costs and for school groups coming to the centers it is their travel cost. We are conservatively estimating this as a total of \$17,250.

Budget Tables for Prairie Water Education and Research Center

Part 1 – Funding sources – The funds for this project will be used for 33 month period of time spread over four fiscal years. Funding will start Oct. 1, 2020 and continue through to June 30, 2023.

	FY 20	FY 21	FY22	Total
FY2020 Section 319 Funds	\$104,030	\$144,458	\$141,512	\$390,000
State and Local match:				
1) VCSU salary match	\$25,984	\$35,512	\$36,578	\$98,074
2) Building Match	\$28,221	\$28,221	\$28,221	\$84,663
3) VCSU Inkind salary match	\$6,115	\$25,073	\$25,825	\$57,013
4) Participating schools/Advisory Board match	\$5,950	\$7,150	\$7,150	\$20,250
Subtotals	\$66,270	\$95,956	\$97,774	\$260,000
Totals	\$170,300	\$240,414	\$239,286	\$650,000

Part 2 – Funding - The funds for this project will be used for funding 33 months; 9 months of FY20, full years of FY21 and FY22,.

Project Objectives and Tasks	FY 20	FY 21	FY22	Total Costs	Cash Match	In Kind Match	319 funds
Objective 1: Staff facility with 2.37 FTE, advertise, and assess program.							
Salary/Fringe	\$109,176	\$169,060	\$169,450	\$447,686	\$98,074	\$57,013	\$292,599
Travel	\$350	\$500	\$500	\$1,350	0	\$550	\$800
Supplies	\$196	\$250	\$250	\$696	0	0	\$696
Subtotals	\$109,722	\$169,810	\$170,200	\$449,732	\$98,074	\$57,563	\$294,095
Objective 2: Provide educational activities to approximately 2500 students a year							
Travel	\$9,300	\$11,300	\$12,050	\$32,650	0	\$11,900	\$20,750
Supplies	\$8,750	\$12,000	\$10,000	\$30,750	\$3,000	0	\$27,750
Subtotals	\$18,050	\$23,300	\$22,050	\$63,400	\$3,000	\$11,900	\$48,500
Objective 3: Provide Teacher training workshops each summer							
Travel	\$2,850	\$3,750	\$3,750	\$10,350	0	\$2,100	\$8,250
Workshops	\$1,300	\$1,400	\$1,400	\$4,100	0	2,700	\$1,400
Subtotals	\$4,150	\$5,150	\$5,150	\$14,450	0	\$4,800	\$9,650
Objective 4: Provide a site for at least one Professional workshop per year							
Workshops	\$700	\$800	\$800	\$2,300	0	0	\$2,300
Subtotals	\$700	\$800	\$800	\$2,300	0	0	\$2,300
Objective 5: House VCSU Macro Lab	0	0	0	0	0	0	0
10 % Administrative Costs	\$9,457	\$13,133	\$12,865	\$35,455	0	0	\$35,455
Building Match	\$28,221	\$28,221	\$28,221	\$84,663	0	\$84,663	0