

**INITIAL PRE-PROPOSAL FOR EPA
NATIONAL CENTER for ENVIRONMENTAL INNOVATION
STATE INNOVATION GRANT
EPA-AO-OPEI-06-01
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Project Name: Watershed-Based Permitting for Skeleton Creek

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DUNS Number: 027213557

Priority Area:

Innovation in Environmental Permitting-Watershed Based Permitting

Project Continuation:

This project is not a continuation of any previous grant.

Proposed Total Award Amount:

[withheld by EPA]

Project Description:

Watershed-based permitting is a unique and innovative process for developing permit criteria and limits based upon all potential sources of contamination, both point and non-point within a specified area, and is strongly encouraged by the U.S. Environmental Protection Agency (EPA). The Oklahoma Department of Environmental Quality (DEQ) has identified Skeleton Creek as a good candidate for a watershed-based permitting study. The Skeleton Creek watershed comprises portions of three counties: Garfield, Logan, and Kingfisher, and portions of Skeleton Creek are included on the 303(d) list of impaired water bodies for pathogens and turbidity. This project will concentrate on establishing watershed goals for turbidity. The DEQ has permitted four municipal point source dischargers and two industrial point source dischargers in the watershed. However, no previous attempt has been made to identify all of the sources of pollution in the watershed.

This proposal aims to identify all sources of turbidity in the Skeleton Creek watershed with the goal of determining a strategy for implementing watershed-based permits. The four phases for this proposal are:

Phase I

The first phase of the project will consist of determining the sources of turbidity that contribute to the Skeleton Creek watershed. Many sources are already known to the DEQ based on GIS information and permits issued. However, the DEQ will also use aerial photography and GIS technology to determine the

coordinates of other sources of turbidity and plot them on a master map. The locations of the identified pollution sources would then be compiled into a GIS database for the Skeleton Creek Watershed. This innovative approach will allow for quick determinations of coordinates for facilities or pollutant sources not currently known to, or regulated by, the DEQ. Field work will be completed as necessary to locate other sources. During the first phase, the DEQ will also develop a watershed working group. The working group will inform basin stakeholders concerning the project and a potential watershed based permit in an effort to promote information exchange and support for the project.

Phase 2

Once all sources of turbidity have been identified, an attempt will be made to quantify the amounts of turbidity coming from the different sources as well as their effect on the watershed. This will be accomplished by accumulating existing data that may have already been published or archived by other agencies. Next, a sampling plan will be developed to gather additional data to fill in gaps that may exist within the available historic data. All data will then be compiled into the Skeleton Creek GIS database.

Phase 3

In phase 3, all data that have been obtained will be compiled and water quality modeling will be performed to determine the net effects of the various sources, point and non-point, within the watershed. The modeling for turbidity will be completed using a load-duration curve model. This innovative approach to modeling for turbidity is useful for characterizing the problem and providing an understandable visual display to better communicate the problems and reduction targets. With the load duration curves, the frequency and magnitude of the water quality standards and allowable loads are easily presented, therefore, the magnitude of loading reduction can be better understood. In addition, load duration curves can be used to characterize flow conditions under which standard exceedances are occurring. The load duration curve can be used to begin differentiating between non-point source and point source problems.

Phase 4

The final phase of the project will be to review the sampling and modeling results and determine pollutant reduction goals for the watershed. Based on the goals developed for the watershed, a permitting strategy will be developed to implement a watershed-based permit to control turbidity in Skeleton Creek. The plan will include numeric goals that can be expressed in a watershed-based permit.

Future phases, which are not part of this proposal, will involve conducting follow-up meetings with the watershed working group and basin stakeholders to begin the implementation process.

Reports will be gathered every six months that detail the location of sources of turbidity and the results of any samples collected, or the results of any modeling that has been completed, depending on what phase of the study coincides with the report. A final report will be submitted to EPA within three months of the completion of the project. The final report will include a graphical representation of the data, a summary of the observations made of each sampling event at each site, and a summary and synopsis of the findings of the project. Also, in order to make the information available to the public, the results of the study will be posted on the DEQ website.

Expected Accomplishments:

This project will help lay the groundwork for implementing watershed-based permitting for the Skeleton Creek watershed. This work will identify pollutant sources, compile water quality data on pollutant contributions, and complete modeling on the effects of the pollutants on the watershed. Ultimately this work will lead to a strategy for writing watershed-based permits for the Skeleton Creek Watershed and

can be considered as a template for implementing similar watershed-based permitting strategies throughout other watersheds in Oklahoma. The innovative approaches used in this study include the use of aerial photography to identify pollution sources and the use of low-duration modeling to determine aggregate effects in the watershed.

<u>Task</u>	<u>Time from grant award</u>
1) Form watershed working group	3 months
2) Obtain QAPP approval for secondary data collection	3 months
3) Identify pollutant sources	5 months
4) Gather existing water quality data/determine what gaps exist	5 months
5) Obtain QAPP approval for new sampling	8 months
6) Develop a sampling plan to obtain additional data	10 months
7) Begin sample collection & analysis	10 months
8) Compile and Review sampling results	14 months
9) Complete modeling in key areas of the watershed	22 months
10) Determine watershed goals/finalize strategy for writing watershed-based permits	24 months
11) Submit final report to EPA	27 months
12) Post final report on DEQ website	30 months

Meeting Evaluation Criteria:

This proposal allows for the identification of all sources of turbidity in the Skeleton Creek watershed, non-point sources as well as point sources. The scope of the study will include all of the water bodies located within the specified watershed. Both existing data and new sampling data will be compiled and considered in order to give an accurate representation of the overall water quality of the watershed. Interaction with other agencies will be essential to the project and will help establish a framework for such interactions in future watershed projects. Modeling will be completed to determine the impacts of the various sources on turbidity on the watershed. As a result of this work, scientifically-based pollutant reduction goals may be established for the Skeleton Creek watershed.

After the proposed project is complete, the DEQ will contact basin stakeholders to share the results of the study. This would be done with an ultimate goal of implementing watershed-based permitting strategy using the numeric goals determined by the study. In addition, this overall procedure could hopefully serve as a model for other states on taking the initial steps to switch from the traditional NPDES permitting strategy to watershed-based permitting strategies.

Description of General Budget and Proposed Match:

[withheld by EPA]