Stream Survey Guidance for NPS Projects

The primary goal of the Maine NPS Grant Program is to restore or protect waterbodies. NPS grant funds are available to fund two types of projects-NPS watershed projects that implement best management practices (BMPs) to reduce pollutant loading and watershed survey projects. "A NPS watershed survey focuses on finding, describing, and prioritizing specific NPS pollution sources in a watershed, and recommends BMPs for correcting identified pollution sources. A NPS watershed survey or other assessment of nonpoint sources and listing of NPS sites (equivalent detail as in a NPS watershed survey) is required information prior to undertaking a NPS watershed project."

This guidance was developed to help NPS grant applicants improve NPS watershed survey proposals for streams. The NPS grant program receives fewer project proposals for streams and the ones received have not been as successful in receiving funding as lake survey proposals. The reasons for this include the fact that streams are generally more complex and the problems may not be as easily defined. Second, methods for doing stream surveys have only recently been formalized in the Maine Stream Team Program's guidance manual. Lastly, programs that support volunteer stream efforts have more recently been established and are limited in staff support. The Maine Stream Team Program began in 2000 and DEP will launch the Volunteer River Monitoring Program in 2009.

Survey Manual Methods

The Maine Stream Team Program has developed a manual "Stream Survey Manual (Volume 1): A Citizen's Guide to Basic Watershed, Habitat, and Geomorphology Surveys in Stream & River Watersheds" (February 2009). The manual provides guidance on two types of stream surveys-Stream Watershed Surveys and Stream Corridor Surveys. Unit 3 in this manual describes and compares the two types of surveys. It also provides estimates for the effort or time needed to complete each type of survey.

Stream Watershed Survey

Stream Watershed Surveys are very similar to Lake Watershed Surveys in that surveyors walk or drive the watershed to identify NPS pollutions sites. The purpose is to determine where sources of sediment, nutrients, toxins, bacteria, and thermal pollution exist and prioritize these sites for implementation of best management practices. Organizers may also choose to assess riparian conditions for problems with poor shading (affects temperature) or pollutant filtering. Another purpose is education of the community about the stream watershed and water quality issues.

Stream Corridor Survey

Stream Corridor Surveys are in-stream surveys done by walking along and in the stream and making observations about stream channel, and bank and riparian (stream side) characteristics and conditions. The purpose is to become familiar with the stream and determine whether pollution, habitat, or geomorphological problems exist. Common types of geomorphological problems identified by the survey include severe stream channel or stream bank instability conditions. However it is important to recognize that all streams migrate over time and that a small amount of stream erosion is normal and expected. The survey also educates the local community about stream ecology, pollution and habitat degradation issues, and the stream. The stream observations are made on the reach scale-a reach is a relatively homogeneous stretch of a stream having a repetitious sequence of physical characteristics and habitat types.

Combination Stream Watershed and Stream Corridor Survey

A third option for surveying is for groups to combine a Stream Corridor Survey with a Stream Watershed Survey. The benefit of doing there types of surveys together within a project is that two perspectives on the stream and potential pollution sources are gained: from within the stream itself and up on the watershed landscape. Additionally, when a Stream Corridor Survey is done first, it typically allows the project team to determine which parts of the stream appear to have the most severe pollution, as indicated by problems such as excessive sediment accumulation, significant lack of shading by riparian vegetation or excessive growth of algae (often caused by heavy input of sediment or fertilizer-sources of phosphorus).

Developing a Proposal

When developing a proposal, applicants should consider the following. (Note that these factors align with NPS RFP Section 1.10 "Criteria for Evaluating Proposals").

Feasibility

Considering what is known about the watershed (land use, water quality issues, particular problems)-does the survey proposal make sense? Is the proposal approach going to implement the most appropriate survey: Watershed Survey, Stream Corridor Survey or both?

The size and scope of the survey are major considerations in planning a survey. A number of factors are going to influence how much of the stream watershed and/or stream reaches are surveyed. These factors include watershed size, development or other land use density, involvement of partner organizations, and number of potential volunteers. It may not be feasible to survey the whole stream-in which case the applicant needs to determine how subwatersheds will be prioritized. Useful approaches include focusing on impaired stream segments, the more developed subwatersheds or particular streams within a larger stream watershed using a phased approach. Keep in mind that projects need to be "limited in size to enable the project to have a visible beneficial effect".

The outcome of the survey should be a report or list of NPS problem sites and at least general recommendations for best management practices implementation sufficient to enable development of plans to implement BMPs needed to help improve the stream. The ultimate success of a survey is continued work in the watershed to include implementation of BMPs, watershed management or restoration plans, and other actions. If possible the applicant should demonstrate that there are planned next steps and there is likelihood that work will continue. Elements that influence this include interest and involvement from project partners, local stakeholders and watershed organizations; stream value, uses, impairment, and regulatory pressure.

Example 1: Proposal is to do a survey in a small stream watershed with land use that includes a significant amount of commercial development and smaller amount of medium intensity residential development. The NPS problems in this watershed are complex and include nutrient, toxics, and temperature issues. In-stream stability is likely to be a problem due to the high percentage of impervious surfaces and associated flashy storm runoff (urban hydrology) conditions. In this case the applicant proposes to do a watershed survey that focuses on identifying stormwater runoff problems connected to the stream. In addition, because of potential instability issues, a Stream Corridor Survey will be done along with the

watershed survey to identify pollution problems and unstable reaches. The survey will be done on the entire stream watershed and stream corridor. Due to the small size of the stream, doing both a Stream Watershed Survey and Stream Corridor Survey is feasible for the proposal.

Example 2: Proposal is to do a survey in a large stream watershed with land use that is primarily low intensity residential development with some agricultural land use. The stream also has a valuable Brook Trout fishery. In this case, the NPS problems include nutrient issues, sedimentation, and perhaps issues related to riparian zone degradation. For this watershed, the applicant proposes to do a watershed survey that will focus on identifying sediment sources. They will also include an assessment of developed areas that are close to the stream for riparian problems. Although it is a large watershed, there should be enough time to survey the entire watershed because of the low intensity land use.

Cost Effectiveness

The cost of a stream survey depends on a number of factors including stream and watershed size, land use, scope of project, project partners and number of volunteers involved. When developing the proposal determine whether the costs are reasonable given the project size and scope. Keep in mind that there are limited 319 funds available for watershed surveys and even if a proposal is excellent, it won't likely be funded it it's too expensive or will use up a large percent of the grant funds. In past years, grants for watershed surveys have generally been in the $4,000-$15,000 cost range. For help with developing time/cost estimates for stream watershed and stream corridor surveys, see the Stream Survey Manual (Unit 3).

Applicant Qualifications, Past Performance and Presentation

Organizations interested in doing stream surveys often lack the experience and/or technical qualifications to compete well in the RFP process. If the applicant has done other types of surveys including lake watershed surveys, build on this experience. Some applicants may have the interest and organizational ability, but need technical advice and assistance with doing surveys. In this case, they will want to look for partners who can provide technical support. State or Federal agencies (e.g. DEP, IF&W, DMR, Fish & Wildlife Service, U Maine Cooperative Extension) may be able to provide technical advice and perhaps limited technical assistance. Local colleges and even high school science teachers can be an excellent resource. Depending on the time of year, professors and teachers may be interested in involving students in surveys. Teachers may also be interested in paid work during the summer. Consultants can also provide technical support. They can however be expensive, so applicant may want to limit their assistance to specific tasks such as providing training, analyzing results, etc.

NPS Pollution/Need

The first step is to gather existing water quality information. Sources of information include state and federal agencies, PEARL-University of Maine database, and local watershed organizations. There is a range of water quality information available for streams-there may be none or very little or there may be extensive information. The next step is to summarize and analyze or interpret the data. Some data may already be summarized or analyzed by the organization or agency that monitored the stream (e.g. DEP Biomonitoring Program and DEP 305 (b) Report). Some may need to be summarized and interpreted. The applicant may want to either have a water quality professional provide this information or at least review it. Also if a link can be made between the water quality data and land use problems, this would make the proposal particularly

strong.

Example: A Stream Watershed Survey proposal will be done on a stream that has biomonitoring and limited chemical data from two locations. In the proposal, the applicant should briefly summarize what data is available (e.g. when, where, organization responsible). They should discuss whether or not water quality standards are met for the stream based on the biological monitoring reports. Lastly, a discussion of any particular problems indicated by the water quality data should be included.

Quality Assurance Project Plans

NPS funded projects that involve environmental monitoring are required to have a Quality Assurance Project Plan (QAPP). The DEP Division of Watershed Management staff will have a generic QAPP for Lake or Stream Watershed Surveys and Stream Corridor Surveys in 2009. Projects utilizing the generic QAPP will be required to develop a Sampling and Analysis Plan (SAP) that includes project specific information.

Resources

Maine Stream Team Program:
www.maine.gov/dep/blwq/docstream/team/streamteam.htm
Stream Team Links:

- Data – Links to Maine steam and river data
- Links – Links to organizations and state and federal agencies
- Materials – Access Maine Stream Team Program reports and educational publications including:
  "Stream Survey Manual (Volume 1): A Citizen's Guide to Basic Watershed, Habitat, and Geomorphology Surveys in Stream & River Watersheds"

DEP Bureau of Land & Water Quality Monitoring webpage (including background on Maine's water classification scheme:
www.maine.gov/dep/blwq/monitoring.htm
Water quality report links:

- Integrated Water Quality Monitoring and Assessment Reports 305(b)/303(d)
- Total Maximum Daily Load (TMDL Documents)

DEP Biomonitoring Program and Data:
www.maine.gov/dep/blwq/docmonitoring/biomonitoring/index.htm