

Chapter 4 – Nonpoint Source Project Development and Implementation

The main purpose of this chapter is to provide information and resources for potential project sponsors. It provides a summary of processes from project conception to project evaluation and completion. Although more detailed and updated information is regularly provided during the annual project solicitation process and available at www.npscolorado.com, the information below serves as a general reference for partnering with the NPS program.

NPS funds are used at the local level to implement projects that protect and restore water quality, to develop watershed-based plans, and for education and dissemination of information related to nonpoint sources of pollution. Colorado awards the NPS funds to local sponsors who can be local watershed groups, government entities, nonprofit organizations, and other entities. Sponsors are required to contribute with 40% of the total project amount in cash and/or in-kind match.

Although the majority of the NPS funds is awarded competitively, the NPS program may set aside a portion of the base funds to support programmatic activities such as update and maintain the [npscolorado](http://www.npscolorado.com) website, provide monitoring, assessment and reporting of measurable results, and support information dissemination efforts.

The NPS program continues to sponsor the website www.npscolorado.com as a key means for program communication and for reference information regarding NPS pollution. Site contents include this management plan, NPS program annual reports, the latest proposal solicitation information, project reporting information, and outreach and education resources. Please utilize this site for Colorado specific NPS information and to provide feedback. The site also provides many other types of water quality and nonpoint source news, information and links, at the state, national and global levels.

4.1 Project Focus

Colorado continues to implement the NPS program according to the *EPA Nonpoint Source Program and Grants Guidelines for States and Territories*, October 2003, which can be found at <http://www.epa.gov/owow/nps/cwact.html>. The implementation of the program will be adjusted according to new and updated EPA Guidance as they change or are updated. We are expecting a new guidance in time for FFY2013 funding cycle. As discussed in Chapters 2 and 6, the overall focus for streams and rivers for the next five years is on, in priority order: 1) legacy mining, 2) selenium and 3) other priorities including pathogens. For lakes and reservoirs: 1) low dissolved oxygen, nitrates and pH, and 2) aquatic life and mercury-related fish consumption advisories. These priorities will support implementation of completed TMDLs and ultimately, restoration of impaired waterbodies.

The WQCC has established the following regulation basins for the purposes of implementing the five-year schedule to review water quality classifications and standards: the San Juan/Gunnison, the Arkansas/Rio Grande, the Colorado and the South Platte. Each year one of the four basins is reviewed; during the fifth year, the WQCC addresses Basic Standards and statewide issues (see Appendix A). The table in Appendix A captures the schedule of on-going Watershed Program efforts that are implemented in tandem with the WQCC review schedule. The NPS program is also implemented in a 5-year cycle, in tandem with the WQCC review schedule. NPS project implementation priorities follow monitoring and rulemaking to capitalize on the availability of the most current data and assessments. The table also shows that the NPS funds are awarded from two sub-sets: 1) incremental funds for the development and implementation of watershed-based plans to achieve TMDLs; and 2) base funds for all other activities. The fifth year NPS priority is general statewide funding, which may emphasize watershed plan development or priorities to be determined.

The NPS program further prioritizes watersheds in the state using the water quality standards segmentation of waterbodies as approved by the WQCC. The criteria for selecting priority watersheds are: 1) identify segments listed in Regulation № 93 – Section 303(d) List of Water Quality Limited Segments Requiring TMDLs and 2)

identify watersheds containing those segments that are or have in the past used NPS funds. Priority watersheds are defined at the 8 or 10-digit Hydrologic Unit Code (HUC). During the proposal solicitation process, the NPS program awards extra points for proposals that aim to work in these priority watersheds because they generally present good opportunity for success in achieve water quality improvements and / or attainment of water quality standards. Watershed Program staff periodically revises the List of Priority Watersheds (see Appendix B).

4.2 Watershed Partnerships & Planning – Getting Started

All watershed management initiatives need to start with partnerships. Water quality and other water resource issues involve many different federal, state and local agencies, private landowners, special interest groups, recreationists, and the general public. All these partners have an interest in how the watershed is managed. Involving all parties with a vested interest in the watershed is a crucial early step in the development of watershed based initiatives.

Development of a watershed plan is typically the first project for watershed partnerships. A watershed plan is a living document, developed in an interactive process that includes a watershed specific combination of stakeholders. The planning process usually begins with a group of concerned citizens who come together around particular issues; these issues are then researched, evaluated, prioritized and captured in a watershed plan. Completion of the planning process is a significant undertaking and usually requires a multi-year effort to establish the framework for protecting and restoring the watershed.

EPA has identified nine elements of a watershed plan, which must be addressed if projects affect streams not meeting water quality standards and utilize incremental funds. Plans are recommended as a key supporting document for all projects, irrespective of the status of the water quality. A watershed-based plan should address not only water quality impairments, but also any sources of pollution and reductions necessary to assure the long-term health of the watershed. Watershed plans should also incorporate any TMDL reports and load reduction recommendations that may have been completed for the watershed or for segments in the watershed.

A holistic or comprehensive watershed plan addresses the EPA nine elements of a watershed plan (see Appendix F) and other water resource-related needs that are important to the community such as recreation, riparian habitat, endangered species habitat needs and water supply. Thus, plans incorporate a balance of broad characterizations of key resource concerns and a thorough assessment of water quality. For eventual nonpoint source implementation project purposes, plans address water quality restoration and protection needs and include a list of water-quality priority projects and implementation strategies.

Locally identified, priority projects that are potentially eligible for NPS funding may fall into the following groups:

4.2.1 Watershed Plans and Assessment Projects produce a planning document that brings together the issues, data, stakeholders and solutions in an organized manner, using the watershed approach. All projects using incremental funds need to satisfy the EPA nine elements of a watershed plan, which should be addressed in a fully developed watershed plan. The nine elements of a watershed plan are not necessarily required for implementation projects using base funds, but are common sense for a watershed plan that addresses water quality. There are two guidance documents available to assist in watershed plan development: the “*Colorado’s Watershed Cookbook: Recipe for a Watershed Plan*” and “*EPA’s Handbook for Developing Watershed Plans to Restore and Protect Our Waters.*” Colorado’s Cookbook contains a number of helpful forms and documents, including an outline that addresses all nine elements along with state identified elements of a watershed plan. EPA’s Handbook provides more in-depth reference material. Colorado’s Cookbook and EPA’s nine elements of a watershed plan checklist can be found at <http://www.npscolorado.com/watershedplan.htm> and EPA’s Handbook can be found at http://www.epa.gov/owow/NPS/watershed_handbook/pdf/ch08.pdf.

Additional helpful documents are: the Integrated Report, the CWA Section 303(d) list of impaired waters, completed TMDLs and Statewide Water Quality Management Plan; they can be found on the WQCC website.

Examples of funded activities within the context watershed plan development include outreach and education through stakeholders' meetings and other outreach activities, collecting, gathering and analyzing data for a comprehensive watershed characterization and assessment, writing the watershed plan, and prioritizing watershed issues and restoration activities for future implementation projects.

4.2.2 Implementation Projects conduct on the ground water quality restoration or protection activities, implementing best management practices. If the implementation project will be using NPS incremental funds, a watershed plan addressing EPA's nine elements for a watershed plan is required. Implementation projects require involvement from a wide range of stakeholders ranging from private landowners to federal land managers. They involve implementation of best management practices (BMPs) for restoration and protection activities. Some examples of implementation projects include stream bank restoration, in-stream habitat improvements, agricultural runoff control, erosion abatement, and capping of abandoned mine waste. Project sponsors must include an outreach and education component in the implementation projects to facilitate and leverage broader application of BMPs and to raise awareness of water quality and nonpoint source issues. A Biological Evaluation is required BEFORE project implementation can start; this process is coordinated with EPA and they provide the required approval.

4.2.3 Information and Education Projects educate communities about water quality and nonpoint sources of pollution; they also promote practices that prevent pollution and restore water quality and aquatic habitat. I&E projects directed solely at information and education are now considered low priority for the NPS program. Information and education is still emphasized as an important element of every watershed plan and every implementation project.

4.2.4 Groundwater Projects protect and/or restore groundwater resources that, if contaminated, may pose human health and ecological risks. In Colorado, there are many issues of pollutant loading to surface water from shallow groundwater. This is a major concern with selenium loading. Projects addressing groundwater-surface water interaction are likely to become more important as the selenium priority moves forward.

4.3 NPS Program Alignment

As with most environmental programs, nonpoint source actual needs far outweigh available resources. The NPS program has identified priorities for particular projects in this plan that are refined during the annual project solicitation announcement. Some important considerations:

- 1) *All projects must have a minimum of 40% cash and in-kind match of the total project amount.*
- 2) *Projects that address compliance with a Colorado Discharge Permit System (CDPS) permit are not eligible.*
- 3) *Projects that involve an actual or potential National Priority List site will be reviewed for eligibility on a case-by-case basis.*
- 4) *Competitive projects fit well with the strategies laid out in Chapters 2 and 6 and address the general, topic-based guidelines below:*

4.3.1 Watershed Planning includes the EPA nine elements for a watershed plan and the TMDL report, if available. A watershed plan should implement the TMDL, if one is completed. Plans must address a large enough geographic area to include the majority of the key sources and causes of impairments to the water body. If the watershed plan is done according to a HUC-8 or a combination of multiple HUC 8s, then more detailed analyses can be done at a smaller land area and larger scale such as HUC 12 or WQCD segment-specific watershed. This improves probability of addressing all of the EPA nine elements for a watershed plan dealing with source identification, load reductions, and best management practices implementation. The plan implementation strategy includes a list of priority projects, yearly action plans, and proposed updates every five years.

4.3.1.1 Interpretation and Use of TMDLs characterize the pollutant specific loadings and load reductions necessary to meet stream water quality standards. Key uses for these reports are in watershed and restoration planning and for project implementation addressing TMDL recommendations. The content and analysis of TMDLs may be further refined during the watershed planning process to address implementation.

4.3.2 Implementation Projects restore impaired waters by the implementation of TMDLs and/or by addressing impaired segments identified on the 303(d) list. The NPS program intent is to focus on larger projects within target basins and priority watersheds to support measurable improvements in water quality.

Restoration projects are required to clearly document a water quality issue(s) that is addressed by the proposed management strategy or BMP implementation. Other demonstrated water quality issues may also be justified by:

1. Documented water quality restoration needs based on stream water quality standards violations or documented trend that indicates declining water quality. The documentation of the potential site-specific water quality impacts should be derived using WQCD analytical tools. This helps establish the benchmarks so that water quality results can be evaluated with post-project data. Sponsors are encouraged to review historical data sets, photographs, comparable research, modeling etc., to establish water quality conditions.
2. Projects are identified in a local watershed plan that is 10 years old or less (preferably 5 years) and which satisfies EPA's nine elements for a watershed plan, to qualify for incremental funds.

Protection projects are not required to have a watershed plan or the documentation of water quality impairments, but the NPS program will consider a higher priority projects that are able to document water quality-related impacts and benefits.

Estimating and reporting pollutant load reductions, such as metals, selenium, nitrogen, phosphorus and sediment, are critical to document project success. These reductions are assessed through pre- and post-project concentration and discharge based data or through modeling. EPA requires each implementation project to report on load reductions on sediment, total nitrogen and total phosphorus.

4.3.2.1 Best Management Practices - selection, design, long-term effectiveness

Proposed BMPs focus on TMDL implementation and restoration. Proposed BMPs should clearly address the area-specific water quality needs. The BMPs are: (1) designed for maximum water quality improvement, (2) based on previously demonstrated effectiveness, and (3) economical and sustainable with low risk of failure and reasonable operation and maintenance. See BMP library as a reference (Appendix E).

Demonstration and research-based BMPs implementation projects are discouraged. NPS will consider assessment of BMPs implementation projects, should they be part of a larger project or effort closely connected to watershed restoration. BMP implementation projects for protection from or prevention of negative impacts from nonpoint source pollution are also eligible for funding using base funds.

4.3.2.2 Legacy Mining Projects

Legacy mining or resource extraction related projects are a current priority. Sponsors should work with the Division of Reclamation, Mining and Safety regional representatives to target projects in their respective watersheds that will lead to measurable water quality improvements.

4.3.2.3 Selenium Projects

Projects that address selenium loading are the second priority for the NPS program. Approaches are watershed specific and should be targeted to achieve the greatest reduction potential for the investment. Currently, the NPS program is supporting the implementation of two large selenium-related projects: a large watershed plan development in the Lower Arkansas Basin and a large implementation project in the Grand Valley addressing minimization of selenium leaching via piping of irrigation ditches. Lessons learned from these two projects will help guide future actions for the NPS program regarding selenium issues. Also, within the next few years, more

selenium TMDL reports will be developed. The timing will allow the NPS program to define a strategy to address selenium within the next five years.

4.3.2.4 Stream Restoration

Proposed stream restoration BMPs are identified in a watershed plan with clear assessments, including geomorphology, water quality, and/or aquatic life analyses, which demonstrate the anthropogenic impacts on water quality. Sources of instability or other pollution must be addressed to treat the cause of the impairment, not only the symptom (i.e., upland revegetation to control weathering and erosion of sediment as opposed to a catchment basin that will not address the source). The project leads to measurable water quality benefits including aquatic, riparian/wetland habitat improvements. BMPs design should be designed to withstand flood events of a determined magnitude and not to prevent bank instability or water quality problems elsewhere. Long-term revegetation for source control is a significant component of most stabilization projects and should be addressed in a comprehensive manner that addresses appropriate vegetation for source control, planting depth commensurate with connectivity to the water table, maintenance and periodic monitoring to determine project success. See Appendix G (Colorado NPS Stream Restoration and Stabilization Guidance) for complete guidance.

4.3.2.5 Stormwater

The NPS program will continue to consider eligible: a) stormwater-related projects that are not required by a permit and b) watershed-based plans that might include stormwater permitted areas (for example urban areas under an MS4 permit).

4.3.3 Other issues such as emerging issues, private lands, information and education, and project management are addressed under guidelines developed by the Colorado NPS program (on-going and may change – always check the www.npscolorado.com for updates).

4.3.3.1 Emerging Issues

Given the diversity of nonpoint source pollution sources and innovative strategies to manage them, the NPS program recognizes the need to understand the program fit before awarding funding to potential projects. This may lead to unintentional delays or declined funding for projects addressing needs not mentioned in this plan.

4.3.3.2 Private Landowner Involvement and Support

Projects on private land may require land owners to be a party to an environmental covenant, conservation, operation and maintenance, and/or access agreements. Projects on private land must demonstrate the positive impact of those projects on water quality in the adjacent segment. Cash and/or in-kind match from landowners is recommended to demonstrate cooperation and commitment at the segment scale.

4.3.3.3 Information and Education

The core I&E program activities are retained, for instance, the coordination of outreach activities, information dissemination and website maintenance. New I&E activities are integrated within implementation projects activities, so that local community involvement can be leveraged to include not only implementation activities but also all the associated education and information activities as well. This is predicated on the thinking that as stakeholders get involved at the local level implementing projects within their watershed, it results in a higher level of awareness and also a change in behavior toward a more desired and educated approach to protection and restoration of water quality and habitat integrity. Information and education efforts, as part of watershed planning and implementation projects, are a priority. Statewide I&E projects are low priority.

4.3.3.4 Project Management

The project manager serves as the point of contact for the project. Project managers should have a background in water quality or an environmental field. Salary range limitations apply so please check npscolorado.com for the OMB Circulars that govern compensation. Funds may be requested for part-time or up to 50% of a full time equivalent. Sponsors are usually limited to one project that has significant project management support such as a watershed plan. In subsequent projects, support is limited to implementation of project tasks and administration and reporting to meet grant requirements.

4.3.3.5 Assessment and Monitoring

The program limited on the amount of funds available for assessment work. Assessments as part of watershed plan development or TMDL related implementation projects are more likely to be funded. Assessments purely to evaluate current conditions or to conduct research are not likely to receive funding.

4.3.3.6 Project Sponsorship

All sponsors must have involvement and accountability in completion of project tasks. Sponsors need to have fiscal accountability, including necessary insurance and sub-contracting procedures in order to meet state contracting requirements. Please check the latest “business ready” checklist created by the NPS program at the npscolorado.com site.

4.3.3.7 Administration and Indirect Costs

Funding limitations of no more than 10% of the project contract amount applies to administration and project reporting.

4.4 Project Implementation Process

The funding process begins in early fall with the release of the project solicitation announcement letter describing proposal guidance and priorities. The deadline for proposals submittal is usually near the end of the calendar year. After reviewing, with participation and comments from the NPS Alliance, and ranking all proposals, NPS program staff develops a draft funding recommendation list that is presented to the WQCC for approval. Project sponsors, NPS and EPA staff negotiate the final project implementation plan with final approval provided by EPA. Sponsors then begin contracting with the state and may begin reimbursable work once the contract is fully executed.

Because the NPS program is implemented through federal and state cooperation there are several layers to the funding process. The life-cycle of a project is typically 3-5 years and can be broken out into the following 10 major phases or steps:

Table 4.1 – Project Implementation Process

Project Steps	General Timing	EPA or State Process	Guidance
1) Development of the Project Concept	Summer or prior to annual solicitation process	NPS program staff and NPS Alliance members	Sponsors submit a short concept paper for technical and programmatic feedback on the basic project idea. Although the process is optional, it does help sponsors create more competitive proposals. Announcement is on npscolorado.com in early summer. Project ideas may be discussed with program staff at any time during the year.
2) Project Solicitation Process	Fall – Three month period	NPS program staff	The solicitation packet, posted on npscolorado.com , allows approximately three months for proponents to finalize project proposals. Projects require 40% in-kind and/or cash match of total project cost. All updated guidance is posted each year.
3) Proposal Selection	Beginning of calendar year – Three month period	NPS program staff with input from EPA and NPS Alliance members	Multi-step process culminating with WQCC approval.

Table 4.1 – Project Implementation Process

Project Steps	General Timing	EPA or State Process	Guidance
4) Project Implementation Plan (PIP)	Final draft due in June or July – negotiations may take several months	EPA approval is a requirement	Sponsors with projects selected for funding must complete a complete draft PIP/work plan. Submission of a draft PIP leads to negotiations with NPS program staff and EPA for final approval. This can be an involved process that takes at least a few months.
5) Contracting with the State	Upon PIP Approval - Two month process	NPS program staff	Sponsors work with NPS program staff to prepare contracting materials including final contract scope of work and insurance certification. <i>No reimbursable work can be conducted prior to contract execution.</i>
6) Sampling and Analysis Project Plan (SAPP) and Biological Evaluation (BE)	In tandem with PIP development and contracting	SAPP – NPS program approval required BE – EPA approval required	Sponsor is responsible for completing the SAPP, with NPS program staff support. Expenses are eligible if accrued after contract execution or they may be considered match if done before the contract but after the federal grant has been awarded ¹ . EPA preparation of the BE, with input from sponsors, commences with submission of the draft PIP. The BE must be completed before construction starts – federal requirement.
7) Fiscal Management / Billing	Start of Project	Sponsor	Cost Reimbursement. The additional provisions in the contract contain important information about invoicing. Sponsors are responsible for keeping all project documents on file; match documentation is required to be kept on file for 10 years.
8) Milestones / Deliverables	Defined by final Scope of Work	Sponsor	Sponsors performance is defined by the contract and scope of work. Any proposed changes must be negotiated with the NPS program staff and EPA in advance.
9) Evaluation and Close-out	Semi-annually and at contract completion date	NPS program staff and EPA	Sponsors capture project status and accomplishments in semi-annual reports. The final report, submitted in draft form by contract expiration, includes a full project evaluation.
10) Project data upload to STORET	At the end of the project	Sponsor (Data Sharing Network may provide technical support)	Project data have to be uploaded into STORET (EPA grant requirement). This process may be facilitated via the Data Sharing Network (DSN).

1 – Contact the NPS program staff for information regarding this date as it varies from year to year.

4.5 Project Monitoring & Evaluation

Project monitoring and evaluation are a high priority for overall project design as measurable water quality benefits are a key aspect of effectively managing watershed restoration and protection. The monitoring and evaluation strategy is outlined in the proposal and then developed further in the PIP as briefly described in item 4 in the table above. The SAPP is a key pre-implementation project document that formalizes how the project will be evaluated from start to finish. Monitoring designs reflect the objectives of the specific project, and concentrate on demonstrating the effectiveness of the project. Monitoring timelines will continue until sufficient data are gathered to determine effectiveness of the BMP and satisfaction of the objectives. There are templates that lay out the step by step process for the PIP and the SAPP on npscolorado.com. All projects gathering data are required to have a SAPP.

The Measurable Results Project (MRP), initiated by the NPS program, is designed to facilitate more consistent project evaluation for the program. The MRP does not supplant the need for project sponsors to monitor their project within the period of the contract. The NPS program requires the project sponsors to be actively engaged in the monitoring of their projects, therefore project sponsors are actively involved in the design and implementation of monitoring plans.

The MRP will scientifically document the effects of restoration efforts on water bodies in Colorado that receive restoration funding from the NPS program. The documentation of these benefits will help the program report on those results and identify and prioritize the most cost effective measures to achieve water quality improvement. To meet the objectives of the project, the MRP will:

- Assist the project sponsor in NPS project SAPP development;
- Collect pre-project data on NPS projects;
- Provide technical assistance to Sponsors while they monitor the project during the contract period;
- Provide post-contract monitoring of the project, as deemed necessary by the NPS program staff.

The types of data generated through the MRP are diverse and will be selected with the ultimate goals of the project in mind. Projects can be evaluated at four analytical levels:

1. Chemical - Water and sediment chemistry may be used to determine concentrations of pollutants in the environment.
2. Biological – Aquatic benthic macroinvertebrate surveys maybe conducted to indicate overall river system health. Riparian and upland vegetation surveys may also be conducted to investigate bank stability and sediment erosion loadings.
3. Physical - Measured changes in channel dimension, sediment size, riffle/pool ratio and others may document how the system is changing over time in response to restoration. Other physical parameters such as stream flow, temperature, dissolved oxygen levels and pH may also be collected.
4. Remote Sensing - Aerial photos, modeling and Geographic Information Service GIS technology may be used to study changes in the system at the landscape level or model results that can't be measured traditionally in the field.

Data generated by the MRP will be used to select effective restoration techniques for future projects targeting NPS pollution in Colorado. The data generated in this study may also have significant research value for the education sector, or for those that seek to better understand baseline and altered state conditions of a given body of water.

4.6 Project Reporting & Tracking

Project reporting falls into three main categories: 1) work summary with each reimbursement request, 2) semi-annual reports, and 3) final reports. The budget table for the PIP serves as an excellent tool for budgeting as well as overall project management. The budget table forms the structure for the reimbursement request and tracks the project budget for the life of the project. It is also a reminder of what and when deliverables are due. The

semi-annual reports document progress toward reaching the deliverables. The final report, a requirement of every project, includes a 360 degree evaluation of all project processes and results. Guidance provided by EPA is comprehensive and offers a great opportunity to tell the full project story. Authors use the final report to not only document project-specific outcomes, outputs and BMP effectiveness, produce the project specific Fact Sheets, but also lessons learned and recommendations for future work.

The Office of the State Controller, has implemented a policy to conduct regular contractor performance evaluations as part of all State Agency's routine contract administration activities. CDPHE has instituted an evaluation process designed to comply with this requirement and provide feedback to the public and project sponsors about compliance with contract requirements and obligations. Outcomes of the final review are captured in a statewide database open to all state agencies and the public.

The Grants Reporting and Tracking System (GRTS) is a national database that stores the data and reports generated for each and every project. NPS staff is responsible for uploading these project data throughout the year. EPA Headquarters evaluates the completeness of the database and progress toward meeting nitrogen, phosphorus and sediment load reductions on an annual basis; project and grant information is also evaluated for completeness every year.