

NATIONAL STREAM AND AQUATIC ECOLOGY CENTER

The *National Stream and Aquatic Ecology Center* is a technology transfer unit of the National Forest System (NFS) Watershed, Fish, Wildlife, Air and Rare Plants (WFWARP) staff. The purpose of the Center is to provide direct technical support and assistance to U.S. Forest Service regions and forests. The Center also develops tools and science applications for more effective management and conservation of watersheds, streams, riparian ecosystems, fisheries and aquatic ecosystems on National Forests and Grasslands.

This document charters the National Stream and Aquatic Ecology Center (NSAEC), which is sponsored by the National Forest System to provide technology development and support to Forest Service field units and policy makers in the technical aspects of watershed management, including: physical watershed processes (hydrology; geomorphology), and biological processes (stream ecology; fish and aquatic habitat; riparian plant ecology). This Center was derived from merging two previously established technical units – the Stream Systems Technology Center and the Fish and Aquatic Ecology Unit. The new combined Center will operate under this charter, subject to periodic review and amendment at intervals of three to five years. The Center described herein directly supports the Forest Service’s strategic plan goal to protect, maintain, and restore, National Forests and Grasslands.

PURPOSE

The mission of the National Stream and Aquatic Ecology Center is to help line officers and technical specialists provide effective management and stewardship of stream systems and the aquatic and riparian habitat they provide. The Center specifically supports the need for variable and sustainable water flows on streams and river systems that provide for healthy aquatic populations and ecosystems within and downstream from National Forests and Grasslands. Essential to achieving this purpose are the program’s partnerships and collaborations within the Forest Service, as well as with other Federal and State agencies, universities, and non-governmental organizations. The Center’s mission is achieved primarily through expert support to the agency’s regions and forests, specifically to provide the technical skills and capacity that they lack within the fields of hydrology, aquatic and riparian ecology, and fluvial geomorphology. Therefore, the Center has and will continue to provide direct technical assistance to field personnel through expert consultation, and by developing technical tools and information for specific application to the field. In addition, the Center will serve as a vital information bridge between practicing field specialists, policy makers, and the research community. The Center will also guide the development and transfer of applied science and technologies aimed at helping land managers effectively assess, restore, and protect watersheds, streams, riparian ecosystems, and fish and aquatic ecosystems on National Forests and Grasslands.

The National Stream and Aquatic Ecology Center was formed when two Washington Office Technical Units, the Stream Systems Technology Center (STREAM Team) and the Fish and Aquatic Ecology

Unit (FAEU), were combined. Both of these Technical Units have long histories and well-documented accomplishments as a result of their technical support efforts. The Fish and Aquatic Ecology Unit was originally founded in the 1980's to assist National Forests with technical transfer of information on fish and habitat relationships, continuing education for employees, and support to Forest Plan revision. The goal of these efforts was to develop technical skills in employees and make available information that would assist in defending forest plan development and project decisions based on independent and verifiable scientific studies and information.

The National Forest Systems (NFS) and Research and Development (R&D) established the Stream Systems Technology Center in 1992 for the purpose of coordinating development of needed technology to secure favorable conditions of water flows on public lands. The initial focus was on technology development for managing instream flows¹. Priority areas to achieve this purpose included: improving knowledge of stream systems and hydrologic processes; developing operational tools and technology for resource specialists so they can more effectively manage watersheds and aquatic ecosystems; providing training and technical support to field units on issues related to hydrology, geomorphology, riparian ecology, and fish and aquatic ecology; and identifying critical technological and research needs to address management issues on National Forests and Grasslands.

In 2012, the Director of WFWARP determined the complementary nature of the mission of the two programs made it advantageous to combine these technical units into a single center to better utilize their expertise in support of watershed management, environmental flows, aquatic, and riparian ecology issues. A significant benefit of the combined unit is the integration of multiple disciplines in the two units, resulting in more effective support to field units in application of interdisciplinary science-based technologies.

RATIONALE

A primary focus of the National Stream and Aquatic Ecology Center is the application of science-based technologies that are essential for the Forest Service to comply with its Organic Administration Act purpose of securing favorable conditions of water flows to effectively manage National Forest System lands for multiple resource benefits. Additional statutes such as the Weeks Act (1911), Federal Power Act (1920), Multiple Use and Sustained Yield Act (1960), Wilderness Act (1964), Wild and Scenic Rivers Act (1968), Clean Water Act (1972), Endangered Species Act (1973), National Forest Management Act (1976) and the Federal Land Policy and Management Act (1976) authorize the U.S. Forest Service to address a broader range of natural resource issues to protect, maintain, and restore water resources, watershed processes, fluvial characteristics of streams, aquatic habitat, and populations of fish and other aquatic biota.

¹ **Instream flow** is defined as the amount of water needed in a stream to adequately provide for downstream uses occurring within the stream channel. **Environmental Flow** is defined as the water regime provided within a stream, river, wetland or coastal zone to maintain ecosystems and their benefits. For the purposes of this Charter, the term "environmental flow" will be used since it more accurately represents the Center's work efforts related to restoring and maintaining aquatic and riparian habitat.

Land managers require access to, and information about, new technologies and diagnostic tools to address critical national issues to meet statutory responsibilities, such as: stream and ecosystem protection and restoration, riparian vegetation management, evaluation of watershed services, watershed and aquatic status and trend monitoring, watershed condition assessments, and evaluations of water resource, watershed, and aquatic species vulnerability to natural and anthropogenic disturbances, including climate change. It is essential the Forest Service make new and existing scientific and technical findings and tools readily available to land managers, technical staff, partners and other stakeholders. In addition, the agency must identify important knowledge gaps that can be addressed with new scientific tools and information that will be distributed via the internet, through publications such as the STREAM Notes newsletter, as well as through trainings, conferences and meetings.

KEY PROGRAM ELEMENTS

To achieve the goals and desired outcomes outlined above, the focus for the National Stream and Aquatic Ecology Center will be on addressing national issues in the following key program elements:

- Watershed, stream, riparian, and aquatic habitat restoration
- Condition, trend, and effectiveness monitoring of watershed, channel, fisheries, aquatic habitat, and riparian vegetation
- Environmental flows and water resource management
- Technology Development, Transfer and Application
- Technical Support and Training

The Center addresses the objectives outlined above by working directly with staff at all levels of the agency, and will involve interagency collaborations and partnerships within the Forest Service, other federal land management agencies, non-governmental organizations, and academia.

PROGRAM OVERVIEW

- **Watershed, Stream, Riparian, and Aquatic Habitat Restoration:** While much is known about the practices necessary to protect, maintain, and restore watershed processes and services, new tools and techniques are needed to address altered hydrologic and disturbance regimes that will affect forests and watersheds as a result of climate change, land use change, and increased demand for water resources. Pragmatic and applied approaches to river and aquatic restoration are needed that address physical and biological issues associated with fluvial systems in an integrated manner.
- **Condition, Trend, and Effectiveness Monitoring of Watershed, Channel, Fisheries, Aquatic Habitat, and Riparian Vegetation:** Objectives of Forest Service management will continue to focus on ecosystem restoration. Effective watershed and aquatic ecosystem restoration is founded on the ability to identify the status and trend of watershed condition, channel characteristics, aquatic habitat, floodplain characteristics, and riparian habitat, and to understand how they are impacted and respond to management actions. We will continue to evaluate and devise approaches that forests and grasslands, and regions can use to more effectively measure and describe current

conditions and trends and to determine whether any observed trends are affected by management actions. This is a key component of the agency's plans for land and resource management under the planning rule.

- **Environmental Flows and Water Resource Management:** There is a critical need to determine the quantity, quality, and timing of water needed for stream and other aquatic ecosystems to maintain their physical and biological processes while providing for human demands on the water supply. Therefore, improved techniques must be developed for quantifying the environmental flow regimes needed to maintain channel, aquatic and riparian resources on National Forests and Grasslands. These technical tools have to meet requirements of the guiding statutes described above, and the resultant regulations and policy implementing those statutes, for application to water resource planning and to address a variety of water resource management issues.
- **Technology Development, Transfer and Application:** Organizational and management effectiveness requires capturing the benefits of rapidly evolving technology, and ensuring managers have access to the best available science. An essential part of the Unit is to develop reliable, effective, low-cost, time-efficient, and scientifically sound technologies for acquiring data or modeling environmental processes to document and measure changes in channel morphology, riparian zones, aquatic habitat, and watershed characteristics.
- **Technical Support and Training:** Field units need expert technical support and consultation on technical issues related to environmental flows, watershed processes and aquatic ecology either directly from the Center's staff or by referral to scientists. Identifying critical training needs and designing, developing and implementing effective training programs for field specialists, staff and line officers, will remain a priority for the Unit.

PROGRAM STRUCTURE AND OPERATIONS

Organization: The National Stream and Aquatic Ecology Center's Program Leader reports directly to the Assistant Director of the WFWARP Staff in the Washington Office of the NFS. The Center's permanent scientific and professional staff is supervised by the Program Leader. In addition to permanent staff, the Center relies on term employees, detailers, graduate students, cooperators, partners, and contractors to accomplish much of its work, and routinely collaborates with other technical units, federal agencies, and academia.

Steering Committee: The National Stream and Aquatic Ecology Center will receive strategic guidance and advice from an executive Steering Committee. The Steering Committee is an independent group representing various management levels of the Forest Service that have knowledge about national needs regarding watersheds, water resources, hydrology, aquatic and riparian ecology, and fish and other aquatic biota. The Director of WFWARP and the Deputy Chief of NFS will sign the program's Charter. The Assistant Director of the Watershed and Fish Group, under the guidance and direction of the WFWARP Director, will provide oversight of the Center and will serve as chair of the Steering Committee. The committee will consist of the following members:

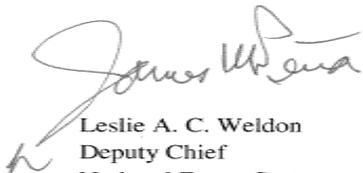
Charter for the National Stream and Aquatic Ecology Center

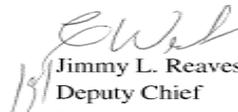
1. NFS Deputy Regional Forester (water/aquatics/fisheries under their purview)
2. R&D Assistant Station Director (RMRS, PNW or NRS)
3. NFS Director WFWARP
4. NFS Director Engineering, Director of Lands, or Director of Range/Vegetation Ecology
5. WO R&D Director or Assistant/Deputy Director
6. NFS Assistant Director WFWARP (AD Watershed and Fish Group = Committee Chair)

Members of the Steering Committee, or their designated representatives, will participate in annual meetings with the Center's staff. The Program Leader will develop an annual program of work relying on input from the Steering Committee and advice from other Washington Office Program Leaders, Regional Office staffs, and R&D staffs. The intent is to assure technology relevant to field needs is provided. The Program Leader will develop and provide an annual program accomplishment report to be distributed electronically and on the Unit's website.

Collaboration and Coordination: The Center's activities and technical support require ongoing collaborative work and partnerships, both internal and external to the Forest Service. The effective cooperation will continue with Forest Service Regional Offices and Forests, Forest Service R&D units, State and Private Forestry, universities and academic partners, other federal agencies, state agencies, non-governmental organizations and private research institutions.

Funding: The National Stream and Aquatic Ecology Center is funded within the WFWARP Program's annual budget constraint, with oversight and guidance provided by the Steering Committee as outlined above. The Center's grants, agreements, and contracts that facilitate partnerships, such as Challenge-Cost Share agreements, will continue to be implemented to supplement the annual budget. Other internal and external funding opportunities will also be explored to fund special projects, when appropriate.


Leslie A. C. Weldon
Deputy Chief
National Forest Systems
Date: 8/20/13


Jimmy L. Reaves
Deputy Chief
Research & Development
Date: 8/22/13