Alaska: Green Infrastructure Alternatives Assessment and Planning

Project Goal
Assess green infrastructure alternatives and placement options for urban communities in cold, wet climates.

Percent Complete
Project expected to be 100% complete, with all ARRA funds expended, by 12/31/2011

Project Cost
$108,307 in section 604(b) ARRA funds

Pass-through Recipient
Alaska Department of Natural Resources, with sub-grants awarded to the cities of Fairbanks and Soldotna

Project Contact
ADNR: 907-269-8465
http://forestry.alaska.gov/community

Project Highlights
Section 604(b) ARRA funds supported Alaska's efforts to begin planning for and implementing green infrastructure. Project elements included

- Identifying the types of green infrastructure that are suitable for urban areas and function well in cold, wet climates
- Implementing demonstration projects in two municipalities to gain public acceptance
- Identifying and mapping areas in the city of Soldotna that would be suitable for incorporating green infrastructure elements

Introduction

Alaska used a portion ($108,307) of its CWA section 604(b) ARRA funds to launch an effort to enable and encourage municipalities and individual homeowners to begin incorporating green infrastructure (GI) elements into new and existing development. Alaska had not conducted much GI planning previously because of a lack of available funding. The ARRA funds allowed Alaska to begin identifying the types of GI that function well in cold, wet areas; to implement demonstration projects in two municipalities; and to identify and map areas that are suitable for incorporating GI elements in the future. Thanks to the CWA section 604(b) ARRA projects, interest in GI is gaining momentum in Alaska.

Project Background

The Alaska Department of Environmental Conservation (ADEC) passed CWA section 604(b) funds to the Alaska Department of Natural Resources' (ADNR's) Division of Forestry (Community Forestry Program). ADNR issued sub-grants to the cities of Fairbanks and Soldotna to conduct separate GI education, planning and implementation projects.

Section 604(b) Funds at Work

City of Soldotna

The city partnered with the nonprofit Kenai Watershed Forum to implement a GI planning and demonstration project. Using a geographic information system to assess the city's stormwater infrastructure, the partners created a map identifying high-priority areas that would most benefit from future on-site stormwater retention projects (Figure 1). The partners also developed a demonstration project on a 0.85-acre historic property in a sensitive location at the confluence of Soldotna Creek and the Kenai River. The partners researched available green parking technologies and best management practices (BMPs) for stormwater management and created and implemented a site-specific landscape design that provides 100 percent on-site stormwater retention. The green parking demonstration area is the first of its kind on the Kenai

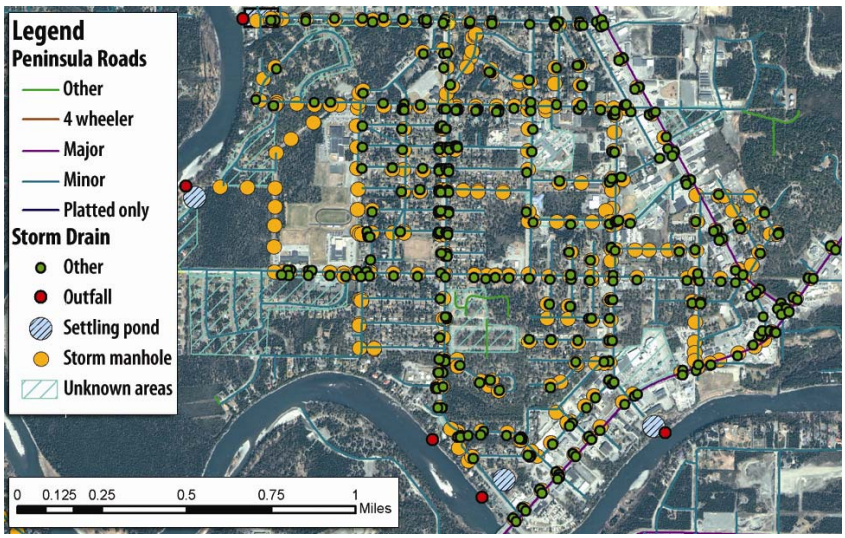

Figure 1. Green shading (labeled as "Unknown areas") on a stormwater infrastructure map of Soldotna shows areas with no existing stormwater controls and where future stormwater retention projects would be ideal.

Figure 2. A Kenai Watershed Forum staff member applies the last layer of gravel on a new GravelPave2 system in front of the historic Soberg House at the confluence of Soldotna Creek and the Kenai River.

Peninsula and serves as a model to encourage other property owners within Soldotna to mitigate stormwater runoff through on-site retention and permeable surface parking designs (Figure 2).

City of Fairbanks

The city partnered with the Cold Climate Housing Research Center (CCHRC), GW Scientific and the Fairbanks Soil and Water Conservation District (SWCD) to develop a GI guide for homeowners (Figure 3). The partners compiled data and literature related to the use of GI BMPs in Alaska and other cold-climate regions. They selected 10 BMPs—rain barrels, rain gardens, tree pits, infiltration and flow-through planters, dry wells, swales and berms, green roofs, permeable pavers, grass reinforcement mesh, and riparian buffers—that are appropriate for residential use because of the feasibility, cost-effectiveness, ease of installation and level of maintenance.

In 2010 the partners implemented six small-scale demonstration projects of the selected BMPs to educate the public. The project reimbursed the homeowners for materials or contractual labor costs up to $500 per residence. The city will follow up with the homeowners to evaluate the success of the new BMPs.

The city has also been focusing on educating its residents. The partners conducted workshops to show homeowners how to construct some of the simpler GI applications such as rain barrels. In the fall of 2011, the city is planning to map areas where certain green building techniques (e.g., green roofs

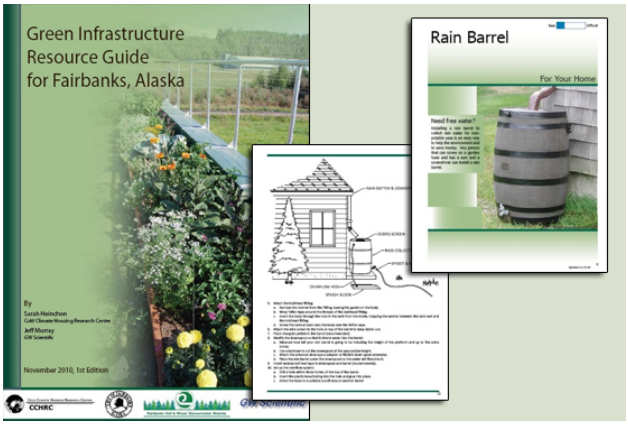

Figure 3. The Fairbanks GI resource guide (http://forestry.alaska.gov/pdfs/communitygrants/GI_Resource_Guide122710.pdf) provides homeowners with detailed installation instructions.

and snowmelt/rainwater capture and reuse) might be beneficial and to conduct a workshop for the business community to introduce the concept of green building techniques and solicit feedback.

The momentum created by the ARRA-funded GI projects has prompted municipalities and other organizations to continue with GI planning efforts. In late 2011, for example, the city of Soldotna received a grant from the U.S. Fish and Wildlife Service to install two rain gardens and help educate the public about GI. ADNR recently submitted a GI-focused grant proposal to the U.S. Forest Service on behalf of CCHRC, Fairbanks, Fairbanks North Star Borough, University of Alaska, Fairbanks SWCD and others. The project would fund a team of experts to examine developed areas in the lower Chena River basin within the Fairbanks North Star Borough to identify and map high-priority areas for GI applications and natural area protection.

Key Project Benefits
• Improved ability to assess or predict water quality/quantity changes
• Improved watershed, water quality/quantity and ecosystem management through - Planning that identifies specific management practices and implementation strategies - Enhanced program development - Education, tech/info transfer, stakeholder engagement, outreach, etc.
• Improved climate change resilience, greenhouse gas emission reduction and energy efficiency