



Applying knowledge to improve water quality

Pacific Northwest

Regional Water Program

A Partnership of USDA CSREES
& Land Grant Colleges and Universities

Fall 2006
PNWWATER 098

5th Annual Satellite Conference:

Stormwater Management in Extreme Climates of the Western USA



The fifth annual regional satellite conference focused on stormwater management strategies in extreme western climates. Video segments were developed and delivered at this conference about stormwater management issues in two cities with little in common — Anchorage, Alaska and Tucson, Arizona. Even though these cities differ greatly in climates and geographic characteristics, they both have significant challenges with stormwater management. The lessons from the case studies covered in this educational program show that stormwater is an important issue in all western communities and that it has a significant impact on water quality.

The 2006 Stormwater Management satellite conference used Anchorage, Alaska as the prototype for winter cities to introduce the audience to engineered snow piles. Snow, removed from the streets and transported to several snow-dump sites around the city, is stacked systematically and watered down to form a basal layer of ice that prevents sand and gravel picked up with the snow from moving into nearby streams. The snow melts from the bottom up, leaving the grit on top to be swept up and disposed of in the summer. Taking advantage of natural phenomena, blocks of peat from wetlands are tethered to the bottom of sedimentation ponds to provide added filtration of stormwater before it enters streams. The Municipality is in the process of re-writing the development guidance manual that will include Low Impact Development strategies. These strategies call for on-site infiltration devices such as rain gardens, cut curbs to direct stormwater from streets and parking lots into beds of rock or native vegetation, and setting limits of impervious surfaces on new development.

At the other end of the weather extreme continuum is Tucson, Arizona. In this area, rainfall averages eight to 10 inches. The largest part of this precipitation falls during the monsoon generated by large storm cells passing over the desert in summer. Prior to the tremendous population influx with its attendant development, stormwater ran across the desert floor toward natural channels and ephemeral rivers as sheet flow. Due to the rapid development, sheet flow is impeded by structures and now tends to cut gullies that slash across roads ripping out vegetation, fences, and sometimes unsuspecting motorists. City and county governments are working with each other, construction firms, watershed groups, and private citizens to introduce erosion control strategies to best deal with



Pacific Northwest Regional Water Quality Coordination Project Partners

Land Grant Universities

Alaska

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<http://www.uaf.edu/ces/water/index.html>

University Publications:

<http://www.alaska.edu/uaf/ces/publications/>

Idaho

University of Idaho
Cooperative Extension System
Contact Bob Mahler: 208-885-7025

<http://www.uidaho.edu/wq/wqhome.html>

University Publications:

<http://info.ag.uidaho.edu/Catalog/catalog.html>

Oregon

Oregon State University
Extension Service
Contact Mike Gamroth: 541-737-3316

<http://extension.oregonstate.edu/>

University Publications:

<http://extension.oregonstate.edu/catalog/>

Washington

Washington State University
WSU Extension
Contact Bob Simmons:
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<http://wawater.wsu.edu/>

University Publications:

<http://pubs.wsu.edu/>

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Water Resource Research Institutes

Water and Environmental Research
Center (Alaska)

<http://www.uaf.edu/water/>

Idaho Water Resources
Research Institute
<http://www.boise.uidaho.edu/>

Institute for Water and
Watersheds (Oregon)
<http://water.oregonstate.edu/>

State of Washington
Water Research Center
<http://www.swwrc.wsu.edu/>

Environmental Protection Agency

EPA, Region 10
The Pacific Northwest
<http://www.epa.gov/r10earth/>

Office of Research and Development,
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<http://www.epa.gov/wed/>

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The Project

Land Grant Universities, Water Research Institutes, and EPA Region 10 have formed a partnership to provide research and education to communities about protecting or restoring the quality of water resources. This partnership is being supported in part by the USDA's Cooperative State Research, Education, and Extension System (CSREES).

Our Goal and Approach

The goal of this Project is to provide leadership for water resources research, education, and outreach to help people, industry, and governments to prevent and solve current and emerging water quality and quantity problems. The approach to achieving this goal is for the Partners to develop a coordinated water quality effort based on, and strengthening, individual state programs.

Our Strengths

The Project promotes regional collaboration by acknowledging existing programs and successful efforts; assisting program gaps; identifying potential issues for cross-agency and private sector collaboration; and developing a clearinghouse of expertise and programs. In addition, the Project establishes or enhances partnerships with federal, state, and local environmental and water resource management agencies, such as by placing a University Liaison within the offices of EPA Region 10.

the impacts of new development. Showing his desert garden paradise, a homeowner described how he changed his 'parking lot' yard into an extension of the Sonoran Desert by treating the property as a watershed. This included zigzagging waterways from plant basin to plant basin and cutting the city's curbs to irrigate larger trees along the parking strip with street borne stormwater.

Both of the video segments shown in the Stormwater Management from a Watershed Perspective: Extreme Western Climates satellite conference share transferable strategies for a wide range of cities. Much of the intermountain West experiences heavy snowfall and arid summers punctuated by fierce rainstorms. Across the northern tier of the lower 48 states, many cities share Anchorage's problem with runoff on frozen ground as well as the question of dealing with sand, salt, and gravel migrating from winter roads to streams and rivers. Watching this workshop offers innovative strategies to many of the nation's cities.

The 2006 workshop audiences rated the program highly useful. There were many comments, several quite surprised, that the problems of stormwater management are shared across the country. Another 'take home message' was how the geography and soil type affects choices for management strategies as well as the success of any particular method.

If you missed the October 17, 2006 airing of the workshop on satellite or Videostream, the program is available on archived Videostream at <http://caheinfo.wsu.edu/video/stream.html> and will soon be released on DVD and videotape. Order on line at <http://pubs.wsu.edu/cgi-bin/pubs/index.html>, by phone at 800-723-1763, or e-mail at bulletin@wsu.edu.

National Water Quality Program Areas

The four land grant universities in the Pacific Northwest have aligned our water resource extension and research efforts with eight themes of the USDA's Cooperative State Research, Education, and Extension System.

1. Animal Waste Management
2. Drinking Water and Human Health
3. Environmental Restoration
4. Nutrient and Pesticide Management
5. Pollution Assessment and Prevention
6. Watershed Management
7. Water Conservation and Management
8. Water Policy and Economics

CSREES is the Cooperative States Research, Education, and Extension Service, a sub-agency of the United States Department of Agriculture, and is the federal partner in this water quality program.