



## CHEMICAL WEED CONTROL RESEARCH PROJECT

### FREQUENTLY ASKED QUESTIONS (as of 7/9/2009)

#### What does this project entail?

The Alaska Railroad Corporation is working with the University of Alaska Fairbanks (UAF) to conduct a herbicide research project, similar to those accomplished for the Alaska Department of Transportation & Public Facilities (ADOT/PF). Two field studies were conducted for DOT/PF along highway rights-of-way in two different climatic zones (Delta Junction and Valdez). The Alaska Railroad project is designed to compliment these previous tests as well as provide information specific to the Alaska Railroad.

The Alaska University Transportation Center (AUTC) scientists are studying how two herbicide products used with a surfactant migrate and are retained in Alaskan soil. Researchers from the UAF Water and Environmental Research Center are evaluating a series of groundwater and soil samples to measure herbicide persistence and dissipation under Alaskan climate and environmental conditions. They will also investigate the effectiveness of glyphosate-based herbicide for vegetation management along the rail corridor.

#### How is the research funded?

The cost of the first year (2008/2009) research effort was \$200,000; and the second-year effort is estimated to cost the same. ARRC is funding half (\$200,000) of the total two-year expense. The Alaska University Transportation Center (AUTC) is funding the remaining \$200,000 through a matching grant.

#### What chemicals are being researched?

- AquaMaster® – (active ingredient is Glyphosate). For use around water.
- Oust® Extra – (active ingredients are Sulfometuron methyl and Metsulfuron methyl).
- Agri-Dex® – (nonherbicide). A nonionic surfactant Agri-Dex® used with AquaMaster to spread the herbicide more evenly and effectively.

#### Why is this research important?

This research is in direct response to public requests for more information about herbicide behavior and persistence in Alaska's environment. In 2006, the Alaska Railroad applied for an Alaska Department of Environmental Conservation (ADEC) permit to use chemicals to control vegetation on ARRC track and rail yards. The railroad has pointed to the environmental success of nearly identical vegetation man-

agement programs in the Lower 48 states and in many other countries, including Canada and Europe, with similar geography and weather. ARRC and UAF want to better understand how products approved for use by EPA and ADEC will behave in Alaska's environment, especially near water bodies. This research is designed to answer these important questions.

#### Is a pesticide permit required for this research project?

The ADEC regulations allow for a scientific research permit with an exemption to the permitting process if the project is less than 20 acres, is conducted by the University of Alaska or is on State land. Similar to a permit, ADEC must determine there is no unreasonable adverse effect including consideration of risk to humans, animals, and the environment before the project can occur. Several are conducted each year by the University of Alaska.

#### What is the size of this research area?

Total of the combined two-year study areas (south end and north end) is less than three acres. (Note: one acre is roughly equivalent to a one-mile section of the track.)

#### Where are you going to do the tests?

Railroad South End (Seward to Portage, 2008) on railroad property (yard or track right-of-way)

- Two 16-by-200-foot patches, one in the ARRC Seward Rail Yard, and one along the track ROW about 25 miles north of Seward.
- Two one-mile sections along the track ROW, one about 39 miles and one 45 miles north of Seward.

Railroad North End (Fairbanks to Eielson, 2009) on railroad property (yard or track right-of-way)

- One 500-foot section along the 24-mile Eielson Branch track ROW at a location likely to be fairly close to the Fairbanks Yard .

University of Alaska Fairbanks (UAF) land

- One 200-foot section along the track adjacent to the UAF Experimental Farm.

#### When did the project start?

Well installation began in June 2008 and the first application of herbicide took place in August 2008. The research project is expected to last at least two years but only one application of herbicides will be applied at each test site.

**Who will administer the products?**

An applicator that is licensed by the ADEC to apply pesticides commercially employed by the AARC will apply products according to the directions provided on the manufacturer's product labels.

**What is the Alaska University Transportation Center (AUTC)?**

The Alaska University Transportation Center (AUTC) focuses on transportation safety, security and innovation in cold regions. The AUTC is also used to meet the research needs of the Alaska Department of Transportation & Public Facilities, the Alaska Railroad, the Alaska Oil and Gas Industry and the Alaska transportation industry.

Alaska's unique climate, cultural diversity, population density and transportation requirements call for specialized expertise not readily available elsewhere. AUTC research is designed to fill a national gap in addressing transportation needs in cold regions. AUTC's goal is to develop that expertise through education/outreach programs and research.

**Can you further describe the UAF research?**

Researchers from UAF's Water & Environmental Research Center (WERC) are evaluating herbicide behavior over a two-year period through a series of soil and groundwater sampling to obtain data about specific chemical behavior in Alaskan micro-climates. As part of the project, basin lysimeter (measuring evaporation and transpiration) testing will be conducted at a test site on the UAF Fairbanks Experiment Farm. By comparing the results from Alaska Railroad test sites and the UAF farm, researchers will be able to better understand what happens to herbicides that are applied in Alaska's different climates. WERC has also been conducting an ongoing project monitoring cold-related re-concentration phenomenon observed in tri-clopyr (broadleaf herbicide) applications.

**Are there any results from the first year?**

Data has been collected and tabulated from the first year (Portage to Seward) and is currently being interpreted by the researchers. Although complete results are not yet available, the initial results indicate that the herbicides are behaving within the norms observed in other climates. This suggests that herbicide use in Alaska can be compared to use in other areas of the country and in similar locations abroad.

**What are the qualifications of the UAF researchers?**

David L. Barnes, PhD, is an associate professor and chair of the Department of Civil & Environmental Engineering at the University of Alaska Fairbanks (UAF). He is also an associate professor for the university's Water & Environmental Research Center. He teaches and performs research in the area of geoenvironmental engineering and has served as principal

investigator on multiple projects focused on contaminant transport and fate, ground-water dynamics, immiscible fluids, and water quality as these topics pertain to energy production, industrial processes, agricultural processes, transportation, domestic waste, and accidental releases of hazardous materials. Dr. Barnes has authored more than 65 refereed journal publication and conference proceedings on these topics. Dr. Barnes earned bachelor's and master's degrees in Civil Engineering from New Mexico State University and a doctorate degree in Chemical and Bioresource Engineering (soils and ground water) from Colorado State University.

Bill Schnabel, PhD, is Director of the UAF Water and Environmental Research Center and a member of the research faculty at the UAF Fairbanks Institute of Northern Engineering. His research activities center around surface/groundwater quality, soil/groundwater chemical fate and transport processes, vadose zone soil moisture processes, and cold region engineering applications. He has worked as a consulting engineer for Ecolotree Incorporated and Golder Associates, and as an assistant professor at the University of Alaska Anchorage School of Engineering. Dr. Schnabel earned a bachelor's degree in Chemistry from Purdue University, a master's degree in Environmental Engineering from the University of Iowa, and a doctorate degree in Environmental Systems Engineering from the University of Alaska Fairbanks.

**Who can I talk to at the University?**

Dr. David Barnes is the lead scientist for this research project. His e-mail is [dave.barnes@uaf.edu](mailto:dave.barnes@uaf.edu).

**Who can I talk to at ADEC?**

Karin Hendrickson, Environmental Program Specialist, ADEC Pesticides Program, (907) 376-1856, [Karin.Hendrickson@alaska.gov](mailto:Karin.Hendrickson@alaska.gov)

**Where can I get more information on the Alaska Railroad's vegetation management/weed control?**

<http://www.AlaskaRailroad.com>. Then click on "Community" and then "Vegetation Management." Or contact ARRC Environmental Operations Manager Matthew Kelzenberg at (907) 265-2384.



*Overgrown weeds on the track bed are nearly impossible to get rid of with non-chemical methods.*