



WASHINGTON STATE DEPARTMENT OF  
**Natural Resources**  
Doug Sutherland - Commissioner of Public Lands

# DGER NEWS

**DIVISION OF GEOLOGY AND EARTH RESOURCES**  
"Washington State's Geological Survey since 1890"

Website: <http://www.dnr.wa.gov/geology/>

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## 3RD ANNUAL DECISION-MAKERS FIELD CONFERENCE

On August 8, DGER held the third annual Decision-Makers Field Conference (Fig. 1). This year we focused on Washington's energy resources, how they are used today, and how they will be used in the future. The conference was held in an informal outdoor setting and covered conventional power generation, alternative energy sources, technological advances in energy production, environmental mitigation, carbon dioxide (CO<sub>2</sub>) sequestration, opportunities for conservation, and climate change.

The major goals for the conference were to show how things work now, to investigate the scientific and technical constraints on resource discovery and exploitation, and to discuss possible scenarios for the future and what it would take to make them happen. Other goals were to foster collaboration within the state's scientific community, to develop interactions between state agencies, and to introduce elected officials to scientists who can help to advise on future legislation.

We explored ways to stimulate energy production (and thus increase state revenues) and examined some of the environmental consequences. We looked at realistic alternatives to conventional energy development.

Washington will no doubt be affected by global and national policies, but can also forge its own policies and directions to a degree probably unmatched by any other



**Figure 1.** This year's decision-makers line up for a group shot next to a haul truck at the TransAlta Centralia coal mine.

state. Washington has a wide range of local options because we are blessed with a remarkable diversity of energy resources, both conventional and unconventional. Washington has extensive coal reserves, potential for natural gas, high potential for power generation from solar, wind, wave, and tidal sources, substantial low-temperature geothermal resources, excellent biomass generation potential (particularly given the state's extensive forests, agricultural lands, and feedlot/dairy operations), and a leading role in hydroelectric power generation. In addition, Washington is home to a national laboratory that focuses on energy research and to several universities that conduct cutting-edge energy research.

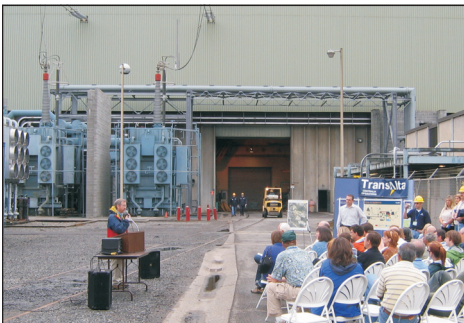
The transition to a different energy future has already started. Wind and biofuels have already begun to make contributions to the fuel mix for the state. Hybrid cars have already become a reality. And perhaps most significantly, the cost of generating power from solar and wind facilities is now close to being competitive with energy generated

from fossil fuels. This, combined with the environmental benefits of renewability, the lack of emissions, and the relative security of supply, means that alternative energy is here to stay. Washington could certainly become a national leader in converting to modern forms of energy generation and carbon dioxide sequestration.

### **TransAlta Power Plant and Coal Mine**

The first stop of the day was the TransAlta Centralia power plant (Fig. 2). Lou Florence, Director of Power Plant Production, described how the power plant works and what environmental controls are in place. He also discussed future plans for controlling emissions from burning coal.

Dick Wallace, Director of the Washington State Department of Ecology Southwest Region, talked about air and water regulations at coal mines and power plants. On the bus trip out to the mine, Roger Fish, Director of U.S. and Canadian Mining Operations, pointed out reclamation that had been done at the mine both in the old style and a newer, more natural style called



**Figure 2.** At the TransAlta power plant in Centralia, Assistant State Geologist Dave Norman welcomes the decision-makers to the field conference.



**Figure 3.** TransAlta Centralia coal mine main pit. The pit is just beginning to be reclaimed in the 'geomorphic' style.

'geomorphic reclamation'. We also saw the many wetlands created and trees planted for reclamation.

At the coal mine (Fig. 3), Roger talked about the cause of the landslide that led to the closure of the mine. With the mine as a backdrop, Tim Walsh of DGER covered geothermal energy, natural gas potential, uranium, and coal resources of Washington.

Travis McLing of Idaho National Laboratory, technical lead for carbon management and Geologic Program Manager for the Big Sky Regional Carbon Sequestration Partnership, gave a talk on carbon sequestration potential for Washington. This topic raised many questions, as it may provide a solution to dealing with CO<sub>2</sub>.

### **Mossyrock Dam**

The third stop of the conference (and lunch) was at Mossyrock Dam on the Cowlitz River. Tony Usibelli, the Director of the Energy Policy Division of the Washington State Department of Community, Trade, and Economic Development, talked about existing and near-term alternative energy sources in Washington—what is already installed and the planned capacity for energy production. He also covered recent technological advances and the growth industry of alternative energy.

Hedia Adelman, Executive Policy Advisor for the Department of Ecology, discussed the possible impacts of global warming on Washington. Charlie Grist, a senior analyst with the Northwest Power and Conservation Council, explained how we can conserve power to help meet our power needs. Pat McCarty, Generation Manager for Tacoma Power, gave a presentation on their Cowlitz River Project and the significant contribution of hydro-electric power. He also discussed Tacoma Power's plans for alternative energy sources, such as tidal and wind power. The conference then stopped on top of Mossyrock Dam, the state's tallest dam (Fig.



**Figure 4.** Mossyrock Dam, built in 1968, stands 606 feet above bedrock. The dam forms 23.5-mile-long Riffe Lake. The Cowlitz Wildlife Area, which surrounds the lake, is managed for Tacoma Power by the Washington Department of Fish and Wildlife. It is enhanced for a wide variety of birds and animals.

4), for a breathtaking view of the Cowlitz River canyon and Riffe Lake.

### **Jackson Prairie Natural Gas Storage**

The fourth and final stop of the day was at the Jackson Prairie underground natural-gas storage facility (Fig. 5). Mark Anders, Technical Services Manager for Puget Sound Energy, and geologist Bob Pinotti explained the functioning of the Northwest's largest natural-gas storage facility. Steve Pappajohn, Vice President of Regulatory, Environmental and Community Affairs for Cascadia Energy Corp. and President of Methane Energy



**Figure 5.** Senior Geologist Bob Pinotti of Puget Sound Energy (PSE) explains the Jackson Prairie Gas-Storage Facility. PSE buys gas during the summer when prices are low, stores it in large underground reservoirs, then taps the stored reserves in winter when gas usage is highest.

Corp., discussed the challenges of coal-bed methane exploration in Washington.

Ron Teissere, DGER State Geologist, talked about the need for preserving data and understanding subsurface geology to help make critical decisions on such projects such as CO<sub>2</sub> sequestration. Marc Cummings, Director of Public Affairs, Pacific Northwest National Labs, presented likely energy technologies of the future and what's not yet feasible but still promising. Paul Horton, Executive Director of Climate Solutions, gave a talk about sustainability.

Doug Sutherland, DNR's Commissioner of Public Lands, closed the conference. Doug recognized the decision-makers and the various agencies and private organizations that worked on the conference for the high level of cooperation that made the conference a success. That is the level of cooperation required if we are to come up with real solutions to our energy needs, he said. ■

### **MESSAGE FROM STATE GEOLOGIST RON TEISSERE**

The accompanying article on the recent Decision-Makers Field Conference describes the content of the day-long trip. The purpose was to explore current and future energy-related issues facing Washington. Highlights included recognition of the industrial scale of the activities necessary to support our energy needs and the progress that has been made in Washington to supply clean energy with the smallest possible impact to the landscape and the atmosphere.

Greenhouse gases remain relatively untouched to date, but the discussion of research and pilot projects to sequester CO<sub>2</sub> in geologic formations below the surface may lead to one solution of this problem in the foreseeable future.

For DGER, one of the important messages shared with the group is the need to capture, preserve, and share earth science

data from all of the energy-related activities. These activities include work related to research, exploration, construction, and production. These data will serve as an invaluable resource for future decision-makers as technologies evolve, population grows, Washington continues its intense development, and new challenges appear.

DGER is working to develop a legislative proposal aimed at improving our ability to capture, catalog, preserve, and digitize earth science data from Washington with the ultimate objective of making it all web-accessible. We hope to do this in partnership with other local, state, and federal agencies to get as complete a data set as possible. The Legislature has supported an initial step by amending the state's regulation of geothermal core holes to require the submission of temperature data to DGER. ■





### EMPLOYEE RECOGNITION DAY

Joe Dragovich (left) and Fritz Wolff man the DGER booth for Washington State Employee Recognition Day, Aug. 21. The event started with employee recognition and was followed by a complimentary barbecue and a chance to check out what our State agencies are doing.

### NEW USGS GEOLOGIC TIME SCALE

A new geologic time scale has been developed by the U.S. Geological Survey Geologic Names Committee. It is based on the scale published in the USGS "Suggestions to Authors" (7th ed.), but updated with unit names and boundary estimates ratified by the International Commission on Stratigraphy.

This new time scale has been released officially as USGS Fact Sheet 2007-3015 (<http://pubs.usgs.gov/fs/2007/3015/>).

## GEOLOGICAL HAZARDS SECTION UPGRADES SEISMOGRAPH

In July, the DGER Hazards Section replaced its seismograph with a new Geometrics 24-channel seismograph. This seismograph is controlled by a laptop computer and has more data storage for seismic signals.

Recording more data allows us to use modern surface-wave techniques to efficiently determine shear-wave velocities (Vs) in culturally noisy areas. Surface wave data from both passive (microtremor) and active surveys (with a seismic source) can be merged to determine shear-wave velocity in

the top 30 meters of the soil column, which is an important datum in determining site classes for building codes.

Under the supervision of Tim Walsh, Recep (Ray) Cakir and Trevor Contreras are using the seismograph to characterize Pacific Northwest Seismic Network (PNSN) strong-motion station sites in Washington. This effort includes drilling, standard penetration testing, downhole seismic logging, and seismic surveys, such as shear wave refraction, multichannel analysis of surface waves, and microtremor array measurement. ■



Ray Cakir (right) and Trevor Contreras monitor drilling at Centennial Park in Olympia. They sampled down to 100 feet and installed a PVC liner. The liner is used to perform downhole shear-wave surveys. The surveys will help characterize the future site of the Natural Resource Building's (left background) far-field strong-motion sensor.



Deb Underwood of Geometrics (left), Trevor, and Ray try out the new seismograph at the Centennial Park site.

## EARTH SCIENCE WEEK OCTOBER 14-20, 2007

### Theme: The Pulse of the Earth

This year marks the tenth annual Earth Science Week (ESW). Earth Science Week activities promote public and professional awareness of the status of earth science in education and society. This year's theme will focus attention on geoscience research.

The DGER ESW webpage will be online by Oct. 1 at <http://www.dnr.wa.gov/geology/esweek/2007/>. There will be a link to our revised Teachers Packet from this webpage.

### Events

**Book Donation.** On behalf of DGER, State Geologist Ron Teissere will donate copies of "Home Ground—Language for an American Landscape", edited by Barry Lopez, to the Washington State Library, the Timberland Regional Library, and the Office of the Superintendent of Public Instruction. From the introduction by Barry Lopez: "In the pages that follow, a community of writers has set down definitions for landscape terms

and terms for the forms that water takes, each according to his or her own sense of what's right, what's important to know. The definitions have been reviewed for accuracy by professional geographers, but the writers' intent was not to be exhaustive, let alone definitive. In concert with each other, they wanted to suggest the breadth and depth of a language many of us still seek to use purposefully every day. Their intent was to celebrate and inform, and to point us toward the great body of work which they perused in their research and which, along with a life experience of their own, they brought into play to craft what they had to say." Some of the authors in this glossary include Barbara Kingsolver, Terry Tempest Williams, and Jon Krakauer.

**Silent Auction.** The Geology Library will hold a silent auction to raise money for geologic education programs. Items to be auctioned include: a rock-gem-mineral collection, geologist Sarah Andrew's Em

Hansen geological mysteries autographed by the author, maps, books, and Mount St. Helens ash from the 1980 eruption. Money raised will be split equally between the Minerals Information Institute and AGI.

**Lunchtime Lecture.** Thursday, October 18, the Division of Geology and Earth Resources Brown Bag lunchtime presentation will discuss an ESW topic to be announced.

### Resources

The American Geological Institute organizes Earth Science Week. Visit its ESW webpage (<http://www.earthsciweek.org/>) for activities, events, lesson plans, and more.

The U.S. Geological Survey ESW website is <http://www.usgs.gov/earthscience/2007/default.asp>.

Washington Governor Christine Gregoire's Proclamation for ESW will be posted at <http://www.earthsciweek.org/proclamations/index.html>. ■

## STAFF NOTES



**Hank Schasse** retired in July after 26.5 years with the Division. In the early days, he was lead geologist in the Coal Section. After that, he was part of the State Geologic Mapping Program for the southwest and, later, the northwest quadrant of the State. Since 1997, He has been mapping 7.5-minute quadrangles for the STATEMAP Program on the northern Olympic Peninsula, southern Puget Lowland, and Whidbey and Camano Islands. Hank has a B.S. from the University of Wisconsin–Madison and an M.S. from Penn State. Before coming to DGER, he worked for the Pennsylvania survey and in mineral exploration. He plans to do some traveling in the southern hemisphere, particularly Australia and New Zealand, and Europe.

**Isabelle Sarikhan**, who has been working for the Landslide Hazard Zonation Project, has accepted a Natural Resource Scientist 2 position in DGER's Geologic Hazards Section, working on geologic hazard assessments.



**Kelsay Davis** is another new Natural Resource Scientist 2 for the Geologic Hazards Section. She has an M.S. from Western Washington University and a B.S. from Oregon State University. She will be working on seismic and tsunami hazards.



**Debra Grant** is our new Front Office manager (Office Assistant 3). She came to us from Green Hill School in Chehalis, a DSHS correctional facility, where she was a Fiscal Technician 2 for



11 months. Before that, she spent 14 years as estimator/office manager for Ken Grant Painting LLC.

**Tara Salzer** has finished her training as a Technical Assistance Coordinator for the Surface Mine Reclamation Program. She has been promoted to Natural Resource Specialist 1.



**Jessica Hicks** has been hired to fill a temporary office assistant position. She is currently working on her A.A. degree in general studies at South Puget Sound Community College.

**Doreen Smith**, who has been with the Division for 4 years, has gone to a developmental assignment with the DNR's Aquatics Division's Rivers District. Doreen will be working out of the Pacific Cascade Region in Chehalis.

### Landslide Hazard Zonation Project

As of September 30, DGER geologists working on the Forest Practices Landslide Hazard Zonation (LHZ) Project will be moving to DNR's Forest Practices Division, which oversees the project.

**Lorraine Powell**, Natural Resource Scientist 3, is transferring from the LHZ Project to DGER's Surface Mine Reclamation Program.

**Carol Serdar** has been promoted to Natural Resource Scientist 3 within the LHZ Project. She will be moving to DNR's Forest Practices Division.

### OPEN-ACCESS JOURNALS

As part of their GeoRef program, the American Geological Institute (AGI) publishes a list of open-access journals that offer free full-text articles. The GeoRef database, established by AGI in 1966, provides access to the geoscience literature of the world. The database contains over 2.8 million references to geoscience journal articles, books, maps, conference papers, reports and theses. You can gain access to this vast amount of information through searching on the web, online, or in the GeoRef CD.

For links to the open-access journal websites, go to <http://www.agiweb.org/georef/about/OpenAccessList.htm>. ■

### Summer Temps

**Gabriel Legorreta-Paulin** has a Ph.D. in geology from the State University of New York at Buffalo and is helping Michael Polenz complete his coastal landslide mapping. He will be moving on to the LHZ Project with DNR's Forest Practices Division.

**Matt Covert**, a student at Arizona State University, worked in the library and did inventory and data entry.

**Mike Hamilton** has been volunteering in the Spokane office for many years, helping Bob Derkey with geologic mapping. He's recently been hired to help map the Olsen Canyon 7.5-minute quadrangle and do reconnaissance and subsurface mapping in northern Lincoln County.

### Cakir-Chae Wedding



Recep (Ray) Cakir, Senior Geologist for the Geologic Hazards Section, and Boyoung Chae were married on May 26. Boyoung is from Sam-Chuck, a small town in South Korea. She and Ray met at Penn State where they were both graduate students. She is currently pursuing her Ph.D. in Instructional System Design in Education at University of Georgia. Ray is from Izmir (ancient name 'Smyrna'), western Turkey. ■



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