The Professional GEOLOGIST

AIPG • AEG 2002
Joint Annual Meeting
Reno-Lake Tahoe
NEVADA

Pre-Registration Deadline
AUGUST 16, 2002

A publication of
The American Institute of Professional Geologists
The 2nd Joint AIPG • AEG 2002 Annual Meeting being held in Reno in September will feature two special events that AIPG members may wish to participate in. Both events are sponsored by AIPG solicited corporations and both events have limited space. The purpose of this notice is to give those AIPG members who will be attending the meeting in Reno the opportunity to sign up for either event prior to receiving the official registration form.

The concept for the golf tournament is that 5 four-member teams each from AIPG and AEG will tee off at 1:00 P.M. on September 24, 2002. Lakeridge Golf Course is 10 minutes by car from the Peppermill Hotel. The course is designed by Robert Trent Jones and the 15th hole, pictured above, is the signature hole. In addition to the golf cart and on course refreshments, there will be prizes for low net, most lost balls and other fun categories. The format will be best ball scramble with handicaps submitted by the players.

Please contact Kel Buchanan by fax or e-mail if you are interested in playing in the golf tournament. I will need your handicap or USGA index if you have one. For golfers who just like to swing away, the handicap is 40. My contact numbers are listed in TPG under the AIPG Foundation. The cost for the golf tournament is $45 thanks to our sponsor, Eklund Drilling, but don’t send any money until you register; just notify me of your interest so I can put you on the list.

The Dinner Cruise on Lake Tahoe: On September 26, four buses will leave the Peppermill Hotel at 4:30 P.M. for a very scenic mountain journey, arriving at the MS Dixie pier at 6:00 P.M. The MS Dixie is a new, fast paddle wheeler, (pictured above), one of two paddle wheelers which travel Lake Tahoe in the summer. The AIPG•AEG dinner is a private event. The MS Dixie has a live band on board for your enjoyment and the lake is a sheet of glass in the evening. The number of guests is limited to 180 persons. Because this cruise is such a good value thanks to our sponsor Mungas Construction, I expect it will have a waiting list. Since this sponsor was solicited by AIPG, I would prefer that those on the waiting list not be AIPG members. The cost of the dinner cruise is $45 and, as with the golf tournament, please just notify me of the names of the participants for the priority list.
The Professional GEOLOGIST

JULY 2002

Volume 39, Number 7

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FRONT COVER—Photos of Reno-Lake Tahoe, Nevada, site of the AIPG •
AEG 2002 Joint Annual Meeting. Photos courtesy of the Reno-Sparks
Convention and Visitors Authority and the Nevada Bureau of Mines and
Geology.
Welcome to the AIPG • AEG
JOINT ANNUAL MEETING

"Gambling with Geologic Hazards"
and
"Dealing with Sustainability"
Reno, Nevada
September 22-29, 2002

As Co-Chairs of the 2002 annual meeting, it is our pleasure to extend a warm welcome to the members, spouses and friends of the Association of Engineering Geologists and American Institute of Professional Geologists. On behalf of the organizing committee, thank you for choosing to join us in Reno for what promises to be an exciting week.

Reno, "The Biggest Little City in the World" has a lot to offer as a venue for a meeting such as this. Our meeting will be held at the Peppermill Hotel Casino located a short distance from Reno-Tahoe International Airport. World-class entertainment, recreation, and gambling facilities coupled with many natural scenic wonders make Reno a destination resort city.

Nestled at the base of the Sierra Nevada Mountains, Reno is located at a crossroads in the settlement of the west. From the building of the Transcontinental Railroad to the mining of the Comstock Lode, geology has been central to the history of the State of Nevada. Now as then, geology is in the forefront of the issues facing our State and the Nation. The influence of geology in our lives is reflected in the main theme of our meeting, "Gambling with Geologic Hazards". Our technical program will emphasize the relationship between society's needs for growth, and the associated risks to the public and the environment. With this theme in mind, some of the newsworthy topics that will be explored include: the environmental threats to Lake Tahoe, seismic hazards in the Basin and Range, modern mining techniques, mine reclamation, and the geologic suitability of the nations proposed Yucca Mountain National Nuclear Waste Repository.

The sub theme selected for the meeting is "Dealing with Sustainability". This sub theme is intended to have a double meaning: the needs in the future to be able to sustain our profession, and the role engineering geology plays in providing sustainable infrastructure necessary for society in an increasingly sensitive environment. Professional registration, new advances in technology, teaching ethical practices to the next generation of practitioners, the role of geologists in planning communities, and the role of mining in sustaining our quality of life are just some of the topics that will be examined.

Attendees will benefit from the combined efforts and talents of members of the two professional associations working together. Select from an outstanding array of field trips, short courses, technical sessions, and symposia. The meeting also will be enhanced by the presence of the University of Nevada, Reno. The facilities and staffs of the Mackay School of Mines, Department of Civil Engineering and Nevada Bureau of Mines and Geology located on campus have contributed to the outstanding program schedule. Be sure to thank our exhibitors and sponsors; their support allows us to deliver a quality meeting experience at a reasonable cost.

Once again thank you for choosing to come to Reno.

Kelvin Buchanan, AIPG Co-Chair AIPG 39th Annual Meeting
Gary Luce, AEG Co-Chair AEG 45th Annual Meeting
<table>
<thead>
<tr>
<th>EVENT</th>
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<th>TIME</th>
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<tr>
<td><strong>MONDAY, SEPTEMBER 23</strong></td>
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<tr>
<td>Registration Desk</td>
<td>Tahoe Foyer</td>
<td>7:00am-12noon</td>
</tr>
<tr>
<td>Short Course Contracting for Geophysical Services</td>
<td>Sierra View Room (#1748)</td>
<td>8:00am-5:00pm</td>
</tr>
<tr>
<td>Field Trip #1: Yucca Mountain, Las Vegas, Nevada</td>
<td>Field trip leaves from west parking lot of Tropicana Hotel in Las Vegas, Nevada</td>
<td>6:00am-5:00pm</td>
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<tr>
<td>Spouse/Guest Hospitality Room</td>
<td>Valley View Room (#1734)</td>
<td>12noon-5:00pm</td>
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<tr>
<td><strong>TUESDAY, SEPTEMBER 24</strong></td>
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<tr>
<td>Registration Desk</td>
<td>Tahoe Foyer</td>
<td>7:00am-5:00pm</td>
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<tr>
<td>Field Trip #2: Open Pit De-watering &amp; Slope Instability in Deep Mine Excavations</td>
<td>Bus pickup: Peppermill Hotel near Valet Parking</td>
<td>7:00am-6:00pm</td>
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<tr>
<td>Spouse/Guest Hospitality Room</td>
<td>Valley View Room (#1734)</td>
<td>7:30am-5:00pm</td>
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<tr>
<td>Short Course: What Are The Odds? Probabilistic Methods</td>
<td>Sierra View Room (#1748)</td>
<td>8:00am-12noon</td>
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<tr>
<td>AEG Executive Council Meeting</td>
<td>Lake View Room (#1747)</td>
<td>8:00am-5:00pm</td>
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<tr>
<td>AIPG 2002 Executive Committee Meeting</td>
<td>Platinum Room</td>
<td>8:00am-5:00pm</td>
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<tr>
<td>Short Course: Using RockWorks/2002</td>
<td>Skyline View Room (#1735)</td>
<td>9:00am-12noon</td>
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<tr>
<td>Field Trip #3: Seismic Hazards of the Carson Range Fault System</td>
<td>Bus pickup: Peppermill Hotel near Valet Parking</td>
<td>9:00am-4:00pm</td>
</tr>
<tr>
<td>Spouse/Guest Field Trip #1: Virginia City</td>
<td>Bus pickup: Peppermill Hotel near Valet Parking</td>
<td>9:30am-3:30pm</td>
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<tr>
<td>Speaker Preparation Room</td>
<td>Boardroom</td>
<td>12noon-11:00pm</td>
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<tr>
<td>Golf Tournament</td>
<td>Bus pickup: Peppermill Hotel near Valet Parking</td>
<td>1:00pm-5:30pm</td>
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<tr>
<td>Short Course: BEST GeoSim: Computer Simulator</td>
<td>Sierra View Room (#1748)</td>
<td>1:00pm-5:00pm</td>
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<tr>
<td>Ice Breaker and Exhibitor Opening</td>
<td>Grand Ballrooms (exhibitors’ area)</td>
<td>6:30pm-8:30pm</td>
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<td><strong>WEDNESDAY, SEPTEMBER 25</strong></td>
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<tr>
<td>Speaker Preparation Room</td>
<td>Boardroom</td>
<td>5:00am-11:00pm</td>
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<tr>
<td>Registration Desk</td>
<td>Tahoe Foyer</td>
<td>7:00am-5:00pm</td>
</tr>
<tr>
<td>Field Trip #4: Mini Trip – Sparks Marina</td>
<td>Bus pickup: Peppermill Hotel near Valet Parking</td>
<td>7:00am-9:00am</td>
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<tr>
<td>Spouse/Guest Hospitality Room</td>
<td>Valley View Room (#1734)</td>
<td>7:30am-5:00pm</td>
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<tr>
<td>Speakers/Moderators Breakfast</td>
<td>Sierra View Room (#1748)</td>
<td>7:30am-9:00am</td>
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<tr>
<td>AIPG 2002 Advisory Board Meeting</td>
<td>Skyline View (#1735)</td>
<td>7:30am-9:30am</td>
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<tr>
<td>Spouse/Guest Field Trip #2: Hidden Cave/Grimes Point Archeological Site Tour</td>
<td>Bus pickup: Peppermill Hotel near Valet Parking</td>
<td>8:30am-3:00pm</td>
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<tr>
<td>Exhibitors and Poster Sessions</td>
<td>Grand Ballrooms</td>
<td>9:00am-5:00pm</td>
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<tr>
<td>Welcome &amp; Opening Session</td>
<td>Tahoe 1 &amp; 2 Rooms</td>
<td>9:00am-9:15am</td>
</tr>
<tr>
<td>Keynote Speaker: Nevada’s State Geologist – Jonathan Price</td>
<td>Tahoe 1 &amp; 2 Rooms</td>
<td>9:15am-9:45am</td>
</tr>
<tr>
<td>AEG’s Outstanding Environ. &amp; Engr. Geologic Project Award</td>
<td>Tahoe 1 &amp; 2 Rooms</td>
<td>9:45am-10:50am</td>
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<tr>
<td>AIPG 2003 Advisory Board Meeting</td>
<td>Skyline View (#1735)</td>
<td>10:00am-12noon</td>
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<tr>
<td>Mid-Morning Break</td>
<td>Grand Ballrooms (exhibitors’ area)</td>
<td>10:50am-11:10am</td>
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<tr>
<td>2002 Richard H. Jahns Lecturer: Dr. Perry Rahn</td>
<td>Tahoe 1 &amp; 2 Rooms</td>
<td>11:10am-12noon</td>
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<tr>
<td>AEG Corporate Business Meeting &amp; Luncheon</td>
<td>Sierra View (#1748)</td>
<td>12noon-2:00pm</td>
</tr>
<tr>
<td>AIPG 2002-2003 Executive Committee Meeting</td>
<td>Skyline View (#1735)</td>
<td>1:30pm-3:30pm</td>
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<tr>
<td>Technical Session #1: Symposium – Tunneling Through Difficult Ground</td>
<td>Tahoe 1 Room</td>
<td>2:00pm-5:20pm</td>
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<tr>
<td>Technical Session #2: Symposium – Addressing Hazardous Waste and Contamination Issues at Abandoned Mines in the Western United States</td>
<td>Tahoe 2 Room</td>
<td>2:00pm-5:20pm</td>
</tr>
<tr>
<td>Technical Session #3: Landslides (Part 1)</td>
<td>Tahoe 3 Room</td>
<td>2:00pm-5:20pm</td>
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<tr>
<td>Technical Session #4: Transportation</td>
<td>Tahoe 4 Room</td>
<td>2:00pm-5:20pm</td>
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<tr>
<td>Technical Session #5: Engineering Geology Practice (Part 1)</td>
<td>Silver &amp; Platinum Rooms</td>
<td>2:00pm-5:20pm</td>
</tr>
<tr>
<td>Technical Session #6: Symposium – Solving Real-World Problems with Geology and Geologic Maps</td>
<td>Maple Room</td>
<td>2:00pm-5:00pm</td>
</tr>
<tr>
<td>Employment Interview Service</td>
<td>Sierra View Room (#1748)</td>
<td>3:00pm-6:00pm</td>
</tr>
<tr>
<td>Mid-afternoon Break</td>
<td>Grand Ballrooms (exhibitors’ area)</td>
<td>3:30pm-3:40pm</td>
</tr>
<tr>
<td>Reception to Joint Annual Banquet</td>
<td>Tahoe Foyer</td>
<td>6:30pm-7:15pm</td>
</tr>
<tr>
<td>Joint Annual Banquet and Awards</td>
<td>Tahoe 2, 3 and 4 Rooms</td>
<td>7:15pm-10:30pm</td>
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<tr>
<td>EVENT</td>
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<tr>
<td><strong>THURSDAY, SEPTEMBER 26</strong></td>
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<tr>
<td>Speaker Preparation Room</td>
<td>Boardroom</td>
<td>5:00am-11:00pm</td>
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<tr>
<td>Registration Desk</td>
<td>Tahoe Foyer</td>
<td>7:00am-5:00pm</td>
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<tr>
<td>Spouse/Guest Hospitality Room</td>
<td>Valley View Room (#1734)</td>
<td>7:30am-5:00pm</td>
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<tr>
<td>Speakers/Moderators Breakfast</td>
<td>Sierra View Room (#1748)</td>
<td>7:30am-9:00am</td>
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<tr>
<td>AIPG Foundation Breakfast</td>
<td>Lake View Room (#1747)</td>
<td>7:30am-9:30am</td>
</tr>
<tr>
<td>Women in AEG•AIPG•AWG Breakfast</td>
<td>Skyline View (#1735)</td>
<td>7:30am-9:00am</td>
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<tr>
<td>Technical Session #7: Symposium—Visioning the Future of Engineering Geology: Sustainability &amp; Stewardship (Part 1)</td>
<td>Tahoe 1 Room</td>
<td>8:00am-12:00pm</td>
</tr>
<tr>
<td>Exhibitors and Poster Sessions</td>
<td>Grand Ballrooms</td>
<td>9:00am-4:00pm</td>
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<tr>
<td>S/G F.T.#3: Lake Tahoe: Heavenly Tramride / Club Cal-Neva</td>
<td>Bus pickup: Peppermill Hotel near Valet Parking</td>
<td>9:00am-3:30pm</td>
</tr>
<tr>
<td>Technical Session #8: Landslides (Part 2)</td>
<td>Tahoe 2 Room</td>
<td>9:00am-12:00pm</td>
</tr>
<tr>
<td>Tech. Ses. #9: Symposium—Evaluation of Earthquake Hazards</td>
<td>Tahoe 3 Room</td>
<td>9:00am-12:00pm</td>
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<tr>
<td>Technical Session #10: Environmental Geology (Part 1)</td>
<td>Tahoe 4 Room</td>
<td>9:00am-12:00pm</td>
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<tr>
<td>Technical Session #11: Hydrogeology</td>
<td>Silver &amp; Platinum Rooms</td>
<td>9:00am-12:00pm</td>
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<tr>
<td>Technical Session #12: Materials Characterization</td>
<td>Maple Room</td>
<td>9:00am-12:00pm</td>
</tr>
<tr>
<td>AIPG Business Meeting</td>
<td>Skyline View Room (#1735)</td>
<td>9:30am-11:30am</td>
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<tr>
<td>Employment Interview Service</td>
<td>Sierra View Room (#1748)</td>
<td>10:00am-6:00pm</td>
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<tr>
<td>Mid-morning Break</td>
<td>Grand Ballrooms (exhibitors’ area)</td>
<td>10:20am-10:40am</td>
</tr>
<tr>
<td>Exhibitors’ Lunch</td>
<td>Grand Ballrooms (exhibitors’ area)</td>
<td>12:00pm-2:00pm</td>
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<tr>
<td>Tech. Ses. #13: Symm—Visioning the Future of Engr. Geology (Pt. 2)</td>
<td>Tahoe 1 Room</td>
<td>1:30pm-4:00pm</td>
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<tr>
<td>Technical Session #14: Expansive Soils and Bedrock</td>
<td>Tahoe 2 Room</td>
<td>2:00pm-4:00pm</td>
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<tr>
<td>Technical Session #15: Fault Hazards</td>
<td>Tahoe 3 Room</td>
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<tr>
<td>Technical Session #16: Site Characterization</td>
<td>Tahoe 4 Room</td>
<td>2:00pm-4:00pm</td>
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<tr>
<td>Technical Session #17: Dams and Related Structures</td>
<td>Silver &amp; Platinum Rooms</td>
<td>2:00pm-4:00pm</td>
</tr>
<tr>
<td>Tech. Ses. #18: Symposium—Controversies in Mining Hydrology</td>
<td>Maple Room</td>
<td>2:00pm-4:00pm</td>
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<tr>
<td>Field Trip #5: Mini Trip—Mount Rose Fan</td>
<td>Bus pickup: Peppermill Hotel near Valet Parking</td>
<td>2:00pm-4:00pm</td>
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<tr>
<td>Special Event: Lake Tahoe Dinner Cruise (Bus pickup in front of Peppermill Hotel near Valet Parking)</td>
<td>Bus boardings start at 4:10pm</td>
<td>4:30pm-10:00pm</td>
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<tr>
<td><strong>FRIDAY, SEPTEMBER 27</strong></td>
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<tr>
<td>Speaker Preparation Room</td>
<td>Boardroom</td>
<td>5:00am-5:00pm</td>
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<tr>
<td>Registration Desk</td>
<td>Tahoe Foyer</td>
<td>7:00am-5:00pm</td>
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<tr>
<td>Spouse/Guest Hospitality Room</td>
<td>Valley View Room (#1734)</td>
<td>7:30am-5:00pm</td>
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<tr>
<td>Speakers/Moderators Breakfast</td>
<td>Sierra View Room (#1748)</td>
<td>7:30am-9:00am</td>
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<tr>
<td>Exhibitors and Poster Sessions</td>
<td>Lake View Room (#1735)</td>
<td>7:30am-9:00am</td>
</tr>
<tr>
<td>AIPG &amp; AEG Joint Past Presidents’ Breakfast (Invitation only)</td>
<td>Grand Ballrooms</td>
<td>9:00am-2:00pm</td>
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<tr>
<td>Technical Session #19: Symposium—Quaternary Faulting</td>
<td>Tahoe 1 Room</td>
<td>9:00am-12:00am</td>
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<tr>
<td>Tech. Ses. #20: Symm—Monitoring &amp; Remediating Solid Waste Facil.</td>
<td>Tahoe 3 Room</td>
<td>9:00am-12:00am</td>
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<tr>
<td>Technical Session #21: Landslides (Part 3)</td>
<td>Tahoe 4 Room</td>
<td>9:00am-12:00am</td>
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<tr>
<td>Technical Session #22: Environmental Geology (Part 2)</td>
<td>Silver &amp; Platinum Rooms</td>
<td>9:00am-12:00am</td>
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<tr>
<td>Technical Session #23: Liquefaction</td>
<td>Maple Room</td>
<td>9:00am-12:00am</td>
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<tr>
<td>Tech. Ses. #24: Symm—Sustainable Development Natural Resources</td>
<td>Maple Room</td>
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<tr>
<td>Employment Interview Service</td>
<td>Sierra View Room (#1748)</td>
<td>10:00am-6:00pm</td>
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<tr>
<td>Mid-morning Break</td>
<td>Grand Ballrooms (exhibitors’ area)</td>
<td>10:20am-10:40am</td>
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<tr>
<td>Field Trip #6: Mini Trip—University of Nevada-Reno</td>
<td>Bus pickup: Peppermill Hotel near Valet Parking</td>
<td>12:00pm-2:00pm</td>
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<tr>
<td>Technical Session #25: Engineering Geology Practice (Part 2)</td>
<td>Tahoe 1 Room</td>
<td>2:00pm-5:00pm</td>
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<tr>
<td>Tech. Ses. #26: Symm—Dealing with Nuclear Waste, Yucca Mtn.</td>
<td>Tahoe 2 Room</td>
<td>1:30pm-5:00pm</td>
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<tr>
<td>Technical Session #27: Debris Flows and Rockfalls</td>
<td>Tahoe 3 Room</td>
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<tr>
<td>Technical Session #28: Geophysics</td>
<td>Tahoe 4 Room</td>
<td>2:00pm-5:00pm</td>
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<tr>
<td>Technical Session #29: Natural and Manufactured Gas Hazards</td>
<td>Silver &amp; Platinum Rooms</td>
<td>2:00pm-5:00pm</td>
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<tr>
<td>Tech. Ses. #30: Symm—Geology as a Profession: Is it Sustainable?</td>
<td>Maple Room</td>
<td>2:00pm-5:00pm</td>
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<tr>
<td>Mid-afternoon Break</td>
<td>Tahoe Foyer</td>
<td>3:20pm-3:40pm</td>
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<tr>
<td><strong>SATURDAY, SEPTEMBER 28</strong></td>
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<tr>
<td>AEG Board of Directors’ Meeting</td>
<td>Sierra View (#1748)</td>
<td>8:00am-5:00pm</td>
</tr>
<tr>
<td>Teachers’ Workshop (Part 1) — Field Trip #8</td>
<td>Bus pickup: Peppermill Hotel near Valet Parking</td>
<td>8:00am-5:00pm</td>
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<tr>
<td>Field Trip #7: Reconstruction of the Historic V&amp; T Railroad</td>
<td>Bus pickup: Peppermill Hotel near Valet Parking</td>
<td>8:00am-4:00pm</td>
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<tr>
<td>Field Trip #8: The Lake Tahoe Crapsheet (Geology: Lake Tahoe)</td>
<td>Bus pickup: Peppermill Hotel near Valet Parking</td>
<td>8:00am-5:00pm</td>
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<tr>
<td><strong>SUNDAY, SEPTEMBER 29</strong></td>
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<tr>
<td>AEG Board of Directors’ Meeting</td>
<td>Sierra View (#1748)</td>
<td>8:00am-12:00am</td>
</tr>
<tr>
<td>Teachers Workshop (Part 2) — workshop at the Peppermill</td>
<td>Sequoia Room</td>
<td>10:00am-5:00pm</td>
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</tbody>
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Technical Program

In conjunction with the meeting theme of the 2002 Joint Annual Meeting, "Gambling with Geologic Hazards and Dealing with Sustainability," the technical program will focus on a variety of earthquake-related issues, as well as classic engineering geology, environmental, and ground water topics. The 2002 Joint Annual Meeting Committee has planned technical sessions, special symposia, short courses, and a teacher workshop that we believe will provide an outstanding opportunity for geologists and other professionals to share the state-of-the-art and practices.

We hope the 2002 Joint Annual Meeting will be remembered as another of the outstanding meetings for which the Association of Engineering Geologists and the American Institute of Professional Geologists are known.

Full meeting activities will begin at 9:00 am WEDNESDAY morning, September 25, 2002 in the Tahoe 1 & 2 meeting rooms with the Welcoming Session and the presentation of AEG's Outstanding Environmental and Engineering Geologic Project Award by AEG President Myles A. Carter. Our Keynote Speaker will be Nevada's State Geologist, Jonathon Price, speaking about Gambling with Geologic Hazards and Dealing with Sustainability.

After the presentation of the Outstanding Environmental and Engineering Geologic Project Award, the Richard H. Jahns Distinguished Lecturer in Engineering Geology Award Recipient, Dr. Perry Rahn, will present his lecture entitled Flood Hazards.

A Speakers' Preparation Room (Boardroom - on the second floor near the Grand Ballrooms) will be open from 1:00 PM to 11:00 PM September 24 (Tuesday) and from 7:00 AM to 11:00 PM September 25 and 26 (Wednesday and Thursday), and 7:00 AM to 5:00 PM September 27 (Friday). Projectors will be provided for your use. Bring your own laptop to practice your PowerPoint presentation.

Keynote Speaker

Jonathan G. Price, Nevada State Geologist

Gambling with Geologic Hazards and Dealing with Sustainability

Price, Jonathan G., Nevada Bureau of Mines and Geology, University of Nevada, Reno, Mail Stop 178, Reno, NV 89557-0088. jprice@unr.edu

How we deal with natural hazards and other complicated issues, such as sustaining economies, cultures, and the environment, is a gamble not unlike playing at the casino. With casino games, we know the odds. With some geologic hazards, detailed geologic investigations narrow the odds to a point at which society can make rational decisions. With some other hazards and with certain issues of sustainability, our uncertainties regarding the odds are so high that social factors tend to overwhelm scientific contributions to decision making. Our jobs as geologists often become ones of narrowing the uncertainties so that rational decisions can be made.

Nevada geology provides many examples that illustrate the need for geologic investigations to help society figure out how to gamble with geologic hazards and deal with sustainability. Earthquakes, floods, land subsidence, construction hazards related to collapsing and swelling soils, shortages and protection of ground- and surface-water resources, and geochemical hazards (such as radon and arsenic) are interrelated with issues of land management and sustainable development of abundant metallic and non-metallic mineral resources and energy resources.

Nevada has been the fastest growing state in the country (as measured by either percentage population growth over the last several decades or extension of the crust over the last few million years). The U.S. is in the midst of the biggest gold-mining boom in history, and Nevada's mines account for most of the production. The odds of being successful in exploration have improved with new geological knowledge and technologies for finding and recovering the resources. The geologic rates of extension and related faulting, fracture development, and volcanism, which are critical factors in dealing with the country's only site under consideration for disposal of high-level nuclear waste, are analogous to low-probability, high-consequence odds of winning certain games at the casinos.
### Technical Session Schedule

#### September 25, Wednesday Afternoon
1. Symposium: Tunneling Through Difficult Ground
2. Symposium: Addressing Hazardous Waste & Contamination Issues at Abandoned Mines in the Western United States
3. Landslides (Part 1)
4. Transportation
5. Engineering Geology Practice (Part 1)
6. Symposium: Solving Real-World Problems with Geology and Geologic Maps

#### September 26, Thursday Morning
7. Symposium: Visioning the Future of Engineering Geology: Sustainability and Stewardship (Part 1)
8. Landslides (Part 2)
9. Symposium: Evaluation of Earthquake Hazards
10. Environmental Geology (Part 1)
11. Hydrogeology
12. Materials Characterization

#### September 26, Thursday Afternoon
14. Expansive Soils and Bedrock
15. Fault Hazards
16. Site Characterization
17. Dams and Related Structures
18. Symposium: Controversies In Mining Hydrology

#### September 27, Friday Morning
19. Symposium: Quaternary Faulting
21. Landslides (Part 3)
22. Environmental Geology (Part 2)
23. Liquefaction
24. Symposium: Sustainable Development of Natural Resources: Fact or Fantasy

#### September 27, Friday Afternoon
25. Engineering Geology Practice (Part 2)
27. Debris Flows and Rockfalls
28. Geophysics
29. Natural and Manufactured Gas Hazards
30. Symposium: Geology as a Profession: Is It Sustainable?

### AIPG President’s Awards

These awards recognize the best undergraduate and graduate posters presented by students at the AIPG*AEG Annual Meeting. ALL STUDENTS ARE WELCOME TO PARTICIPATE IN THE POSTER SESSIONS—SEPTEMBER 25-27, 2002. Cash awards and associate memberships in AIPG will be given to deserving students in honor of an AIPG member. The award will be presented in honor of a member who has made significant contributions to the Institute, as chosen by the sitting President of AIPG.

#### Graduate Category
1st place, $500 plus AIPG Associate Membership
2nd place, $100 plus AIPG Associate Membership
3rd place, AIPG Associate Membership

#### Undergraduate Category
1st place, $250 plus AIPG Associate Membership
2nd place, $50 plus AIPG Associate Membership
3rd place, AIPG Associate Membership

All awardees will be requested to attend the AIPG Annual Business meeting to be recognized.
Field Trips

Early registration prices are available if you register before August 16, 2002. The last date for receiving late (full price) field trip registration by mail, fax, or e-mail is September 18, 2002. Subject to space availability. All trips are subject to cancellation due to insufficient pre-meeting registration. For overnight trips, you will be contacted regarding roommates. Single supplement costs are noted.

The last field trip registration is 48 hours before the field trip (subject to space availability). Register early, though, as field trips could be cancelled due to insufficient early registrants.

Field Trip #1 — Pre-Meeting

Yucca Mountain Proposed High-Level Nuclear Waste Repository, Las Vegas, Nevada

Date: September 23, 2002 (Monday)
Time: 8:00 am - 5:00 pm
Cost: $25.00 - before August 16, 2002
       $35.00 - after August 16, 2002 (Limit 18/45)
Location: Bus pickup at the West Parking Lot of the Excalibur Hotel and Casino. The entrance of the parking lot is off Las Vegas Boulevard, just south of Tropicana Avenue. The address for the Excalibur is 3850 S. Las Vegas Boulevard. The west parking lot is the farthest east from the buildings and adjacent to I-15, but not accessible from the freeway; bus boarding will start at 6 am.

Participants in this field trip will travel by bus from Las Vegas, Nevada to the U.S. Department of Energy’s (DOE) Yucca Mountain site, located ca. 150 km (90 mi) northwest of Las Vegas on and adjacent to the Nevada Test Site. On 10th January, 2002, the Secretary of Energy informed the Governor of Nevada that he intends to recommend the Yucca Mountain Site to President Bush for a mined geologic repository for spent nuclear fuel and high-level radioactive waste. The potential repository is located more than 250 meters above the water table in unsaturated rhyolitic tuffs of Miocene age. Field trip participants will visit the underground Exploratory Studies Facility, which includes an 8 km main exploratory tunnel, a 3 km cross drift and a number of alcoves and niches for conducting tests. We will examine the welded tuff of the proposed repository horizon 200 - 350 meters below the land surface and visit several locales where project scientists conducted hydrologic, geochronological, and thermal tests.

The field trip will also visit the crest of Yucca Mountain where participants will view and discuss the surface geology of the site including the volcanic and pre-volcanic stratigraphy, the tectonic setting including several faults, and nearby Pleistocene-age basaltic eruptive centers. The field trip will emphasize the hydrogeology of the unsaturated and saturated zones and its effect on the ability of the potential repository to isolate radionuclides from the biosphere. A symposium on Yucca Mountain will be held in Reno on Friday. This trip will acquaint participants with the regional and site geologic and hydrogeologic settings.

A major topic will be the engineering geology of tunnels and alcoves in the densely welded rhyolitic tuffs of Miocene age. The main tunnel was constructed using a 25-ft diameter tunnel-boring machine (TBM). A smaller (16.5 ft) TBM was used for the second exploratory tunnel, known as the Cross Drift. The trip will also visit the sites of various surface investigations.

Participants should plan to arrive in Las Vegas on or before Sunday, September 22nd. The field trip will depart at ca. 6:00 am on the morning of Monday, September 23rd. The trip will last all day and will return to Las Vegas late on Monday afternoon. AEG-AIPG Annual Meetings participants should plan to fly to Reno on Monday evening or early Tuesday morning. Robust footwear, long pants and sleeved shirts are required for underground access. Hard hats, eye and ear protection, lamps and self-rescue gear will be provided at the tunnel entrance.

This trip is on a DOE restricted-access facility. Non-U.S. citizens are welcome on the trip, but must provide a completed PASA consent form and a letter from a U.S. citizen sponsor.

For additional or clarifying information contact John Peck at peck1@juno.com or call (702) 255-5285. More information on the Yucca Mountain site and the Yucca Mountain Project can be found on the web at www.ymp.gov

Leaders: John Peck (peck1@juno.com) and Bob Levich

Field Trip 2# — Pre-Meeting

Open Pit De-watering and Slope Instability in Deep Mine Excavations

Date: September 24, 2002 (Tuesday)
Time: 7:00 am - 6:00 pm
Cost: $65.00 - before August 16, 2002
       $80.00 - after August 16, 2002 (Limit 18/45)
Location: Bus pickup in front of the Peppermill Hotel.

This one-day field trip will view a superb open pit mining operation, approximately 30 miles north of Carson, Nevada. Geologic conditions of ground water, a weak rock mass, and adverse geologic structures combined to produce challenging mining slope instability problems, which have been successfully overcome will be discussed. The open pit is approximately 8,000 by 5,000 feet with vertical slope heights from 1,100 to 1,500 ft. at overall slope angles from 25 to 35 degrees and interrim slope angles between 25 to 44 degrees. Slope failures greater than 20 million tons have occurred in the pit and dewatering rates over a 10-year period average about 70,000 gpm. Participants will view a recent structurally controlled large failure, the pit dewatering system consisting of deep large-diameter perimeter wells and horizontal drains, and a computerized integrated slope-monitoring system.

Leaders: Robert Sharon, Director, Geotechnical Engineering, Barrick Goldstrike Mines, Elko, NV; and Robert Watters, Professor of Geological Engineering, MSM, University of Nevada-Reno, Reno, NV (watters@mines.unr.edu)
Field Trips

Field Trip #3 — Pre-Meeting
Seismic Hazards of the Carson Range Fault System
Date: September 24, 2002 (Tuesday)
Time: 9:00 am - 3:00 pm
Cost: $45.00 - before August 16, 2002
$60.00 - after August 16, 2002 (Limit 18/45)
Location: Bus pickup in front of the Peppermill Hotel

This field trip looks at the fault system bounding the spectacular eastern front of the Carson Range, which poses the principal seismic hazard to the Reno/Carson City urban corridor. Trenching studies indicate that most, if not all of this system has ruptured twice within the past 2,000 years. We will look at various parts of the system, including the complexity faulted Mount Rose fan in the South Reno area, the Washoe Valley area where trenching revealed two 2-meter events, and the Genoa fault, one of the most prominent range-front fault in the Basin and Range province. Recent earthquakes on the Genoa fault caused surface offsets of up to 5 m. We will visit a gravel quarry near Genoa that spectacularly exposes the striated bedrock fault plane, and a large scarp in glacial outwash deposits near Woodfords.

Leader: Alan Ramell, Nevada Bureau of Mines and Geology, ramell@unr.edu

Field Trip #4 — Mini Trip
Sparks Marina
Date: September 25, 2002 (Wednesday)
Time: 7:00 am - 9:00 am
Cost: $20.00 - before August 16, 2002
$30.00 - after August 16, 2002 (Limit 18/45)
(Includes continental breakfast)
Location: Bus pickup in front of the Peppermill Hotel

Visit this year's AEG Outstanding Project, a former sand and gravel quarry that at one time appeared to be headed for superfund status as a site with spilled oil from a nearby tank farm, but is now an urban lake with fishing, swimming, scuba diving opportunities and surrounded by a two-mile walking trail.

Leader: Shawn Gooch, City of Sparks Engineering, sgooch@ci.sparks.nv.us

Field Trip #5 — Mini Trip
Mount Rose Fan, Quaternary and Holocene Faulting
Date: September 26, 2002 (Thursday)
Time: 2:00 pm - 4:00 pm
Cost: $20.00 - before August 16, 2002
$30.00 - after August 16, 2002 (Limit 18/45)
Location: Bus pickup in front of the Peppermill Hotel

This two-hour, during-the-meeting mini-trip, will visit Holocene and older Quaternary faults that cut the Mount Rose alluvial fan. The mountain itself, at 10,776 ft, is the highest peak in the Carson Range. Homes built on the alluvial fan varyly avoid fault and flood hazards.

Leaders: John Bell, University of Nevada-Reno, jbell@unr.edu

Field Trip #6 — Mini Trip
University of Nevada Reno
Date: September 27, 2002 (Friday)
Time: 12 noon - 2:00 pm
Cost: $20.00 - before August 16, 2002
$30.00 - after August 16, 2002 (Limit 18/45 incl. lunch)
Location: Bus pickup in front of the Peppermill Hotel

This two-hour mini-trip, with a box lunch, will include options for visits to the W.M. Keck Museum (minerals, fossils, rocks, gold, and Tiffany silver servings from the family collection John Mackay, one of the famous miners of the Comstock Lode), the Seismological Laboratory, the Nevada Bureau of Mines and Geology, and the Department of Geological Sciences at the Mackay School of Mines and the Earthquake Engineering Laboratory and Civil Engineering Department in the College of Engineering.

Leaders: Rachel Dobler, Mackay School of Mines, University of Nevada-Reno, dobler@mines.unr.edu

Field Trip #7 — Post-Meeting
Reconstruction of the Historic Virginia and Truckee Railroad - Lyon, Storey and Carson Counties
Date: September 28, 2002 (Saturday)
Time: 8:00 am - 4:00 pm
Cost: $20.00 - before August 16, 2002
$35.00 - after August 16, 2002
$45.00 - after August 16, 2002 (Limit 18/45)
Location: Bus pickup in front of the hotel

Efforts are under way for the reconstruction of a 17-mile section of the historic Virginia & Truckee Railroad (V&T) between Carson City and Virginia City, Nevada. The V&T Railroad linked Reno and the silver mines and mills of the Comstock from 1870 until the tracks were pulled in 1941. Interest in reviving the railroad has been expressed virtually since the time the last train ran.

In 1993 momentum for the project reached the point that a Tri-County Railway commission (TCRC) was formed to represent and coordinate the efforts of the three counties in which the project will be operated. Application was made in 1993 by Carson City to the Federal Highway Administration, resulting in the granting of $2.2 million of STEA funding. Under the terms of the grant, these funds are administered by the Nevada Department of Transportation through an inter-local agreement with the TCRC. The funds are specifically intended for an environmental assessment of the entire route and the design and construction of the first mile of the project. This 1-mi portion includes a major engineering obstacle, the crossing of the abandoned, approximately 200-ft-deep Overman mine pit. Final plans are now near complete and the one mile NDOT portion of the project should go to bid in the fall of 2002.

The remainder of the project, approximately 16 miles, is in the preliminary design stage awaiting the completion of the NDOT project to proceed with final plans. This longer portion includes a wide range of geotechnical concerns. These issues fall into four major categories: the feasibility of opening a 560-ft-collapsed tunnel; a bridge crossing of a four-lane section of U.S. highway 50; embankment, rockfall, and slope stability issues, particularly along the
Field Trip #8 — Post-Meeting

The Lake Tahoe Crashshoot: Debris Flows, Rock Slides, Active Faults, Landslides and Lahars, pick your lucky number!

Date: September 28, 2002 (Saturday)
Time: 8:00 am - 5:00 pm
Cost: $65.00 - before August 16, 2002
       $80.00 - after August 16, 2002 (Limit 18/45)
       (guidebook, lunch, and tram ride)
Location: Bus pickup in front of the hotel

This day-long field trip will examine some of the numerous natural hazards and scenic vistas of the Lake Tahoe Region. You will investigate Steamboat Springs, a geothermal resource; Slide Mountain, origin of a large rock slide in 1983; the currently active Genoa Fault; natural granite foundations around Heavenly Valley; the Emerald Bay rock slide; the Meeks bay submarine landslide and other landslides along the roadway; the Glacial Moraine Dam of Lake Tahoe; and Lahars along the highway. Views of the region from the top of Squaw Mountain, home of the 1960 Olympics, should round out your scenic view of the area on a lovely fall afternoon. Join us for a day of geologic adventure and humor with one of the regions most experienced engineering geologists, Dr. Bob Watters of UNR.

Leaders: Liz Jones Cratford, T. Cratford & Associates, Anchorage, AK (sacratford@alaska.com); Robert Watters, University of Nevada-Reno, Reno, NV; Bill Gates, Kleinfielder, Seattle, WA.

Teachers’ Workshop

Our Teachers’ Workshop is being offered in conjunction with AEG and AIPG’s joint annual meeting. All attendees will receive continuing education units (CEU) for this workshop. No partial credit will be given. For further information, call D.D. LaPointe at work at 775-784-6691 x.134. D.D.’s e-mail address is diapoint@unr.edu

For Teachers of Grades 6 - 12

Date: Saturday, September 28, 2002
      Sunday, September 29, 2002
Time: 8:00 am - 5:00 pm (September 28)
      10:00 am - 5:00 pm (September 29)
Cost: $10.00

Location: September 28 - Field Trip #8: The Lake Tahoe Crashshoot: Debris Flows, Rock Slides, Active Faults, Landslides and Lahars, pick your lucky number! (lunch provided)
September 29: Sequoia Room at Peppermill Hotel

CEUs: For both days: 1.8 CEUs

AEG and AIPG are pleased to offer an Earth science teachers’ workshop: Geologic Hazards in Your Community. The 2-day (15-hour) workshop will provide one (1) Teacher In-Service Renewal Credit to attending participants. Attendance at both the Saturday Field Trip and the Sunday Classroom Activity Sessions is required for credit.

Saturday, September 28: This day-long field trip will examine some of the numerous natural hazards and scenic vistas of the Reno/Lake Tahoe Region. You will investigate Steamboat Springs, a geothermal resource; Slide Mountain, origin of a large rock slide in 1983; the currently active Genoa Fault; natural granite foundations around Heavenly Valley; the Emerald Bay rock slide; the Meeks bay submarine landslide and other landslides along the roadway; the glacial moraine dam of Lake Tahoe; and lahars along the highway. Views of the region from the top of Squaw Mountain, home of the 1960 Olympics, should round out your scenic view of the area on a lovely fall afternoon. Join us for a day of geologic adventure and humor with one of the regions most experienced engineering geologists, Dr. Bob Watters of UNR.

Sunday, September 29: The Saturday field trip will be followed up by a day of integrated lecture and hands-on classroom activities. Course material will be designed to enable grade 6-12 teachers to bring the information gleaned on the field trip back into the classroom to make Earth science come alive with real-life local examples of geologic hazards, landforms, and Earth history. Activities will be aligned with grade-appropriate National and State Science and Geography Standards and will include selected modules from the recently released EarthComm and Investigating Earth Science curricula developed by the American Geological Institute. Participants will receive training in reading geologic and topographic maps in order to find information helpful in solving realistic problems in land-use planning. Topics covered will include landforms, weathering, erosion, watersheds, glacial geology, earthquakes, soils, floods, landslides, and debris flows.
Symposia

#1: Tunneling Through Difficult Ground  
Chair: Peggy Ganse, Haley & Aldrich  
Wednesday - September 25 - Afternoon  
Technical Session #1—Room: Tahoe 1

The success of an underground construction project, particularly a tunnel, relies greatly upon a thorough and comprehensive understanding of the ground. Engineering geologists play a vital role in project development by performing subsurface investigations, collecting samples, and evaluating laboratory results, all with the goal of understanding ground conditions so that ground behavior during construction can be reasonably predicted. This tunneling symposium will present a variety of case studies of tunnels constructed through difficult ground, so that experience gained by the practitioners can be shared with the audience, providing a link between site conditions (which can be evaluated with relative ease in some cases) and ground behavior during construction (which can be much more difficult to predict). Case studies presented will include conducting subsurface investigations in challenging conditions, as well as construction of tunnels through ground with faults, high ground water inflows, gassy ground, and variable geology.

After the case histories are presented, the symposium will change its focus to a panel discussion on Geotechnical Baseline Reports (GBRs) and Disputes Resolution Boards (DRBs). Two important design and contract mechanisms associated with tunneling and underground engineering projects. A presentation will be made on the purpose of the GBR, tips on writing baseline statements, and common pitfalls to avoid. The next presentation will discuss how DRBs are used to mediate construction disputes, many of which occur due to vague or ineffective GBRs. Once this presentation is given, the two presenters will be joined by three professionals in the engineering, construction, and legal field. Moderator Peggy Ganse will lead the panel in a discussion of the use of the GBR in tunnel construction, its apparent benefits and shortcomings, and its impact on the bidding and construction process. Representation by all sides of the construction equation should ensure a lively and thought-provoking discussion. Questions from audience members also will be entertained.

#2: Addressing Hazardous Waste and Contamination Issues at Abandoned Mines in the Western United States  
Chair: Jerome DeGraff, USDA Forest Service  
Wednesday - September 25 - Afternoon  
Technical Session #2—Room: Tahoe 2

This symposium consists of presentations on 1) characterizing hazardous waste/contamination related to past mining activities; 2) issues associated with accomplishing cleanup and response actions for contamination, and 3) case histories of abandoned mine cleanup and response actions carried out in the Western United States.

#3: Solving Real-World Problems with Geology and Geologic Maps  
Chair: Jonathan G. Price (State Geologist, Nevada Bureau of Mines and Geology)  
Wednesday - September 25 - Afternoon  
Technical Session #6—Room: Maple

This symposium includes national issues, state-level advisory bodies from the geological community, and innovative applications of geologic maps.

#4: Visioning the Future of Engineering Geology: Sustainability and Stewardship  
Chair: Robert E. Tepel  
Thursday - September 26 - Morning  
Technical Session #7—Room: Tahoe 1

This symposium is for individual geologists, geo-business people, professors, students, government staff, professional association leaders, and members of licensure and regulatory boards. Do you believe in the value of engineering geology? Do you appreciate its manifest benefits to the public? This is your chance to learn where Engineering geology is headed in the future and to make your views known. Come and join with your fellow geologists, and with the leaders of the professional organizations that are responsible for the future of Engineering geology, to share in the development of strategies to keep engineering geology alive and growing. Desired outcome: we keep engineering geologists engaged in using their special expertise to protect the public health, safety, and welfare in an effective and responsible manner, and they will find increasing acceptance of the need for their services.

#5: Evaluation of Earthquake Hazards  
Chair: Ellis Krinitzsky and Allen Hatheway  
Thursday - September 26 - Morning  
Technical Session #9—Room: Tahoe 3

A span of emerging techniques is presented for assessing earthquake hazards for land-use planning and engineered works. These include both probabilistic and deterministic methods, new research findings, building code mapping, and procedures of the U.S. Army Corps of Engineers for use in engineering seismic withstand design.

#6: Controversies in Mining Hydrology  
Chair: Mark Stock, Global Hydrologic Services, Inc.  
Thursday - September 26 - Afternoon  
Technical Session #18—Room: Maple

Mines have the potential to interact with both ground water and subsurface-water systems. As a result, mines are responsible for avoiding or mitigating any significant impacts to the hydrologic environment, and various government agencies enforce standards in this regard. In this session, representatives of government will discuss what their mining hydrology standards are and how they are enforced; and technical specialists will present examples of studies designated to quantify, prevent, or mitigate any impacts of mining on the hydrologic environment.

#7: Quaternary Faulting
Chair: Craig dePolo
Friday - September 27 - Morning
Technical Session #19 - Room: Tahoe 1

The presentations in this symposium will give an overview of contemporary quaternary faulting studies in the western Great Basin so that you may better understand some of the faults and seismic hazard issues that are in this region.

#8: Monitoring and Remediating Solid Waste Facilities: New Concepts and Tools
Chair: Dan Kelleher
Friday - September 27 - Morning
Technical Session #20 - Room: Tahoe 2

This symposium is dedicated to Solid Waste Facility Groundwater and Remediation and the premise of each presentation focuses on allowing good, fundamental science to guide philosophies and technical approaches. So the thrust of the symposium is a toolbox of just that: philosophies and approaches that use the fundamentals of geology for solving problems and engineering solid waste facilities. I invite you to the symposium — stop in to meet the presenters and stay to reach into the toolbox.

#9: Sustainable Development of Natural Resources: Fact or Fantasy
Chair: Kelvin Buchanan, Dirk van Zyl, and Debra Struchslacker
Friday - September 27 - Morning
Technical Session #24 - Room: Maple

In October 2000, there were by last count, 46 accepted definitions of "sustainable development" of resources. By September 2002, that number may be doubled. Simply put, whatever definitions are used, the end result is that development of resources should be done in such a way so as to take the "boom and bust" out of the business cycle. Our panelists will begin by explaining sustainable development in its various guises. A specific example of sustainable development will demonstrate how an open pit mine in Montana is used to provide clean water for the city of Helena. Two other panelists will provide a point-counterpoint on whether sustainability makes sense for extractive industries. There will be at least two guest panelists besides the speakers. An open forum with audience participation on the merits of the concept of sustainability will ensue when the speakers have completed their dissertations.

#10: Dealing with Nuclear Waste, The Yucca Mountain Project, Nevada
Chair: John Peck
Friday - September 27 - Afternoon
Technical Session #25 - Room: Tahoe 2

This symposium addresses the very controversial Yucca Mountain site as a potential high-level radioactive waste repository. President Bush in February of this year recommended the site be developed as a repository. The Governor of Nevada vetoed the recommendation in April. Congress has 90 days of continuous session in which to override the Governor's veto. If the veto is sustained the symposium speakers will discuss the history of the world's most extensive site characterization project. If Congress overrides the veto then the Department of Energy will proceed with a license application before the Nuclear Regulatory Commission. The speakers will tell of current status.

Yucca Mountain is located in Nye County, Nevada about 90 mi northwest of Las Vegas. The mountain is composed of thousands of feet of Miocene age rhyolitic tuff overlying older Tertiary sedimentary rocks or Paleozoic carbonate rocks. The mountain has a thick unsaturated zone comprising at least 1800 ft densely welded to non-welded tuff. The potential repository horizon is situated about halfway between the surface and the saturated zone. Quaternary faults are present adjacent to the site and Pleistocene basaltic cinder cones and flows occur within about 12 mi of the site. Exploratory tunnels about 7 mi in total length are used for underground testing and measurement.

Russ Dyer, Project Manager for the Department of Energy will be the keynote speaker for the symposium. He will describe the overall technical aspects of the project. A technical spokesman for the State of Nevada will present arguments against the suitability of the site as a repository. Other speakers representing technical organizations that are involved with the exploration, experimentation and construction at the site will address specific subjects. These include hydrogeology of the saturated and unsaturated rocks at the site, the tectonics of the site and region, the stratigraphy and engineering geology of the volcanic rocks, and specific tests and experiments bearing on site suitability. The symposium will provide a broad overview of the project and the results of investigations that have been conducted at Yucca Mountain since the late 70's.

#11: Geology As A Profession: Is It Sustainable?
Chair: Kelvin Buchanan and Debra Struchslacker
Friday - September 27 - Afternoon
Technical Session #30 - Room: Maple

Most geologists have a passion for the science and their work. Although there seems to be a shrinking pool for those in the geological sciences, some individuals have moved up in the industry by taking advantages of opportunities. How do they do it? Recently I was told that Newmont Mining had consistently reduced their employee numbers by 41/2% per year. These reductions are not all geologists to be sure. The percentage lay-offs in the geological community have been much higher. How does one retain the original passion for the science of geology when jobs seem so scarce? Our panelists for this session may be able to help you find some of the answers.

TRANSPORTATION

Air Travel
The Peppermill Hotel is located one and one-half mi from the Reno Tahoe International Airport. Free Shuttles to and from the airport and downtown are offered by the hotel.

Automobile Travel
If you are coming from the airport: when leaving the airport, go straight ahead, which is Plumb Lane; continue west of Plumb Lane until you reach S. Virginia; turn left onto S. Virginia and the Peppermill Hotel is two blocks down on the right-hand side.

If you are driving: 1) head south on 395/580, exit on Plumb Lane (head west), turn left onto S. Virginia and the Peppermill Hotel is two blocks down on the right-hand side; and 2) heading east on 395/580, south, exit on Plumb Lane (head west), turn left onto S. Virginia and the Peppermill Hotel is two blocks down on the right-hand side.

Weather and Attire
The average temperature in the Fall in Reno is usually in the high 60's and 70's, however this is a period of transition. Daytime highs in the middle 80's are not unusual. One is advised to bring a light jacket for the evening, as well as an umbrella for possible showers.

Recommended attire for the technical sessions is business casual. For the field trips, see each trip's description. The Joint Annual Banquet is a semi-formal affair. Attire for the Lake Tahoe Dinner Cruise special event is casual.
AIPG • AEG JOINT ANNUAL MEETING

Short Courses

Four short courses will be offered in conjunction with the AIPG•AEG Joint Annual Meeting. The courses were selected to offer attendees a wide variety of educational opportunities. The courses will be accredited for continuing education units (CEUs) and include course materials and coffee/soda breaks. Partial CEUs will not be given. Professional Annual Meeting registration for at least one day is required to participate in the short course.

Contracting for Geophysical Services

Date: September 23, 2002 (Monday)  
Total of 0.9 CEUs  
Time: 8:00 am to 5:00 pm  
Cost: $200.00 - before August 16, 2002  
$250.00 - after August 16, 2002 (Limit 25)  
Location: Sierra View Room (#1748)

This course will teach engineers, geologists, and project managers how to select and utilize geophysical methods, and how to effectively work with geophysical service providers. Service providers may be either in-house service groups or outside geophysical companies. A phased approach will be emphasized to obtain the project information required by the geologist/engineer. The course will introduce many geophysical methods, making extensive use of case histories. Presentations will note the considerations for selection of the appropriate technique(s). These considerations include the physical properties (geological interface) to be measured, anticipated resolution and ambiguity of the interpretation, and possible sources of interference. The course will cover applications of geophysics to engineering, groundwater and environmental projects. This course offers a unique perspective with two senior instructors, one from a geophysical service company and one from a government agency utilizing those services. Participants will provide sample projects for class determination of appropriate phased methods. Provided materials will include course notes, a recommended list of geophysical-service contractual provisions, and a reference to useful geophysical publications. This course has been well received when previously presented: U.S. EPA Regions, Corps of Engineers Districts, other meetings, and private firms.

Instructors: Rowland B. French, PhD, RG, Northwest Geophysical Associates, Inc., 541-757-7231, rowland@nnga.com; and Gregory L. Hempen, PhD, PE, RG, St. Louis District, Corps of Engineers, 314-331-8441, hempen@ mindspring.com

Using RockWorks/2002 as an Analytical and Visual Tool in Site Characterization and Remediation

Date: September 24, 2002 (Tuesday)  
Total of 0.4 CEU  
Time: 9:00 am to 12 noon  
Cost: $50.00 - before August 16, 2002  
$75.00 - after August 16, 2002 (Limit 10/40)  
Location: Skyline View Room (#1735)

This short course will be focused on the management, analysis, and visualization of geological data based on boreholes and/or measured sections. The course will be taught using RockWorks/2002. Specific topics include the management of geophysical, geochemical, lithologic, stratigraphic, hydrologic, and structural data from vertical, inclined, and deviated boreholes and measured sections. Output and analytical topics will include surface models, striplogs, cross sections, fence diagrams, and solid modeling. Special emphasis will be placed on three-dimensional graphics and computing the volume and mass properties of geological features.

Additional topics will include gridding/contouring, model manipulations, advanced volumetrics, hydrological and hydrochemical tools (drawdown, Piper and Stiff plots), 3D and 3D feature analysis (rose and stereonet diagrams, lineation maps and densities), statistical computations and diagrams (histograms, scatterplots, ternary plots), survey mapping, and coordinate conversions. Case studies will include environmental remediation and geotechnical examples.

Instructors: Alison Aicott and/or Jim Reed, RockWare, Inc., 303-278-3534 x. 108

What Are The Odds? An Introduction to Probabilistic Methods for Environmental and Engineering Geologists

Date: September 24, 2002 (Tuesday)  
Total of 0.4 CEU  
Time: 8:00 am to 12:00 pm  
Cost: $150.00 - before August 16, 2002  
$175.00 - after August 16, 2002 (Limit 10/24)  
Location: Sierra View Room (#1748)

All decisions based on geologic information are plagued by uncertainty, and probabilistic methods provide a powerful set of tools with which to quantify and utilize that uncertainty in decision-making processes. So, join us in Reno for an informative half-day overview of some of the practical tools currently available to professional geologists. Learn how the methods work, what assumptions lie beneath them, and why thinking probabilistically about geologic processes isn’t really as far-fetched as it may seem. In fact, most geologists probably incorporate probabilistic reasoning into their thinking without even realizing it!

The course will include an overview of basic probability concepts, a discussion of probabilistic methods available to the professional geologist, the pros and cons of viewing the world probabilistically, hands-on computer exercises using FOSM Calculator and Mathematica software, and time for informal questions. Specific probabilistic topics will include an introduction to common probability distributions and their manipulation: sources of uncertainty; empirical probabilistic models based on Poisson and binomial distributions (temporal distributions of floods, earthquakes, etc.); first-order, second-moment and Monte Carlo methods for rational probabilistic modeling; conditional probability and logic trees; and sampling strategies.

No prior training in statistics or probability is required, but an interest in solving applied geologic problems is essential.

Participants will receive a complimentary CD containing FOSM Calculator (web browser based calculator software for geotechnical and hydrologic applications); course notes formatted as a Mathematica notebook; a copy of MathReader software to read the notes on their own computers, and paper handouts.

Instructors: Bill Haneberg, PhD, PG, CPG, Haneberg Geoscience, bill@haneberg.com
AIPG • AEG JOINT ANNUAL MEETING

Short Courses

BEST GeoSim: A Computer Simulator to Teach Site Investigation Skills

Date: September 24, 2002 (Tuesday)
Total of 0.4 CEUs

Time: 1:00 pm to 5:00 pm

Cost: $50.00 - before August 16, 2002
$75.00 - after August 16, 2002 (Limit 25)

Location: Sierra View Room (#1748)

BEST SiteSim has been developed with support from the National Science Foundation and the Oak Ridge Associated Universities to help students learn site investigation skills. Students are given either a geotechnical or hydrogeologic site to investigate, and they must select boring locations and lab tests, interpret the geology revealed in the borings, and evaluate the results, all under budgetary constraints. This short course will introduce participants to the workings of the simulator, the geology and engineering contained in the site databases, and the pedagogical studies demonstrating its effectiveness. By the end of the course, participants will be able to load and customize the program, and use it for laboratory exercises or term projects in their own courses. Participants will spend time exploring the program's options, using a computer lab set up for the short course. Each participant will receive a copy of BEST SiteSim as part of their registration. This course is subsidized by the NSF-DUE-CCLI program.

Instructors: Paul Santl, Colorado School of Mines, 303-273-3108, psantl@mines.edu, and John Petrikovitsch, University of Missouri-Rolla, 573-341-4580, jpetrikv@umr.edu

Spouse/Guest Tours

The AEG and AIPG Joint Annual Meeting offers four exciting spouse/guest tours.

#1: Virginia City Tour

Date: September 24, 2002 (Tuesday)

Time: 9:30 am to 3:30 pm

Cost: $35.00

Location: Bus pickup in front of the Peppermill

Virginia City was once "the Richest Place on Earth". In the 1860's and 1870's thousands of miners dug the gold and silver ore with hand tools, and stamp mills thundered around the clock. The Comstock Lode was the wonder of the age, and its glory days survive in this classic Victorian city of the western frontier. Partake of shopping and sightseeing among the many attractions that this Comstock city has to offer. Be sure to wear comfortable shoes. Sidewalks are wooden and the surface is uneven. There are many sights to see on the stided streets, and although the main street is level, they can be quite hilly, and some are dirt. The various cemeteries are open to tourists, but can be rugged. Enjoy lunch on your own in one of the period saloons (like the "Bucket of Blood") or one of the restaurants along the main street.

#2: Hidden Caves/Grimes Point Archeological Site Tour

Date: September 25, 2002 (Wednesday)

Time: 8:30 am to 3:00 pm

Cost: $45.00 (Limit 12/25)

Location: Bus pickup in front of the Peppermill

Hidden Cave was discovered in the 1920's and has been excavated three times, 1940, 1951, and 1980. Many of the cave's artifacts were found unbroken and arranged in concentrations, leading to the conclusion that after the Native Nevadans left the cave as a cache site some 3,500 - 3,800 years ago, and not as a shelter. Climatologically, the area has changed from the moist environment surrounding ancient Lake Lahontan (whose wave action formed Hidden Cave 21,000 years ago) to the dry high desert environment that exists today. In the same general area as Hidden Cave is Spirit Cave, the burial site of Spirit Cave Man, discovered in the 1940's and dated to be around 9,400 years old, one of the oldest mummies in North America. Also at the same archeological site is Grimes Point, the location of many fine petroglyphs. Access to Hidden Cave requires a 0.25 mi uphill walk, which is not handicapped accessible, but is generally regarded as "easy".

The tour of the cave's interior lasts one hour, and is given by a representative from the BLM in Carson City. There is also a 2-mile trail in the vicinity of the cave with interpretive stations along the way, and a 0.4-mi interpretive trail through the petroglyphs at Grimes Point.

Bathrooms and picnic tables are available at Grimes Point, and a picnic lunch will be provided.

Be sure to wear comfortable clothes and shoes.

#3: Lake Tahoe: Heavenly Tramride, Taylor Creek, and the Club Cal-Neva Tour

Date: September 26, 2002 (Thursday)

Time: 9:00 am to 3:30 pm

Cost: $58.00

Location: Bus pickup in front of the Peppermill

Take a short gondola ride to the top of Heavenly Valley Ski Resort at 8,250 ft for spectacular views of Lake Tahoe, then submerge yourself below stream level at Taylor Creek to observe the Kokanee (salmon) spawning run (you won't even get wet!). Follow this with a scenic drive along the Northwest shore of Lake Tahoe to Crystal Bay, home of the beautifully restored Club Cal-Neva, which straddles the California/Nevada border, and was once owned by Frank Sinatra.

Temperatures for the Lake are usually about 10 degrees cooler than in Reno and it may be chilly at the top of the Heavenly Tramride. Be sure to wear comfortable clothes and shoes, and bring a jacket.

#4: Truckee and Donner State Park

Date: September 27, 2002 (Friday)

Time: 9:00 am to 3:00 pm

Cost: $35.00

Location: Bus pickup in front of the Peppermill

The Donner Party, on its way West, arrived at what would become Donner Lake in October of 1846, too late to cross the Sierra. Their epic ordeal has been repeatedly chronicled. Visit Donner State Park and see for yourself what they were faced with during that long winter. Then, enjoy visiting and shopping in nearby picturesque Truckee, a place often listed as the "coldest spot in the U.S." during winter, but certainly pleasant in September. Be sure to wear comfortable clothes and shoes, and bring a jacket or sweater. Lunch at one of Truckee's unique restaurants is on your own.
Special Functions

Hospitality Suite

Date: September 23 through 27, 2002  
Monday - Friday

Time: 12 noon - 5:00 pm (September 23)  
7:30 am - 5:00 pm (September 24 - 27)

Cost: Complimentary to Guests/Sponsors

Location: Valley View Room (#1734)

We extend a warm welcome to all guests and spouses. Please come and visit the Hospitality Suite, located in one of the Peppermill Suites. Relax, have a cup of coffee or a soft drink, great old friends and make new ones. Hosts will be on hand from 8:00 am to 4:00 pm to welcome you, answer questions or just chat. Information on Reno and the surrounding areas will be available. A special Spouse/Guest Gift awaits all registered spouses and guests. SPOUSES AND GUESTS - BE SURE TO VISIT THE HOSPITALITY SUITE AND REGISTER FOR A DRAWING!

Golf Tournament

Date: September 24, 2002 (Tuesday)

Time: 1:00 pm to 5:30 pm

Cost: $45.00

Location: Limousine pick up in front of the Peppermill

Five four-member teams from AEG and AIPG will tee off at 1 pm at the LakeLedge Golf Course (approximately 10 minutes from the Peppermill Hotel). The golf course was designed by Robert Trent Jones. The format will be a best ball scramble based on handicaps provided by the players. Please submit your handicap or USGA index to Kelvin Buchanan (summitcrk@aol.com). If you do not have a handicap, one will be assigned. Thanks to our sponsor, Eldund Drilling, you can enjoy this event at the low cost mentioned above. This cost includes; golf carts, on-course refreshments, and prizes for the winners. Please register early as only 40 places are available!

Ice Breaker Reception

Date: September 24, 2002 (Tuesday)

Time: 6:30 pm to 8:30 pm

Cost: Complimentary to Annual Meeting Registrants and Spouse/Guests

Location: Exhibitors' Area - Grand Ballrooms

The Ice Breaker opens the Exhibition Tuesday evening in the Exhibitor area, with the opportunity to get acquainted with the vast array of products and services offered to the industry. One complimentary drink per person will be served.

Joint AEG-AIPG-2002 Annual Banquet

Date: September 25, 2002 (Wednesday)

Time: 6:30 pm - 7:15 pm: Reception  
7:15 pm - 10:30 pm: Dinner

Cost: $45.00

Location: Tahoe 2, 3 & 4 Rooms Reception in Tahoe Foyer

After a reception and mingling with friends, enjoy a delicious dinner, visit some more with friends, and recognize the award winners who have given much to our industry and Associations. This is your opportunity to recognize them and also pay tribute to their accomplishments. A cash bar reception starts at 6:30 pm. Dinner includes wine (two bottles to a table, only). Pre-dinner entertainment will be chamber music with Sylvia Harrison.

Be sure to remember to TAKE A STUDENT TO DINNER. Buy an Annual Banquet ticket for one of our participating students.

Women in AEG•AIPG•AWG Breakfast

Date: September 26, 2002 (Thursday)

Time: 7:30 am - 9:00 am

Cost: $15.00

Location: Skyline View Room (#1735)

Join members of the Association of Engineering Geologists, the American Institute of Professional Geologists, and the Sierra Chapter of the Association for Women Geoscientists at our networking breakfast, where we will feature our Keynote Speaker, Elizabeth L. Matheson (Helping Policymakers with Geo-Issues — Professional Activities Outside the Technical Realm). All parties interested in enhancing the professional growth and advancement of women in the geosciences are encouraged to attend.

Exhibitors Luncheon

Date: September 26, 2002 (Thursday)

Time: 12:00 noon - 1:40 pm

Cost: Complimentary to Annual Meeting Registrants and Spouse/Guests

Location: Exhibitors' Area - Grand Ballrooms

The Exhibitor Luncheon will be served in the Exhibitors' Area, compliments of the exhibitors. This lunch is a very special function, because it allows attendees to show support to the many companies that have made the Joint Annual Meeting possible. Remember that a meeting of this caliber would not be possible without the generous support of the exhibitors. AEG and AIPG are very grateful for this contribution.

Special Event: Lake Tahoe Dinner Cruise

Date: September 26, 2002 (Thursday)

Time: 4:30 pm to 10:00 pm

Cost: $45.00

Location: Bus pickup in front of the Peppermill; bus leaves promptly at 4:30 pm

The dinner cruise will be held on the M.S. Dixie, a fast paddle wheeler similar to those on the Mississippi. The cruise is limited to 180 people. Four buses will leave the Peppermill at 4:30 pm for a very scenic mountain journey arriving at the M.S. Dixie pier at Lake Tahoe at 6:00 pm. The dinner is a private event. The M.S. Dixie has a live band for your listening and dancing enjoyment. The dinner cruise will last about 4 hours.

Thanks to our sponsor, Mungas Construction, we are able to offer the dinner cruise for the cheap price of $45.00. Please register early to guarantee yourself a space for this event!

Speakers' & Moderators' Breakfast

Date: September 25, 2002 (Wednesday)  
September 26, 2002 (Thursday)  
September 27, 2002 (Friday)

Time: 7:30 am - 9:00 am

Cost: Complimentary to Speakers & Moderators

Location: Sierra View Room (#1748)

A Speakers' and Moderators' Breakfast will be held each morning for the day's speakers and session moderators. This breakfast is required for Speakers and Moderators. Speakers, register at the breakfast and discuss the mechanics for your presentation with your Moderator. The breakfast is a great time to get acquainted with your session's speakers as well as to review the procedures for the day. The breakfast is for speakers and moderators only on the day of their presentation.
**REGISTRATION FORM**

**AEG•AIPG•2002 Joint Meeting**

Association of Engineering Geologists and American Institute of Professional Geologists

**SEPTEMBER 22 – 29, 2002**

<table>
<thead>
<tr>
<th>NAME (LAST)</th>
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<td>Day ( )</td>
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<td>Evening ( )</td>
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**ANNUAL MEETING REGISTRATION**

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<th>Before 8-16-02</th>
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<th>AMOUNT</th>
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<tr>
<td>Full Registration: AEG, AIPG or GSN Member</td>
<td>$220.00</td>
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<td>Full Registration: Non-Member</td>
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<td>Corporate Registration: (one floating registration pass for your employees for the three days of technical sessions; one pass for Ice Breaker; one pass for Exhibitor Lunch; and &quot;Short Course Only&quot; or &quot;Field Trip Only&quot; one-day registration covered)</td>
<td>$350.00</td>
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<tr>
<td>Short Course ONLY Limited Registration *</td>
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- **GEOLGY OF RENO AND TRUCKEE MEADOWS, NV** reprint

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**FIELD TRIPS (requires regular or limited-field-trip reg.)**

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<td>#1: Yucca Mountain, Las Vegas, NV (Sept. 23)</td>
<td>$25.00</td>
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<td>(no registrations accepted after September 5, 2002)</td>
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<tr>
<td>#2: Open Pit De-watering / Deep Mine Excavations (Sept. 24)</td>
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<td>$80.00</td>
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<td>#3: Seismic Hazards, Carson Range Fault System (Sept. 24)</td>
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<td>#4: Mini Trip: Sparks Marina (Sept. 25)</td>
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<td>#5: Mini Trip: Mount Rose Fan (Sept. 26)</td>
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<td>#6: Mini Trip: University of Nevada-Reno (Sept. 27)</td>
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<td>#7: Reconstruction of Historic V&amp;T RR (Sept. 28)</td>
<td>$35.00</td>
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<tr>
<td>#8: The Lake Tahoe Crapshoot (Sept. 28)</td>
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**SHORT COURSES (requires regular or limited-short-course reg.)**

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<td>Using RockWorks/2002 (Sept. 24-AM)</td>
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<td>What Are The Odds? Probabilistic Methods (Sept. 24-AM)</td>
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<td>BEST GeoSim: Simulator to Teach (Sept. 24-PM)</td>
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**REGISTRATION FORM CONTINUED ON OTHER SIDE**

* Not required if you are registering for at least one day of technical sessions.
# REGISTRATION FORM -- cont’d

## SPECIAL EVENTS (requires conference registration)

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<tr>
<th>Event</th>
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<tr>
<td>Golf Tournament (Tuesday, Sept. 24)</td>
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<tr>
<td>Ice Breaker Reception (Tuesday, Sept. 24)</td>
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<tr>
<td>AEG Corporate Business Meeting &amp; Luncheon (Wednesday, Sept. 25)</td>
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<tr>
<td>Joint AEG•AIPG•2002 Annual Banquet (Wednesday, Sept. 25)</td>
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**TAKE A STUDENT TO DINNER** — Buy an Annual Banquet Ticket and Donate to One of our Participating Students

<table>
<thead>
<tr>
<th>Event</th>
<th>No. Tickets</th>
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<tbody>
<tr>
<td><strong>STUDENT:</strong> If you are interested in participating in &quot;TAKE A STUDENT TO DINNER&quot; — be sure to register for the drawing at the Registration Desk while at the Annual Meeting in Reno</td>
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<tr>
<td>Women in AEG•AIPG•AWG Breakfast (Thursday, Sept. 26)</td>
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<td>$15.00</td>
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<tr>
<td>Exhibitors’ Luncheon (Thursday, Sept. 26)</td>
<td>Must Register</td>
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<tr>
<td>Special Event: Lake Tahoe Dinner Cruise (Thursday, Sept. 26)</td>
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<tr>
<td>Speakers’/Moderators’ Breakfast: 9/25 (Wed) □ — 9/26 (Thurs) □ — 9/27 (Fri) □</td>
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## SPouse/Guest Activities

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<th>Event</th>
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<tr>
<td>#1: Virginia City Tour (Tuesday, Sept. 24)</td>
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<td>$35.00</td>
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<tr>
<td>#2: Hidden Cave/Grimm Pt. Archeological Site (Wednesday, Sept. 25)</td>
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<td>$45.00</td>
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<tr>
<td>#3: Lake Tahoe: Heavenly Tramride/Club Cal-Neva (Thurs., Sept. 26)</td>
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<td>$58.00</td>
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<tr>
<td>#4: Truckee and Donner State Park Tour (Friday, Sept. 27)</td>
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## TEACHERS WORKSHOP (held Sat. & Sun., September 28 & 29)

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<tbody>
<tr>
<td>Field Trip “Geology of Lake Tahoe” on Sept. 28 and in-class workshop on Sept. 29</td>
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CONTENT AND APPLICATION OF THE U.S. NATIONAL VALUATION STANDARDS

THE STRUCTURE OF USPAP

The Uniform Standards of Professional Appraisal Practice (USPAP) document is designed to provide standards for valuations of all feasible kinds. As previously stated, the Standards governing valuations are provided within four divisions or types of assets (property). Essentially the same divisions are used in the International Valuation Standards (IVS) (IVSC, 2000a, p. 61-80). The four asset types are:

- Real property, such as residential and commercial buildings and land,
- Personal property, such as moveable equipment, jewellery and antiques,
- Businesses and their component parts, such as factories and distribution systems,
- Intangible assets, such as company shares, contracts and patents. IVS uses the label, Financial Interests (IVSC, 2000a, p. 74).

All four of these asset types can be relevant to the minerals valuer. The following are the primary USPAP standards for the four asset types, and examples of their respective application to minerals industry asset valuation:

- Standards 1 and 2, the real property valuation standards, are the applicable standards for valuation of a mineral property, the ownership and partial interests in it, and the land surface and buildings on the property (the surface estate).
- Standards 7 and 8, the personal property valuation standards, are those applicable to the mining equipment such as trucks and shovels.
- Standards 9 and 10 are for both business valuation and intangible asset valuation. These provide the instructions for valuation of the mining corporation and the mining operation as a business, valuation of a long-term product sales contract and valuation of shares of the mining company.

As previously mentioned, the standards for each of these categories of valuations are in pairs. Within each pair of standards, the first standard covers the development of the valuation, providing instructions on what must be considered and analysed in conducting the valuation. The second standard provides instructions on the contents of the valuation report.

ETHICS, COMPETENCY, TRANSPARENCY AND OTHER PROVISIONS

USPAP also includes ethics, competency and record keeping rules, and Standards for consulting assignments by real property valuers. State licensed valuers, and valuers who are members of the major national general valuation institutes, must abide by all USPAP standards and rules.

USPAP focuses on conducting the valuation independently, impartially, ethically, objectively and competently. It also focuses on reporting the valuation clearly, accurately, meaningfully, understandably and with full disclosure.

REAL PROPERTY VALUATION, STANDARDS 1 AND 2

The following discussion is limited to the major features of Standards 1 and 2 for real property valuation as they apply to mineral property valuation, and in particular to valuations based on Market value. Standard 1 provides rules for the development process of a valuation. Standard 2 gives instructions on the content of the valuation report. There are many important features that are additional to those contained in the Australasian VALMIN Code.

Purpose, Intended Use, Scope and Type

The interest in the property that is being valued must be determined and specified in the report. The purpose of the valuation must be provided, including specifying and defining the type of value to be estimated, such as market value, use value, insurance value or taxation value. The intended use of the valuation Report must be stated, thereby warning the reader that the valuation may not be suitable for a different use.

The scope of work performed must be reported, including the level of inspection and identification of the property, the degree of research of physical and economic characteristics, the extent of data research, and the type and extent of analy-
sis applied. A reasonable level of verification of information relied upon is required. Disclosure of Assumptions and limiting conditions are required.

Types of Valuations and Levels of Reports

USPAP provides for two types of real property valuations and three levels of valuation reporting. A Complete Appraisal requires abiding by all the rules and considerations in the two standards. Departure from some rules is allowed, which if invoked, results in a Limited Appraisal.

For both of these types of valuations, the level of reporting being applied must be identified. A Self-Contained Appraisal Report will contain everything that is relevant to the valuation in comprehensive detail. A Summary Appraisal Report will cover everything relevant to the valuation, but at a written, summary level. A Restricted Use Appraisal Report is designed for use only by the client, is written at a level appropriate for the client’s use, and may make extensive reference to materials retained in the valuer’s work file. From the author’s experience, valuers are almost always requested to conduct a Complete Appraisal and to provide a Self-Contained or Summary Appraisal Report.

Effective Date and Exposure Time

Market value is determined as at a specific effective date of the valuation. USPAP requires that the effective date and the date of the report be reported together to avoid confusing the reader. Typical practice is to state both dates on the report cover sheet.

The value determination if generally based on the assumption that the property will have had adequate exposure to the market prior to the specified effective date, for market value to be attained. An opinion of reasonable exposure time must be expressed.

Highest and Best Use

The market value of a property is determined on its Highest and Best Use. In determining market value, the first, and also possibly the last consideration, should be highest and best use. Lack of adequate Highest and Best Use analysis is the source of the greatest number of complaints filed against the work of real property valuers in the U.S. For real property valuation, USPAP provides the following definition of highest and best use for real property valuation:

The reasonably probable and legal use of property that is physically possible, appropriately supported, and financially feasible, and that results in the highest value. (USPAP, 2001, p 198).

For an example of a common type of situation in the U.S. that is addressed by determination of the highest and best use, assume the subject property includes a mineral deposit under an orchard. To determine the market value of the property, the valuer needs to determine whether the value of the property as an orchard exceeds its value as a mineral property, or whether some combination of the two uses is feasible to maximise value. There also may be other uses to consider, such as subdivision into housing lots, if the property adjoins an expanding urban area. For some mineral properties, in order to maximise value, it might be relevant to consider leasing or selling excess water rights, and leasing or selling surface, which would not be impacted by underground mining. Whether or not the current owner or a known buyer would undertake these actions is irrelevant.

If the subject property is held as U.S. federal unpatented mining claims or a federal mineral lease, then an alternative use to mineral development is not legally possible. The real estate ownership (which includes the minerals) has remained with the federal government, and the agreement allowing a private party to occupy the property only allows a mineral use. This is a similar arrangement to the typical minerals tenement in Australia. Even in these situations, the use which provides the maximum value should be selected. That may be through sublease, with an advanced royalty followed by annual payments.

The Three Approaches to Estimation of Market Value

The Methods for determining the market value of a property fall into three approaches specified in USPAP and the International Valuation Standards (IVS, 2000, p 44-45). The Sales Comparison Approach is often also called the market approach or market method by business valuers and non-U.S. valuers. It is based primarily on the principle of substitution. The Cost Approach is based mainly on the principle of contribution to value. The Income Approach is based on the principle of anticipation of benefits. IVS has labelled this third approach the Income Capitalisation Approach.

Note that: USPAP and IVS specify the same three approaches throughout their Standards, for the four property (asset) types and for all forms of value to be estimated, though the methods of analysis applied within the approaches will alter, and not all three approaches are always applicable. However, the discussion here is limited to market value determination for real property as applicable to minerals industry asset.

The three approaches should not be viewed as being independent of each other. Generally, they overlap in their sources of data, but the data are analysed using different methods. The underlying philosophy is that the three approaches should substantiate the findings of each other.

USPAP requires that all three approaches be considered in conducting a Complete Appraisal. If an approach is then excluded, the reasoning for its exclusion must be explained. This is an important area where IVS is not quite as strict as USPAP in its wording, apparently due to jurisdictional issues.

The author strongly recommends that a minerals valuer should attempt to base his determination of value on as many indicators of market value as can be reasonably obtained. This is especially true if the valuation is to be used in litigation. All the available methods of value estimation are subject to a high level of uncertainty and are open to criticism. The more methods that can be applied, the more support that can be developed for the concluding opinion of market value of the valuation report.

Sales Analysis

Within the real estate valuer community, there is little dispute that market value should be estimated by drawing as much as possible on analysis of transactions for related properties. This philosophy applies in the application of each of the three approaches. Since the results from analysing sales and
other transactions can be used in all three approaches, the gathering, verification and analysis of transaction data is often considered to be separate to the sales comparison approach.

However, within the minerals industry, in some cases, even acquiring a modest amount of sales data may require casting one’s net more broadly than is generally considered. It may require including sales from a number of different mineral commodities to that of the subject, but with similar economic characteristics. For example, for a crushed stone quarry, one may need to consider analysis of other construction material property sales, such as sand and gravel. For a particular industrial mineral, one may need to consider other industrial minerals with somewhat similar market characteristics. In doing so, the valuer must ensure that only appropriate methods of value estimation are used.

For exploration stage properties, the advanced royalty payment terms on a lease, or the farm-in terms on a joint venture (JV; JV Terms Method), may also be analysed to develop indications of value that can help support one’s conclusions, since these are generally arms-length transactions (Appleyard, 1994).

Despite these options, it is well recognised that finding, data gathering and verification for even two or three somewhat useful sales or transactions can often be very time consuming and even expensive.

Sales Comparison Approach

The author promotes the view that one should always attempt to use the sales comparison approach in a valuation. The value estimate(s) derived from it generally provides the best indication of the market value of the property. That is the view that carries sway among authorities that count in the U.S., particularly the courts. Of the three approaches, the sales comparison approach draws most directly on sales data, which are by definition, from the market. At the least, a value estimate derived by the sales comparison approach should be used as a validity or “sanity check” against an estimate derived by the net present value method (Grant, 1994).

In the author’s view, the sales comparison approach has to some extent received unjustified bad press within the community of minerals valuers, in the author’s view. This is due to the extensive use of the term “comparable sales” as commonly used in the valuation of residential real estate (eg, Cartwright, 2001). “Comparable sales” in that meaning are generally not available for mineral property valuations, at least in the author’s experience.

The sales comparison approach can use analysis methods that do not rely on “comparable sales” in any strict sense of the term. Values of difficult to value real property, such as farms, timber tracts and water rights, face somewhat similar problems to minerals valuers, with scarce and non-comparable sales. They have long ago pushed the sales comparison approach down to working with common units of measure.

That is, the adjustment grid to bring the sales data to the subject property can be worked through at the level of dollars/unit, such as dollars/hectare, dollars/m³, or dollars/kg (ASFMRA, 1990a, ch. 6). Ratio analysis is in this process.

Cost Approach

For a complete appraisal, USPAP requires that the cost approach be considered. However, use of the cost approach for determining market value is generally rejected outright by minerals valuers in the U.S. as not being applicable to mineral deposits. Some U.S. real property valuation experts claim that the Cost Approach can only be applied to improvements (eg buildings and infrastructure) and cannot be applied to land, of which a mineral deposit is a component by definition (Appraisal Institute, 1993, p. 197). The author disputes both of these contentions.

Some minerals valuers, such as Paschall, use the cost approach only for valuing the plant and equipment on the property (Paschall, 1998, p. 4). The concept of estimating the “replacement cost less accrued depreciation” for a unique mineral deposit, or for improvements, such as a mill built at the site of such a deposit, is generally ridiculed by U.S. valuers. Evans of the Bureau of Land Management wrote, “A final, and almost always inappropriate approach, is the cost approach to value.” (Evans, 1998, p. 16).

The writings of minerals valuers and others in the U.S. about the valuation of mineral properties show that they believe that the cost approach can be based only on depreciated replacement cost analysis and/or historic cost analysis for surface improvements and exploration expenditures (Gentry and O’Neil, 1984, pp. 12-13; Loucks, 1991, ch. 11, pp. 8, 17-18). The depreciated replacement cost method is designed for valuation of buildings and plant, not for land and its components, such as a mineral deposit.

The historic cost method is based on historic cost accounting principles, this being the accounting regime employed for public reporting in the U.S. Historic cost accounting is well recognised for causing a significant percentage of U.S. public companies to report book values for assets that have little or no relationship to market value. Adjustments for time and obsolescence that are typically employed by real estate valuers, do little to rectify this problem when applied to market value estimation of a mineral deposit. The positive or negative contribution by geological knowledge to the value of the deposit is often manyfold greater than the cost of obtaining it.

However, in Canada and Australia, cost approach methods are commonly used for exploration properties. The methods are designed to provide adjustments to exploration expenditures that reflect the operation of the market for the properties in developing market value. These methods reflect flexible thinking, not bound to traditional cost approach methods.

6 The Multiple of Exploration Expenditure (MEE) Method promoted in Australia by M. Lawrence (1994), is a method in the cost approach. This method, as also described by Onley (1994), “... is applicable to exploration properties from the earliest stage of exploration to a moderately advanced stage, but, for which no resources have been delineated.” For this method, a prospective enhancement multiplier (based upon a valuer’s assessment of the property’s prospectivity to date) is applied to the relevant and effective past exploration expenditure on the property. A related method in the cost approach is described by Rosee (2000). This method, which he terms the appraised value method, applies an addition adjustment, instead of a multiplication adjustment to a similarly derived basis of exploration expenditures.
As indicated, the author believes that the denigration of the cost approach by U.S. minerals valuers described here, is unfairly harsh, particularly in light of advances of the past two decades. The cost approach is based primarily on the principle of contribution to value, and only secondarily on the principle of substitution that constrains some writers. For difficult to appraise real estate properties, a broader interpretation is now being applied, based on the estimation of the contributory value of each component of the subject property.

Valuers of rural real estate in the U.S. face similar issues to miners valuers when valuing farm and other land, water, and timber. Since about 1990, the ASFMRA has been teaching in its real property valuation courses, a method for deriving from sales analysis the contributory value to the subject property of various land classes and the improvements (ASFMRA, 1995a, ch 12). The method is based on sales analysis, but does not require the use of so-called ‘comparable sales.’ The contributory value of each component of the land mix of the property is determined using ratio analysis of land classes within sales.

Application of a similar contribution method to the analysis of mineral property sales data should provide similar contributory values for categories of mineralization or other property attributes. In the U.S., the SEC's restriction limiting the reporting of quantitative data to only reserves has made it difficult for the independent valuer to obtain adequate data on the categories of mineralization at the subject property, let alone at other properties that have been sold (SEC, 1992). However, diligent research, aided by some recent liberalisation of the reporting restriction, could provide a very useful additional approach for determining the value of a mineral property, particularly if the valuation report is to be used in a litigation situation.

If enough sales data are available to develop the sales comparison approach adjustment grid, there will likely be enough sales data to develop a cost approach, since the same sales can be used in both analyses. Generally it is necessary to utilise at least as many sales as there are components being estimated from those sales.

What may be the most important difference between the sales comparison approach and the cost approach is the presentation of the results. The sales comparison approach results sum the adjustments necessary to get the average dollar per unit bases of the selected sales to the subject property. That is, a grid showing the adjustments for each sale is presented, with the resultant value estimate for the subject property calculated from that sale.

The presentation of the results of the cost approach focuses on the contributory value of each component of the subject property. No sales are shown in this table. The contributory value for each component is calculated from sales or other sources prior to entry in the table. The contributory values are then summed to provide the property value. Example components will be reserves, resources, other mineralization and exploration potential, land surface, roads, buildings, and water rights.

Income Approach

The income approach includes all methods of value estimation that are based on the income generation potential of the property. U.S. real estate valuers commonly call methods of estimating a property's value based on its income generation capability income capitalisation methods.

Minerals industry practitioners tend to rely very heavily on the Net Present Value (NPV) method, also commonly called the Discounted Cash Flow (DCF) method, for estimating market value. This is particularly true for properties under development and in production. In such situations, their reliance on the NPV method is generally to the exclusion of all other methods of estimating value. Often the result of their valuation is an investment value or use value rather than the desired estimate of Market Value (Ellis, 2000c). This method is also subject to abuse as Lawrence (2000) outlined.

Many users of minerals valuation reports outside of the minerals industry have difficulty understanding NPV-based valuations, and look on them with great suspicion. They feel much more comfortable with a valuation that includes an estimate from the sales comparison approach. This is particularly true of many courts within the U.S., with a considerable percentage apparently rejecting NPV-based minerals valuations (Paschall, 1999). Many other courts are only allowing the NPV Method into testimony with reluctance. These problems have contributed to the inroads made by real estate valuers into the field of mineral property valuation. Eaton of the U.S. Department of Justice writes that, the NPV Method is so complex compared to other methods of analysis, that neither the attorneys nor the courts understand it (Eaton, 1996, p 192).

He goes on to state, "The courts have historically favored the sales comparison approach to value, often to the exclusion of the cost and income capitalization approaches, and preferred valuation opinions that can be supported by solid market data" (p. 193).

The UASFLA provides the following extract from a 1982 court decision involving a sand and gravel deposit. The comment pertains to NPV-based valuation.

Great care must be taken, or such valuations can reach wonderland proportions. It is necessary to take into consideration manifold and varied factors like future supply and demand, economic conditions, estimates of mineral recoverability, the value of currency, changes in the marketplace, and technological advances. Many of these factors are impossible to predict with reasonable accuracy. (UASFLA, 2000, p. 97).

Within the income approach, variants of NPV analysis can be applied, including that discussed below. There also are a few other income based valuation methods available that are commonly used by real property valuers. These include ratio analysis of selling price to gross income and net operating incomes. All methods within the income approach have their individual pros and cons, and all are subject to a high level of criticism. Despite their well recognised individual problems, this author recommends that when possible, a number of methods should be applied. Doing so will aid the valuer in developing

an understanding of the subject property within the context of the market.

The NPV Method is in the category of value estimation methods called *yield capitalisation* by the U.S. real estate valuer and financial analyst communities. In applying the NPV Method to estimate mineral property value, most minerals Industry practitioners use projected annual after tax cash flows as the basis of their analysis.

On the other hand, U.S. real estate valuers generally use annual net operating income as the amount to be discounted to present value. Some minerals valuers, such as Paschall (1998, p. 6) do the same, especially those who have done work for government agencies, or are state licensed. Net Operating Income (NOI) for this purpose is generally applied as: net sales — operating costs — capital costs. NOI is used because of the need to analyse sales on the same basis as the subject property. Less information needs to be obtained (or assumed) to calculate an NOI than to calculate after tax cash flows. It also is argued that assumptions about the financing and income tax arrangements that the potential buyer brings to the subject property should not be made. Some argue that income taxes are levied against the owner and/or operator of the property, not against the property itself.

Most buyers of mineral properties, however, do their analyses of potential acquisitions on an after tax cash flow basis. In evaluating the market for the subject property, it is important to attempt to analyse the subject property and sales from the buyer’s perspective. Therefore, the author often uses both the NOI and after tax cash flows as the basis for discounting, in order to get a better understanding of the property’s value.

Valuation theory holds that the discount rate applied must reflect the market for the property, and if at all possible, be determined from the market. There is considerable controversy over how this should best be done. This controversy occurs among real property valuers in general, and valuers of mineral properties in particular. A strong sector of real property valuers in the U.S. holds that the discount rate should be derived from analysis of sales within the same general category of property as the subject, by use of internal rate of return analysis.

The discount rate selected should reflect the market for the property on the effective date of the valuation, rather than be an investment rate. The rate also should be appropriate for the NOI or cash flow being discounted, such as being a before or after tax discount rate, with (nominal terms) or without inflation incorporated (real terms).

**Reconciliation**

In drawing a conclusion of value, USPAP requires the valuer to reconcile the results of the approaches used, discussing the quality and quantity of data available, and the applicability or suitability of the approaches. Leading real property valuers in the U.S. recommend that the results of the approaches be weighted, instead of selecting the result of one approach to be the opinion of market value presented (UASFLA, 2000, p. 23).

**Certification**

The report must contain a certification signed by the responsible valuer. The certification addresses nine items, primarily verifying the independence and impartiality of the valuer.

**LESSONS FROM EXPERIENCE WITH USPAP**

USPAP provides separate standards for conducting real property valuation, personal property valuation, and Business and Intangible asset valuation. The VALMIN Code does not separate these out. Separation helps the valuer to develop a conclusion of value which correctly matches with the purpose of the valuation assignment.

USPAP has been developed based on internationally accepted principles of valuation developed by the valuation community as a whole. IVS provides a similar implementation of the same principles. When objectively and fully carried out, the valuation process follows the scientific method, resulting in an objective conclusion of value:

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<tr>
<th>Scientific Method</th>
<th>Valuation Process</th>
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<tr>
<td>Hypothesis</td>
<td>Define the problem</td>
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<tr>
<td>Gather information</td>
<td>Plan the valuation</td>
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<tr>
<td>Record the data</td>
<td>Collect the data</td>
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<tr>
<td>Analyse the data</td>
<td>Apply value approaches</td>
</tr>
<tr>
<td>State a conclusion</td>
<td>Arrive at a value conclusion</td>
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For market valuation of mineral properties, all three approaches suffer from limitations in their application and are subject to severe criticism. More than one approach should be used if possible, to provide validation. The conclusion as to market value should be derived by weighting the results from the Approaches used.

A market value conclusion should be based on the highest and best use of the mineral property or asset being appraised. This need not match with its use, or the use of some of its components, at the time of the valuation. In the U.S., the highest and best use of a mineral property often is not even a mineral use.

Developers of standards should be extremely cautious of barring any specific method of value estimation. The valuers valuator needs all the methods available that can be muddled to develop indications of value, given the inherent difficulty of his task in an environment suffering from a severe shortage of good data. In any event, method selection must be the prerogative of the expert valuer.

For example, some minerals industry professionals promote that the NPV method should never be applied to the valuation of a mineral prospect at the exploration stage. This is strictly true if one considers the paucity of data available about anything likely mine on the property, but the author believes that it is quite appropriate to use the NPV method in particular circumstances. For example, to calculate the NPV of the income stream that might be generated from leasing the prospect, or from grazing cattle on the surface, or from considering a non-mineral highest and best use of the property.
International rule makers should assure that the standards are not so high or inflexible that they become relatively prohibitively costly or too time consuming for the minerals valuer to carry out market valuations of low value mineral assets. The author's experience is that the application of USPAP or VALMIN to small minerals valuation assignments can be too onerous. For example, consider the common request to appraise a farmer's interest in a small sand and gravel quarrying operation on his property.

At least in Australia for such a situation, one can usually choose to forgo the cachet of providing a VALMIN-compliant valuation report if it appears too costly in the circumstances. In the U.S., state licensed valuers and members of the major valuation societies are bound to abide by USPAP. However, USPAP does provide some flexibility in allowing the development of a scope of work that is appropriate, relative to the scale of the assignment. This flexibility is largely based on assuring that one conducts a level of research and analysis, which at least matches the level that competitors and peers would do for the same or a similar assignment. USPAP's allowance of the exercise of departure provisions, with the client's approval, resulting in a limited appraisal, could also prove beneficial under certain circumstances, dependent on the intended use of the valuation. The main point here is that the client cannot expect to enjoy the benefit of a quality qualifier, without the work that is usually entailed to be entitled to it. See Ellis (2000a) and (2000c).

Trevor R. Ellis, MSc(MinEc), FAusIMM(CPGeo), CPG-AIPG, CMA-AIMA, CGA(CO). Mineral Property Appraiser, Ellis International Services, Inc., Denver, Colorado, USA.

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References cited are included at the end of Part 3.

AIPG EXECUTIVE COMMITTEE MEETING

Sunday, May 5, 2002
COSMOS Club, Washington, DC

Barbara H. Murphy, CPG-06203, AIPG National Advisory Board Representative

The Executive Committee meeting was held in conjunction with the Washington, D.C. Fly-In from May 5th through May 7th. The meeting was held at the COSMOS Club in the central part of Washington, D.C. The COSMOS Club was founded in 1878 in the home of John Wesley Powell to serve as a center of good fellowship that embraced the sciences and the arts, where members could meet socially to exchange ideas. The Club moved in the late 1800s to the Townsend Mansion and has undergone renovations and is now in the Embassy Row area. The Club also serves as a residence for scholars and scientists when visiting the Washington, D.C. area. The historic building and the artwork were such a treat to see.

The Executive Committee meeting convened promptly at 9 am on Sunday morning. All members of the Executive Board and Advisory Board and the Executive Director were present. There also were several visitors present throughout the meeting. The Board validated an earlier vote to dissolve the West Virginia and the Virginia sections and establish the Virginias Section from a merger of the West Virginia and Virginia sections. The Board validated its approval of the proposed AIPG Virginias Section Bylaws. As part of Secretary Lynn Kantner's report, the Board learned that most of our members are in the age categories of 35 and older. Very few of our members are younger than 35 years old. This trend
matches those of other professional geology organizations. There also are fewer numbers of geosciences majors graduating from the colleges and universities in the U.S. The Board reviewed a recent article on geology education in which the author concluded that there are more jobs for geology graduates than for graduates with other science degrees. Many high school students are not introduced to geology; most high schools are now only teaching biology, chemistry, and physics.

The Treasurer, M. B. Kumar, reported that AIGP is financially sound, but there is a need for more members and other revenue sources in order to remain fiscally secure. The next agenda item, as part of the Treasurer’s report, was a review and discussion of dues amounts for all categories of membership and whether to create a Lifetime Membership category. It was decided to leave the dues costs at the same level for now and to investigate the Lifetime Membership category.

Virginia McLemore, Editor, presented information about *The Professional Geologist* (TPG) publication. About 5300 issues of the magazine are printed for distribution 10 times each year. There is always a need for more articles and a need for more advertising. The articles are peer reviewed by a panel of associate editors. Virginia would like to see articles to celebrate the 40th anniversary of AIGP next year. Some ideas include a history of each AIGP Section written by someone in the Section and articles about our members, perhaps what led them into geology or about their geological career. Many of the Sections now have an Internet web site so our members may be aware of what the various sections are doing.

Rick Powers, President-Elect, presented additional information on his proposed Corporate membership and corporate certification programs. The Board decided to adopt the corporate membership program as another membership category for now and have additional discussions on the proposed corporate certification program. Bob Fukundiny presented the Past-President’s report in which he discussed the need for a business plan for AIGP. Bill Siok, Executive Director, was asked to prepare a business plan. Fukundiny also discussed AIGPs continuing professional development program and GSAs short course offerings at meetings. It is getting harder to fill short courses and have them profitable. AIGP will need to consider the types of courses our members would find beneficial and look at the financial structure of offering the short courses. Jim Shotwell, Vice President, reported on activities and comments from various Sections. AIGP needs to look at the role of AGI and what it may provide. There is a need for more exposure of AIGP at the national level and for the geologic profession.

The next agenda items included the Presidents and Executive Directors reports. Larry Cerrillo, AIGP President, spoke about the continuing education development program, the need for an increase in membership, ways in which to stimulate Section activities, state reciprocity issues, geologists relationships with engineers and regulatory language affecting the two professions, and the practice of U.S. geologists in Canada. Bill Siok, Executive Director, reported on the new health care program, GeoCare that is now offered to our members through AAPG.

The Annual Meetings Committee reported that the St. Louis meeting was a great success. The Missouri Section and AIGP headquarters realized a profit and the Association of Engineering Geologists (AEG), with whom the meeting was held, also realized financial success. The plans for the 2002 meeting in Reno are well underway. Jonathan Price gave us an overview of the meeting which will be held in conjunction with AEG and the Geological Society of Nevada. Committees have been organized for the 2003 meeting in Glenwood Springs, Colorado and the 2004 meeting in Saratoga Springs, New York so plans are underway. It was noted that combining the AIGP meeting with that of another similar professional organization may be very beneficial, both financially and in having more people to assist with planning and organizing the meeting.

Under the State Affairs Committee report there were several proposals: to review and revise the AIGP policy statement on “relationship between professions”; AIGP, in conjunction with the Geo-Institute and AGI, to draft a definitive position paper on the difference between geologists and engineers; and for AIGP to establish a relationship with REGREVIEW. REGREVIEW provides study guides for the ASBOG exam and offers review classes around the country as preparation for the ASBOG exams. A discussion on AIGPs role in issuing position papers followed and it seemed, by consensus, that white papers on issues directly affecting geology and geologists were appropriate, but position papers on issues not directly affecting geology may not be supported by all of our members.

The candidates, and ballots, for 2003 officers, appear in the June issue of *TPG*. The next item on the agenda was a report from the Continuing Professional Development (CPD) Committee. Several issues were discussed including the need to offer courses and record the activities accepted for CPD. It was decided that no new acronym was necessary for current members who chose to participate in the CPD program. The CPD refers to those certified as professional geologists by AIGP; regardless of change in requirements for certification.


The meeting and the Fly-In were successful. Being an active member of AIGP shows how AIGP can be of benefit to geologists and the geologic profession. I would like to encourage more of our members to active with the Sections and the National AIGP. It is a great group of people with whom to work.
It was a great meal; pasta with smoked salmon and a vodka cream sauce, pinot grigio, salad with balsamic vinaigrette, cantaloupe, and ice cream. Ah yes, so content, but now I must prepare an article for TPG. What to write about? I move the books on my desk to make room for my laptop. "How to Avoid World War III at Home", "The Third Side", "Environmental Dispute Resolution", "Geomorphology in Deserts", "Fractured Rock Hydrology", the May TPG—interesting articles—kudos to all contributors. As I continue to ponder subject matter, such as the fly-in, CPD, other areas of concern, the small paperback "The Third Side" keeps drawing my attention. OK, give-in, write about it.

As some of you know, one of the other hats I wear is that of mediator for environmental and public policy disputes. I am torn between reading geology books and books on conflict. Today's news is all about conflict, terror, inevitable attacks and such. Short of being in a position to prematurely crash an aircraft in the midst of a terrorist attack, there probably is not much we as individuals can do on that scale. What we can do is to minimize conflicts in our daily lives whether on the road, in the office, at home, wherever. When this is not possible, do we reach for the phone and dial an attorney, or do we pause and consider alternatives? Hopefully the latter.

One alternative to resolving a conflict is of course mediation. What is mediation? Definitions are numerous, but as described by William Ury, "The Third Side", it is a process wherein a third party or parties enter a conflict as a neutral to help disputants reach an agreement. Not to write or recommend an agreement, but to help the disputants reach an agreement. This "third side" can be a parent, teacher, a third sibling, most anyone.

Why choose mediation? There are numerous reasons, such as less cost than litigation, outcome of any agreement is in the hands of the parties, greater chance for an agreement to succeed, time efficient, and the fact that 75% of mediated cases result in settlement. Sure worth considering.

Ury points out that "Whatever the surface issues in dispute, the underlying cause of conflict usually lies in the deprivation of basic human needs like love and respect." One might think environmental or policy dispute cases cannot be viewed from this perspective, but think about disputes with which you have been involved; were they not the result of certain individuals not getting their needs met? Everyone involved in such disputes has their own agenda. If the needs for respect, identity, and safety are not being met, a conflict ensues.

So, where am I going with all this? I guess it is to encourage the minimization of conflict at those levels over which we have some control. Someone said, "Conflict is inevitable, violence is not." In fact, conflict may be good to bring about change. We may not think of our types of conflict escalating into violence, but I have been involved in two projects where persons have been murdered as a result of conflicts that were resolvable.

Let me close by quoting Ury, "Peace is a process that begins with each of us and radiates out from there." Forgive the person that cut you off on the freeway, the regulator that made unfounded comments about your report, or the spouse that burned dinner. Make it a great day!
About this time of the year, we're all either returning from or ruminating about an upcoming summer vacation. It's a good time to relax a bit, enjoy the salubrious weather, and not take professional association issues and pronouncements too seriously.

In March, my column was focused on the subject of AIPG services to members, particularly the issue of affordable and effective health insurance. Of course, members and prospective members frequently request a list of AIPG's overall services, and these have been outlined by past Presidents many times within the pages of TPG.

In the interest of repetition, not for repetition's sake, but in the expectation that AIPG members may appreciate the breadth of AIPG services and actions on their collective behalf, please consider this list of some of the most important.

AIPG's primary service is the certification credential, Certified Professional Geologist (CPG). The other equally critical service is in AIPG's role as advocate and voice for geologists and geology at the state and national levels.

AIPG also provides these additional services and benefits provided to members:

- Health and Life Insurance at competitive rates.
- Subscription to the AIPG news journal The Professional Geologists (TPG).

- TPG and the website are media available to all members for publishing technical articles and opinion pieces.
- AIPG makes website pages available for posting Section and Chapter news and links to Section and Chapter websites.
- AIPG provides electronic links to all major geologic organizations.
- As an American Geological Institute (AGI) associated society, AIPG has access to AGI benefits for AIPG members, including Earth Science Week educational materials; regular informational updates pertaining to legislative issues from Washington, D.C. effecting geology and geologists; and affiliation with other scientific and educational sister societies.
- AIPG has entered into formal cooperation agreements with international professional geology organizations including the Canadian Council of Professional Geoscientists (CCPG) and the European Federation of Geologists (EFG). These agreements are aimed at easing difficulties of practicing across international boundaries.
- AIPG has committees and task forces to address specific needs, such as educational standards, scholarships, legislation affecting geology and geologists.
- AIPG offers scholarships to undergraduate geology students.
- AIPG will soon provide members with a web-based resume posting and employment search service.
- AIPG provides members with an exceptional regional and national network of professional colleagues.
- AIPG Sections and Chapters provide organizational structures for members to address specific and particular regional (local and state-level) needs.
- AIPG provides general liability insurance for Sections and Chapters.
- AIPG supports publications, such as the Citizens' Guide to Geologic Hazards, aimed at public education regarding the role geology and geologists play in the ordinary circumstances of daily living.
- AIPG provides a structure within which motivated member volunteers can constructively affect the profession.
- AIPG (in cooperation with AASG) exhibits at the annual convention of the National Conference of State Legislatures (NCSL) on behalf of its members. NCSL also provides an opportunity for all members to meet and speak with their respective legislators in an informal non-political atmosphere.
- AIPG conducts an annual Washington, D.C. Fly-In to meet with key agencies and congressional offices on behalf of its members. This is an event open for the participation of all members.

These are a few items for you to consider. Constructive input is encouraged, particularly through your Section committees. Enjoy the summer!
Science Invades the Environmental Protection Agency

John J. Dragonetti, CPG-02779

Background

For nearly a decade, Congress and the White House have talked about improving the status of science at EPA, but still nothing much has changed. Several bills have been introduced in Congress aimed at improving the quality of science used in decision making, and the overall position of EPA within the federal government. The bill (H.R. 64) introduced by Rep. Ehlers, who chairs the House Science Subcommittee on Environment, Technology and Standards, would implement the National Research Council’s recommendation of establishing a high-level administrator position within the agency. Unlike other legislation on improving science at the EPA that have not seen much consideration, H.R. 64 has strong-bipartisan support that helped it to pass the House in April 2002. The bill would create a presidentially appointed position with the title of Deputy Administrator of Science and Technology. It also would extend the term of the Assistant Administrator of the Office of Research and Development to five years adding to it the title of Chief Scientist of the EPA. The length of the term was designed to provide more continuity for decisions that would transcend administrations.

Ten years ago, President George H. W. Bush initiated the action to elevate the EPA’s status to cabinet level, renaming it the Department of Environmental Protection. Despite the president’s support for this move, the EPA remains an independent agency. The Boehlert bill (H.R. 2438) has picked up the charge to elevate the agency, but the bill is currently awaiting committee action. Although the inclusion of the EPA Administrator at cabinet meetings has become standard practice in the past several administrations, the U.S. is one of the few nations that does not officially include the head of its environmental agency as a part of the highest level of executive leadership.

Science at the EPA

Even as external efforts are underway to raise the status of science within EPA, recent actions by the agency itself suggest science is on shaky ground. May 2002 was celebrated as EPA Environmental Science Month, established “to highlight the use of sound science in EPA’s decision processes.” But use of the program tool- ed during the month — the EPA Science to Achieve Results (STAR) program — is terminating its flagship graduate fellowship program. The STAR fellowship program is the only federal program dedicated to graduate study in environmental science, and the elimination of the $9.7 million program has raised concerns about producing the next generation of environmental experts to replace the agency’s aging workforce. The program supports close to 100 graduate fellows each year to study environmental problems that fall within the scope of the EPA mission. AGI estimates that roughly 10% of those students are studying in the geosciences. The National Council for Science and the Environment (http://www.cnhe.org/) has led opposition to the proposed elimination of the fellowships, and it is not at all clear that Congress will go along with the administration’s plans.

An EPA Science Forum was part of the celebration of Environmental Science Month. The forum was hosted by the EPA Office of Research and Development to showcase the agency’s efforts to use sound science as the basis for developing environmental policy. Rep. Boehlert spoke at the opening session, stating that “science does indeed have to be the foundation for any environmental policy.” The question remains of how effective the agency will be in truly integrating science into the other dominant aspects of its mission. Whether Congress will force the issue is largely in the hands of the Senate. By passing the Ehlers bill, they can help ensure that future EPA decisions will reflect scientific reality.

For more information on the National Research Council report and congressional legislation on science at EPA, see the article by AIPG/AGI Geoscience and Public Policy Intern Caedlin Ofresh in the November 2001 issue of The Professional Geologist. The article also is available at www.agiweb.org/gap/logis107/kpg_co.html.

This column is a bimonthly feature written by John J. Dragonetti, CPG-02779, who is Senior Advisor to the American Geological Institute’s Government Affairs Program.
Monthly review prepared by Margaret Baker, David Applegate, MEM-0002, AGI Government Affairs Program, and AGI/AAPG Geoscience Policy Intern Heather Golding.

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Senate Passes Energy Bill, Next Stop House-Senate Conference

The Senate spent much of the past three months debating its version of comprehensive energy legislation (S. 517) before taking a final 88-11 vote on April 25th. The large number of supporting votes reflected a desire by both the Senate leadership and the White House to complete action and move to a House-Senate conference. The administration and congressional Republicans hope to use the conference to restore key provisions found in the House counterpart, H.R. 4. Senate conferees have already been announced and the House is expected to make its announcement in the first half of May. Unlike its House counterpart, which passed that chamber last August, the Senate energy bill does not include a provision opening the Arctic National Wildlife Refuge (ANWR) to oil exploration. Instead, the bill calls for opening a natural gas pipeline from the North Slope of Alaska to the state's southern coastal. The Senate bill contains $14 billion worth of tax incentives for energy efficiency and increased domestic energy production, heavily weighted toward renewable energy sources. The House bill, passed last August, includes $33 billion in tax breaks with a greater emphasis on incentives to increase production from more traditional energy sources. An AGI Special Update comparing the two pieces of legislation will be sent out in the first week of May. More at http://www.agiweb.org/gap/legis107/energy.html.

Yucca Mountain: House Panel Votes to Override Nevada Governor

On April 8th, Nevada Gov. Kenny Guinn (R) submitted his Notice of Disapproval to Congress, signaling the state's official objection to the proposed Yucca Mountain high-level nuclear waste repository site. As provided by the Nuclear Waste Policy Act of 1982, Congress has 90 working days to override the governor's objection by passing a resolution approving the site. The House Committee on Energy and Commerce responded quickly to the governor's disapproval, holding a hearing the following week to consider House Joint Resolution 87. Introduced by subcommittee chairman Rep. Joe Barton (R-TX), the resolution only needs a simple majority in both chambers of Congress to override Nevada's objection. At the hearing, Secretary of Energy Spencer Abraham emphasized that site selection was not a final step in repository development and would lead to additional studies to answer remaining questions about the repository. The General Accounting Office and Nuclear Waste Technical Review Board also provided testimony on the status of DOE site investigations. Both of Nevada's representatives and Sen. John Ensign (R-NV) testified against the resolution. A week later, the committee voted 41-6 in favor of the resolution, paving the way for a vote by the full House in early May. More at http://www.agiweb.org/gap/legis107/yucca.html.

Science at EPA Getting Mixed Signals, Fellowships Threatened

Congress has taken a strong interest in elevating the role of science at the Environmental Protection Agency (EPA), but the agency's own interest is less certain. Last year, Rep. Vernon Ehlers (R-MI) introduced legislation, the Strengthening Science at the EPA Act (H.R. 64), that would establish a new Deputy Administrator for Science and Technology at the agency. On April 30th, the House passed the bill by voice vote, sending it to the Senate for consideration. In a House Science Committee press release, Ehlers states that he believes the bill "will be a big step forward in ensuring the scientific accountability of EPA decisions." Meanwhile, one of the few programs within EPA targeted specifically at environmental science is faced with elimination in the president's budget request for fiscal year (FY) 2003. EPA did not request funding for the Science to Achieve Results (STAR) Fellowship program, which funds graduate research in a range of disciplines. An AGI staff analysis suggests that nearly 20 percent of the 800 fellowships issued since the program's inception in 1995 have gone to projects in earth science-related disciplines. EPA budget documents state that "funding for EPA's STAR Fellowship Program was eliminated in FY 2003 as part of a larger effort to increase environmental science education programs at the National Science Foundation." But the NSF request did not specify funds for such fellowships. In the meantime, students who applied for the coming year all received letters from EPA stating that only existing fellowships would be funded and no new ones would be issued. The National Council for Science and the Environment is heading up a campaign to help protect these fellowships from elimination. More information at http://cnie.org/NCSE/SciencePolicy?FID=1682.
AAPG Testifies on Oil and Gas Assessment Methodology

At a hearing on April 18th, the House Energy and Mineral Resources Subcommittee addressed the methodology used to assess domestic oil and gas resources on public lands. The hearing was prompted by a RAND Corporation report: "Assessing Gas and Oil Resources in the Intermountain West: Review of Methods and Framework for a New Approach". RAND is the original "think tank" with much of its work funded by the federal government and particularly the military, but this particular study was commissioned by the Hewlett Foundation. The report criticizes the U.S. Geological Survey (USGS) and other agencies for using technically recoverable resources as the basis for reporting assessment results. Specifically, the RAND report criticizes such an approach for failing to fully account for economic factors controlling resource availability. Testifying on behalf of the report was Debra Knopman, Associate Director of RAND Science and Technology, who was one of the authors. She called for assessments to report economically "viable" resources. American Association of Petroleum Geologists (AAPG) Secretary Charles J. Mankin told the House that "technically recoverable resource is the correct base to use when making policy decisions on competing use of federal lands. Although further analysis of this resource base is perfectly justified depending upon policy issues to be addressed, only the total resource base can be used to balance against other competing social and environmental uses or preservation of these lands." Mankin is Oklahoma State Geologist and Director of the Sarkeys Energy Center at the University of Oklahoma. Witness testimony can be found at http://www.house.gov/resources/107cong/energy/2002apr18/agenda.htm. The RAND report is at http://www.rand.org/publications/MR/MR1553.0/.

Geoscientists Respond to Snub in EPA Proposed Rule

The Environmental Protection Agency (EPA) has proposed "paperwork reduction" regulations that recognize only Professional Engineers and Certified Hazardous Materials Managers for a number of responsibilities under the Resources Conservation and Recovery Act (RCRA). Those responsibilities include the authority to sign off on issues related to hazardous waste generation and treatment-storage facilities, frequency of inspections of hazardous waste tanks, training requirements, paperwork approval, treatability studies, and facility contingency plans. During a public comment period for the proposed rule, AGI and several of its member societies submitted their concerns on the proposed regulations, arguing that EPA was disregarding certified and licensed professional geologists. In the proposed regulations, EPA extends authority to Certified Hazardous Materials Managers, having previously recognized only Professional Engineers. The original proposal announcement was issued in the Federal Register on January 17, 2002 (Vol. 57, No. 12).

FCC Rule Inhibits Use of Ground-Penetrating Radar

Geophysicists are up in arms over a ruling by the Federal Communications Commission (FCC) that would essentially eliminate most commercial applications of ground-penetrating radar (GPR), a widely used technology for imaging buried objects. According to an FCC press release, GPR would be limited to frequencies below 960 MHz and between 3.1 to 10.6 GHz, and its use in those ranges would be "restricted to law enforcement, fire and rescue organizations, to scientific research institutions, to commercial mining companies, and to construction companies." Under the rule, consulting companies and many other private-sector geophysicists would not be qualified users of GPR instrumentation. Moreover, opponents of the ruling argue that numerous GPR applications need the prohibited frequencies to properly image objects such as conduits beneath concrete runways. GPR proponents also argue that the FCC ruling jeopardizes the use of this technology for safety purposes such as identifying buried power and gas lines. The principal driver for the FCC action appears to be concern from the Department of Defense that GPR could interfere with military wireless Global Positioning System units. Complicating matters is FCC's view that the new rule is in fact a relaxation of existing rules, implying that many current uses of GPR — many of them on behalf of the federal government — are already illegal. A number of groups, including several AGI member societies, are working to challenge the FCC ruling. Additional information on their efforts can be found at http://www.g-p-r.com and http://www.radar-solutions.com. The FCC press release is at http://www.fcc.gov/Bureaus/Engineering Technology/News Releases/2002/nret0203.html.

IPCC Gets New Leader

Marking a transition point for the Intergovernmental Panel on Climate Change (IPCC), the group has elected the current IPCC Vice Chair, Dr. Rajendra Pachauri of India, as the new Chairman. Pachauri replaces Dr. Robert Watson of the World Bank, who was seeking a third term, but was opposed by the Bush Administration. A former Clinton White House official, Watson oversaw the IPCC's Third Assessment Report. The United Nations Environment Programme established IPCC in 1988 "to assess the scientific, technical and socio-economic information relevant for the understanding of the risk of human-induced climate change." Unlike Watson, Pachauri is not an atmospheric scientist; his area of expertise is economics and technology. He will chair the group as it prepares for the fourth assessment on climate change, which is expected to be released in 2007. The IPCC press release can be found at http://www.ipcc.ch/press/pr20042002.htm.

Minerals Management Service Releases Next Five-Year Leasing Plan

The Department of the Interior's Minerals Management Service (MMS) announced in the April 19th Federal Register that it has issued a proposed final five-year program for outer continental shelf (OCS) oil and gas leases. MMS issued its
draft plan last October, along with a draft Environmental Impact Statement. The plan would schedule 20 leases in eight OCS regions over the next five years. According to the MMS press release, the only change made in the final proposal is one that would effect two lease sales in the Chukchi Sea/Hope Basin area (off the northwestern edge of Alaska) that would be designated as “special” lease sales. Under this type of sale, MMS would issue a request of interest for each year of the five-year plan. If industry expressed an interest, then MMS would continue with the normal leasing process; otherwise, if no interest was expressed, then the sale process would end. MMS submitted the plan to Congress and the White House, setting the stage for Secretary of the Interior Gale Norton to finalize the plan and put it into effect starting on July 1, 2002. More at http://www.mms.gov/5-year/.

AGI Provides Testimony in Support of NSF, USGS, DOE Programs

On April 16th, the American Geological Institute (AGI) provided both oral and written testimony in support of the National Science Foundation’s geoscience programs to the House Appropriations Subcommittee on VA, HUD and Independent Agencies. Like earlier testimony submitted to the subcommittee’s Senate counterpart, the testimony expresses concern over the president’s requested program transfers and calls for enhanced support for core programs in the Geosciences Directorate. The testimony also calls for expansion of the Major Research Equipment account to accommodate both existing projects and the requested new starts, including the EarthScope initiative (which is featured in the April issue of Geotimes at http://www.geotimes.org/april02).

On April 4th, AGI provided written testimony to the House Appropriations Subcommittee on Interior and Related Agencies in support of budgets for the U.S. Geological Survey, the Department of Energy’s Fossil Energy Research and Development program, and other geoscience-related programs within the subcommittee’s jurisdiction. The testimony urges the subcommittee to reject proposed cuts to these programs. The text of these statements is on the AGI web site at http://www.agiweb.org/gap/testimon.html.

AGI Selects New Congressional Science Fellow

AGI is pleased to announce the selection of Larry Kennedy as the 2002-2003 AGI Congressional Science Fellow. He will succeed current fellow David Curtiss, who is serving on the staff of Rep. J.C. Watts (R-OH), chairman of the House Republican Conference. Kennedy is currently pursuing a masters degree in hydrology at the University of Nevada, Reno following a 15-year career in mineral exploration. Prior to entering the mining industry, he received a Ph.D. in geology from the University of Western Ontario and a B.A. in earth science from Wesleyan University. Kennedy will join fellows from GSA, AGU, SSJS, and more than twenty other science and engineering societies for an orientation session in September followed by placement in the office of a representative, senator, or congressional committee for the following year. The AGI fellowship is supported by a generous grant from the AGI Foundation. More on the fellowship at http://www.agiweb.org/gapac/csf.html. The May 2002 issue of Geotimes includes a column by David Curtiss on “Becoming a Standard Bearer”; see http://www.geotimes.org/may02/scene.html.

Geotimes Special Policy Issue Features EarthScope

The April 2002 issue of Geotimes is the seventh annual special geoscience and public policy issue. The cover story describes the EarthScope initiative, the first-ever earth science project to be requested as part of the National Science Foundation’s Major Research Equipment account. A related Political Scene column addresses the challenge faced by the geoscience community in turning the president’s budget request for EarthScope into actual appropriations. The second feature focused on the role of geology on Native American lands, particularly the role of the USGS. The Comment is by Rep. Sherwood Boehlert (R-NY), chairman of the House Science Committee. Most of these articles can be found on the web at http://www.geotimes.org/april02/.

New Material on Web Site

The following updates and reports were added to the Government Affairs portion of AGI’s web site http://www.agiweb.org since the last monthly update:

- Energy Policy Overview (4-26-02)
- High-Level Nuclear Waste Disposal (4-26-02)
- Arctic National Wildlife Refuge Update (4-20-02)
- Summary of Hearings on Brownfields (4-12-02)
- AGI FY 2003 House Appropriations Testimony on NSF (4-16-02)
- State Challenges to the Teaching of Evolution (4-10-02)
- AGI FY 2003 House Appropriations Testimony on USGS and DOE Fossil Energy (4-4-02)
- Reformulated Gasoline and MTBE (4-3-02)
- Geotimes Political Scene: Turning a Request into Reality (4/02)


This month’s review goes out to members of the AGI Government Affairs Program (GAP) Advisory Committee, the leadership of AGI’s member societies, and other interested geoscientists as part of a continuing effort to improve communications between GAP and the geoscience community that it serves. Prior updates can be found on the AGI web site under “Government Affairs” <http://www.agiweb.org>. For additional information on specific policy issues, please visit the web site or contact us at <govt@agiweb.org> or (703) 379-2480, ext. 212.
Acknowledging Other's Work

Part 1. A question regarding how to acknowledge the work of others recently arose in connection with a field trip guide I co-authored. The field trip is intended to provide an example of a trip designed for the general public on the consequences of living with geology in one's home area. It used a pre-existing field trip designed for geologists as its basis, although some of the technical details were removed and a number of discussion sections of interest to the public were added. The question presented is how to properly acknowledge the authors of the field trip guide on which the new trip is based.

CANON 4 of the AIPG Code of Ethics, Obligations to Professional Colleagues, states, "Members should respect the rights, interests, and contributions of their professional colleagues." Rules 4.1.1 provides more specificity by stating, "Rule 4.1.1 A Member shall give due credit for work done by others in the course of a professional assignment, and shall not knowingly accept credit due another."

There is no question that the authors of the earlier field trip guide should be acknowledged, the question is how to do so. Should the authors of the previous trip, at least those who provided a significant portion of the text of the new guide, be named as co-authors of the new field guide? These authors have not been asked to review or comment on the new guide. Therefore, they have not had the opportunity to revise the information presented for changes in opinions, etc. This strikes me as one of inherent characteristics of authorship.

This issue is very similar to the one raised in column 73 (April '02) in "Should you be required to obtain a written consent to quote from a consultant's report?". The issue may be more important for consultants because of the potential legal liability for opinions presented. But the ethical issue doesn't change because of an author's business affiliation or the purpose for which the report was written.

An alternative method of acknowledgment is a clear statement that substantial portions of the earlier work was used, perhaps accompanied by explicit thanks in the acknowledgment's section. While this alternative makes clear that the liability for authorship lies in the subsequent report, does the use of extensive portions of the earlier report constitute plagiarism? Rule 4.1.2 of the AIPG Code of Ethics states, "A Member shall not plagiarize another in oral and written communications, or use materials prepared by others without appropriate attribution." Clear acknowledgment of the use of the previous work may satisfy the requirements of Rule 4.1.2. Do you think so?

However, the acceptability of the acknowledgment alternative may depend in part on copyright issues. I don't pretend to be an expert in the copyright area. Column 72 (March '02) contained a section on copyright use by Mark Longman that was quoted in its entirety from the RMAG's Outcrop; permission for this reprinting was sought and granted. I'd appreciate receiving comments on this question from those of you with more knowledge and experience in the area of copyrights and fair uses.

Part 2: Peter R. Rose, CPG, in his Business Side of Geology column for the May 2002 AAPG Explorer, decried what he believes is an increasing failure to give credit to previous work during talks and posters at professional meetings. Rose observed that "Increasingly, I think I'm seeing a lot of concepts, ideas, findings, quotes, and even figures thrown up on the screen that I know were first put forward by someone other than the speakers who now blithely present them as their own. What I don't often see (or hear) is the obligatory 'after Smith, 1887,' or 'modified from Jones, 1999.'" Rose points out that the AAPG (and the AIPG) Code of Ethics requires acknowledgment of the contributions of others.

Rose suggests that the increasing use of PowerPoint™ may be contributing to the problem. He also notes that the problem is as unethical when done in private reports as it is in public presentations. I would suggest an additional source of the problem; namely professors who have used the copy machine to assemble figures for handouts that fail to cite the source of the figure. To correct these problems, Rose suggests that program chairmen or members of the audience who observe failures to give proper attribution stand up and say so.

In light of Rose's comments, I was particularly pleased recently when I received a call from an Illinois geologist asking permission to use some slides of mine in a presentation he was planning. I sent him electronic copies of the requested slides, which meant that he had better slides that included my copyright line.

The foregoing brings up the question, what is the difference between a slide labeled "Smith, 1999," "after Smith, 1999," and "modified from Smith, 1999"? I believe that "Smith, 1999" refers to an exact copy of Smith's 1999 figure, "after Smith, 1999" refers to a figure that I've re-drawn based on Smith's 1999 figure, and "modified from Smith, 1999" refers to a figure that contains some of Smith's 1999 figure, but also contains modifications that I've added to Smith's figure. In the modification case, the ability of presentation software to build a slide allows one to show first Smith's slide and then the modifications, which may be important as a means of showing the improvements that one has contributed to the idea.
Students' Values Shift During School

Where Will They Lead? MBA student attitudes about business and society, a study by the non-profit Aspen Institute, found that students' attitudes shifted during the course of their MBA education. The report found that student attitudes "are shaped by what they learn over the course of an MBA degree."

Priorities shift from customer needs and product quality to the importance of shareholder value during the two years of MBA study. Responsibility to the community and environment are seen as less critical.

- MBA students are unsure about whether and how social responsibility contributes to business success. They would like schools to provide more concrete information on the topic during their studies and incorporate the information into core classes.
- The students do not believe that they can change core company values and, when corporate and personal values conflict, they are more likely to leave the company than work towards change.
- Although the students perceived differences between their attitudes and those of current management, students ranked both their own and management's goals in the following descending order: shareholders, customers, employees, social/environmental concerns. Both groups ranked shareholder value as more than twice as important as social/environmental concerns.
- Students believed that the most effective teachers of dealing with values conflicts are guest speakers who have had to make tough decisions. As one student stated, "You want to hear from someone who has had to make the decision—not someone who analyzes the decision. Guest speakers are real people who talk about real issues."
- Students also believed that discussion of such issues belonged in their core courses.

The executive summary of the study can be downloaded from http://aspeninstitute.org/sisb/student_att.html along with an order form for the full study.

There is no reason to believe that geoscience students differ from their MBA peers in general attitudes towards social and ethical issues, particularly as they seek employment in the corporate world. The Aspen Institute study clearly suggests steps that schools and the profession can take to emphasize the importance of ethical conduct in professional practice. These are:

- bring in guest speakers who talk about making the hard decisions, and
- incorporate discussion of ethical issues into the core curriculum as case study examples.

Further, corporations should continue to focus on the importance of ethical behavior by their employees by providing continuing education in professional ethics, by bringing in outside speakers on the subject, and by senior management demonstrating that they are acting in concert with stated corporate ethics and values statements. Mentors likewise can do the same; encourage discussion and study of professional ethics and discuss how they deal with ethical issues as they arise.

AIPG can develop a list of speakers, who are willing and have some training and experience in dealing with professional ethics and practices issues. "Training and experience in professional ethics and practices" means not just someone who can relate histories of perceived inappropriate behavior, but someone who can discuss specifically how the inappropriate activity violated a specific standard and how slight changes in the facts may change one's view of the behavior. This reflection on and analysis of professional ethics is lacking in too many ethical case studies. Guest speakers need to talk about personal experience, but must be able to place these experiences in a larger, more general context in order to be effective.

However, such efforts by AIPG to provide speakers must be supported by companies in this effort. Companies can send their employees to professional ethics short courses, bring in such courses to their employees, and be willing to pay honoraria to and the travel expenses of qualified outside speakers. Without such corporate support, AIPG's efforts will be meaningless.

Geological Ethics and Professional Practices 1987-1997, AIPG's Reprint Series #1, a compilation of the first two years of these columns and other articles by a number of contributors on professional ethics printed in TPG over a 10-year period provides a written version of the expertise suggested.
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MEMBERS IN THE NEWS

AIPG Members Elected as New Officers of AAGP

Stephen A. Sonnenberg, CPG-06201, manager of the DJ Sub Business Unit for Encana Energy Resources Inc. in Denver, has been voted president-elect by the AAGP membership. He will serve as AAGP president in 2003-04.

Also elected were:

Peter M. Lloyd, business development director in Kuala Lumpur, Malaysia for Schlumberger Next!, vice president (one-year term).

Paul Weimer, of the University of Colorado, Boulder, and a consulting geologist, treasurer (two-year term).

The new officers will take on their duties on July 1, when Daniel L. Smith, CPG-02336, of Houston, assumes the presidency.

Remaining on the committee are Charles J. Mankin, CPG-01416, director of Sarnoff Center at the University of Oklahoma and director of the Oklahoma Geological Survey, secretary, and John Lorenz, of Sandia Laboratories in Albuquerque, New Mexico, elected editor.

Terry L. Hollrah, CPG-05114, of Hollrah Exploration, Oklahoma City, will serve on the Executive Committee as chairman of the House of Delegates.

Sonnenberg, a native of Billings, Montana, was president of the Division of Professional Affairs in 1998-99, and AAGP vice president for 1999-96. He also is a Foundation Trustee Associate, and in 1999 he received AAGP’s Distinguished Service Award.

New Position

Dawn H. Garcia, R.G., CPG-08313, recently started a new position as a senior project manager for the RETEC Group, Inc., in their Long Beach, California, office. She is managing the BP (formerly ARCO) Carson Refinery project. This is one of the largest operating refineries on the west coast, and covers close to 700 acres and has a crude capacity of approximately 265,000 barrels per day. The refinery provides petroleum projects for clients in five Western states (Arizona, California, Nevada, Oregon, Washington) and Canada. RETEC operates a hydrocarbon recovery system and provides a variety of environmental services for the refinery. RETEC is a consulting firm that specializes in environmental management services for petroleum, gas and electric utilities, transportation, and manufacturing clients. You can contact Dawn at RETEC Group, Inc., 5000 E. Spring St., #250, Long Beach, CA 90815, (562) 420-2983, ext. 22, fax (562) 420-2915, dgarcia@retec.com.

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Applicants for certification must meet AIGA’s standards as set forth in its Bylaws on education, experience, competence, and personal integrity. If any Member or board has any factual information as to any applicant’s qualifications, in regard to these standards, whether that information might be positive or negative, please mail that information to Headquarters within thirty (30) days. This information will be circulated only so far as necessary to process and make decisions on the applications. Negative information regarding an applicant’s qualifications must be specific and supportable; persons who provide information that leads to an application’s rejection may be called as a witness in any resulting appeal action.

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OH-Reed J. Poderis
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AZ-Andrew T. Swarthout

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NJ-William J. Sweeney

New Certified Professional Geologists

TX-Alfred W. Armstrong CPG10650
JD Consulting, 1704 Camp Craft Rd., Austin TX 78746, (512) 3747588.

NY-Robert M. Osman CPG10633
6537 Donlen Dr., Ellicottville NY 14730, (716) 8712026.

AK-Jean M. Bodeau CPG10654

NY-Jeffrey J. Contino CPG10658
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PA-Robert C. Earle CPG10662
USR Corp., 2325 Maryland Rd., Willow Grove PA 19090, (215) 9302016.

AK-Robert P. Morell CPG10655
Fairbanks Gold Mining, Inc., PO Box 73726, Fairbanks AK 99707, (907) 4906302.

AK-Allan S. Nakashish CPG10653
661 West 89th Ave., Anchorage AK 90516, (907) 2699852.

CA-Robert C. O'Neill CPG10656
MicroChem Laboratories, PO Box 485, 635 Brie Hart Dr., Murphys CA 95247, (209) 7299800.

New Students

VA-Evan R. Bishop SA0255
717 Mason St., Apt. 5, Harrisonburg VA 22801.

GA-Alfred M. Elser SA0256
GA State Univ., Dept. of Geology, Atlanta GA 30303, (404) 4839646.

MI-Andrea M. Irish SA0252
759 Five Lakes Rd., Aticla MI 48412, (989) 7745320.

NY-Thereza M. Lawler SA0253
8494 Kysorville Byensville Rd., Dansville NY 14437.

NY-Bethany J. Zinni SA0254
SUNY Geneseo, 599 Geneseo Hall, Geneseo NY 14454, (716) 2456561.

New Associates

WY-Lawrence J. Faulkner AS0015
1600 Nebraska, Green River WY 82935.

FL-Cristie E. Garrett AS0016
Ketcham Appraisal Group, 1203 Thomasville Rd., Tallahassee FL 32303, (850) 6819400.

AIPG Annual Meetings

Sept. 22-28, 2002
Reno-Lake Tahoe, Nevada

October 4-9, 2003
Glenwood Springs, Colorado

2004
Saratoga Springs, New York

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As of 3/28/01 As of 04/03/02

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Annual Meeting Employment Interview Service

The Annual Meeting Employment Interview Service will offer an opportunity for employers to recruit students and professionals in AEG/AIPG-related fields. Interviews will be held Wednesday, Thursday, and Friday, September 25, 26, and 27. The Employment Interview Service brings potential employers and employees together for face-to-face interviews.

The Résumé Book will be located at the Annual Meeting Registration Desk in the Tahoe Foyer, Sierra View Room (#1748) on the 17th floor of the Peppermill Hotel has been reserved for interviews (see room schedule located on the Message Board near the Registration Desk).

Employers:
- If you would like to schedule an interview time in the Sierra View Room (#1748), please contact Julie C. Keaton, AEG Meetings Director. A limited number of time blocks are available and will be filled on a first-response basis.
- Register in advance and have your job(s) posted when the Registration Desk opens on Monday, September 23.
- Be sure to specify educational or professional experience requirements as well as your specialty area or areas of expertise your applicant should have.
- The Annual Meeting must receive your job description no later than August 16, 2002.

Job Candidates:
- If you are seeking employment and would like to participate in the Interview Service, please complete the Response form attached with three copies of your résumé. A limited number of interview appointments may still be available on-site, based upon arrival.
- By reviewing our job posting daily, it will be easier to find the job that's right for you.
- The Annual Meeting must receive three copies of your résumé (limited to two pages) no later than September 11, 2002. Include your name, address, and phone number on your résumé. Also include concise details of work experience and education.

Employment Interview Service Room (Sierra View Room — #1748) is open September 25, 8:00pm to 6:00pm, and September 26 and 27, 10:00am to 6:00pm. For more information, contact: Julie C. Keaton, AEG Meetings Director, 909-337-0657 or aegjuliexx@aol.com

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