

SAN DIEGO ASSOCIATION OF GEOLOGISTS

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SDAG MEETING ANNOUNCEMENT

WEDNESDAY, June 16, 2004

HISTORY AND GEOLOGY OF THE SAN DIEGO AND ARIZONA EASTERN RAILWAY

presented by

Charlie Coval
Construction Specialist
PARSONS

George Copenhaver
Senior Engineering Geologist
GEOCON, Incorporated

Where: Giovanni's Pizza (Kearny Mesa)
9353 Clairemont Mesa Boulevard
San Diego, CA 92123
(858) 279-6700

When: 6:00 pm – Social Hour
7:00 pm – Dinner
8:00 pm – Program

Directions: Giovanni's is located in a strip mall, southwest corner of Clairemont Mesa Blvd. and Ruffin Rd. From I-15, take Clairemont Mesa Blvd. west to Ruffin Rd. Turn left (south) on Ruffin and turn right immediately into the parking lot.

Dinner: Pizzas. A whole bunch of them. All you can eat! Yes, there will be a veggie pizza for the beer drinking vegetarians. And salad. Price includes soda fountain. Great selection of beers on tap.

Cost: \$15 each. \$5 for students. \$20 if you did not make a reservation. **LIMITED TO FIRST 60 PEOPLE.**

Reservations: Make your reservation online at www.sandiegogeologists.org or call the SDAG Reservation Hotline at (619) 255-8380, **no later than 5pm Friday, June 11th.**

RESERVATIONS CANNOT BE ACCEPTED AFTER Friday AT 5PM.



2004 EXECUTIVE COMMITTEE

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SPEAKERS:

Charlie Coval
Construction Specialist,
PARSONS

George Copenhaver
Senior Engineering Geologist,
GEOCON, Incorporated

Mr. Coval has 19 years experience in railroads within San Diego County, including freight and Light Rail. He is past President of the San Diego Railroad Museum and current President of the Border Rail Institute (BRI). The BRI is a non-profit organization dedicated to Cultural Tourism, the Annual Christmas Train (participates in gift-giving during Mexico's celebration of Epiphany), and Cooperative Professional Trans-Border dialogue for the Border California Museum Association. He is very active in the recent developments and historic re-opening of the equally historic San Diego & Arizona Eastern Railway and will present some of the highlights of this interesting and important project.

Mr. Copenhaver has over 30 years experience as an engineering geologist and exploration geologist for private industry. Half of his experience included many preliminary to final geologic and geotechnical investigations in southern California. Mineral exploration experience for over 10 years covered a number of western States with CONOCO Minerals (now CONOCO/PHILLIPS) with responsibilities conceiving and implementing mapping and drilling programs in the western United States (including Alaska). He also served as a consultant in both geotechnical and mining specialties. He is presently very busy with GEOCON on a variety of geotechnical projects and is also compiling a GUIDEBOOK OF GEOLOGY of the SD&AE Railway route. This project will result in geologic cross-section information covering over 130 lineal miles and 21 tunnels, following the historic Spreckels "Impossible Railroad" from San Diego to Tijuana, B.C., Mexico, thence to Tecate, B.C., over the Peninsular Ranges Batholith, re-entering the U.S. near Campo and then descending through the Batholith and the legendary Carrizo Gorge metamorphic melange (and by the huge 1932 bedrock landslide and nearly 200 foot high trestle). Finally emerging on the desert and passing between the Elsinore Fault and the Laguna Salada Fault, the railroad cross-section will have presented the rail traveler with geologic vistas not available for over two generations.

SUMMARY:

HISTORY AND GEOLOGY OF THE SAN DIEGO AND ARIZONA EASTERN RAILWAY

(Adapted from North County Times article, May 1, 2004 "World's largest wooden trestle in nearby state park" by Ernie Cowan)

At the turn of the 20th century, business pioneers envisioned a rail line connecting the tiny port city of San Diego with El Centro to the east. Considering the terrain, the project was deemed to be folly and became known as "The Impossible Railroad."

The 11-mile Carrizo Gorge portion of the line alone took 12 years to build and included construction of 17 tunnels and 14 major wooden trestles, including the spectacular Goat Canyon Trestle, the line's main attraction. Completion of construction in the gorge linked San Diego and El Centro in 1919 with a 140-mile international route that entered Mexico at Tijuana and returned to the United States near



Carrizo Gorge Railway

Goat Canyon Trestle.

Campo. Today the railroad right of way through Carrizo Gorge is a narrow corridor surrounded by state park property.

In 1976 a powerful hurricane slammed Carrizo Gorge with winds and torrential rainfall. In the storm's wake, the rail line through Carrizo

Gorge was left with collapsed tunnels and heavily damaged trestles.

With no trains rolling on the thin steel line that seems to hang on a ledge a thousand feet above the gorge, hikers, mountain bikers and railroad buffs began to discover the beauty of this blend of man and nature.

The unused rail line was like a challenging but ready-made trail that took wilderness travelers past long-abandoned railroad camps, through tunnels more than a half-mile long, and eventually reached the world's largest wooden trestle that crosses Goat Canyon in a graceful arch. Built of huge redwood timbers, the trestle towers more than 200 feet in height, and spans more than 750 feet.

But the line was never legally abandoned, and a few years ago a small group of investors formed the Carrizo Gorge Railway with hopes of once again opening the route.

Work has progressed, and the line is now passable, according to railroad spokesman Rich Borstadt.

Railroad police have been hired. Visitors who travel along the tracks are being warned that they are trespassing and when rail service resumes will be subject to citation in addition to great personal risk.

"There is no place to run in the tunnels, and if someone is in there when a train comes along, there is a serious safety issue," Borstadt said.

Current plans envision rail service returning to Carrizo Gorge in the next few months. Borstadt said the railroad is planning an autumn rededication that might coincide with the Nov. 15, 1919, ceremony by Spreckles when he drove a golden spike to mark the completion of Carrizo Gorge construction.

"After that we hope to offer specific times when the public or groups will be allowed to enter the gorge," Borstadt said.

He said there is also discussion of providing rail tours into the spectacular gorge that would allow naturalists and historians an opportunity to tell the story of both the natural history as well as the human history of this fascinating place.

2004 CORPORATE SPONSORS - THANK YOU!!

A significant portion of the SDAG operating and scholarship budget is provided by corporate sponsorship. Please consider becoming a Corporate Sponsor for 2004! In addition to monthly recognition for your contribution, you will be entitled to a free Internet "link" from the [SDAG Website](#), and all Corporate Sponsors are listed in the front of the annual SDAG Field Trip Volume.

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PRESIDENT'S PAGE:
(WAS ROUNDED CORNER)

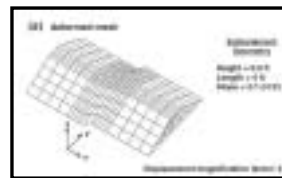
- **OSW.** The May One Stop Wonder was a huge success (In my opinion...). We had about 20 enthusiasts show up. We made two field trip stops, then we went back to Sunbelt for Burgers and Books. The field stops included an abandoned pegmatite Mine in OUR back yard (OK, a hole in the ground, actually two holes, but nice ones...) in Mission Trails Park, followed by a visit to the Old Mission Dam. Bill White from the Park was on board to give us some great history and lore on both the pegmatite mine and the dam. Tom Kuper, Past President of SDAG, was also on board – telling us he used to explore the mine in the 60's. Please read details in the attached Field Trip Road log prepared by Carol Ziegler. She prepared the first draft of the Road Log right after the field trip, while recovering from the OSW at Sunbelt Publications – the lunch spot. We think this is a record – Field trip to road log write up – within an hour. Did I say huge success? More OSWs to come. Thanks goes to Sunbelt Publications for providing the picnic spot (beautiful parking lot...) and discounts on all those great books.
- **Farthest Traveled, AGAIN.** OK, The Kupers win again. Tom Kuper, representing Tom and Dorian, traveled once again from Oregon, to join us for the OSW. Tom shared great stories about the Pegmatite Mine we visited. Tom brought along his two pre-geologist nieces. The youngest one is named Sierra – I used to call her Sierra Nevada Pale Ale when she was a baby...
- **102.** The May meeting, joint with ASCE, had a large attendance. Dr. Jonathan Bray is an excellent speaker. He was worried about competing with the backdrop of San Diego Bay and Downtown. No problemo. He can really capture an audience. Just before the speech, Dr. Bray caught me off guard and requested a short introduction – I should had just intro'd him with “Heeeeer’s Johnny!”
- **Web Site.** The SDAG web site works. We have a new SDAG member from Texas. Melissa found us via the website and has been a member for a few months. She just graduated from Texas A & M with a geology degree, and has moved to San Diego to join her husband who is in the Navy. She will be at her first SDAG meeting in June. This was going to be an advertisement as she was looking for a job. I hired her yesterday. Sorry!
- **New Spot.** This month we are trying a new (old) restaurant. I am always looking for cheap and cute places (that will allow Geologists). This time it is all you can swallow Pizza and Salad. Please join us.
- **Picky Nic.** OK. Due to demands and riots by members we are going to re-establish the SDAG Annual Picnic. It is going to be in August. This time it will be different. We are not going to spend a gazillion dollars on rentals and have a few people show up. This year, we are doing it the easy way. We are not renting a bunch of stuff. SDAG purchased a cool canopy from Price Club (Number 64077, I think) that will serve as the main tent. (It has already been tested at the first OSW.) I am bringing my barrel BBQ. Other volunteers are bringing the rest of the stuff. Right? We will burn exotic burgers, dogs and veggie stuff. We need input from members as to picnic activities – should we do Volleyball? I am thinking Piñatas or playing “Can you name this formation?” NOT. Bob Stroh is the 2004 Picnic Chairman. Please call him with any questions. Bob, I hope you read this in case you did not know you were the chairman. Always be careful of what you wish for...
- **Presidential Luck.** Dear Members: You have no idea how Lucky I am to have such a professional group of officers helping me this year. Kudos to Phil, Margaret, and that pesky Secretary, Dave, who is always bugging me for newsletter info 8 months in advance...
- **Bribe/Encouragement.** SDAG has had wonderful attendance this year. But we are missing a few of our members, in particular some recent past Presidents at our meetings. I will not mention names (Barb, Pat...) but I encourage everyone to attend the SDAG meetings. This is YOUR organization. Please join us.

El Prez.

ANNOUNCEMENTS:



At last month's joint meeting with ASCE, **Dr. Jonathan Bray** gave an exciting presentation on mitigating the damaging effects of potential surface rupture on structures built upon active fault zones. His richly illustrated paper discussing the topic is available as a PDF for **download** at: <http://www.geology-guy.com/bray2001-faulting.pdf>



SDAG BOOKSHELF: All pubs in print will be available for purchase at the June 16th meeting with special emphasis on our latest: Bob Stroh's 2001 "Coastal Geology of San Diego" and the Murbach/Hart 2003 "Hot Springs and Tourmalines of San Diego." Or you can order 'em on-line at <http://www.sandiegogeologists.org>. See order form in this newsletter.

Professional Paper, "Geology and Paleontology of Palos Verdes Hills, California" – Maps Digitized.



Mark Legg and Dick Brown have scanned the color maps in the Woodring, Bramlette and Kew (1946) classic Professional Paper, "Geology and Paleontology of Palos Verdes Hills, California." These maps are available on two CD's. We are making them available for \$10 each, \$20 for both. The CDs include the large geologic map and two smaller detailed geologic maps and the large map of the Pleistocene terraces. These are all the maps in the pocket of the publication. They were scanned at 300 dpi, and are in both TIF and PDF formats on the same CDs.

To order the CDs e-mail Dick Brown at dickbrowngeo@adelphia.net, call (562) 598-0595, or write to:

Dick Brown
296 College Park Dr.
Seal Beach, CA 90740

Include your mailing address, describe which CD (or both) and send a check, payable to "Arthur R. Brown," for \$10 (for one CD) or \$20 (for both CDs).

SDAG Wear: - Monte (Murbach) has a variety of shirts, hats, visors and even a nice vest with the SDAG logo. A small selection is available for purchase at the meetings; all SDAG wear can be ordered from Monte.

SDAG NEWSLETTER IS DIGITAL! If we don't have your e-mail address, or your email address changes, or if you have problems with the electronic format please contact **David Bloom** at 619-524-6967 OR secretary@sandiegogeologists.org.

DO YOU HAVE AN ANNOUNCEMENT?? Do you have an event, job opening, field trip or other announcement you would like to share with our members?? Just call or email our SDAG Secretary, **David Bloom** at 619-524-6967 OR secretary@sandiegogeologists.org.

NEW JOB OPENING!

Ninyo & Moore has immediate openings for **Project Geotechnical Engineers and Geologists** and a **Senior Technical Marketing Associate** in their **San Diego** and **Irvine** offices. Submit resumes to our Corporate office: Ninyo & Moore, 5710 Ruffin Road, San Diego, California 92123, Attention: Ms. Margot A. Graves. (EOE). Please visit us at our web site at www.ninyoandmoore.com.

ANNOUNCING THE SDAG 2004 ANNUAL FIELD TRIP AND CALL FOR PAPERS



JOSHUA TREE NATIONAL PARK October 30-31st CALL FOR PAPERS!!

Although the field trip will focus on the Mojave Desert portion of the park, submissions which include or focus any facet of the park or surrounding environs will be welcome. Potential subjects may include updates on geologic/fault interpretations, weathering phenomena, local flora and fauna, and cultural, mining or historical interests. Please contact Margaret if you would like to discuss a potential paper. The deadline for submission of papers and associated graphics is July 15th. Text can be an unformatted WORD file, with graphics in JPEG or TIF format (no PDFs or AutoCAD files please!).

Call Margaret Eggers at 760-757-7711, or email at mmeggers@eggerv.com if you have questions.

This beautiful gem of Southern California will be the destination for our 2004 field trip. We will be focusing on the higher elevation, Mojave Desert portion of the park. SDAG members will camp in the park, and we will visit several points interest, both geologic, mining and cultural. The trip will be limited to 60 individuals, and carpooling is a must to keep things moving smoothly. Field trip stops have not been finalized so contact Margaret Eggers (mmeggers@eggerv.com) if you have a specific suggestion. We are will make every effort this year to have the field guides printed and available the day of the trip so please submit papers early. Dr. D. D. Trent, co-author of “Joshua Tree National Park: Geology” is scheduled to join us on our trip. Note that Sunbelt Publishing has copies of Dr. Trent’s book (with Dr. Richard W. Hazlett, 2002) for sale! Contact Lowell Lindsay at llindsay@sunbeltpub.com.

MARK YOUR CALENDARS TODAY!

SDAG Historical Geologic Map Archive



- Ellis & Lee, 1919, USGS Water Supply Paper 446, Plate 1, Preliminary geologic map of western San Diego County, California.

Map of San Diego Quadrangle, California, showing marine terraces and marine soundings, Plate VI, in Ellis & Lee, 1919, USGS Water Supply Paper 446.



- CDMG, 1954, Geology of Southern California, Bulletin 170, Map Sheet 23 "Geology of the Jacumba area, San Diego and Imperial Counties," by Baylor Brooks and Ellis Roberts

CDMG, 1954, Geology of Southern California, Bulletin 170, Map Sheet 22 "A typical portion of the southern California Batholith, San Diego County," by Richard Merriam



- CDMG, 1954, Geology of Southern California, Bulletin 170, Plate [Chapter] II-3 "Generalized geologic map of the Peninsular Ranges province, southern California," scale 1:380,160 (6 miles per inch), compiled by R.H. Jahns.

Merriam, R.H., 1958, Economic Map of the Santa Ysabel Quadrangle, San Diego County, California, Calif. Div Mines Bull. 177, Plate 1-A



- Merriam, R.H., 1958, Geologic Map of the Santa Ysabel Quadrangle, San Diego County, California, Div Mines Bull. 177, Plate 1

"Geology and Mineral Resources of San Diego County, California" Plate 1, in Weber, F.H., Jr., 1963, Mines and mineral resources of San Diego County, California, CDMG County Report 3



- "Geology and Mineral Deposits of the Julian District, San Diego County, California" Plate 7, in Weber, F.H., Jr., 1963, Mines and mineral resources of San Diego County, California, CDMG County Report 3

"Map of San Diego County Showing Topographic Map Coverage and Geologic Mapping Adapted for Plate 1," Plate 2, in Weber, F.H., Jr., 1963, Mines and mineral resources of San Diego County, California, CDMG County Report 3



- Larsen, 1948, Geologic Map of the Corona, Elsinore, and San Luis Rey Quadrangles, California, Plate 1, reprinted for distribution by the California Division of Mines (GSA Memoir), scale 1:125,000.

Everhart, Donald L., 1951, Geology of the Cuyamaca Peak Quadrangle, San Diego County, California, CDM Bull. 159, Plate 2 "Geologic Map of the Cuyamaca Peak Quadrangle, California"

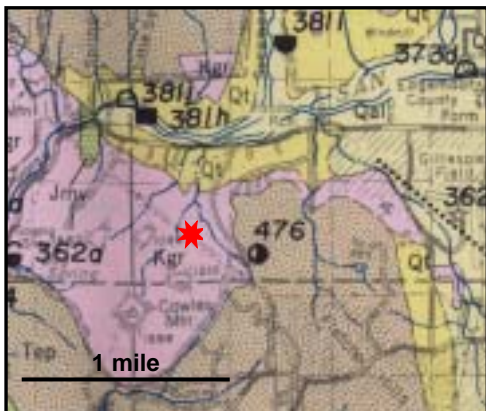


We have made even more progress assembling a set of digitally scanned historical geologic maps of the San Diego area. Your contributions are invaluable! Please let us know what other rare, out-of-print geologic maps you would like to see in SDAG's electronic archive. We would like San Diego area geologic maps of regional scale (covering 7.5-minutes or more), and in the public domain. If you have a pristine copy of a rare geologic map, we would like to borrow it for scanning. We are especially interested in a good copy of Marcus Hanna's 1926 geologic map of the La Jolla quadrangle. Please contact **Greg Cranham** at gcranham@hargis.com, or **David Bloom** at secretary@sandiegogeologists.org or (619)524-6967.

THE ONE-STOP, TWO-STOP SDAG FIELD TRIP, MAY 8, 2004

First Stop – Old Olswick Prospect Site

Just above Mesa Road Trailhead Entrance, Mission Trails Park



Geologic Map of Fletcher Hills vicinity. Red Cross indicates field trip Stop 1. Ref: Plate 1, Weber (1963).

From the trailhead a scar can be seen up on the hillside. As one crosses a creek (where did THAT water come from??) a very small opening is seen in the hillside. We are told by park historian, Bill White, that the earlier Spanish name for Cowles Mountain was Cerro del Mine (mountain of the cave). It is believed that before any prospectors got here a cave existed at this location. It is known that by the 1800s the Spaniards occupied this area, but then stories are told. Who knows what is truth and what is fiction?

TWO MURDERS AND TWO LIVE-INS

Someone mentions that he heard that some San Diego State student at one time lived in the cave. Bill White tells that two bodies are supposedly buried in the mine: one murdered, the other just disappeared deep inside. Tom Kuper helps corroborate the tale as he recounts that in 1964 as a 14-year-old he once dragged out a couple of mattresses from the hole so that he could get through.

And drowning(?), you say. One of the tales Bill heard tells of someone bringing a watercraft to the cave. Greg Cranham points out that he drinks water from Pure-Flo's well on the other side of the mountain where one can fill up one's own 5-gallon water jug for a dollar. The well is a deep fracture well approximately 1000 feet deep. Dog Spring is a year-round spring near Kwaay Paay, commonly known as "Cow Pie."



Another tale suggests stalactites have been seen in this cave. Really? Well, Mike Walawender had someone bring him some material from a nearby area that was essentially epsom salts. So yep, it's possible.

Now, the story about the San Diego State student reminds Mike Walawender about the geology student who did live in an old mine. A murder was involved there, too. Seems the student's girlfriend was killed.

THE REAL STORY

Someone was obviously trying to prospect for something, but what? Probably gold. However, this is an area seems to be deficient in most things except quartz and schorl. Mike W. speculates that this was a very high temperature hydrothermal deposit with few unusual ions present. There is a meter diameter vug very rich in tourmalines, but does appear not to have been of much interest to the prospectors. Kennedy's map notes a prospecting site about one-quarter mile up the road on the opposite (east) side of the canyon ("Olswick Prospect"), but no mention of this prospect is made in the literature. Weber's County Report 3 (1963) notes that there is uranium found in the area, but Phil Farquharson's handy scintillometer tells us that the material is not radioactive.

Most pegmatite mines in San Diego County were operating close to the turn of the 19th century because of a lucrative arrangement with the Chinese. The Empress Dowager of China was partial to pink, and some of the best pink tourmalines found in the world have come out of San Diego County.

Stop Two of the “One-Stop” Field Trip – Mission Gorge Dam off Grasslands Parking area

We start at the Bronze Plaque No. 52, which Bill White tells us is actually more accurate than most bronze plaques marking California historical landmarks.

“NO. 52 MISSION DAM AND FLUME - After many attempts dated back to 1774 to provide a reliable source of water for crops and livestock for Mission San Diego de Alcalá, a dam and flume system was finished between 1813 and 1816 by Indian laborers and Franciscan Missionaries to divert waters of the San Diego River for a distance of 6 miles. The aqueduct system continued in existence until 1831 when constant flooding caused the dam and flume to fall into disrepair. They were not repaired due to secularization of the missions.”

Still, there is not a lot known about when the dam was actually started and who built it. It is known that in the early 1800s there were from 800 to 1600 Indians associated with the dam. A discussion then ensued between George Morgan and Greg Cranham as to whether the Indians were forced to work on the dam. It appears that this is not the case. The Indians probably agreed to work and in exchange were able to reap the benefits of the mission, such as the new fruits and grains that had been imported by the Spaniards and were being grown in fields that were not directly adjacent to the dam site.



Soon, however, we are inspecting a boulder that had been put in place by the Daughters of the American Revolution on May 17, 1941. Bill White tells us that where the word “Indians” used to read “white man.” Sometime in the 1960s this was deemed politically incorrect and that part of the stone was carved out and the word “Indians” was inserted.

The aqueduct system continued in existence until 1831, when continuous flood events caused the dam and the associated flume to fall into disrepair. This area was affected by flooding on an average of every 10-11 years. Another reason the dam was not repaired is that the missions had by then become secularized.

As we examine the dam, there are several things of note. The dam is built of cement, rock, and tile. The tile was used to shape the dam and help control the waters. Cement? Yes, there are two possible sources of lime: seashells and caliche paleosols found in the Mission Valley Formation. It seems that it would be too far to transport seashells, so nearby lime kilns probably derived their material from the Mission Valley Formation.

There is also a vertical cement column seen at the spillway gate opening of the dam. It is noted that the USGS used to have a gauging station here, as evidenced by the fact that the concrete is rebar enforced.

The dam has “V”-shaped buttresses that were only tied into the banks of the river. This is most likely the reason that by 1916, and possibly 1927, flooding undermined the dam structure. There are various publications that note the dam was between 220 feet and 250 feet long. It was built at this site because it is at the edge of the El Cajon Valley. If it had been built farther down into the gorge, floodwaters would have acquired much more energy, potentially destroying the dam. Also, farther down the canyon there would have been more rocks and boulders entrained in floodwaters and they would cause extensive damage.

We spent most of our time looking at what would have been a gate on the dam. Bill White tells us that the other side of the main dam, the north side, was where the real business of the dam was located, including a water wheel, mill, and the starting point of the “V”-shaped flume that was used to convey water to the mission.

Generously thanks to Diane and Lowell Lindsay and Monte and Diane Murbach for the BBQ.

■ Contributed by Carole L. Ziegler, participant

Photos by Phil Farquharson

SDAG PUBLICATION ORDER FORM

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LIST	QUANTITY	PRICE	TOTAL
<i>Landslides in Crystalline Basement Terrain</i> Evans (1988)		\$ 5.00	\$
<i>Seismic Risk in the San Diego Region</i> Roquemore, Tanges and Wright (1989 - proceedings)		10.00	
<i>Geotechnical Engineering Case Histories in San Diego County</i> Hoobs (1990)		10.00	
<i>Environmental Perils, San Diego Region</i> Abbott and Elliott (1991)		10.00	
<i>Natural History of the Coronado Islands, Baja California, Mexico, Revisited</i> Perry (1992)		10.00	
<i>Geology and Natural History, Camp Pendleton US Marine Corps Base, San Diego County, California</i> Rosenberg (1994)		15.00	
<i>Paleontology and Geology of the Western Salton Trough Detachment, Anza-Borrego Desert State Park, California</i> Remeika and Sturz (1995)		15.00	
<i>Geology and Natural Resources of Coastal San Diego County, California</i> Munasinghe and Rosenberg (1996)		Out of print	
<i>Santa Cruz Island Geology Field Trip Guide</i> Boles and Landry (1997)		15.00	
<i>Geology and Geothermal Resources of the Imperial and Mexicali Valleys</i> Lindsay and Hample (1998)		15.00	
<i>Water for Southern California</i> Cranham (1999)		15.00	
<i>Geology and Enology of the Temecula Valley</i> Birnbaum and Cato (2000)		15.00	
<i>Coastal Processes and Engineering Geology of San Diego, California</i> Stroh (2001)		25.00	
<i>Geology of the Elsinore Fault Zone San Diego Region</i> Murbach and Hart (2003)		25.00	
SUBTOTAL:			
Postage and Handling \$4.00/book (unless picked up):		4.00	
TOTAL:			

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1. Prices subject to change without notice. _____
2. Allow 4 weeks for delivery. _____
3. Make checks payable to SDAG at address above. _____
4. Bookseller discount off list price is 40%,
 resale number required. Phone: _____

JOB OPENINGS!

KLEINFELDER is seeking a **Senior Environmental Engineer for their Temecula office**. Qualifications: Job Code #292: Seeking individual with management experience (personnel and projects). Positions require BS degrees in civil, chemical, mechanical, or environmental engineering; MS degrees with EIT, PE, or certification preferred. Ten plus related experience required. To submit a resume online, go to Kleinfelder.com and click on "Careers." (1203)

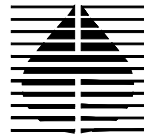
Fossil Preparator, Department of Paleontology
San Diego Natural History Museum

The Department of Paleontology at the San Diego Natural History Museum has an opening for a Fossil Preparator. This position is funded by paleontological mitigation contract work for construction primarily in coastal San Diego County. This full-time (40hrs/week) position requires preparation of fossil vertebrates, invertebrates and/or plants. Prior fossil preparation experience and working knowledge of modern preparation techniques and materials is preferred. Starting hourly wage will range between \$12 and \$15 depending upon level of experience. Please send resumes to Thomas A. Deméré, Curator, Department of Paleontology, San Diego Natural History Museum, P.O. Box 121390, San Diego, CA 92112-1390 or by e-mail at <mailto:t-demere@sdnhm.org>. EOE

Assistant Professor, Geology

The San Diego Community College District is accepting applications for the position of Assistant Professor, Geology at Mesa College to begin Fall 2004. For additional requirements and application materials please visit: <http://www.sdccd.net/employment>. EOE

Hargis + Associates, Inc., a San Diego based consulting firm (and SDAG Corporate Sponsor) specializing in hydrogeology and engineering, currently has opportunities in both our Mesa, Arizona, and San Diego offices. We are currently looking to fill the following positions:



HARGIS + ASSOCIATES, INC.
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Phone: 619.521.0165
Fax: 619.521.8580

Staff Hydrogeologist: Candidate would have a B.S. Degree in Geology, and 3 to 5 years relevant experience, including experience with sampling, well installation, workplan and report preparation. Candidate should possess strong writing and presentation skills. GIS skills, Masters degree and/or California registration is a plus. Position will be based in San Diego, and may require some travel and field work. OSHA 40-hour training required.

Staff Engineer: Candidate would have B.S. Degree in Chemical, Civil, or Mechanical Engineering and EIT Certification, and two to four years of relevant experience, including design, operation, and maintenance of remediation systems. Masters degree and registration is a plus. Candidate should possess strong writing and presentation skills. Position will be based in San Diego, and may require some travel and field work. OSHA 40-hour training preferred, but not mandatory.

Senior Engineer: Candidate would have a B.S. Degree in Civil Engineering and registration in Arizona with ten+ years of relevant experience, including design, operation, and maintenance of remediation systems. Masters degree and/or California registration is a plus. Strong leadership, writing and presentation skills required. Position will be based in Mesa and may require some travel and field work. OSHA 40-hour training and MSHA training preferred, but not mandatory. Excellent opportunity for an experienced, registered Arizona Civil Engineer.

Hargis + Associates offers competitive salaries and benefits, and a challenging work atmosphere. Hargis + Associates is an Equal Opportunity Employer. To learn more about Hargis + Associates, please visit our website at: www.hargis.com.

Qualified candidates should send resumes, along with a cover letter summarizing experience and salary requirements to:

Hargis + Associates, Inc.
Attention: Kim Stransky
2365 Northside Drive, Suite C-100
San Diego, CA 92108

<p>STUDENT GEOLOGIST WANTED</p> <p>\$10.36-\$12.48/HR</p> <p>EMPLOYMENT NOTICE</p>

The City of San Diego Development Services Department Geologic Review section is seeking a qualified student (graduate student preferred) interested in a limited paid position as an intern. The position will last approximately one year and will provide up to approximately 20 hours a week during normal business hours, although flexible scheduling is available. The selected individual will begin work as soon as possible.

The selected individual will be supervised by California-registered geologists and/or civil engineers, and will perform engineering and geologic work applicable toward registration.

The student ideally will have some academic background pertaining to geology/civil and/or engineering geology/geotechnical engineering. In addition, familiarity with computer word processing programs, spreadsheets, databases, strong reading and reasoning skills are important considerations. Work experience in the Civil/Geotechnical engineering fields will also be considered. Interested individuals should contact Robert N. Hawk, Senior Engineering Geologist at 619-446-5288 or George Varshock at 619-446-5304. Resumes may be sent to:

Robert N. Hawk, PE
Senior Engineering Geologist
City of San Diego
Development Services
Land Development Review Division
1222 First Avenue, MS 502
San Diego, CA 92101-4155

or FAXED to the above at: 619-446-5499

Or emailed in .PDF or Word format to: rhawk@sandiego.gov

The selection process is ongoing. Resumes may be kept for subsequent open positions

**San Diego Association of Geologists
c/o David M. Bloom
3728 Mt. Almagosa Place
San Diego, CA 92111**