

Inland Geological Society

August 2014

Newsletter of the Inland Geological Society

Volume 30 No. 8

This Meeting:

**Thursday,
August 7th**

Time:

Social: 6:00pm
Dinner: 7:00pm
Lecture: 7:30pm

Location:

LSA Associates
1500 Iowa Ave
Suite 200
Riverside, CA
92507

(Map on Pg. 4)

Coming to
Dinner?

Please RSVP:
By Monday 8/1
(951) 784-2168
dixie.lass@att.net

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August Speaker:

Thom Deane, PG, CHG, RG, MS
Deane Consulting, Inc., Redlands, CA

***Effects of Debris Flow and Superposition of
Seasonal Spring Flow on Multi-Year Variable
Spring Base Flow Conditions at Ruby Springs,
OMYA Inc.'s White Knob Mine, Lucerne, CA***

Abstract

During August 2003 an intense 40-minute monsoon-type storm event occurred at OMYA's White Knob Quarry in Lucerne Valley CA, resulting in a debris flow that flowed from a combined natural/man-made talus slope through the Ruby Springs area of OMYA's Western Drainage. CDFG claimed that approximately 1.8 miles of the drainage were damaged via scouring of vegetation and native soils. A 2005 Deane Consulting, Inc. (DCI) initial field investigation determined that only the uppermost 1.2 miles of the drainage had been scoured, whereas the remaining lower portion of the drainage below a confluence with a "twin" drainage to the west received only a relatively watery discharge.

Using the (Chezy-Manning) estimated water fraction peak flow discharge rate of approximately 1,120 ft³/s with the Rational Method, approximately 5.5 inches of precipitation were estimated to have occurred during the storm event. The storm event

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appears comparable to a 100-Year/6-Hour statistical storm event (1986 San Bernardino County Hydrology Manual) and the following 2004 NOAA Atlas 14 statistical storm events: 1,000-Year/6-Hour, 500-Year/6-Hour, 50-Year/12-Hour, 10-Year/24-Hour, 5-Year/48-Hour, 2-Year/7-Day, and 1-Year/20-Day, indicating a highly unusual storm intensity.

Via the use of 52 trenches distributed throughout 19 drainage reaches, ~341 yd³ of native soils had been eroded by the debris flow within the steeper upper reaches, and ~6,512 yd³ of debris flow materials (eroded native soils, talus slope materials) had been deposited throughout all of the reaches, with the majority being deposited within the uppermost reach (~4,362 yd³) and the confluence reach (~519 yd³).

In accordance with a 2008 DCI technical work plan, baseline and interim cross-channel topographic data were collected at 49 of the trench locations to estimate annual rates/volumes of erosion/sedimentation of native soils and debris flow materials ("matrix"), along with post-storm event precipitation data and Ruby Springs discharge rate/surface flow distances, for the 2008-2009, 2009-2010, 2011-2012, 2012-2013, and 2013-2014 Reporting Periods. Native soil annual erosion/sedimentation rates have ranged between -9 mm/yr (erosion) and +18 mm/yr (sedimentation), whereas matrix annual erosion/sedimentation rates have ranged between -16 mm/yr and +32 mm/yr. Western Drainage and nearby CIMIS station precipitation data indicate what appears to be a temporary change in the local rain microclimate precipitation pattern since the 2011-2012 Reporting Period, and Western Drainage precipitation data as snow (%) indicate what appears to be also a temporary change in the local snow microclimate precipitation pattern since the 2012-2013 Reporting Period, independent of OMYA site activities.

Ruby Springs discharge rates collected by DCI since 2007 indicate a virtually immediate response to the 2009-2010 Reporting Period change from drought to wet conditions and an approximate two-year delayed response to the 2011-2012 Reporting Period change from wet to drought conditions. Furthermore, a series of seasonal short-duration cycles of Ruby Springs discharge rates has been superimposed onto an underlying long-duration cycle of Ruby Springs discharge rates. The short-duration cycles appear to represent relatively immediate responses to storm event precipitation occurring near to Ruby Springs. However, the long-duration cycle appears to represent the delayed response to storm event precipitation occurring within the upper portion of the Western Drainage watershed, farther away from Ruby Springs, as a function of the cyclical cumulative effects of multi-year drought conditions, followed by multi-year wet precipitation conditions, and then followed by the current multi-year drought conditions.

BIOGRAPHY:

Mr. Deane is a Professional Geologist/Certified Hydrogeologist (California), and Registered Geologist (Arizona). He has a BS Geology from Cal Poly Pomona, MS Hydrology/Water Resources University of Arizona. Professional experience ranges from gold exploration/mine permitting to water resources/contaminated site investigations. He has worked in Eastern Europe, South America, and the western United States and is the Principal hydrogeologist of DEANE CONSULTING INC. located in nearby Redlands.

Mr. Howard Brown, who will comment on Mr. Deane's work, is a Sr. Geologist at OMYA California. He is a graduate of California State University Northridge. He has 30 years of mining industry experience in positions of responsibility, and has been with Omya since 1979. He has authored more than 24 published papers and abstracts on a variety of geological topics for various professional societies and technical journals and is considered a leading expert on limestone deposits.

Upcoming Meetings/Events

Rock & Gem Shows—Various Locations

Various rock and mineral shows will be throughout So. California. To find one near you, visit www.rockngem.com/showdates.asp

AEG—So. California Chapter Meeting



The meeting details for the next meeting for the AEG-Southern California Chapter is to be announced. For more info., visit the So. California Chapter at www.aegsc.org/calendar/.

AEG—Inland Empire Section



AEG—Inland Empire Section meeting details have not been announced. For more info., visit www.aegsc.org/chapters/inlandempire/index.php.

South Coast Geological Society Meeting



Dr. Lucy Jones, USGS, will be giving a talk at the August meeting. IGS and LAGGS will be cohosting this meeting. For more info., visit SCGS on Facebook and/or

www.southcoastgeo.org.

Los Angeles Basin Geological Society



LABGS will be cohosting the August meeting with South Coast Geological Society. Please see the details above. aVisit their website for more info. (www.labgs.org).

San Diego Assoc. of Geologists Field Trip



Monte Marshall will be presenting a talk on “A Tale of Two Schields, The Canadian and Baltic” on **Wednesday, August 20, 2014**. For more info, visit www.sandiegogeologists.org

San Diego Assoc. of Geologists Field Trip



Jill Krezoski will be presenting a talk on “The Mineralogy of Mars” on **Wednesday, September 17, 2014**. For more info, visit www.sandiegogeologists.org

GRA 23rd Annual Conference and Meeting

Groundwater Resources Association of California will be holding their 23rd Annual Conference and Meeting, titled “2014—A Year of Groundwater” on **Oct. 15-16, 2014** in Sacramento, CA. They are currently calling for abstracts. For more info, visit www.grac.org/

IGS Meeting Schedule

August 13, 2014 (Wednesday) **SCGS/IGS Joint Meeting**

Dr. Lucy Jones, USGS

GEOLOGY!

This meeting will be held at the Orange County Water District office located at 18700 Ward St., Fountain Valley, CA. Talk starts at 7:30 PM.

September 3, 2014 (Wednesday)

TBA

October 2014

Tony Morgan will be back with us!

IGS MEETING LOCATION:

LSA Associates, Inc.
1500 Iowa Ave, Suite 200
Riverside, CA 92507

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