

**Bauer, Laurel**

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**From:** Laurel Bauer, <sup>N20</sup>  
**Sent:** Monday, November 03, 2008 11:59 AM  
**To:** Clifford Munson  
**Subject:** FW: Paleoseismic survey of Central Virginia seismic zone  
**Attachments:** 7-Central Virginia.pdf

From Rus.

**From:** Russell L Wheeler [<mailto:wheeler@usgs.gov>]  
**Sent:** Monday, November 03, 2008 11:58 AM  
**To:** Sarah Gonzalez; Alice Stieve; Yong Li; Laurel Bauer; Gerry Stirewalt  
**Cc:** (b)(6)  
**Subject:** Fw: Paleoseismic survey of Central Virginia seismic zone

Hi, all-

With Steve Obermeier's permission, I'm forwarding the attached map to you. Please share it with any other of your NRC geology or seismology counterparts on COL reviews. It's up to you whether and how you might want to preserve it at NRC. Steve did not object to my suggestion that NRC might want to make the map available online (see below), but if you decide to make it available outside the NRC, probably you should obtain his permission for that.

Note that Steve and I are not getting any younger, which implies that within a few years the map could become unavailable. I don't know whether Steve still has the map in digital or scannable form.

The CVSZ is an important source for nearby sites like North Anna and Calvert Cliffs. For these sites, hazard depends partly on the frequency of large earthquakes that have occurred within the zone. The CVSZ is one of only a handful of CEUS areas to have received attention from a paleoseismologist experienced in the detection and analysis of paleoliquefaction features. During the late '90s, Steve and an assistant surveyed the streams and rivers of the zone and found only two small sand dikes. The only published documentation of the search and its results is a 1998 AGU abstract. The only other documentation that I know of is the attached unpublished map, which was probably one of Steve's slides for the 1998 talk. The map shows the locations of the stream reaches that were searched by canoe, the two dikes that were found, and the largest historical earthquake in the zone. The map does not show sites at which paleoliquefaction features were observed.

It's easy enough to think of follow-up work that could be done in the CVSZ (repeat observations to locate the exposures, dating of dikes and source and cap beds, examination of any onland exposures, etc.). However, the map and the abstract remain a foundation that is considerably better than is available in most of the rest of the CEUS. Thus, the map will be an important information resource for the foreseeable future.

Best wishes,  
Rus

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Rus Wheeler  
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paper mail:  
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Lakewood, CO 80225

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1711 Illinois St., rm. 442  
Golden, CO 80401

----- Forwarded by Russell L Wheeler/GD/USGS/DOI on 11/03/2008 09:22 AM -----

Stephen Obermeier (b)(6)

To Russell L Wheeler <[wheeler@usgs.gov](mailto:wheeler@usgs.gov)>

cc

10/28/2008 07:40 PM

Subject Re: Your central Virginia figure

Please respond to  
(b)(6)

Absolutely, send it to them.

Steve

--- On Fri, 10/24/08, Russell L Wheeler <[wheeler@usgs.gov](mailto:wheeler@usgs.gov)> wrote:

From: Russell L Wheeler <[wheeler@usgs.gov](mailto:wheeler@usgs.gov)>

Subject: Your central Virginia figure

To (b)(6)

Date: Friday, October 24, 2008, 5:12 PM

Steve-

Many years ago you sent us the attached map, which shows the river reaches that you and McNulty searched in the Central Virginia seismic zone. Perhaps it was a figure in your 1998 AGU talk. The map has come up in a couple of the licensing reviews that we are doing for NRC, including the current one on the Calvert Cliffs, MD site on the Chesapeake Bay. May I send the figure to NRC for their use? We should assume that it will get shared around NRC, and that eventually it might get included in some NRC document that's downloadable from their Web site.

Is it ok with you if I send the file to NRC?

Thanks,  
Rus

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