HLWYM HEmails

From:	Donald Hooper
Sent:	Monday, February 05, 2007 12:55 PM
To:	Brittain Hill
Cc:	'John Trapp'; John Stamatkos; James Rubenstone; Keith Compton; Roland Benke; Debashis Basu; Nancy Adams
Subject:	RE: IA Consequences draft presentation for ACNW
Attachments:	acnw_ashplume-redist-floods_comments_5feb07.wpd

This time with the attachment. –DH

-----Original Message-----
From: Brittain Hill [mailto:BEH1@nrc.gov]
Sent: Monday, February 05, 2007 6:33 AM
To: Debashis Basu; John Stamatakos; Nancy Adams; Roland Benke; <Don Hooper; John Trapp; James Rubenstone; Keith Compton
Subject: IA Consequences draft presentation for ACNW

Team IA:

Please review the attached slides and provide comments to me ASAP. I could use your help in selecting the best possible quotes from the ACNW report regarding our concerns with the presentation of our information in their report. Most of the high significance items are in good shape, but could use better or exact quotes for the latter part of the slides.

Things are in draft format and will naturally need to be polished in the next couple of days. The background stuff is covered by Jack and John in the preceding days, but the intro slides are needed to emphasize what's going on in the program (as ACNW still doesn't get it).

Many thanks-
Britt

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Subject: RE: IA Consequences draft presentation for ACNW
Sent Date: 2/5/2007 12:55:05 PM
Received Date: 2/5/2007 12:55:05 PM
From: Donald Hooper

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Files	**Size**	**Date & Time**
MESSAGE	1307	2/5/2007 12:55:05 PM
acnw_ashplume-redist-floods_comments_5feb07.wpd	13899	

Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:

“Quote for large floods bypassing RMEI ”

From “Executive Summary”:
368 The Committee has observed that large floods would dominate the process of fluvial
369 erosion and transport and would carry contaminated ash beyond the active fan and all the way
370 to the Amargosa River and beyond. In the short period of historical record, two large floods in
371 the Fortymile Wash/Amargosa River system have reached Death Valley. The sediments most
372 likely to be suspended and transported long distances are the smallest particles – the same
373 particles of concern for respiration or ingestion.

- and -

From Chapter 3.5:
1992 Intense, ephemeral floods associated with major storms have the potential to extensively erode
1993 tephra deposits, but the large flood discharges also can transport radioactive materials to the
1994 vicinity of the RMEI or far beyond. Floods are especially capable of transporting fine-grained
1995 materials important to the inhalation dose for long distances.
1996
1997 Realistic analyses of potential doses must consider all of these processes as well as particle
1998 size and density.

Comment: Extremely large floods, such as a 100-year flood, are not relevant to the sediment budget approach (NRC model). Eleven flood events have been record at the Amargosa Valley gage (station # 10251258, southernmost near U.S. Highway 95) over the 30-year recording period from 1969 to 1998. These represent 11 events that reached the Fortymile Wash drainage basin outlet. Because of limited gaging, sub-basin flow is poorly known. Of the 11 flood events, only 7 have a measured peak discharge of greater than 0.1 m3/s. These 7 floods are responsible for recent suspended load and bed load sediment transport down the wash. Fortymile Wash grain size is highly variable, as is anticipated for a dryland ephemeral stream system. In this fluvial system grain size is highly dependent on sampling location and is poorly sorted. There is a large grain-size variation laterally and vertically from bank-to-bank. Staff recognize that downstream fining and sorting occurs, but such a broad, braided alluvial system constantly replenishes its sediment load. In addition to grain size analyses of numerous fluvial facies conducted by T. Ressler, CNWRA staff recently collected two samples in the active channel of Fortymile Wash at the highway crossing. Sieve analysis is just being completed for these two samples. Furthermore, these samples are close to the RMEI location. Death Valley is not the RMEI location.

“Need good quote for ignoring ASHPLUME... ”

From “Executive Summary”:
390 ~~incorporated into and dispersed with the ash~~. The code ASHPLUME has been used to model
391 this dispersion. The NRC has designed a new module, REMOB, for estimating resuspension
392 and remobilization, but the Committee has not seen the foundations for results from this model.
393 Performance assessment shows that igneous activity will increase the dose to the RMEI if a
394 volcanic event occurs within the first few thousand years after closure of the repository. The
395 effect of an igneous event relative to other contributors to the RMEI dose will decrease with
396 time.

Comment: The correct module name is ASHREMOB.

From Chapter 6.4:
5378 The NRC has estimated particle size distribution of ash particles and has estimated the
5379 dimensions and density of spent fuel particles that could be incorporated into and dispersed with
5380 the ash. The code ASHPLUME (DOE, 2000) has been used to model this dispersion. The NRC
5381 has designed a new module, REMOB, for estimating resuspension and remobilization, but
5382 ACNW has not seen the equations or results for that model. ~~Parameters like breathing rate and~~

Comment: The original ASHPLUME was not a DOE product:
Jarzemba, M.S., P.A. LaPlante, and K.J. Poor. "ASHPLUME Version 1.0—A Code for Contaminated Ash Dispersal and Deposition." CNWRA 97-004. San Antonio, Texas: CNWRA. 1997.

More:
5682 The code ASHPLUME has been used to model this dispersion. The NRC has
5683 designed a new module, REMOB, for estimating resuspension and remobilization, but ACNW
5684 has not seen the equations or results for that model. If there is an igneous event, the peak dose
5685 to the RMEI would occur earlier in the postclosure period than in the absence of an igneous
5686 event, and the dose to the RMEI would probably be larger. The difference between doses
5687 calculated using these scenarios gradually decreases with time, and is approximately an order
5688 of magnitude at 10,000 years.

The correct module name is ASHREMOB. This module is discussed in several places (all are probably publicly available):

Mohanty, S., R. Benke, R. Codell, K. Compton, D. Esh, D. Gute, L. Howard, T. McCartin, O. Pensado, M. Smith, G. Adams, T. Ahn, P. Bertetti, L. Browning, G. Cragnolino, D. Dunn, R. Fedors, B. Hill, D. Hooper, P. LaPlante, B. Leslie, R. Nes, G. Ofoegbu, R. Pabalan, R. Rice, J. Rubenstone, J. Trapp, B. Winfrey, and L. Yang. "Risk Analysis for Risk Insight Progress Report." San Antonio, Texas: CNWRA. 2005.

Benke, R., B. Hill, D. Hooper, and R. Nes. "Draft Description of Abstracted Models for Tephra Redistribution and Resuspension in the Total-System Performance Assessment (TPA), Version 5.1Beta Code". San Antonio, Texas: CNWRA. 2006.

R.R. Benke, B.E. Hill, and D.M. Hooper, 2006, Fluvial Redistribution of Contaminated Tephra: Description of an Abstracted Model: Proceedings of the 11th International High-Level Radioactive Waste Management Conference (IHLRWM), "Global Progress Toward Safe Disposal," April 30 - May 4, 2006, Las Vegas, Nevada. La Grange Park, IL: American Nuclear Society, p. 958-962.

Hooper, D., and R. Benke, 2006, Fluvial Redistribution of Contaminated Tephra: Process-Level Modeling and Parameter Estimation: Proceedings of the 11th International High-Level Radioactive Waste Management Conference (IHLRWM), "Global Progress Toward Safe Disposal," April 30 - May 4, 2006, Las Vegas, Nevada. La Grange Park, IL: American Nuclear Society, p. 963-966.

Only mention of TEPHRA code/model:
5008 The amount and distribution of hypothetical tephra deposits were calculated using the
5009 TEPHRA code (Connor et al., 2001). For each realization in performance assessment, the
5010 calculated tephra deposit is partitioned into (i) initial deposits (if any) at the receptor location, (ii)
5011 potential deposits in the Fortymile Wash drainage system that are subject to fluvial
5012 redistribution, and (iii) potential deposits in areas subject to wind erosion and transport (Benke
5013 et al., 2006). ~~Areas of Fortymile Wash that lack tephra deposits are assumed to contribute~~