HLWYM HEmails

From: Paul Bertetti
Sent: Thursday, February 22, 2007 2:22 PM
To: spainter@swri.edu; David Pickett; Jude Mcmurry; Olufemi Osidele; Hakan Basagaoglu
Cc: 'Paul Bertetti'
Subject: RE: Colloid fracture Rd in UZFT

Sorry that I am late in responding to these notes.

I would be available and interested in attending the meeting, if held, tomorrow morning.

I would agree with Scott that it is more reasonable to use the current fracture retardation factors for colloids as opposed to using values of 1. The mechanisms involved in UZ retention and SZ retention may vary, but the SZ values are not completely unacceptable for the UZ.

There is indeed a SZFractureForceFactor and its default value is 0, just like the equivalent UZ value. The important concept is that the colloid retardation code bypasses the "dissolved" calculations in which this factor is applied. There is no dissolved actinide retardation on fractures in the SZ. I am unclear as to how the UZFFF is applied to colloids. I thought it was "bypassed" as well. I will be ready to answer this tomorrow.

Paul

-----Original Message-----
From: Scott Painter [mailto:spainter@swri.edu]
Sent: Thursday, February 22, 2007 11:29 AM
To: dpickett@cnwra.swri.edu; jmcmurry@cnwra.swri.edu; 'Olufemi Osidele'; 'Hakan Basagaoglu'
Cc: 'Paul Bertetti'
Subject: RE: Colloid fracture Rd in UZFT

I vote for keeping the ColloidRetardationFactor_STFF distribution as is. Given that we have some measured values for this parameter, it seems unnecessarily conservative to set it to 1.

Retardation in the UZ may be subject to different retardation and remobilization processes. For example, fracture flow in the UZ is likely highly episodic, which may act to remobilize colloids and reduce the time-averaged retardation factor. Overall, the UZ retardation processes are highly uncertain and probably make little or no difference in the global transport.

I'm available tomorrow morning for a meeting.

-----Original Message-----
From: David Pickett [mailto:dpickett@cnwra.swri.edu]
Sent: Thursday, February 22, 2007 9:23 AM
To: jmcmurry@cnwra.swri.edu; 'Scott Painter'; 'Olufemi Osidele'; 'Hakan Basagaoglu'
Cc: 'Paul Bertetti'
Subject: RE: Colloid fracture Rd in UZFT

My random responses. I welcome Scott's comments on my comments:

> 2. Just curious, why were the current values for the
> FractureColloidRetardationFactor_xxx parameters added to TPA
> in the first place? Without this retardation (which in the
> base case applies only to J-species colloids)in the

> fractures, was the dose from colloids unrealistically high?

No, it was not driven by any results, though I'm sure I was influenced by a desire for realism and could not imagine unimpeded colloid transport. It was probably a case of my looking at colloids in isolation. There were some data that appeared relevant, so I used them.

> 3. If we do reset all the
> FractureColloidRetardationFactor_xxx parameters to values of
> 1.0, how would users be able to take advantage of the current
> values (a non-trivial sampled distribution) if they >did<
> want to examine the effects of sorption in fractures? Seems
> a shame to lose all that work that has already been done to
> come up with the current sampled distribution values.

The same distribution is used for sat zone fractured tuff (ColloidRetardationFactor_STFF), so it's present in tpa.inp. How to ensure the user is aware it's available for testing, I'm not sure. At any rate, no effort was wasted.

> 4. On the other hand, to model sorption in fractures a user
> would have to start from scratch to develop Fracture Rd
> values besides 1.0 for all the dissolved radionuclides, so
> new values for the colloid Rds would just be one more task on
> the to-do list.

Good point.

> 5. If the FractureColloidRetardationFactor_xxx parameters
> are changed to 1.0 in the UZFT module, the
> ColloidRetardationFactor_STFF in the SZFT module also needs
> to be reset to 1.0.

I'm not so sure, because they're modeling different processes. The STFF distribution was taken from one developed by DOE for SZ fractured tuff based on the C-Wells tests. In other words, it represents retardation as a composite effect of flow through fractured tuff - not simply fractures. One could possibly view this as an argument for its inapplicability to the UZ fractures.

> 6. Because there is no equivalent to the
> UZFractureForceFactorForKdToRd on/off flag in the SZFT
> module, a retardation factor besides 1.0 is >always<
> calculated in SZFT for Am, Np, Pu, U, Th, and Cm (for the
> dissolved as well as the colloidal forms) in the fractured,
> saturated tuff (STFF). For those six elements, SZFT does
> model sorption in fractures. Compared to the amount of
> sorption in the alluvium, it likely doesn't make much
> difference whether sorption in STFF is there or not, but we
> should probably note to the user that sorption in the
> saturated tuff fractures does happen, but for the actinides only.

Sure. But again note my comment under #5 above. The STFF parameter does not really model sorption in the fractures - rather, in fractured tuff.

> We just have a few days left to change tpa.inp if we choose
> to. What about a short meeting Friday a.m. to decide what to do?

OK by me.

> -----Original Message-----
> From: David Pickett [mailto:dpickett@cnwra.swri.edu]
> Sent: Wednesday, February 21, 2007 3:36 PM
> To: Scott Painter; Jude McMurry; Olufemi Osidele; Hakan Basagaoglu
> Subject: Colloid fracture Rd in UZFT
>
>
> Not to beat a dead horse, but...do we have any agreement that
> the FractureColloidRetardationFactor_xxx_ parameters in UZFT
> should be one, due to conservatism in light of uncertainty,
> and the desire to not have colloids more retarded than dissolved RNs?
>
> I see the TPA chapter has the old distribution and I realize
> I never made an outright recommendation that we go to 1.
>
> Thoughts?
>
> David
>

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