



Scientific Analysis/Calculation Error Resolution Document

QA: QA
Page 1 of 5

Complete only applicable items.

INITIATION

1. Originator: Jim Houseworth/Ming Zhu	2. Date: 5/22/08	3. ERD No. ANL-NBS-HS-000042 ERD 02
4. Document Identifier: ANL-NBS-HS-000042 REV 00	5. Document Title: Analysis of Hydrologic Properties Data	

6. Description of and Justification for Change (Identify applicable CRs and TBVs):

I Background Information Summary

This ERD is prepared to resolve CR 12142 associated with *Analysis of Hydrologic Properties Data*, ANL-NBS-HS-000042 REV 00 (BSC 2004 [DIRS 170038]).

CR 12142: Table 6-1 in *Analysis of Hydrologic Properties Data*, ANL-NBS-HS-000042 REV 00 (BSC 2004 [DIRS 170038]) correlates the UZ model layers with hydrogeologic units for the Paintbrush Group (layers beginning with "Tp") as defined in Buesch et al. 1996 [DIRS 100106], Table 4. The lithostratigraphic unit at the base of the major unit "TSw" is shown as "Ttpv2". The corresponding UZ model layer is listed as "tsw39 (vit,zeo)" and the corresponding hydrogeologic unit is listed as "PV2". According to the source information in Buesch et al. 1996 [DIRS 100106], Table 4, the "PV2" (short for Ttpv2) is the uppermost lithostratigraphic unit in the major unit "CHn". The error in the unit classification has no impact on the output from the UZ flow model.

Other reports that have this same error are listed in ERD 01 of *Development of Numerical Grids for UZ Flow and Transport Modeling*, ANL-NBS-HS-000015 REV 02 (BSC 2004 [DIRS 169855]). There is no impact of this error in BSC (2004 [DIRS 170038]) on any downstream technical products.

(see attached)

CONCURRENCE

	Printed Name	Signature	Date
7. Checker	Charles Haukwa		05/22/2008
8. QCS/QA Reviewer	Peter Persoff		05/22/2008

APPROVAL

9. Originator	Jim Houseworth Ming Zhu		05/22/2008 5/22/08
10. Responsible Manager	Paul Dixon		5-22-08

(Continued from Block 6)

The following documents that cite ANL-NBS-HS-000042 REV 00 [DIRS 170038] were checked for impacts as a result of this correction:

- ANL-EBS-GS-000002 REV 01, *Geochemistry Model Validation Report: External Accumulation Model*
- ANL-EBS-MD-000049 REV 03 AD 01, *Multiscale Thermohydrologic Model*
- ANL-NBS-GS-000013 REV 01, *Heat Capacity Analysis Report*
- ANL-NBS-HS-000005 REV 03, *In Situ Field Testing of Processes*
- ANL-NBS-HS-000054 REV 00, *Data Analysis for Infiltration Modeling: Bedrock Saturated Hydraulic Conductivity Calculation*
- ANL-WIS-MD-000027 REV 00, *Features, Events, and Processes for the Total System Performance Assessment: Analyses*
- ANL-WIS-PA-000001 REV 03, *EBS Radionuclide Transport Abstraction*
- MDL-NBS-HS-000002 REV 03, *Seepage Model for PA Including Drift Collapse*
- MDL-NBS-HS-000004 REV 03, *Seepage Calibration Model and Seepage Testing Data*
- MDL-NBS-HS-000005 REV 01, *Conceptual Model and Numerical Approaches for Unsaturated Zone Flow and Transport*
- MDL-NBS-HS-000008 REV 02, *Radionuclide Transport Models Under Ambient Conditions*
- MDL-NBS-HS-000010 REV 03, *Site-Scale Saturated Zone Transport*
- MDL-NBS-HS-000015 REV 02, *Drift-Scale Coupled Processes (DST and TH Seepage) Models*
- MDL-NBS-HS-000016 REV 01, *Drift-Scale Radionuclide Transport*
- MDL-NBS-HS-000017 REV 01, *Drift Scale THM Model*
- MDL-NBS-HS-000019 REV 01 AD 01, *Abstraction of Drift Seepage*
- MDL-NBS-HS-000020 REV 02 AD 01, *Particle Tracking Model and Abstraction of Transport Processes*
- MDL-NBS-HS-000021 REV 03, *Saturated Zone Flow and Transport Model Abstraction*

- MDL-WIS-PA-000005 REV 00 AD 01, *Total System Performance Assessment Model/Analysis for the License Application*
- DOE/RW-0573, *Yucca Mountain Repository SAR*

II Inputs and/or Software

None

III Analysis and Results

In Table 6-1 in *Analysis of Hydrologic Properties Data*, ANL-NBS-HS-000042 REV 00 (BSC 2004 [DIRS 170038]), the lithostratigraphic unit at the base of the major unit “TSw” is shown as “Tptpv2”. The corresponding UZ model layer is listed as “tsw39 (vit, zeo)” and the corresponding hydrogeological unit is listed as “PV2”. According to the source information in Buesch et al. (1996 [DIRS 100106], Table 4, the “PV2” unit (short for Tptpv2) is the uppermost lithostratigraphic unit of the major unit “CHn”. This correction to Table 6-1 in *Analysis of Hydrologic Properties Data*, ANL-NBS-HS-000042 REV 00 (BSC 2004 [DIRS 170038]) is given in Table 1 below. Note also that the designation of “tsw39” as the top model layer for the Calico Hills nonwelded (CHn) major unit (see Table 1) has no effect on the development of the UZ properties for use in the UZ flow model.

Table 1. Correlation of GFM2000 Lithostratigraphy, UZ Model Layers, and Hydrogeologic Unit

Major Unit (Modified from Montazer and Wilson 1984 [DIRS 100161])	GFM2000 Lithostratigraphic Nomenclature	UZ Model Layer (BSC 2004 [DIRS 169855], Table 6-5)	Hydrogeologic Unit (Flint 1998 [DIRS 100033], Table 1)
Tiva Canyon welded (TCw)	Tpcr	tcw11	CCR, CUC
	Tpcp	tcw12	CUL, CW
	TpcLD		
	Tpcpv3	tcw13	CMW
	Tpcpv2		
Paintbrush nonwelded (PTn)	Tpcpv1	ptn21	CNW
	Tpbt4	ptn22	BT4
	Tpy (Yucca)	ptn23	TPY
		ptn24	BT3
	Tpbt3		
	Tpp (Pah)	ptn25	TPP
	Tpbt2	ptn26	BT2
	Tptrv3		
	Tptrv2		
Topopah Spring Welded (TSw)	Tptrv1	tsw31	TC
	Tptrn	tsw32	TR
	Tptrl, Tptf	tsw33	TUL
	Tptpul, RHHtop		
	Tptpmn	tsw34	TMN
	Tptpll	tsw35	TLL
	Tptpln	tsw36	TM2 (upper 2/3 of Tptpln)
		tsw37	TM1 (lower 1/3 of Tptpln)
	Tptpv3	tsw38	PV3
	Calico Hills nonwelded (CHn)	Tptpv2	tsw39 (vit, zeo)*
Tptpv1		ch1 (vit, zeo)	BT1 or BT1a (altered)
Tpbt1			
Tac (Calico)		ch2 (vit, zeo)	CHV (vitric) or CHZ (zeolitic)
		ch3 (vit, zeo)	
		ch4 (vit, zeo)	
		ch5 (vit, zeo)	
Tacbt (Calicobt)		ch6 (vit, zeo)	BT
Tcpuv (Prowuv)		pp4	PP4 (zeolitic)
Tcpuc (Prowuc)		pp3	PP3 (devitrified)
Tcpmd (Prowmd)		pp2	PP2 (devitrified)
Tcplc (Prowlc)			
Tcplv (Prowlv)		pp1	PP1 (zeolitic)
Tcpbt (Prowbt)			
Tcbuv (Bullfroguv)			
Crater Flat undifferentiated (CFu)	Tcbuc (Bullfroguc)	bf3	BF 3 (welded)
	Tcbmd (Bullfrogmd)		
	Tcblc (Bullfroglc)		
	Tcblv (Bullfroglv)	bf2	BF2 (nonwelded)
	Tcbbt (Bullfrogbt)		
	Tctuv (Tramuv)		
	Tctuc (Tramuc)	tr3	Not Available
	Tctmd (Trammd)		
	Tctlc (Tramlc)		
	Tctlv (Tramlv)	tr2	Not Available
	Tctbt (Trambt) and below		

Source: BSC 2004 [DIRS 169855], Table 6-5.

* The designation of "tsw39" as the top model layer for the Calico Hills nonwelded (CHn) major unit has no effect on the development of the UZ properties for use in the UZ flow model.

UZ = unsaturated zone.

IV Impact Evaluation

This change corrects an error in Table 6-1 of BSC (2004 [DIRS 170038]). The "Tptpv2" lithostratigraphic unit, and the corresponding "tsw39 (vit, zeo)" UZ model layer and "PV2" hydrogeologic unit have been moved from the "TSw" major unit to the "CHn" major unit. This placement has no impact because the "TSw" and "CHn" major units are not used for the development of hydrological properties. This change has no impact the conclusions of BSC (2004 [DIRS 170038]) or any downstream technical product.