Errata to Report ERDC/EL TR-07-1

The first term in the last row in Equation 19 should be corrected to read as follows,

$$-(\gamma+\lambda)\theta$$

Equation 21 should be corrected to read

$$\alpha_1 = 1+\lambda\theta+k\Delta t\theta$$

Equation 22 should be corrected to read

$$\alpha_2 = 1+\gamma\theta+\lambda\theta+k\Delta t\theta$$

Equation 23 should be corrected to read

$$d_1^n = \left(1-\lambda(1-\theta)-k\Delta t(1-\theta)\right)c_1^n+(\lambda-\gamma)(1-\theta)c_2^n+(1-\theta)\gamma c_b^n+\gamma\theta c_b^{n+1}+q\Delta t$$

Equation 24 should be corrected to read

$$d_N^n = (\gamma+\lambda)(1-\theta)c_{N-1}^n+\left(1-\lambda(1-\theta)-\gamma(1-\theta)-k\Delta t(1-\theta)\right)c_N^n+q\Delta t$$

Equation 25 should be corrected to read

$$-(\gamma_u+\lambda)\theta c_{i-1}^{n+1}+(1+\gamma_u\theta+2\lambda\theta+k\Delta t\theta)c_i^{n+1}-\lambda\theta c_{i+1}^{n+1} =$$
$$(\gamma_u+\lambda)(1-\theta)c_{i-1}^n+\left(1-\gamma_u(1-\theta)-2\lambda(1-\theta)-k\Delta t(1-\theta)\right)c_i^n+\lambda(1-\theta)c_{i+1}^n+q\Delta t$$

For completeness, the terms derived for the upstream and downstream boundary conditions for upwind differencing of advection are included below. The first term of the tridiagonal matrix for the upstream boundary equation is

$$\alpha_{1u} = 1+\gamma_u\theta+\lambda\theta+k\Delta t\theta$$

which is the same as Equation 22 above for α_2, except for γ_u being used instead of γ, where $\gamma_u = 2\gamma$. The right side of the tridiagonal matrix for the upstream boundary is

$$d_{1u}^n = \gamma_u(1-\theta)c_b^n+\gamma_u\theta c_b^{n+1}+\left[1-\gamma_u(1-\theta)-\lambda(1-\theta)-k\Delta t(1-\theta)\right]c_1^n$$
$$+\lambda(1-\theta)c_2^n+q^n\Delta t$$

The second term of the tridiagonal matrix for the downstream boundary equation, α_{2u}, is the same as the equation for α_{1u} above. The right side of the tridiagonal matrix for the

downstream boundary is the same as Equation 24 above, except for γ_u being used instead of γ.