1 Mathematica

$(c^2(\sigma(g+\epsilon^2\lambda u^2 b_{xx})h_x + u^t(\epsilon+\epsilon\sigma b_x h_x) + \epsilon^2 u(1+\sigma b_x h_x)u_x + \sigma h(\epsilon\lambda b_x^2(u_t + \epsilon u u_x)) + b_x(g\lambda + \epsilon(\epsilon\lambda^2 u^2 b_{xx} + 0.5\epsilon u_x^2 + 0.5u_{xt} + 0.5\epsilon u u_{xx})) + \epsilon((0.5\epsilon\lambda^2 u^2 b_{xxx} + 0.5\lambda b_{xx}u_t + \sigma h_x(\epsilon u_x^2 - ux, t) + \epsilon u(1.5\lambda b_{xx}u_x - s h_x u_{xx}))) + \epsilon\sigma^2 h^2(\frac{1}{3}\epsilon u_x u_{xx} + \lambda b_x(0.5\epsilon u_x^2 - 0.5u_{xt} - 0.5\epsilon u u_{xx}) - \frac{1}{3}u_{xxt} - \frac{1}{3}\epsilon u u_{xxx})))/l = 0$

$c^2/l(\sigma(g+\epsilon^2\lambda u^2 b_{xx})h + u^t(\epsilon+\epsilon\sigma b_x h_x) + \epsilon^2 u(1+\sigma b_x h_x)u_x + \sigma h(\epsilon\lambda b_x^2(u_t + \epsilon u u_x)) + b_x(g\lambda + \epsilon(\epsilon\lambda^2 u^2 b_{xx} + 0.5\epsilon u_x^2 + 0.5u_{xt} + 0.5\epsilon u u_{xx})) + \epsilon((0.5\epsilon\lambda^2 u^2 b_{xxx} + 0.5\lambda b_{xx}u_t + \sigma h_x(\epsilon u_x^2 - ux, t) + \epsilon u(1.5\lambda b_{xx}u_x - s h_x u_{xx}))) + \epsilon\sigma^2 h^2(\frac{1}{3}\epsilon u_x u_{xx} + \lambda b_x(0.5\epsilon u_x^2 - 0.5u_{xt} - 0.5\epsilon u u_{xx}) - \frac{1}{3}u_{xxt} - \frac{1}{3}\epsilon u u_{xxx})) = 0$

$\sigma(g+\epsilon^2\lambda u^2 b_{xx})h + u^t(\epsilon+\epsilon\sigma b_x h_x) + \epsilon^2 u(1+\sigma b_x h_x)u_x + \sigma h(\epsilon\lambda b_x^2(u_t+\epsilon u u_x)) + b_x(g\lambda + \epsilon(\epsilon\lambda^2 u^2 b_{xx} + 0.5\epsilon u_x^2 + 0.5u_{xt} + 0.5\epsilon u u_{xx})) + \epsilon((0.5\epsilon\lambda^2 u^2 b_{xxx} + 0.5\lambda b_{xx}u_t + \sigma h_x(\epsilon u_x^2 - ux, t) + \epsilon u(1.5\lambda b_{xx}u_x - s h_x u_{xx}))) + \epsilon\sigma^2 h^2(\frac{1}{3}\epsilon u_x u_{xx} + \lambda b_x(0.5\epsilon u_x^2 - 0.5u_{xt} - 0.5\epsilon u u_{xx}) - \frac{1}{3}u_{xxt} - \frac{1}{3}\epsilon u u_{xxx}) = 0$

$$\begin{aligned}
&\left(g+\epsilon^2\lambda u^2 b_{xx}\right)\sigma h_x + u^t(\epsilon+\epsilon\sigma b_x h_x) + \epsilon^2 u(1+\sigma b_x h_x)u_x \\
&+ \sigma h(\epsilon\lambda b_x^2(u_t+\epsilon u u_x)) + b_x(g\lambda + \epsilon(\epsilon\lambda^2 u^2 b_{xx} + \frac{1}{2}\epsilon u_x^2 + \frac{1}{2}u_{xt} + \frac{1}{2}\epsilon u u_{xx})) \\
&+ \epsilon((\frac{1}{2}\epsilon\lambda^2 u^2 b_{xxx} + \frac{1}{2}\lambda b_{xx}u_t + \sigma h_x(\epsilon u_x^2 - ux, t) + \epsilon u(1.5\lambda b_{xx}u_x - s h_x u_{xx}))) \\
&+ \epsilon\sigma^2 h^2(\frac{1}{3}\epsilon u_x u_{xx} + \lambda b_x(\frac{1}{2}\epsilon u_x^2 - \frac{1}{2}u_{xt} - \frac{1}{2}\epsilon u u_{xx}) - \frac{1}{3}u_{xxt} - \frac{1}{3}\epsilon u u_{xxx}) = 0
\end{aligned} \tag{1}$$

$$\begin{aligned}
&\left(g+\epsilon^2\lambda u^2 b_{xx}\right)\sigma h_x + (1+\sigma b_x h_x)\,\epsilon u_t + (1+\sigma b_x h_x)\,\epsilon^2 u u_x \\
&+ \sigma h\left(\epsilon\lambda b_x^2\left(u_t+\epsilon u u_x\right)\right) + b_x\left(g\lambda + \epsilon\left(\epsilon\lambda^2 u^2 b_{xx} + \frac{1}{2}\epsilon u_x^2 + \frac{1}{2}u_{xt} + \frac{1}{2}\epsilon u u_{xx}\right)\right) \\
&+\epsilon\left(\left(\frac{1}{2}\epsilon\lambda^2 u^2 b_{xxx} + \frac{1}{2}\lambda b_{xx}u_t + \sigma h_x\left(\epsilon u_x^2 - ux, t\right) + \epsilon u\left(1.5\lambda b_{xx}u_x - s h_x u_{xx}\right)\right)\right) \\
&+\epsilon\sigma^2 h^2\left(\frac{1}{3}\epsilon u_x u_{xx} + \lambda b_x\left(\frac{1}{2}\epsilon u_x^2 - \frac{1}{2}u_{xt} - \frac{1}{2}\epsilon u u_{xx}\right) - \frac{1}{3}u_{xxt} - \frac{1}{3}\epsilon u u_{xxx}\right) = 0
\end{aligned} \tag{2}$$

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$$\begin{aligned}
&\left(\frac{g}{\epsilon}+\epsilon\lambda u^2 b_{xx}\right)\sigma h_x+\left(1+\sigma b_x h_x\right)u_t+\left(1+\sigma b_x h_x\right)\epsilon u u_x\\
&\quad+\sigma h\lambda b_x^2\left(u_t+\epsilon u u_x\right)+b_x\left(\frac{g\lambda}{\epsilon}+\epsilon\lambda^2 u^2 b_{xx}+\frac{1}{2}\epsilon u_x^2+\frac{1}{2}u_{xt}+\frac{1}{2}\epsilon u u_{xx}\right)\\
&\quad+\frac{1}{2}\epsilon\lambda^2 u^2 b_{xxx}+\frac{1}{2}\lambda b_{xx}u_t+\sigma h_x\left(\epsilon u_x^2-u_{xt}\right)+\epsilon u\left(1.5\lambda b_{xx}u_x-s h_x u_{xx}\right)\\
&+\sigma^2 h^2\left(\frac{1}{3}\epsilon u_x u_{xx}+\lambda b_x\left(\frac{1}{2}\epsilon u_x^2-\frac{1}{2}u_{xt}-\frac{1}{2}\epsilon u u_{xx}\right)-\frac{1}{3}u_{xxt}-\frac{1}{3}\epsilon u u_{xxx}\right)=0
\end{aligned}\tag{3}$$