

Table S1

Variable group	Variable Name	Final utilized value	Variable group	Variable Name	Final utilized value
Lambda iteration	RLAMBDA1	10.0	PEST termination	NOPTMAX	30.0
	RLAMFAC*	-3.00		PHIREDSTP	0.10
	PHIRATSUF	0.30		NPHISTP	3.00
	PHIREDLAM	0.03		NPHINORED	3.00
	NUMLAM	10.0		RELPARSTP	0.010
Parameter variation control	RELPAR-MAX	10.0		NRELPAR	3.00
	FACPAR-MAX	10.0	Setting for Tikhonov regularization	PHIMLIM*	Very low value (for initial run), then 5% increase in Φ_{\min} (for second run)
	FACORIG	0.001		PHIMACCEPT*	> PHIMLIM
Derivative method switch	PHIREDSWH	0.1.00			

* Subject to vary for different cases and conditions

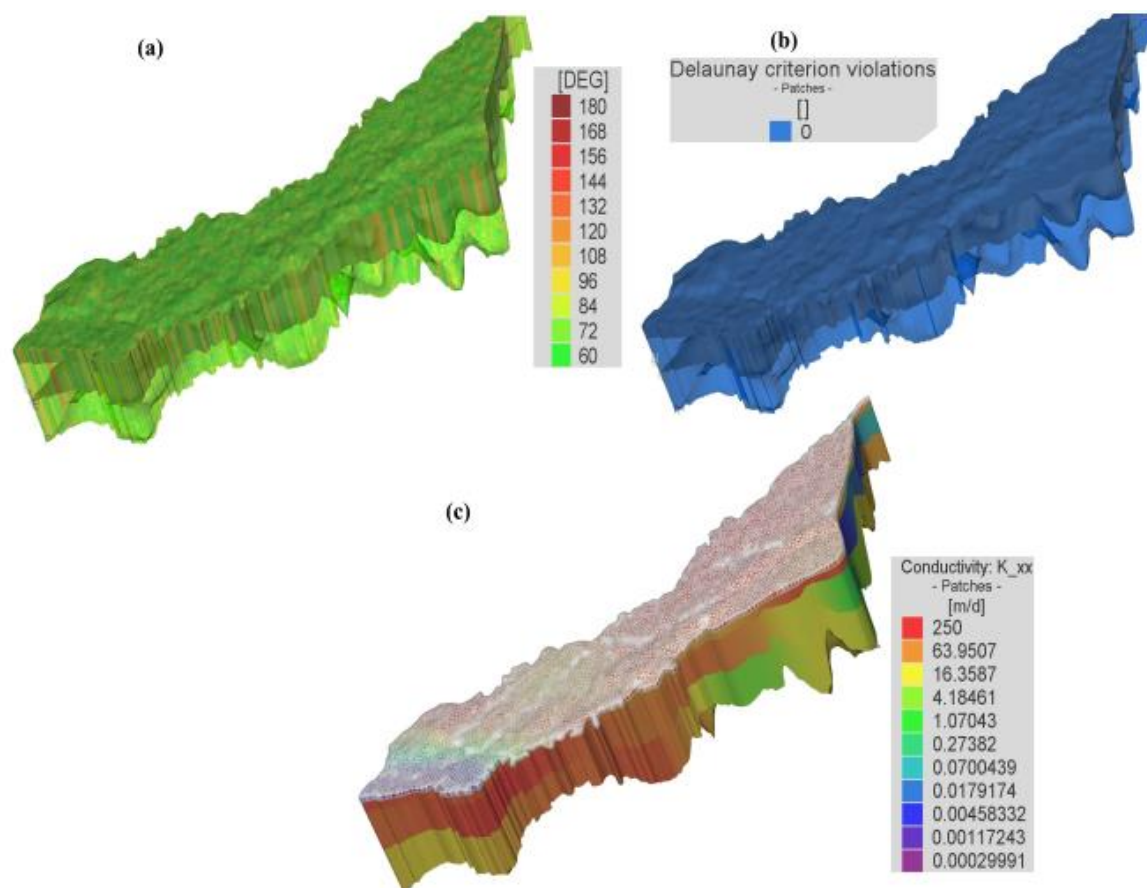


Figure S1 (a) Representation of triangular mesh angles, (b) Delaunay criteria, and (c) distribution of interpolated hydraulic conductivity.

Table S2

Output sensitivity for hydraulic conductivity

Coordinates		For hydraulic conductivity				Pilot Point ID
X	Y	Layer 1	Layer 2	Layer 3	Layer 4	
385837.0000	3535973.0000	0.011	0.010	0.010	0.016	C-14
379119.0000	3519310.0000	0.018	0.010	0.010	0.038	D-11
360731.0000	3496813.0000	0.218	0.199	0.074	0.121	E-13
309050.0000	3431319.0000	0.010	0.010	0.012	0.012	E-15
381390.7000	3477821.1000	0.011	0.013	0.010	0.021	E-4
374314.7000	3497970.2000	0.110	0.111	0.041	0.053	E-9
368972.8000	3465441.9000	0.021	0.010	0.010	0.012	F-5
357769.1000	3467472.7000	0.037	0.016	0.017	0.024	F-8
334029.6900	3434557.8900	0.010	0.010	0.010	0.011	G-1
326778.7400	3434895.6000	0.010	0.010	0.011	0.011	G-3
313568.9000	3438446.4000	0.010	0.010	0.012	0.011	G-6
277645.4800	3386566.6500	0.010	0.010	0.013	0.013	H-1
242063.2000	3407439.3000	0.010	0.010	0.010	0.010	H-12
278134.1000	3391658.4000	0.010	0.010	0.019	0.011	H-2
265783.4600	3410222.0400	0.010	0.010	0.015	0.013	H-6
256552.8000	3404326.9000	0.010	0.010	0.013	0.011	H-8
337716.6900	3457008.7600	0.010	0.010	0.010	0.010	LRR-13
314109.9600	3420251.0700	0.010	0.010	0.012	0.011	LRR-17
367411.7000	3477434.9600	0.031	0.016	0.015	0.061	S.T.H-16
350872.0800	3484310.5000	0.252	0.089	0.085	0.092	S.T.H-21
379969.5600	3519189.2000	0.016	0.010	0.010	0.029	S.T.H-34
367738.6300	3473217.9500	0.017	0.010	0.010	0.027	S.T.H-56
368119.9000	3510686.3000	0.156	0.130	0.047	0.133	S.T.H-58
240358.0588	3394934.4869	0.010	0.010	0.010	0.010	1
258299.9188	3394934.4869	0.010	0.010	0.013	0.010	2
276241.8188	3394934.4869	0.010	0.010	0.019	0.011	3
240358.0588	3412876.3269	0.010	0.010	0.010	0.010	4
258299.9188	3412876.3269	0.010	0.010	0.014	0.013	5
276241.8188	3412876.3269	0.010	0.010	0.016	0.015	6
294183.7188	3412876.3269	0.010	0.010	0.018	0.013	7
312125.5188	3412876.3269	0.011	0.010	0.011	0.011	8
276241.8188	3430818.2269	0.010	0.010	0.013	0.014	9
294183.7188	3430818.2269	0.010	0.010	0.014	0.015	10
312125.5188	3430818.2269	0.010	0.010	0.011	0.012	11
330067.4188	3430818.2269	0.010	0.010	0.010	0.011	12
312125.5188	3448760.1269	0.010	0.010	0.013	0.012	13
330067.4188	3448760.1269	0.010	0.010	0.011	0.011	14
348008.9188	3448760.1269	0.010	0.010	0.010	0.010	15
330067.4188	3466702.0269	0.010	0.010	0.011	0.010	16
348008.9188	3466702.0269	0.010	0.010	0.010	0.010	17
365950.9188	3466702.0269	0.022	0.010	0.010	0.010	18

348008.9188	3484643.8269	0.267	0.090	0.090	0.090	19
365950.9188	3484643.8269	0.010	0.010	0.010	0.090	20
383892.9188	3484643.8269	0.010	0.014	0.010	0.010	21
348008.9188	3502586.1269	0.268	0.266	0.090	0.271	22
365950.9188	3502586.1269	0.267	0.267	0.090	0.091	23
383892.9188	3502586.1269	0.010	0.010	0.010	0.010	24
365950.9188	3520528.1269	0.089	0.010	0.010	0.269	25
383892.9188	3520528.1269	0.010	0.010	0.010	0.010	26
383892.9188	3538469.1269	0.010	0.010	0.010	0.013	27

Output sensitivity for drain/fillable porosity

Coordinates		For drain/fillable porosity				Pilot Point ID
X	Y	Layer 1	Layer 2	Layer 3	Layer 4	
380150.000	3542691.000	0.0156	0.0144	0.0144	0.0144	C-16
379119.000	3519310.000	0.0155	0.0144	0.0144	0.0144	D-11
369775.000	3499135.000	0.0156	0.0144	0.0144	0.0144	E-11
360731.000	3496813.000	0.0357	0.0144	0.0146	0.0144	E-13
309050.000	3431319.000	0.0148	0.0144	0.0146	0.0144	E-15
374314.700	3497970.200	0.0161	0.0144	0.0144	0.0144	E-9
364981.700	3465936.060	0.0155	0.0144	0.0146	0.0144	F-6
353361.300	3465316.000	0.0149	0.0144	0.0144	0.0144	F-9
326778.740	3434895.600	0.0148	0.0144	0.0144	0.0144	G-3
313568.900	3438446.400	0.0147	0.0144	0.0145	0.0144	G-6
277645.480	3386566.650	0.0149	0.0144	0.0149	0.0144	H-1
278866.600	3399296.100	0.0146	0.0144	0.0206	0.0144	H-3
275279.300	3406469.090	0.0146	0.0144	0.0214	0.0144	H-5
256552.800	3404326.900	0.0147	0.0144	0.0208	0.0144	H-8
338673.200	3444797.600	0.0146	0.0144	0.0144	0.0144	LRR-14
314109.960	3420251.070	0.0146	0.0144	0.0147	0.0144	LRR-17
367411.700	3477434.960	0.0157	0.0144	0.0145	0.0144	S.T.H-16
350872.080	3484310.500	0.0896	0.0144	0.0150	0.0144	S.T.H-21
335306.200	3461259.670	0.0352	0.0144	0.0146	0.0144	S.T.H-3
372613.980	3498545.300	0.0159	0.0144	0.0144	0.0144	S.T.H-43
369975.000	3492369.550	0.0160	0.0144	0.0144	0.0144	S.T.H-57
376276.280	3526993.770	0.0155	0.0144	0.0144	0.0144	S.T.H-63
242164.819	3395297.347	0.0145	0.0144	0.0148	0.0144	1
263720.319	3395297.347	0.0148	0.0144	0.0199	0.0144	2
252942.619	3413964.927	0.0148	0.0144	0.0235	0.0144	3
274498.019	3413964.927	0.0145	0.0144	0.0221	0.0144	4
296053.519	3413964.927	0.0145	0.0144	0.0170	0.0144	5
317609.019	3413964.927	0.0145	0.0144	0.0145	0.0144	6
285275.819	3432632.527	0.0155	0.0144	0.0156	0.0144	7
306831.319	3432632.527	0.0148	0.0144	0.0146	0.0144	8
328386.719	3432632.527	0.0148	0.0144	0.0144	0.0144	9
317609.019	3451300.127	0.0146	0.0144	0.0144	0.0144	10
339164.919	3451300.127	0.0145	0.0144	0.0144	0.0144	11
349941.919	3469967.727	0.0148	0.0144	0.0144	0.0144	12
371497.919	3469967.727	0.0155	0.0144	0.0146	0.0144	13

339164.919	3488635.127	0.2674	0.0144	0.0165	0.0144	14
360719.919	3488635.127	0.0150	0.0144	0.0144	0.0144	15
382275.919	3488635.127	0.0185	0.0144	0.0144	0.0144	16
371497.919	3507303.127	0.0150	0.0144	0.0144	0.0144	17
382275.919	3525970.127	0.0154	0.0144	0.0144	0.0144	18

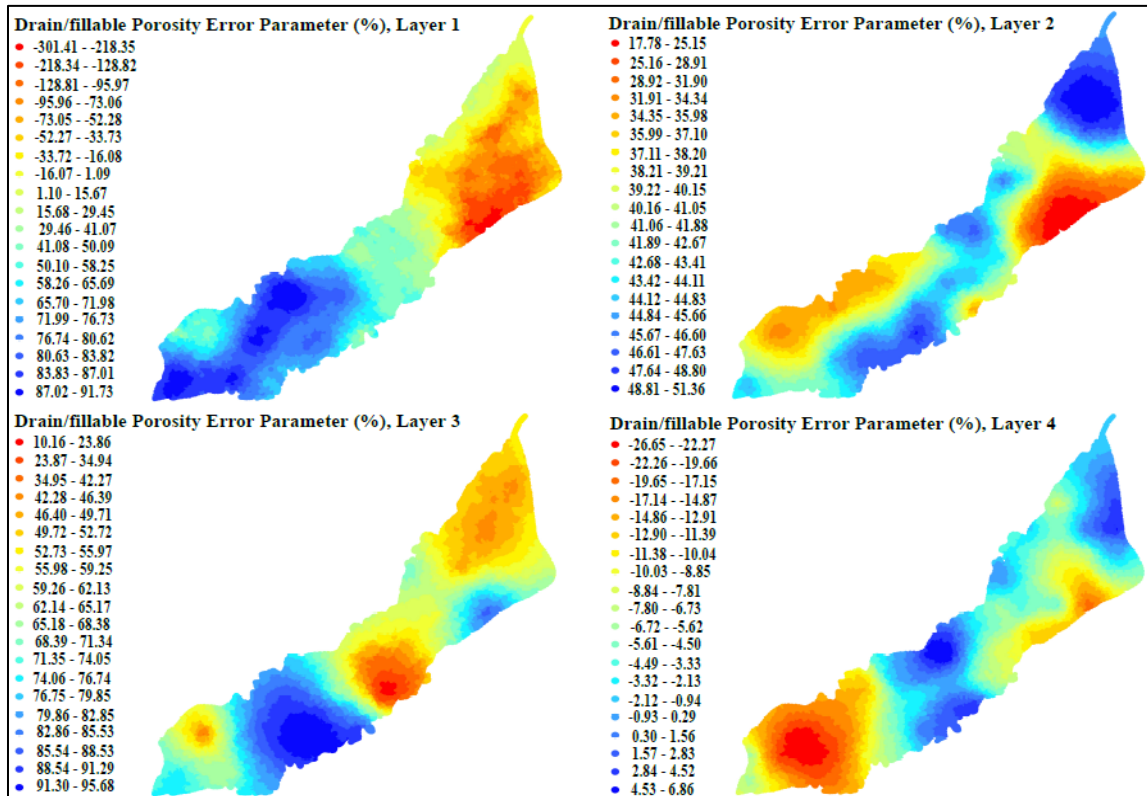
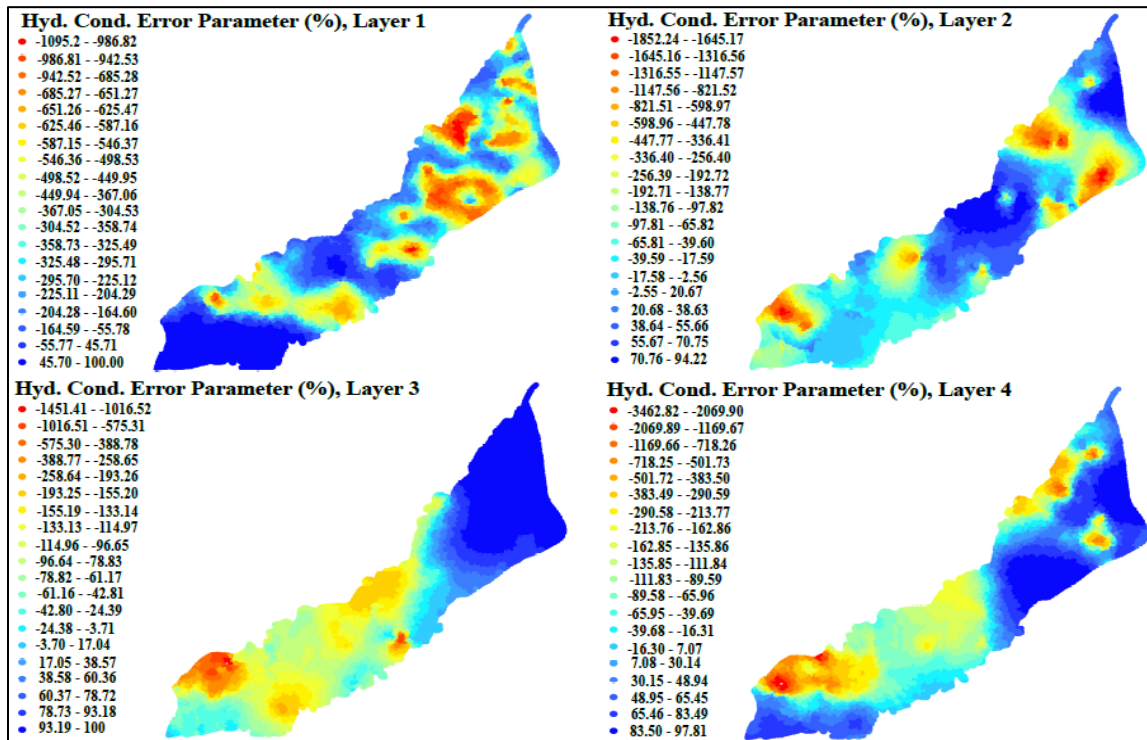


Figure S2. Parameter error (%) for hydraulic conductivity and drain/fillable porosity