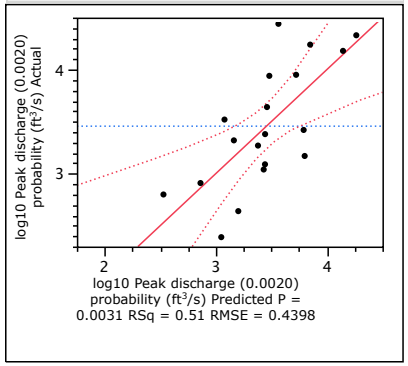
Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 2-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Coastal Plain peak flow probability classes.

Response LOG10 Peak discharge (0.0020 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.514029
RSquare Adj	0.453283
Root Mean Square Error	0.439751
Mean of Response	3.456316
Observations (or Sum Wgts)	19

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	2	3.2727441	1.63637	8.4619
Error	16	3.0940980	0.19338	Prob > F
C. Total	18	6.3668421		0.0031*

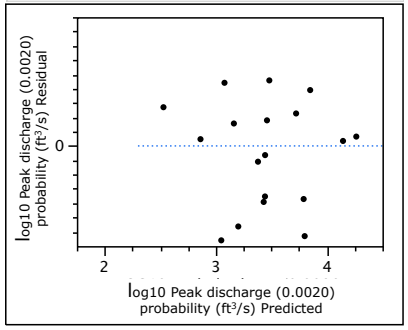
Parameter Estimates

Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	0.6770496	0.849682	0.80	0.4372	
log10 Drainage area (mi^2)	1.1773669	0.293923	4.01	0.0010*	3.4291148
log10 Channel slope(ft/mi)	1.4409624	0.50289	2.87	0.0112*	3.4291148

Effect Tests

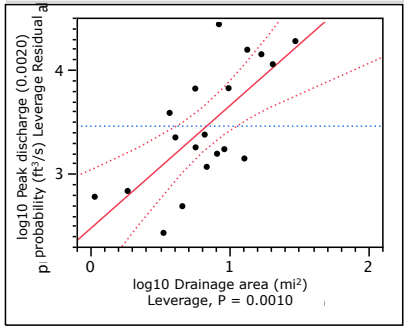
Source	N parm	DF	Sum of Squares	F Ratio	Prob > F
log10 Drainage area	1	1	3.1029280	16.0457	0.0010*
log10 Channel slope(ft/mi)	1	1	1.5877195	8.2103	0.0112*

Residual by Predicted Plot



log10 Drainage area (mi^2)

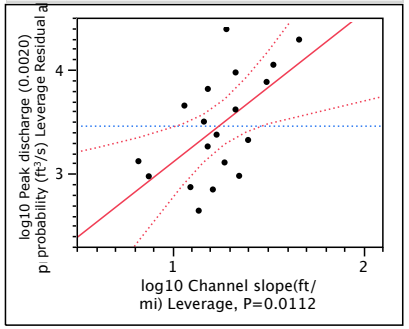
Leverage Plot



log10 Drainage area (mi^2)
Leverage, P = 0.0010

log10 Channel slope(ft/mi)

Leverage Plot

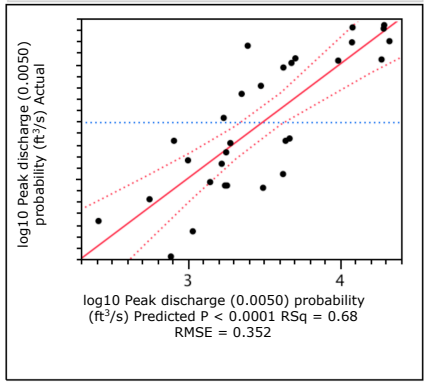


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 2-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Coastal Plain peak flow probability classes.

Response LOG10 Peak discharge (0.0050 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.677424
RSquare Adj	0.653529
Root Mean Square Error	0.352048
Mean of Response	3.488667
Observations (or Sum Wgts)	30

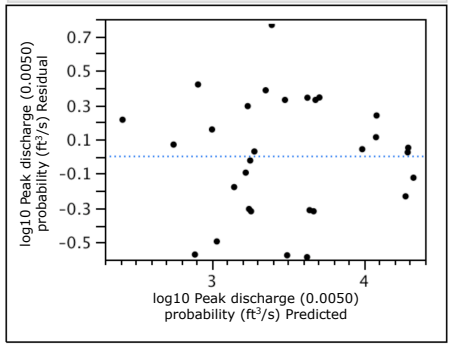
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	2	7.027424	3.51371	28.3506
Error	27	3.346322	0.12394	Prob > F
C. Total	29	10.373747		<.0001*

Parameter Estimates

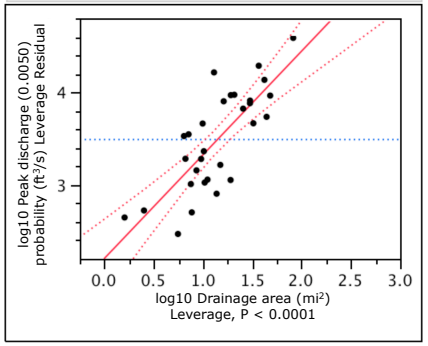
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	0.7495851	0.540429	1.39	0.1768	
log10 Drainage area (mi²)	1.1199354	0.171518	6.53	<.0001*	4.8378733
log10 Channel slope(ft/mi)	1.2885992	0.313485	4.11	0.0003*	4.8378733

Residual by Predicted Plot



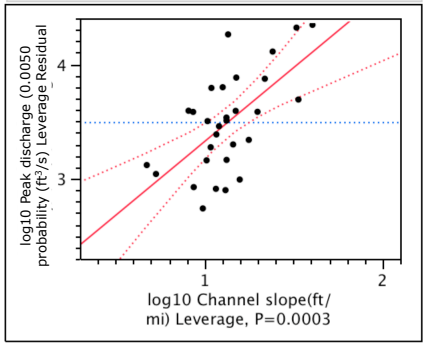
log10 Drainage area (mi²)

Leverage Plot



log10 Channel slope(ft/mi)

Leverage Plot

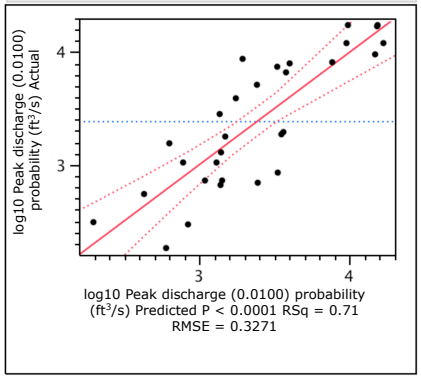


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 2-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Coastal Plain peak flow probability classes.

Response LOG10 Peak discharge (0.0100 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.712108
RSquare Adj	0.690783
Root Mean Square Error	0.327126
Mean of Response	3.382
Observations (or Sum Wgts)	30

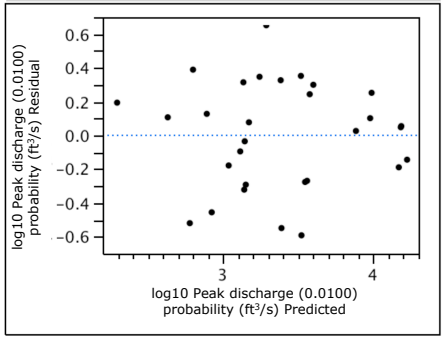
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	2	7.146777	3.57339	33.3927
Error	27	2.889303	0.10701	Prob > F
C. Total	29	10.036080		<.0001*

Parameter Estimates

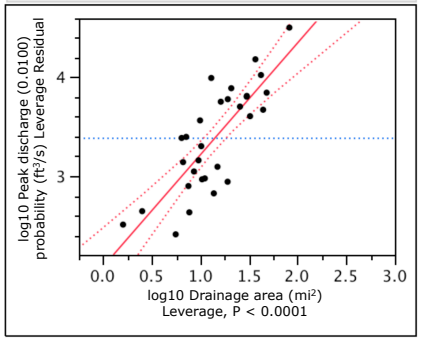
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	0.5959351	0.50217	1.19	0.2457	
log10 Drainage area (mi^2)	1.1345475	0.159376	7.12	<.0001*	4.8378733
log10 Channel slope(ft/mi)	1.3153737	0.291292	4.52	0.0001*	4.8378733

Residual by Predicted Plot



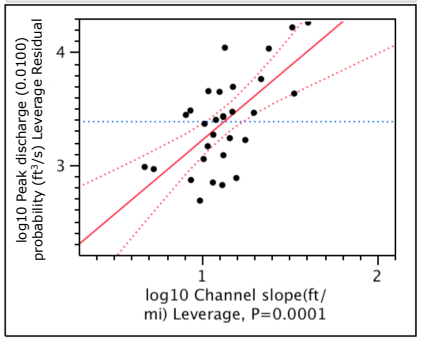
log10 Drainage area (mi^2)

Leverage Plot



log10 Channel slope(ft/mi)

Leverage Plot

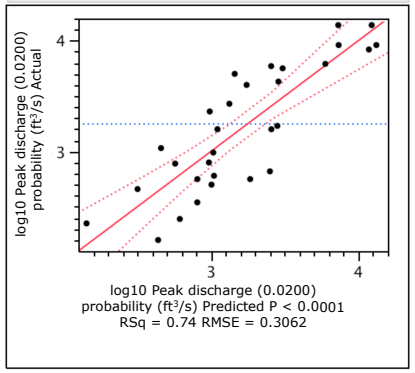


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 2-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Coastal Plain peak flow probability classes.

Response LOG10 Peak discharge (0.0200 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.743787
RSquare Adj	0.725486
Root Mean Square Error	0.306183
Mean of Response	3.247419
Observations (or Sum Wgts)	31

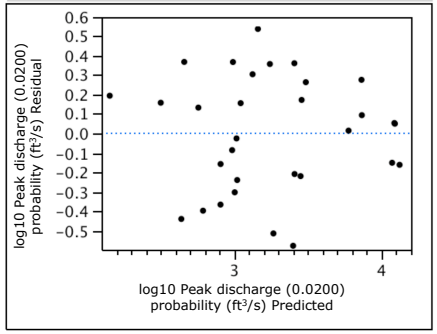
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	2	7.620243	3.81012	40.6421
Error	28	2.624950	0.09375	Prob > F
C. Total	30	10.245194		<.0001*

Parameter Estimates

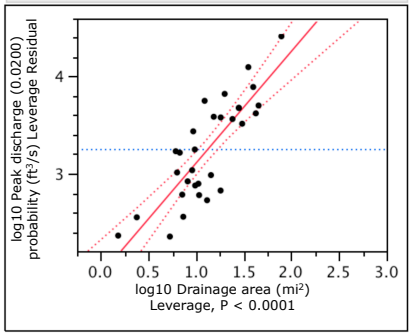
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	0.4530911	0.469983	0.96	0.3433	
log10 Drainage area (mi^2)	1.1517898	0.149023	7.73	<.0001*	4.9745993
log10 Channel slope(ft/mi)	1.3152155	0.272454	4.83	<.0001*	4.9745993

Residual by Predicted Plot



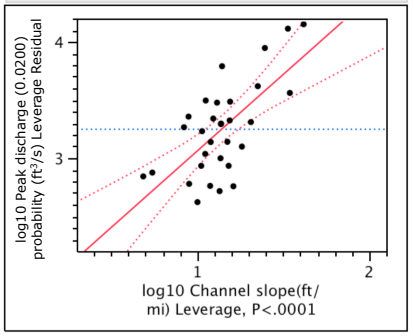
log10 Drainage area (mi^2)

Leverage Plot



log10 Channel slope(ft/mi)

Leverage Plot

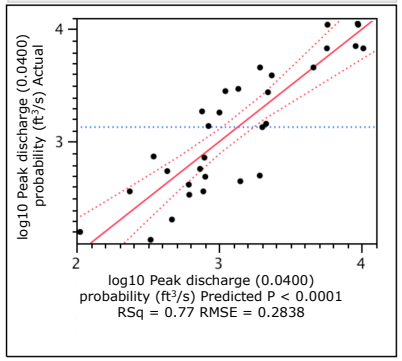


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 2-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Coastal Plain peak flow probability classes.

Response LOG10 Peak discharge (0.0400 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.77387
RSquare Adj	0.757717
Root Mean Square Error	0.283781
Mean of Response	3.130645
Observations (or Sum Wgts)	31

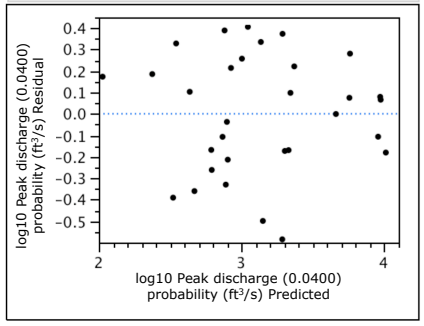
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	2	7.7167078	3.85835	47.9112
Error	28	2.2548793	0.08053	Prob > F
C. Total	30	9.9715871		<.0001*

Parameter Estimates

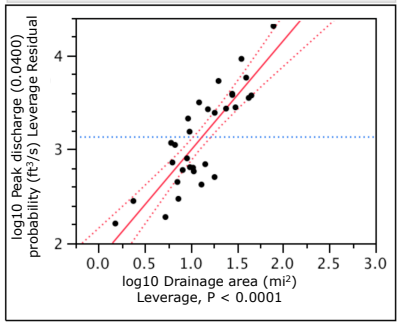
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	0.292075	0.435595	0.67	0.5080	
log10 Drainage area (mi²)	1.1648884	0.13812	8.43	<.0001*	4.9745993
log10 Channel slope(ft/mi)	1.3410786	0.252519	5.31	<.0001*	4.9745993

Residual by Predicted Plot



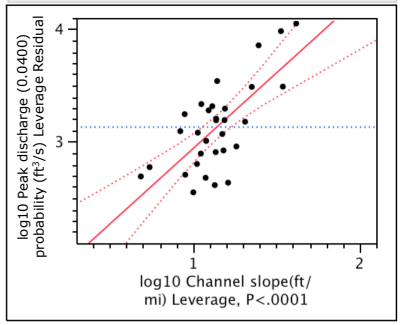
log10 Drainage area (mi²)

Leverage Plot



log10 Channel slope(ft/mi)

Leverage Plot

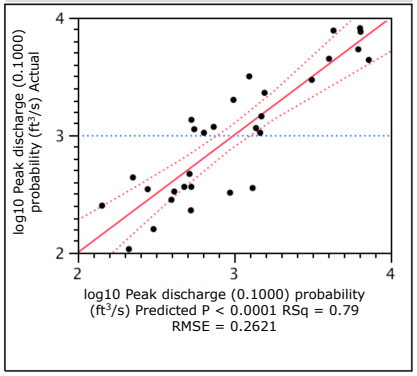


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 2-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Coastal Plain peak flow probability classes.

Response LOG10 Peak discharge (0.1000 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.785978
RSquare Adj	0.770124
Root Mean Square Error	0.262105
Mean of Response	2.994333
Observations (or Sum Wgts)	30

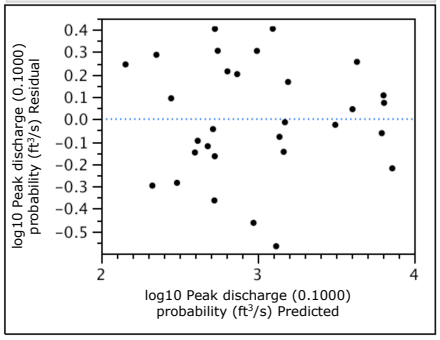
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	2	6.8118627	3.40593	49.5776
Error	27	1.8548740	0.06870	Prob > F
C. Total	29	8.6667367		<.0001*

Parameter Estimates

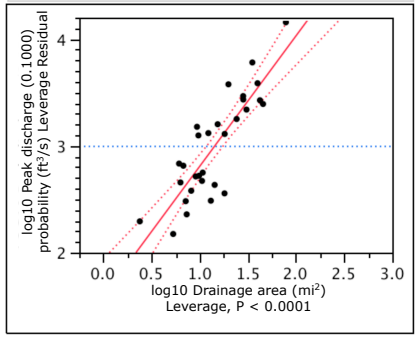
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	−0.06504	0.453296	−0.14	0.8870	
log10 Drainage area (mi^2)	1.2210203	0.144068	8.48	<.0001*	6.0522828
log10 Channel slope(ft/mi)	1.4454958	0.257263	5.62	<.0001*	6.0522828

Residual by Predicted Plot



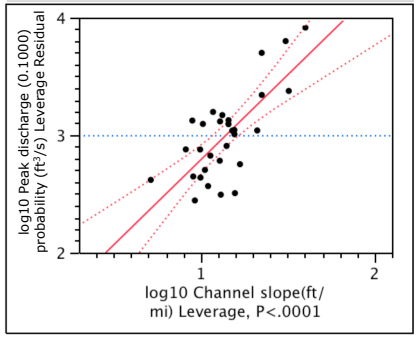
log10 Drainage area (mi^2)

Leverage Plot



log10 Channel slope(ft/mi)

Leverage Plot

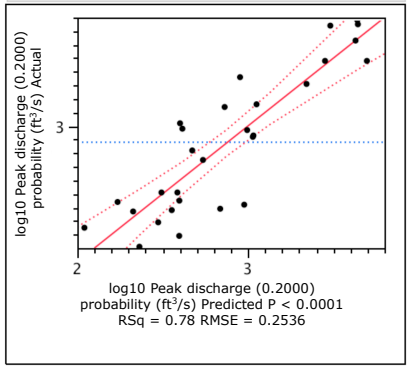


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 2-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Coastal Plain peak flow probability classes.

Response LOG10 Peak discharge (0.2000 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.781193
RSquare Adj	0.764362
Root Mean Square Error	0.253577
Mean of Response	2.880345
Observations (or Sum Wgts)	29

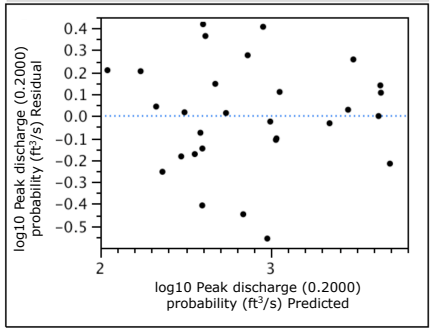
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	2	5.9688615	2.98443	46.4132
Error	26	1.6718351	0.06430	Prob > F
C. Total	28	7.6406966		<.0001*

Parameter Estimates

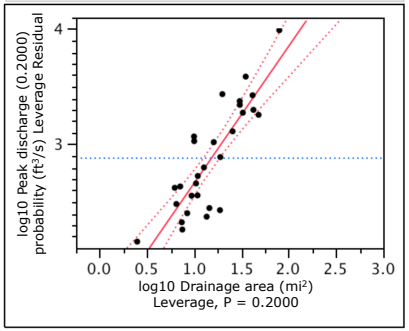
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	-0.121986	0.449873	-0.27	0.7884	
log10 Drainage area (mi^2)	1.1869595	0.143602	8.27	<.0001*	6.179018
log10 Channel slope(ft/mi)	1.4104066	0.25295	5.58	<.0001*	6.179018

Residual by Predicted Plot



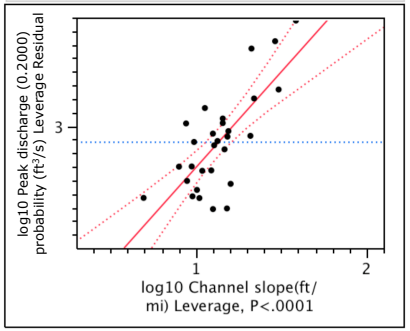
log10 Drainage area (mi^2)

Leverage Plot



log10 Channel slope(ft/mi)

Leverage Plot

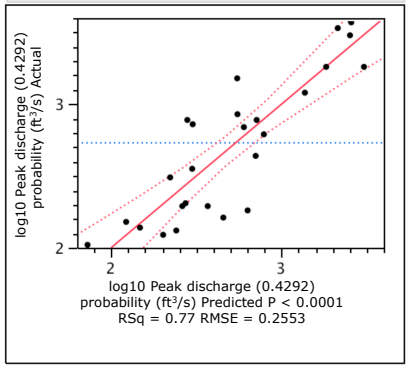


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 2-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Coastal Plain peak flow probability classes.

Response LOG10 Peak discharge (0.4292 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.767521
RSquare Adj	0.748148
Root Mean Square Error	0.255336
Mean of Response	2.730741
Observations (or Sum Wgts)	27

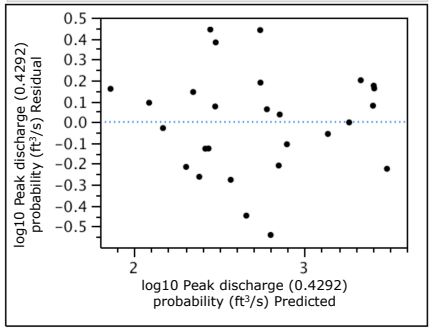
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	2	5.1658653	2.58293	39.6176
Error	24	1.5647199	0.06520	Prob > F
C. Total	26	6.7305852		<.0001*

Parameter Estimates

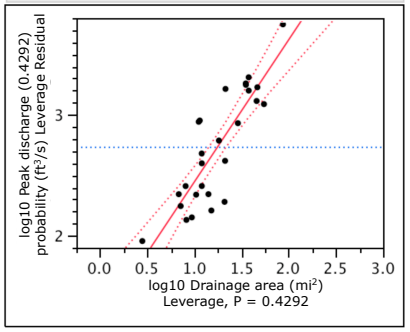
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	-0.339434	0.458993	-0.74	0.4668	
log10 Drainage area (mi²)	1.1751624	0.147013	7.99	<.0001*	5.9101842
log10 Channel slope(ft/mi)	1.4583655	0.256975	5.68	<.0001*	5.9101842

Residual by Predicted Plot



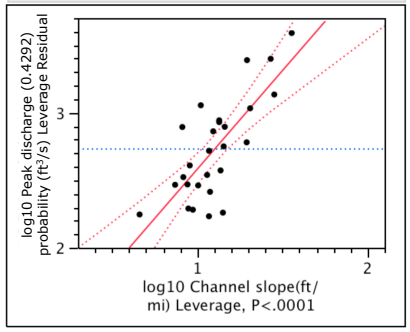
log10 Drainage area (mi²)

Leverage Plot



log10 Channel slope(ft/mi)

Leverage Plot

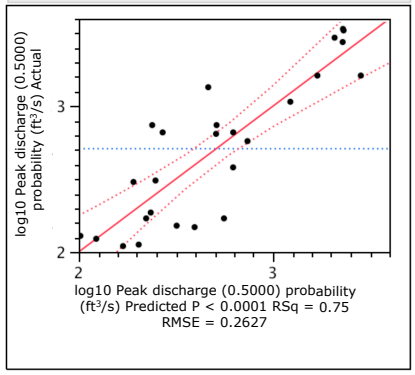


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 2-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Coastal Plain peak flow probability classes.

Response LOG10 Peak discharge (0.5000 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.747167
RSquare Adj	0.725182
Root Mean Square Error	0.262736
Mean of Response	2.708077
Observations (or Sum Wgts)	26

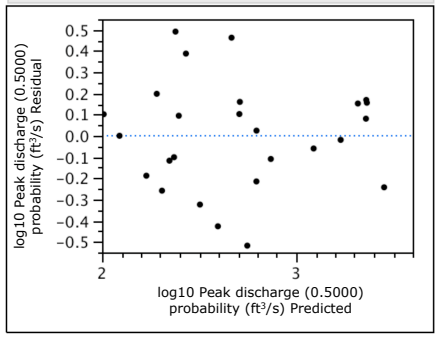
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	2	4.6919137	2.34596	33.9846
Error	23	1.5876901	0.06903	Prob > F
C. Total	25	6.2796038		<.0001*

Parameter Estimates

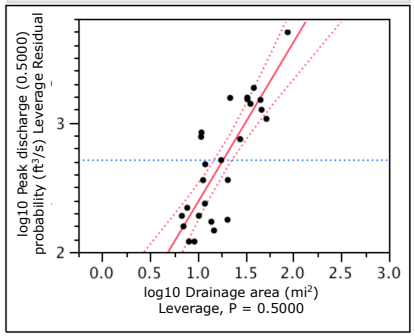
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	-0.584769	0.539278	-1.08	0.2894	
log10 Drainage area (mi²)	1.2350021	0.171121	7.22	<.0001*	7.4318606
log10 Channel slope(ft/mi)	1.5607523	0.297164	5.25	<.0001*	7.4318606

Residual by Predicted Plot



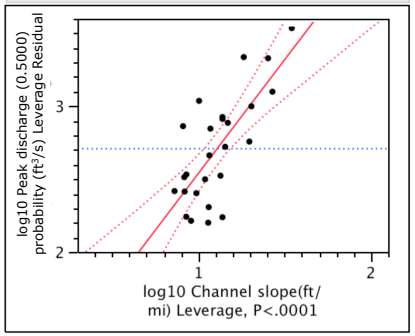
log10 Drainage area (mi²)

Leverage Plot



log10 Channel slope(ft/mi)

Leverage Plot

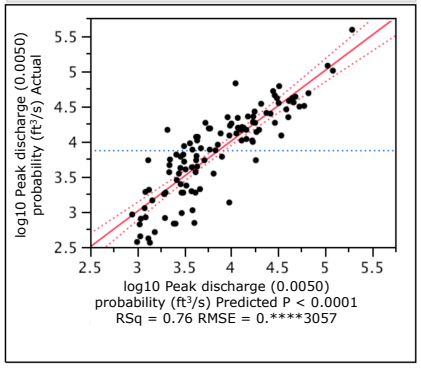


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 2-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Piedmont peak flow probability classes.

Response LOG10 Peak discharge (0.0050 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.758181
RSquare Adj	0.753863
Root Mean Square Error	0.305696
Mean of Response	3.865652
Observations (or Sum Wgts)	115

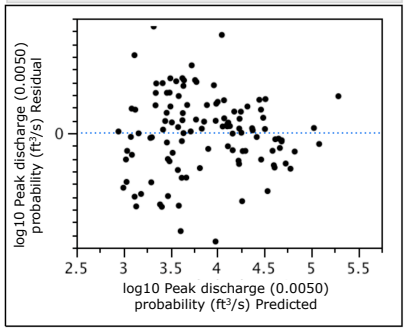
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	2	32.815603	16.4078	175.5780
Error	112	10.466423	0.0935	Prob > F
C. Total	114	43.282026		<.0001*

Parameter Estimates

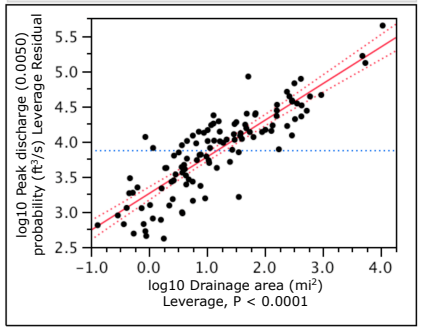
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	3.3170876	0.046907	70.72	<.0001*	
log10 Drainage area (mi^2)	0.5208905	0.029154	17.87	<.0001*	1.1841194
Wetland (%)	-0.037742	0.020384	-1.85	0.0667	1.1841194

Residual by Predicted Plot



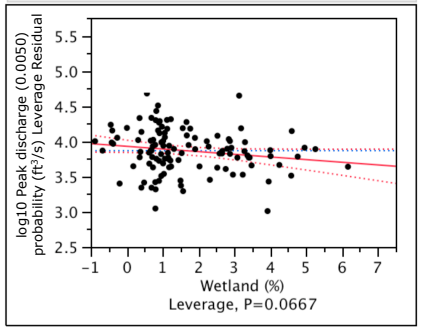
log10 Drainage area (mi^2)

Leverage Plot



Wetland (%)

Leverage Plot

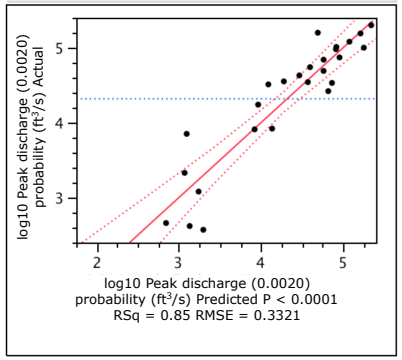


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 2-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Blue Ridge peak flow probability classes.

Response LOG10 Peak discharge (0.0020 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.854226
RSquare Adj	0.84155
Root Mean Square Error	0.33207
Mean of Response	4.317692
Observations (or Sum Wgts)	26

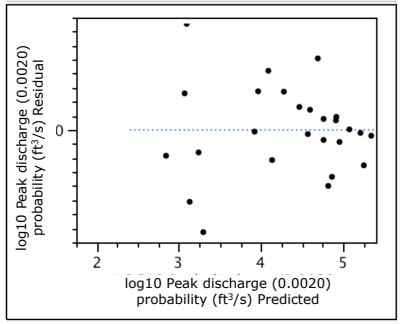
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	2	14.862043	7.43102	67.3891
Error	23	2.536219	0.11027	Prob > F
C. Total	25	17.398262		<.0001*

Parameter Estimates

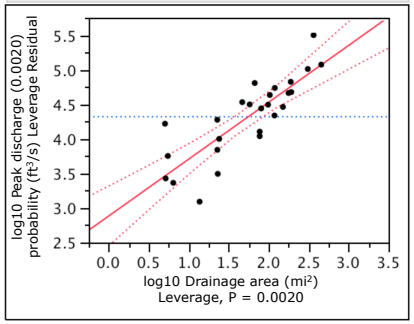
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	2.7513422	0.353678	7.78	<.0001*	
log10 Drainage area (mi²)	0.8219338	0.113931	7.21	<.0001*	3.1211542
log10 Channel slope(ft/mi)	0.0935068	0.117045	0.80	0.4325	3.1211542

Residual by Predicted Plot



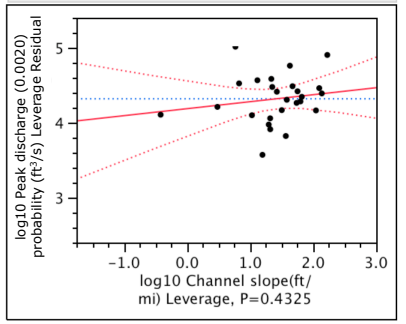
log10 Drainage area (mi²)

Leverage Plot



log10 Channel slope(ft/mi)

Leverage Plot

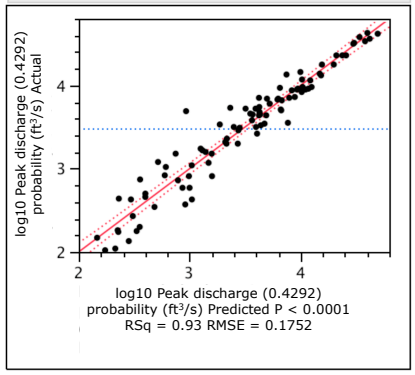


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 2-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Blue Ridge peak flow probability classes.

Response LOG10 Peak discharge (0.4292 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.932736
RSquare Adj	0.931274
Root Mean Square Error	0.175177
Mean of Response	3.475053
Observations (or Sum Wgts)	95

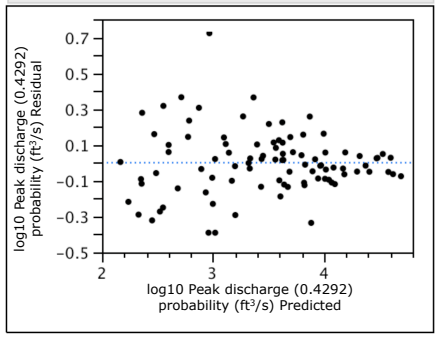
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	2	39.148766	19.5744	637.8711
Error	92	2.823209	0.0307	Prob > F
C. Total	94	41.971975		<.0001*

Parameter Estimates

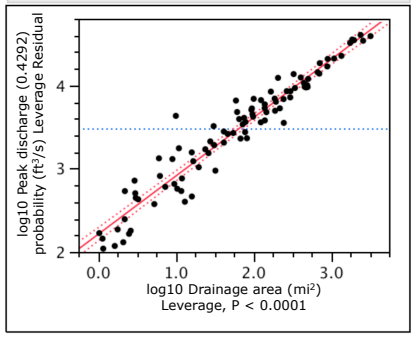
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	2.6144311	0.264317	9.89	<.0001*	
log10 Drainage area (mi²)	0.7000661	0.019652	35.62	<.0001*	1.0135216
log10 Basin slope (ft/mi)	−0.164304	0.107191	−1.53	0.1288	1.0135216

Residual by Predicted Plot



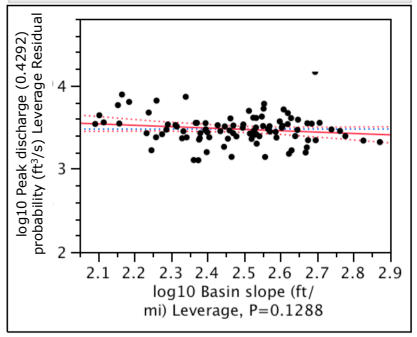
log10 Drainage area (mi²)

Leverage Plot



log10 Basin slope (ft/mi)

Leverage Plot

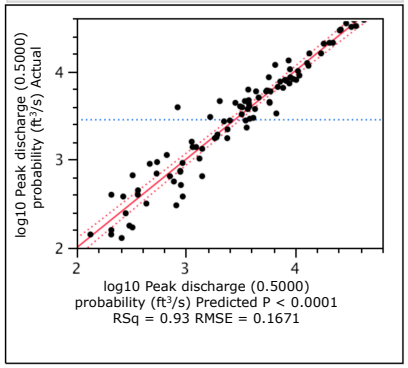


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 2-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Blue Ridge peak flow probability classes.

Response LOG10 Peak discharge (0.5000 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.933797
RSquare Adj	0.932326
Root Mean Square Error	0.167071
Mean of Response	3.448602
Observations (or Sum Wgts)	93

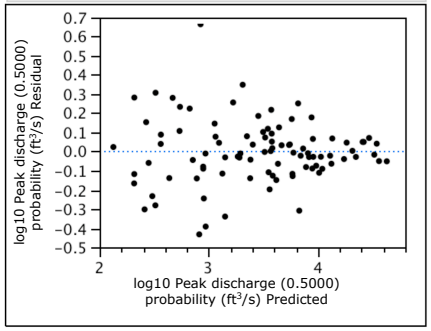
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	2	35.433966	17.7170	634.7262
Error	90	2.512152	0.0279	Prob > F
C. Total	92	37.946118		<.0001*

Parameter Estimates

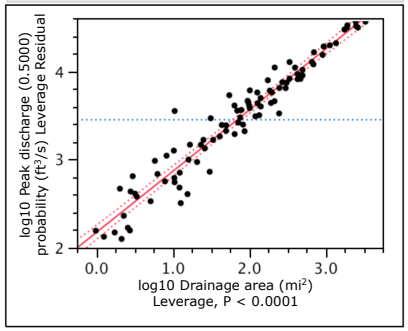
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	2.5369286	0.25333	10.01	<.0001*	
log10 Drainage area (mi^2)	0.6920335	0.019455	35.57	<.0001*	1.0097121
log10 Basin slope (ft/mi)	−0.148053	0.102378	−1.45	0.1516	1.0097121

Residual by Predicted Plot



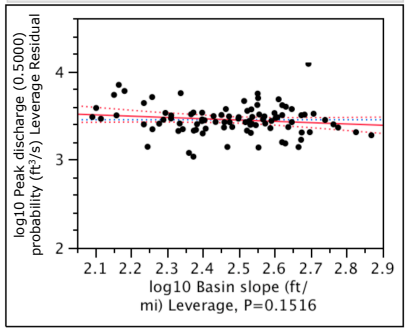
log10 Drainage area (mi^2)

Leverage Plot



log10 Basin slope (ft/mi)

Leverage Plot

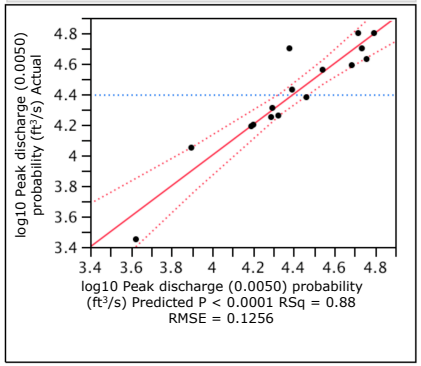


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 2-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Appalachian Plateaus peak flow probability classes.

Response LOG10 Peak discharge (0.0050 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.884428
RSquare Adj	0.866648
Root Mean Square Error	0.125603
Mean of Response	4.39375
Observations (or Sum Wgts)	16

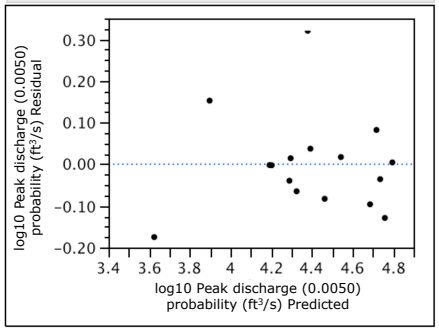
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	2	1.5694847	0.784742	49.7422
Error	13	0.2050903	0.015776	Prob > F
C. Total	15	1.7745750		<.0001*

Parameter Estimates

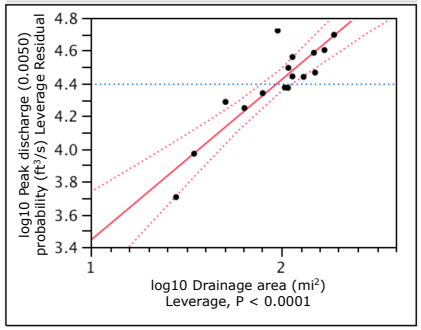
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	1.9248594	0.466156	4.13	0.0012*	
log10 Drainage area (mi^2)	0.9803985	0.136495	7.18	<.0001*	3.6537132
log10 Channel slope(ft/mi)	0.3475422	0.138972	2.50	0.0265*	3.6537132

Residual by Predicted Plot



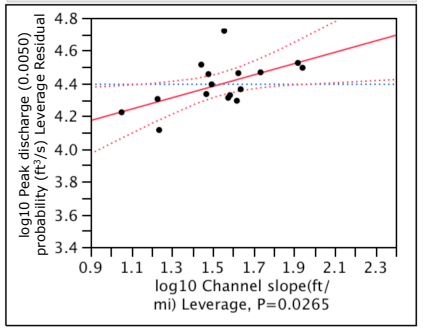
log10 Drainage area (mi^2)

Leverage Plot



log10 Channel slope(ft/mi)

Leverage Plot

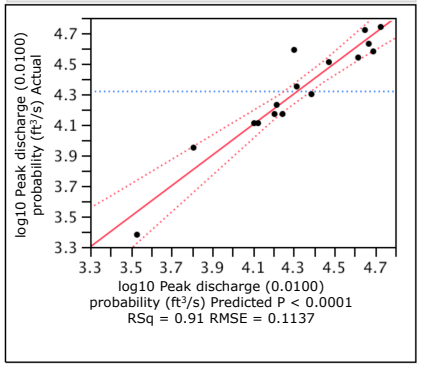


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 2-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Appalachian Plateaus peak flow probability classes.

Response LOG10 Peak discharge (0.0100 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.907707
RSquare Adj	0.893508
Root Mean Square Error	0.113686
Mean of Response	4.3175
Observations (or Sum Wgts)	16

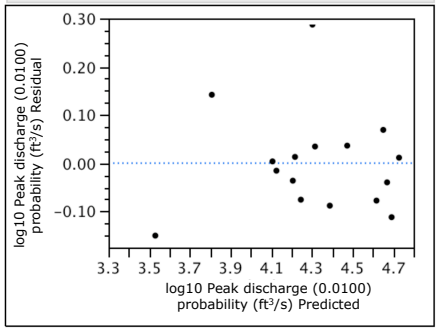
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	2	1.6524800	0.826240	63.9276
Error	13	0.1680200	0.012925	Prob > F
C. Total	15	1.8205000		<.0001*

Parameter Estimates

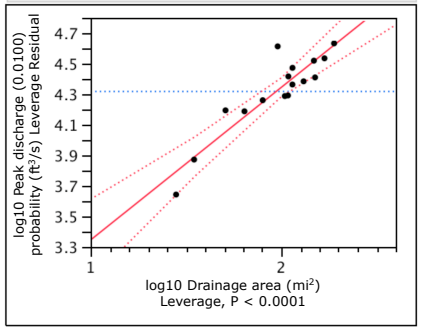
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	1.8116226	0.421929	4.29	0.0009*	
log10 Drainage area (mi^2)	0.9993751	0.123545	8.09	<.0001*	3.6537132
log10 Channel slope(ft/mi)	0.3472458	0.125787	2.76	0.0162*	3.6537132

Residual by Predicted Plot



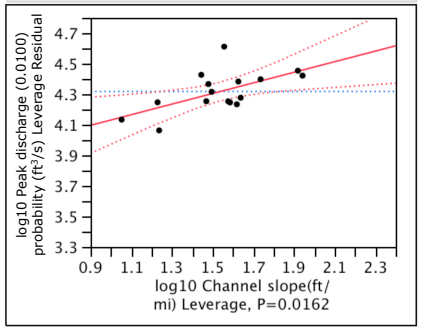
log10 Drainage area (mi^2)

Leverage Plot



log10 Channel slope(ft/mi)

Leverage Plot

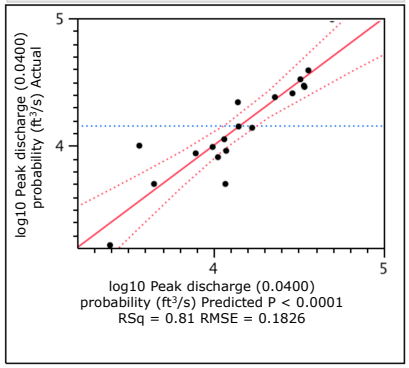


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia. 2-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Appalachian Plateaus peak flow probability classes.

Response LOG10 Peak discharge (0.0400 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.813166
RSquare Adj	0.789811
Root Mean Square Error	0.182647
Mean of Response	4.153684
Observations (or Sum Wgts)	19

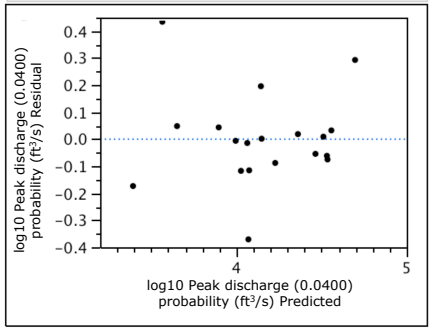
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	2	2.3230856	1.16154	34.8187
Error	16	0.5337565	0.03336	Prob > F
C. Total	18	2.8568421		<.0001*

Parameter Estimates

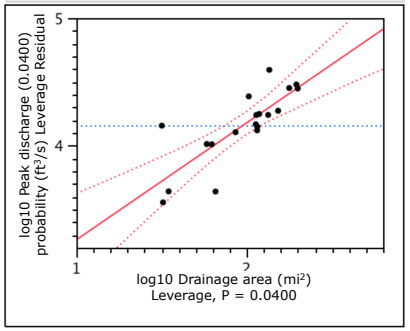
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	2.0020259	0.596825	3.35	0.0040*	
log10 Drainage area (mi²)	0.9169628	0.170785	5.37	<.0001*	3.6327998
log10 Channel slope(ft/mi)	0.2278375	0.186893	1.22	0.2405	3.6327998

Residual by Predicted Plot



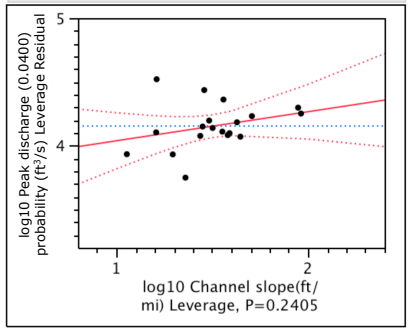
log10 Drainage area (mi²)

Leverage Plot



log10 Channel slope(ft/mi)

Leverage Plot

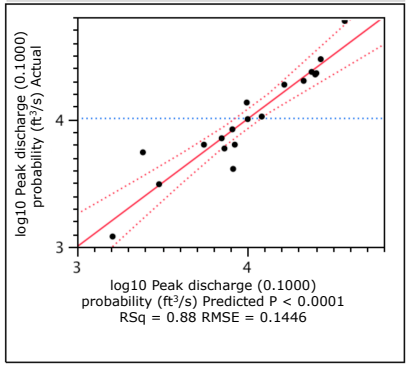


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 2-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Appalachian Plateaus peak flow probability classes.

Response LOG10 Peak discharge (0.1000 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.883385
RSquare Adj	0.868808
Root Mean Square Error	0.144642
Mean of Response	4.005263
Observations (or Sum Wgts)	19

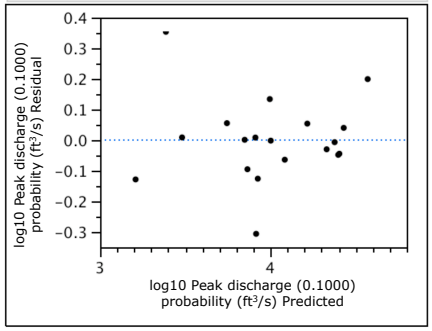
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	2	2.5357324	1.26787	60.6016
Error	16	0.3347413	0.02092	Prob > F
C. Total	18	2.8704737		<.0001*

Parameter Estimates

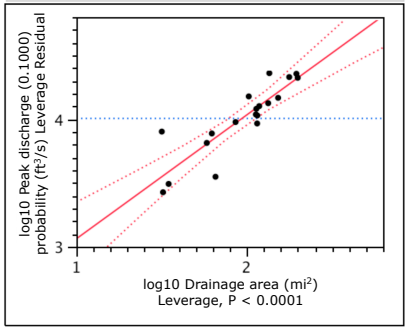
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	1.7063383	0.47264	3.61	0.0023*	
log10 Drainage area (mi^2)	0.9703994	0.135249	7.17	<.0001*	3.6327998
log10 Channel slope(ft/mi)	0.2556215	0.148005	1.73	0.1034	3.6327998

Residual by Predicted Plot



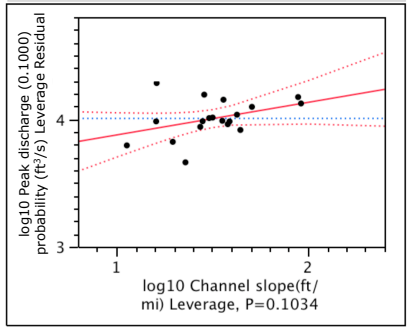
log10 Drainage area (mi^2)

Leverage Plot



log10 Channel slope(ft/mi)

Leverage Plot

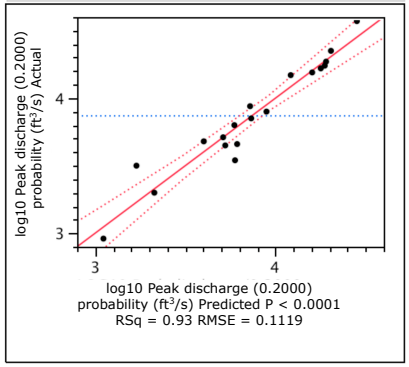


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 2-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Appalachian Plateaus peak flow probability classes.

Response LOG10 Peak discharge (0.2000 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.930847
RSquare Adj	0.922203
Root Mean Square Error	0.111883
Mean of Response	3.868421
Observations (or Sum Wgts)	19

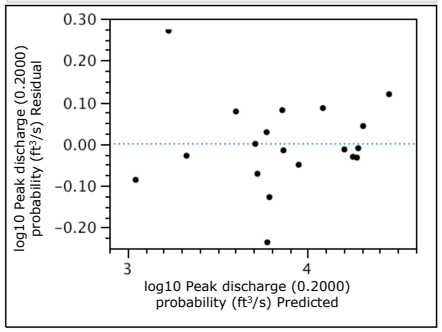
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	2	2.6959687	1.34798	107.6859
Error	16	0.2002839	0.01252	Prob > F
C. Total	18	2.8962526		<.0001*

Parameter Estimates

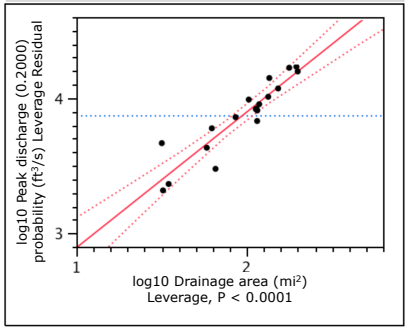
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	1.4827202	0.365593	4.06	0.0009*	
log10 Drainage area (mi^2)	1.0042895	0.104617	9.60	<.0001*	3.6327998
log10 Channel slope(ft/mi)	0.2688515	0.114484	2.35	0.0320*	3.6327998

Residual by Predicted Plot



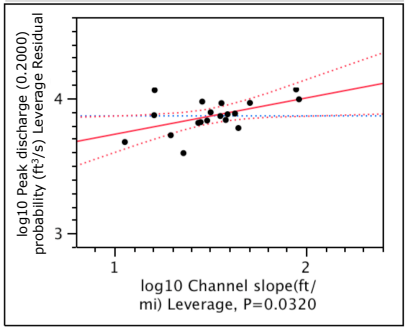
log10 Drainage area (mi^2)

Leverage Plot



log10 Channel slope(ft/mi)

Leverage Plot

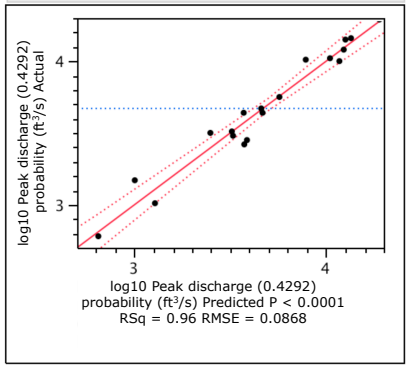


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 2-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Appalachian Plateaus peak flow probability classes.

Response LOG10 Peak discharge (0.4292 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.960534
RSquare Adj	0.955601
Root Mean Square Error	0.086841
Mean of Response	3.67
Observations (or Sum Wgts)	19

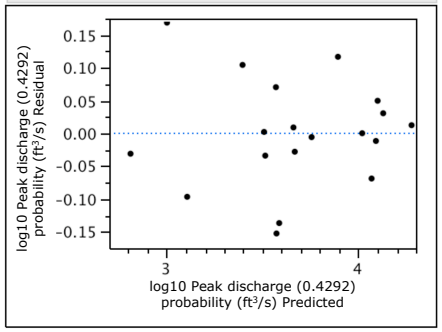
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	2	2.9367377	1.46837	194.7079
Error	16	0.1206623	0.00754	Prob > F
C. Total	18	3.0574000		<.0001*

Parameter Estimates

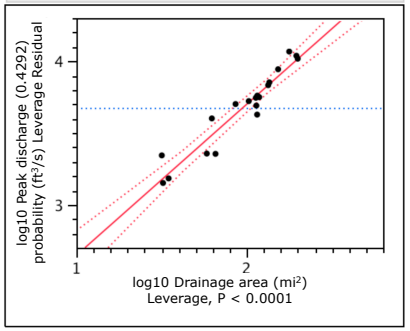
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	1.1609961	0.283766	4.09	0.0009*	
log10 Drainage area (mi^2)	1.0527902	0.081202	12.97	<.0001*	3.6327998
log10 Channel slope(ft/mi)	0.287199	0.08886	3.23	0.0052*	3.6327998

Residual by Predicted Plot



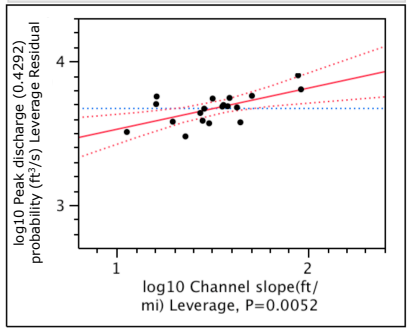
log10 Drainage area (mi^2)

Leverage Plot



log10 Channel slope(ft/mi)

Leverage Plot

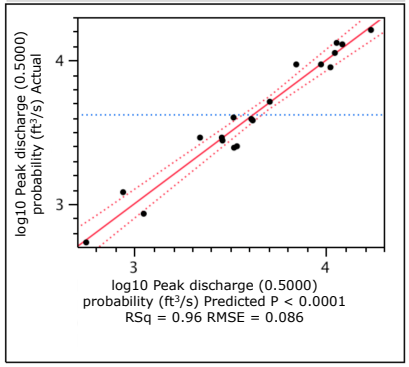


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 2-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Appalachian Plateaus peak flow probability classes.

Response LOG10 Peak discharge (0.5000 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.96226
RSquare Adj	0.957542
Root Mean Square Error	0.08596
Mean of Response	3.618421
Observations (or Sum Wgts)	19

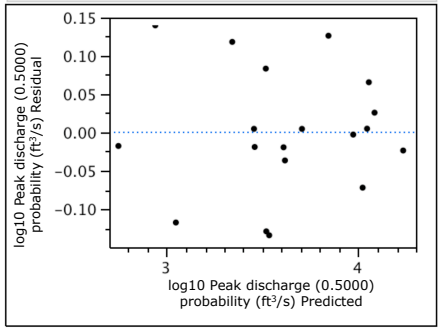
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	2	3.0144261	1.50721	203.9762
Error	16	0.1182266	0.00739	Prob > F
C. Total	18	3.1326526		<.0001*

Parameter Estimates

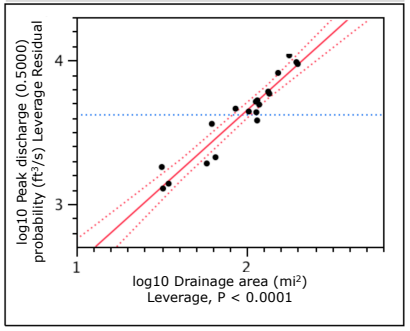
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	1.0686317	0.280888	3.80	0.0016*	
log10 Drainage area (mi^2)	1.0685158	0.080378	13.29	<.0001*	3.6327998
log10 Channel slope(ft/mi)	0.2936826	0.087959	3.34	0.0042*	3.6327998

Residual by Predicted Plot



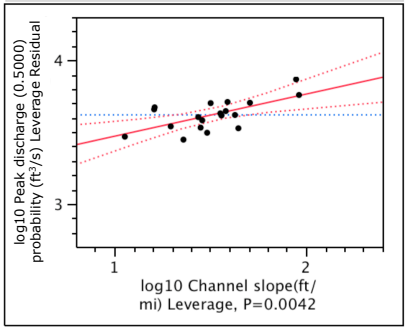
log10 Drainage area (mi^2)

Leverage Plot



log10 Channel slope(ft/mi)

Leverage Plot

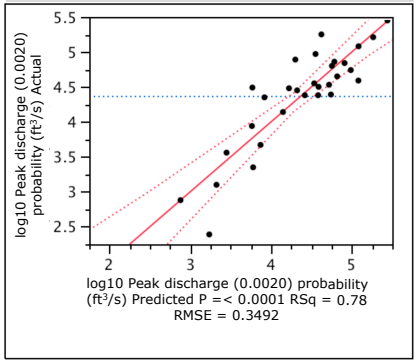


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 2-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Mesozoic Basins peak flow probability classes.

Response LOG10 Peak discharge (0.0020 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.780131
RSquare Adj	0.763844
Root Mean Square Error	0.349208
Mean of Response	4.362
Observations (or Sum Wgts)	30

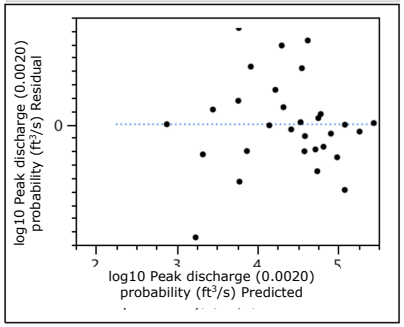
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	2	11.682525	5.84126	47.9002
Error	27	3.292555	0.12195	Prob > F
C. Total	29	14.975080		<.0001*

Parameter Estimates

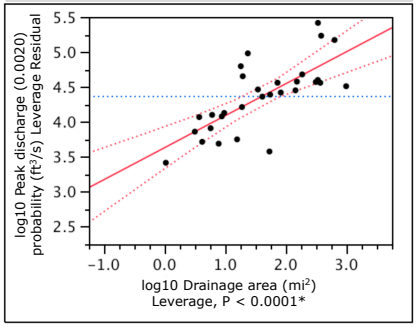
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	2.2211032	0.867967	2.56	0.0164*	
log10 Drainage area (mi^2)	0.4571024	0.082108	5.57	<.0001*	2.1240197
log10 Basin slope (ft/mi)	0.6804052	0.461615	1.47	0.1521	2.1240197

Residual by Predicted Plot



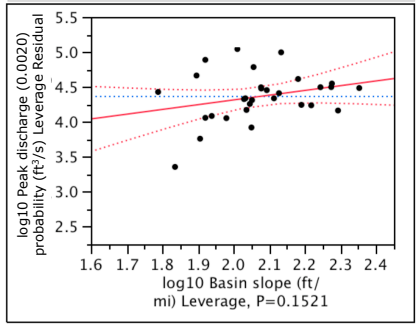
log10 Drainage area (mi^2)

Leverage Plot



log10 Basin slope (ft/mi)

Leverage Plot

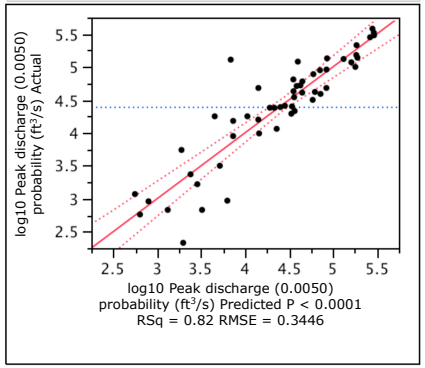


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 2-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Mesozoic Basins peak flow probability classes.

Response LOG10 Peak discharge (0.0050 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.821442
RSquare Adj	0.81444
Root Mean Square Error	0.344607
Mean of Response	4.386111
Observations (or Sum Wgts)	54

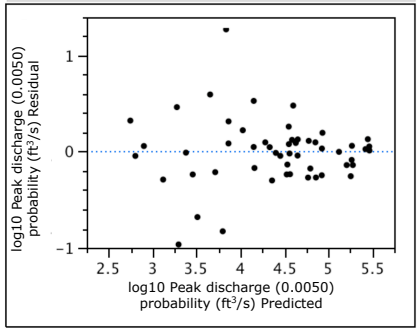
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	2	27.862232	13.9311	117.3108
Error	51	6.056451	0.1188	Prob > F
C. Total	53	33.918683		<.0001*

Parameter Estimates

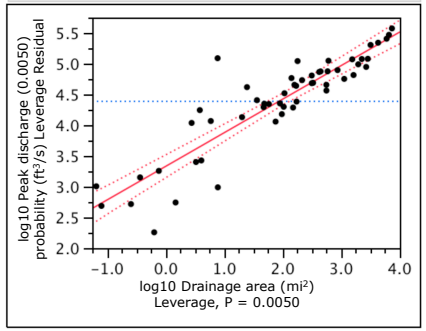
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	3.4246215	0.094795	36.13	<.0001*	.
log10 Drainage area (mi²)	0.5468739	0.036303	15.06	<.0001*	1.0007666
Wetland (%)	-0.083826	0.035578	-2.36	0.0223*	1.0007666

Residual by Predicted Plot



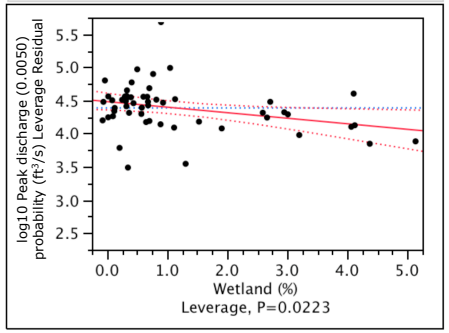
log10 Drainage area (mi²)

Leverage Plot



Wetland (%)

Leverage Plot

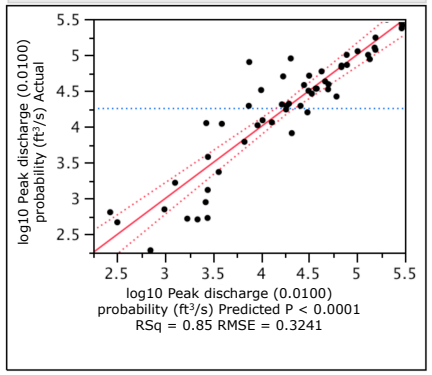


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 2-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Mesozoic Basins peak flow probability classes.

Response LOG10 Peak discharge (0.0100 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.851886
RSquare Adj	0.846189
Root Mean Square Error	0.324142
Mean of Response	4.252182
Observations (or Sum Wgts)	55

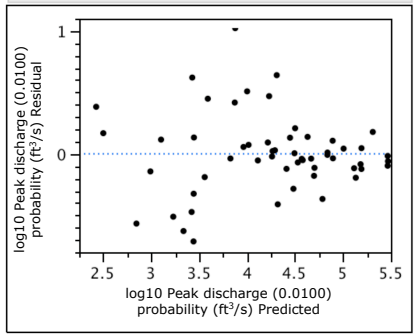
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	2	31.423789	15.7119	149.5399
Error	52	5.463549	0.1051	Prob > F
C. Total	54	36.887338		<.0001*

Parameter Estimates

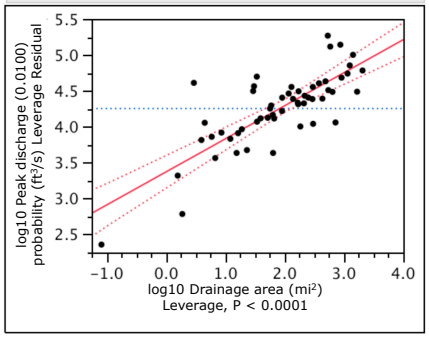
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	1.5639993	0.486868	3.21	0.0023*	
log10 Drainage area (mi^2)	0.4605541	0.048774	9.44	<.0001*	2.0660678
log10 Basin slope (ft/mi)	0.847895	0.257173	3.30	0.0018*	2.0660678

Residual by Predicted Plot



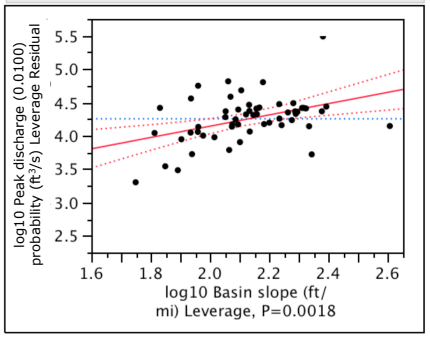
log10 Drainage area (mi^2)

Leverage Plot



log10 Basin slope (ft/mi)

Leverage Plot

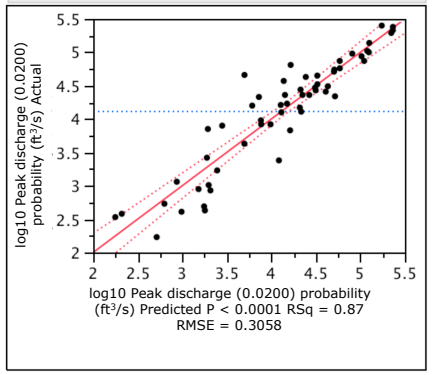


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 2-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Mesozoic Basins peak flow probability classes.

Response LOG10 Peak discharge (0.0200 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.869321
RSquare Adj	0.864569
Root Mean Square Error	0.305757
Mean of Response	4.112586
Observations (or Sum Wgts)	58

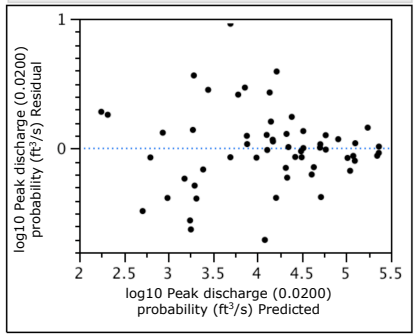
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	2	34.204921	17.1025	182.9392
Error	55	5.141791	0.0935	Prob > F
C. Total	57	39.346712		<.0001*

Parameter Estimates

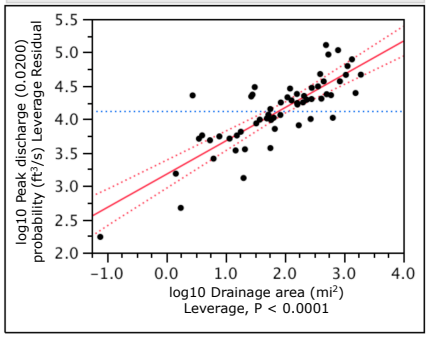
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	1.655153	0.448129	3.69	0.0005*	
log10 Drainage area (mi^2)	0.4999791	0.045572	10.97	<.0001*	2.0713569
log10 Basin slope (ft/mi)	0.7118817	0.237562	3.00	0.0041*	2.0713569

Residual by Predicted Plot



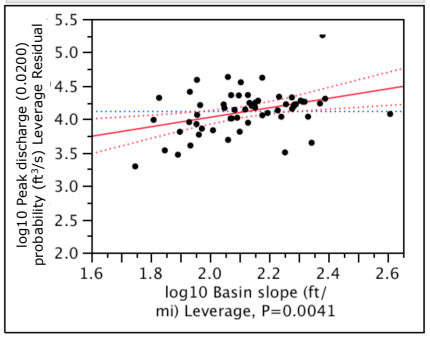
log10 Drainage area (mi^2)

Leverage Plot



log10 Basin slope (ft/mi)

Leverage Plot

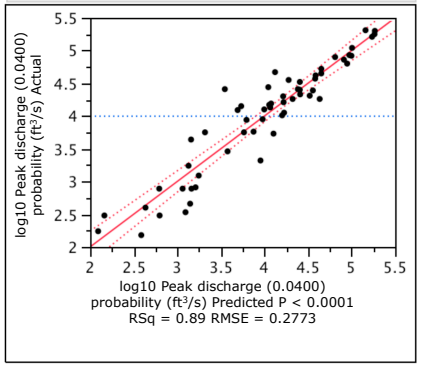


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 2-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Mesozoic Basins peak flow probability classes.

Response LOG10 Peak discharge (0.0400 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.894015
RSquare Adj	0.890161
Root Mean Square Error	0.277322
Mean of Response	3.996724
Observations (or Sum Wgts)	58

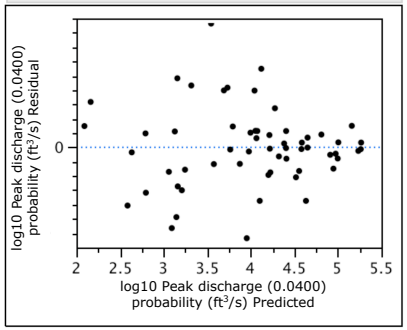
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	2	35.680576	17.8403	231.9713
Error	55	4.229902	0.0769	**Prob > F**
C. Total	57	39.910478		<.0001*

Parameter Estimates

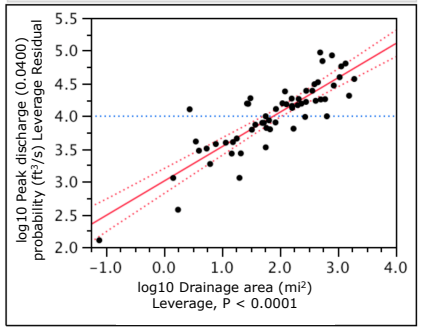
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	1.6750983	0.406454	4.12	0.0001*	
log10 Drainage area (mi²)	0.5269073	0.041334	12.75	<.0001*	2.0713569
log10 Basin slope (ft/mi)	0.6239017	0.215469	2.90	0.0054*	2.0713569

Residual by Predicted Plot



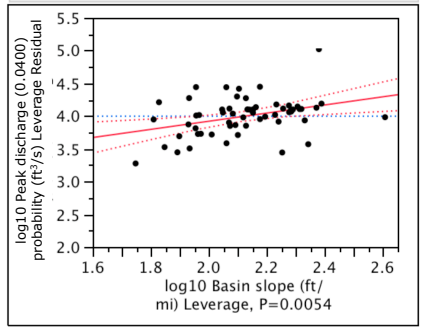
log10 Drainage area (mi²)

Leverage Plot



log10 Basin slope (ft/mi)

Leverage Plot

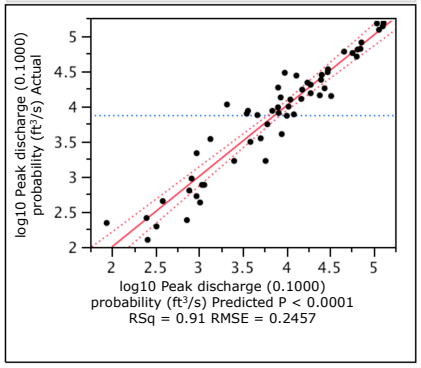


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 2-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Mesozoic Basins peak flow probability classes.

Response LOG10 Peak discharge (0.1000 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.911986
RSquare Adj	0.908726
Root Mean Square Error	0.245745
Mean of Response	3.861754
Observations (or Sum Wgts)	57

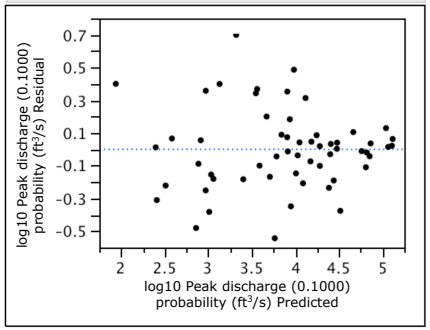
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	2	33.790934	16.8955	279.7700
Error	54	3.261090	0.0604	Prob > F
C. Total	56	37.052025		<.0001*

Parameter Estimates

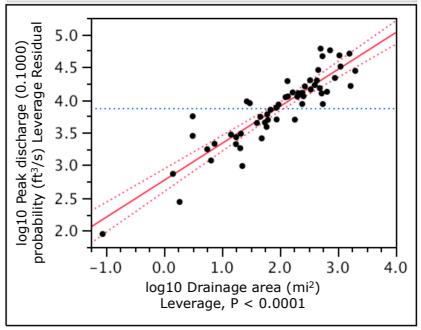
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	1.7336287	0.361971	4.79	<.0001*	
log10 Drainage area (mi^2)	0.5660673	0.037376	15.15	<.0001*	1.9372799
log10 Basin slope (ft/mi)	0.4816649	0.191112	2.52	0.0147*	1.9372799

Residual by Predicted Plot



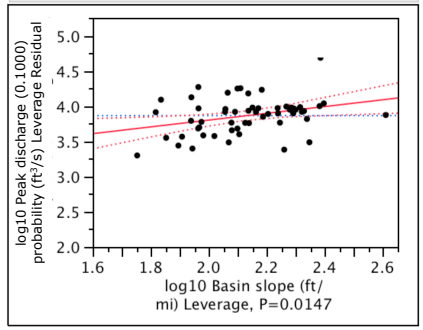
log10 Drainage area (mi^2)

Leverage Plot



log10 Basin slope (ft/mi)

Leverage Plot

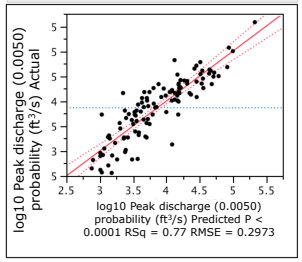


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 3-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Piedmont peak flow probability classes.

Response LOG10 Peak discharge (0.0050 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.773395
RSquare Adj	0.767271
Root Mean Square Error	0.297254
Mean of Response	3.865652
Observations (or Sum Wgts)	115

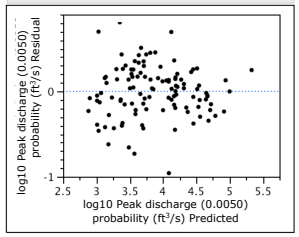
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	3	33.474104	11.1580	126.2797
Error	111	9.807922	0.0884	Prob > F
C. Total	114	43.282026		<.0001*

Parameter Estimates

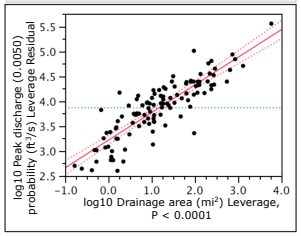
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	6.3368858	1.107123	5.72	<.0001*	
log10 Drainage area (mi²)	0.5540501	0.030842	17.96	<.0001*	1.4015032
Wetland (%)	-0.039031	0.019827	-1.97	0.0515	1.1847915
log10 January-February-March precipitation (in)	-2.950285	1.080719	-2.73	0.0074*	1.2085232

Residual by Predicted Plot



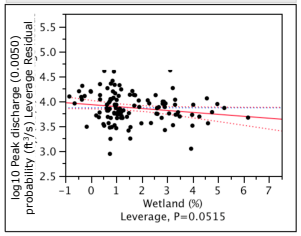
log10 Drainage area

Leverage Plot



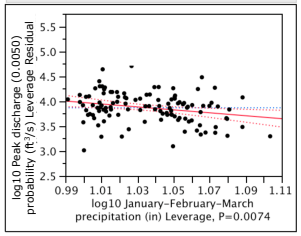
Wetland (%)

Leverage Plot



log10 January-February-March precipitation (in)

Leverage Plot

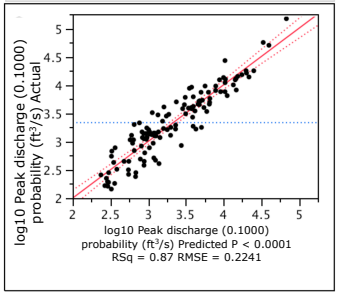


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 3-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Piedmont peak flow probability classes.

Response LOG10 Peak discharge (0.1000 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.865531
RSquare Adj	0.862224
Root Mean Square Error	0.224055
Mean of Response	3.333889
Observations (or Sum Wgts)	126

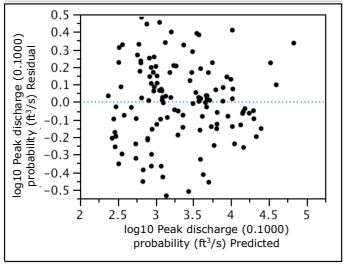
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	3	39.421295	13.1404	261.7573
Error	122	6.124500	0.0502	Prob > F
C. Total	125	45.545794		<.0001*

Parameter Estimates

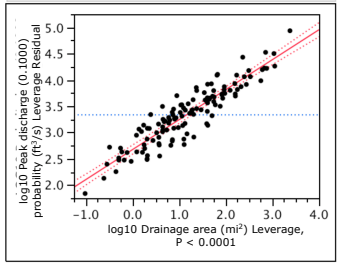
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	3.3583558	0.376305	8.92	<.0001*	
log10 Drainage area (mi²)	0.5709924	0.022559	25.31	<.0001*	1.3605704
log10 Basin slope (ft/mi)	−0.296894	0.179619	−1.65	0.1009	1.2200265
Wetland (%)	−0.041382	0.015583	−2.66	0.0090*	1.3524521

Residual by Predicted Plot



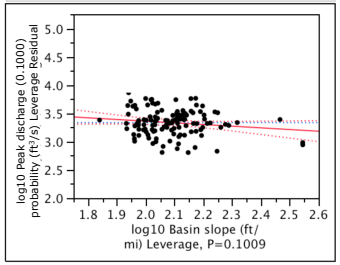
log10 Drainage area (mi²)

Leverage Plot



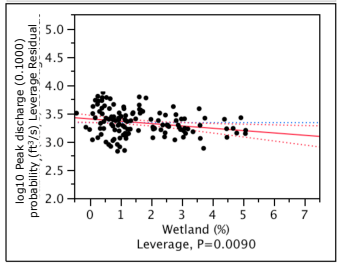
log10 Basin slope (ft/mi)

Leverage Plot



Wetland (%)

Leverage Plot

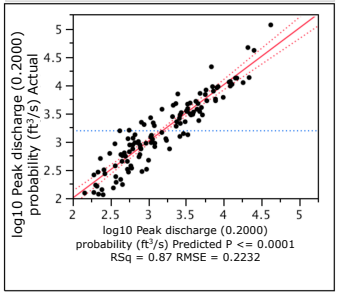


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 3-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Piedmont peak flow probability classes.

Response LOG10 Peak discharge (0.2000 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.867283
RSquare Adj	0.863992
Root Mean Square Error	0.223194
Mean of Response	3.18984
Observations (or Sum Wgts)	125

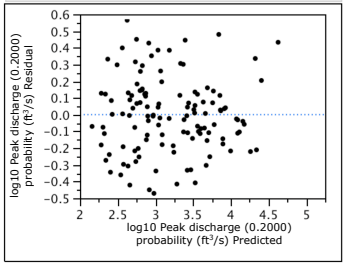
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	3	39.389718	13.1299	263.5706
Error	121	6.027679	0.0498	Prob > F
C. Total	124	45.417397		<.0001*

Parameter Estimates

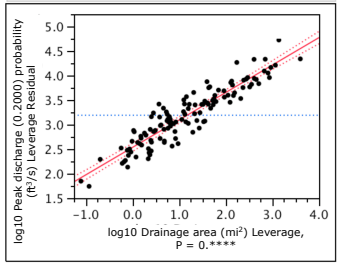
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	2.898048	0.345843	8.38	<.0001*	
log10 Drainage area (mi²)	0.5603292	0.02094	26.76	<.0001*	1.158798
log10 Basin slope (ft/mi)	−0.164853	0.167289	−0.99	0.3264	1.0631863
Water (%)	−0.043	0.025293	−1.70	0.0917	1.0943864

Residual by Predicted Plot



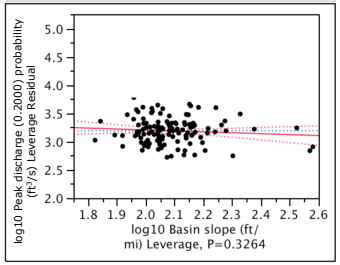
log10 Drainage area (mi²)

Leverage Plot



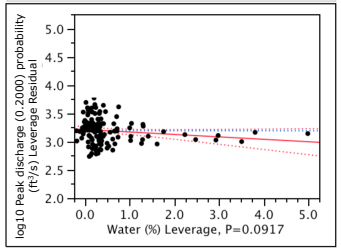
log10 Basin slope (ft/mi)

Leverage Plot



Water (%)

Leverage Plot

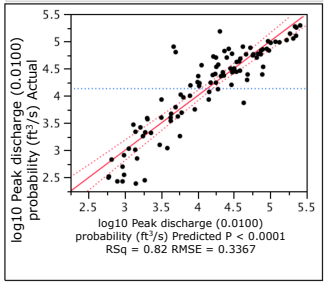


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 3-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Blue Ridge peak flow probability classes.

Response LOG10 Peak discharge (0.0100 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.821942
RSquare Adj	0.816378
Root Mean Square Error	0.336662
Mean of Response	4.1297
Observations (or Sum Wgts)	100

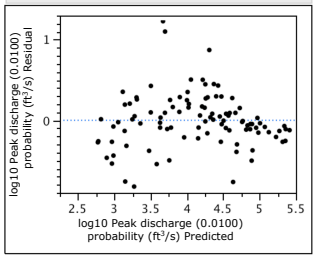
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	3	50.227318	16.7424	147.7169
Error	96	10.880773	0.1133	Prob > F
C. Total	99	61.108091		<.0001*

Parameter Estimates

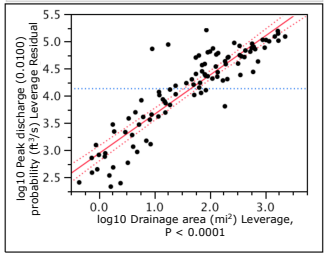
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	1.9346843	1.954432	0.99	0.3247	
log10 Drainage area (mi²)	0.7196182	0.034782	20.69	<.0001*	1.0805492
log10 Basin slope (ft/mi)	-0.683055	0.267244	-2.56	0.0122*	1.7718619
log10 Mean annual precipitation (in)	1.6074959	1.379851	1.16	0.2469	1.7526731

Residual by Predicted Plot



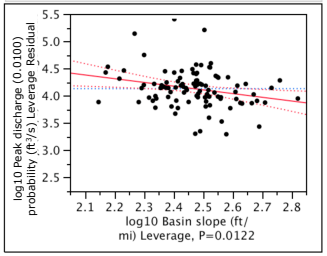
log10 Drainage area

Leverage Plot



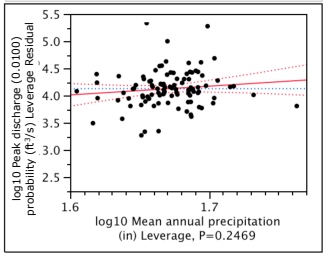
log10 Basin slope (ft/mi)

Leverage Plot



log10 Mean annual precipitation (in)

Leverage Plot

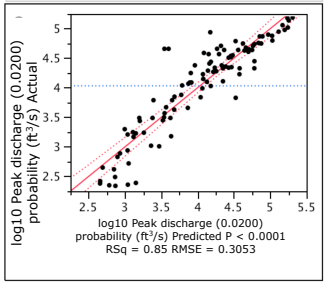


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 3-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Blue Ridge peak flow probability classes.

Response LOG10 Peak discharge (0.0200 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.849599
RSquare Adj	0.844994
Root Mean Square Error	0.30534
Mean of Response	4.032647
Observations (or Sum Wgts)	102

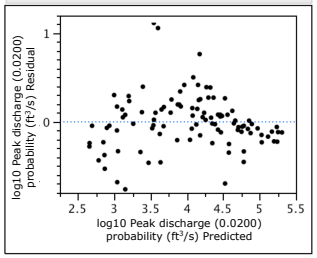
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	3	51.612589	17.2042	184.5298
Error	98	9.136796	0.0932	Prob > F
C. Total	101	60.749385		<.0001*

Parameter Estimates

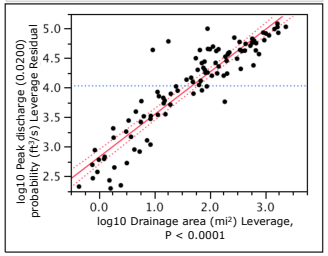
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	1.5886832	1.756622	0.90	0.3680	
log10 Drainage area (mi²)	0.7208794	0.031243	23.07	<.0001*	1.0873826
log10 Basin slope (ft/mi)	-0.630723	0.242004	-2.61	0.0106*	1.7847817
log10 Mean annual precipitation (in)	1.6693248	1.242184	1.34	0.1821	1.7629138

Residual by Predicted Plot



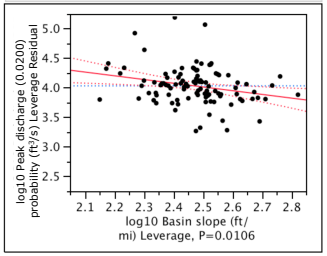
log10 Drainage area (mi²)

Leverage Plot



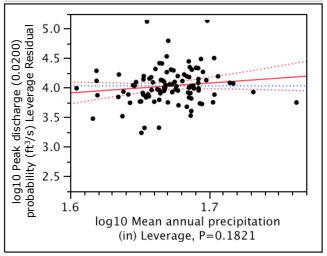
log10 Basin slope (ft/mi)

Leverage Plot



log10 Mean annual precipitation (in)

Leverage Plot

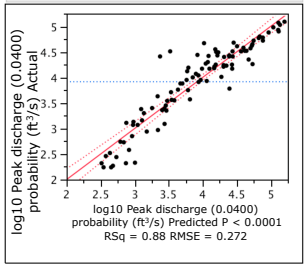


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 3-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Blue Ridge peak flow probability classes.

Response LOG10 Peak discharge (0.0400 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.878763
RSquare Adj	0.875052
Root Mean Square Error	0.272034
Mean of Response	3.914412
Observations (or Sum Wgts)	102

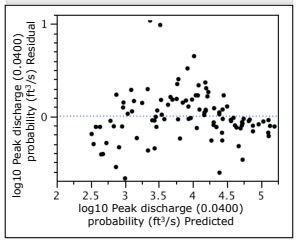
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	3	52.566851	17.5223	236.7790
Error	98	7.252264	0.0740	Prob > F
C. Total	101	59.819115		<.0001*

Parameter Estimates

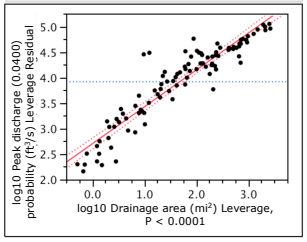
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	3.0399134	0.469401	6.48	<.0001*	
log10 Drainage area (mi²)	0.7225473	0.027175	26.59	<.0001*	1.0364285
log10 Basin slope (ft/mi)	−0.578347	0.186335	−3.10	0.0025*	1.3330525
log10 NOAA 2-year 24-hour precipitation intensity (in)	2.0237948	0.859902	2.35	0.0206*	1.305989

Residual by Predicted Plot



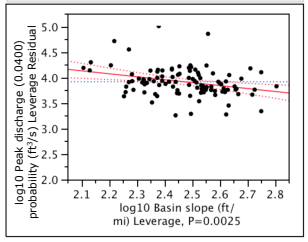
log10 Drainage area (mi²)

Leverage Plot



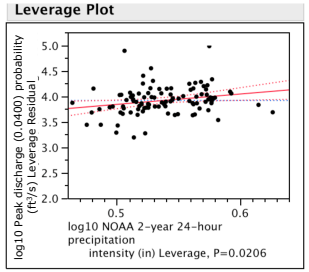
log10 Basin slope (ft/mi)

Leverage Plot



log10 NOAA 2-year 24-hour precipitation intensity (in)

Leverage Plot

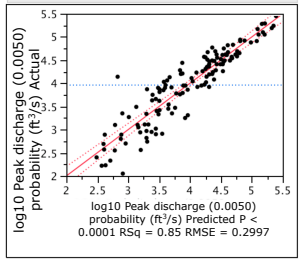


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 3-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Valley and Ridge peak flow probability classes.

Response LOG10 Peak discharge (0.0050 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.853598
RSquare Adj	0.850245
Root Mean Square Error	0.299678
Mean of Response	3.960148
Observations (or Sum Wgts)	135

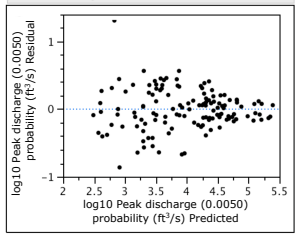
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	3	68.594115	22.8647	254.5990
Error	131	11.764682	0.0898	Prob > F
C. Total	134	80.358797		<.0001*

Parameter Estimates

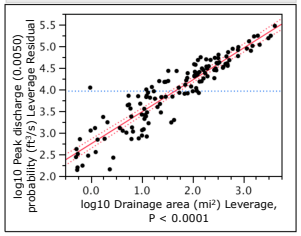
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	5.2912932	0.450882	11.74	<.0001*	.
log10 Drainage area (mi²)	0.738887	0.026907	27.46	<.0001*	1.0163234
Wetland (%)	-0.734598	0.269835	-2.72	0.0074*	1.0015144
log10 January-February-March precipitation (in)	-2.493743	0.447813	-5.57	<.0001*	1.0168323

Residual by Predicted Plot



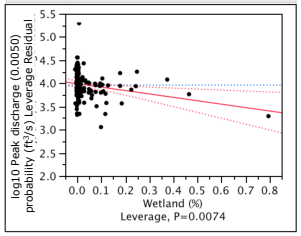
log10 Drainage area

Leverage Plot



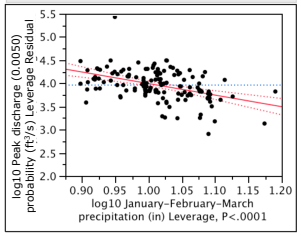
Wetland (%)

Leverage Plot



log10 January-February-March precipitation (in)

Leverage Plot

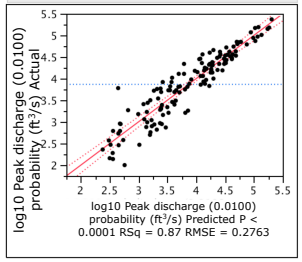


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 3-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Valley and Ridge peak flow probability classes.

Response LOG10 Peak discharge (0.0100 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.874052
RSquare Adj	0.871211
Root Mean Square Error	0.276304
Mean of Response	3.866934
Observations (or Sum Wgts)	137

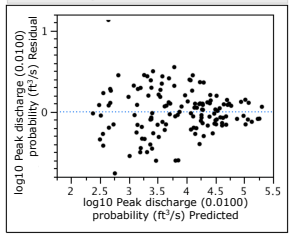
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	3	70.464408	23.4881	307.6633
Error	133	10.153704	0.0763	Prob > F
C. Total	136	80.618112		<.0001*

Parameter Estimates

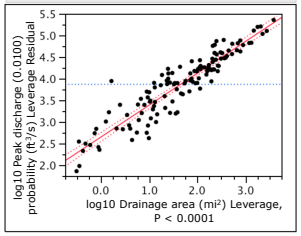
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	4.5954782	0.434599	10.57	<.0001*	
log10 Drainage area (mi^2)	0.7353677	0.025598	28.73	<.0001*	1.0863125
log10 Basin slope (ft/mi)	0.347762	0.161285	2.16	0.0329*	1.503178
log10 January–February–March precipitation (in)	−2.797153	0.477806	−5.85	<.0001*	1.4080313

Residual by Predicted Plot



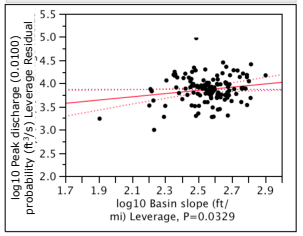
log10 Drainage area

Leverage Plot



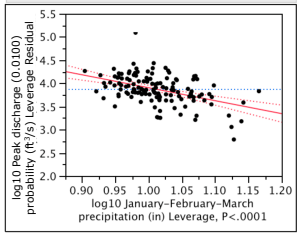
log10 Basin slope (ft/mi)

Leverage Plot



log10 January–February–March precipitation (in)

Leverage Plot

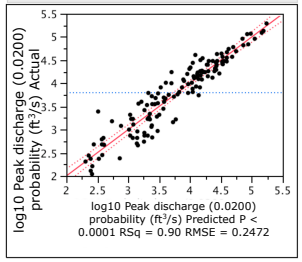


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 3-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Valley and Ridge peak flow probability classes.

Response LOG10 Peak discharge (0.0200 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.895627
RSquare Adj	0.893324
Root Mean Square Error	0.247193
Mean of Response	3.795643
Observations (or Sum Wgts)	140

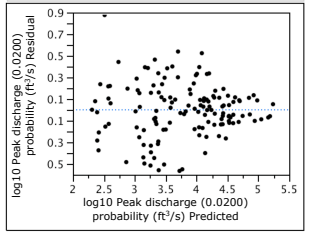
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	3	71.309665	23.7699	389.0055
Error	136	8.310177	0.0611	Prob > F
C. Total	139	79.619842		<.0001*

Parameter Estimates

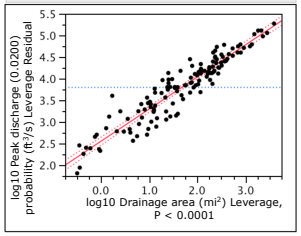
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	4.0408118	0.388315	10.41	<.0001*	
log10 Drainage area (mi^2)	0.7411792	0.022828	32.47	<.0001*	1.0878737
log10 Basin slope (ft/mi)	0.3110996	0.145918	2.13	0.0348*	1.5396378
log10 January–February–March precipitation (in)	−2.255674	0.434337	−5.19	<.0001*	1.4434966

Residual by Predicted Plot



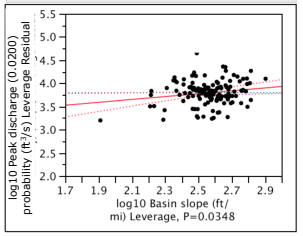
log10 Drainage area

Leverage Plot



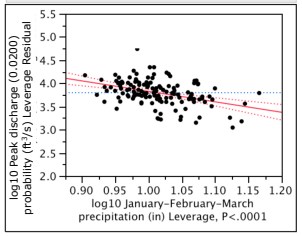
log10 Basin slope (ft/mi)

Leverage Plot



log10 January–February–March precipitation (in)

Leverage Plot

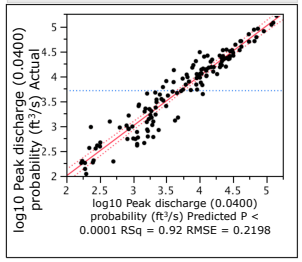


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 3-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Valley and Ridge peak flow probability classes.

Response LOG10 Peak discharge (0.0400 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.915819
RSquare Adj	0.913948
Root Mean Square Error	0.219774
Mean of Response	3.708273
Observations (or Sum Wgts)	139

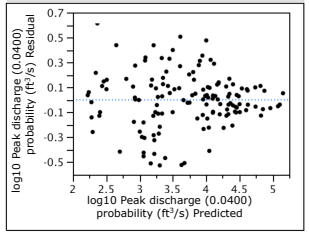
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	3	70.937833	23.6459	489.5601
Error	135	6.520553	0.0483	Prob > F
C. Total	138	77.458386		<.0001*

Parameter Estimates

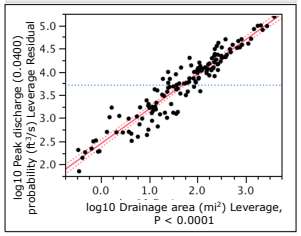
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	3.4895935	0.345759	10.09	<.0001*	
log10 Drainage area (mi²)	0.7452306	0.020728	35.95	<.0001*	1.0955323
log10 Basin slope (ft/mi)	0.3945901	0.130974	3.01	0.0031*	1.5689219
log10 January–February–March precipitation (in)	-2.026118	0.390155	-5.19	<.0001*	1.4574057

Residual by Predicted Plot



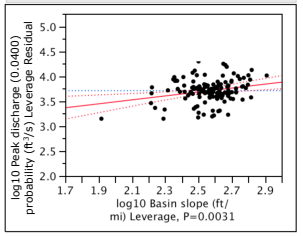
log10 Drainage area

Leverage Plot



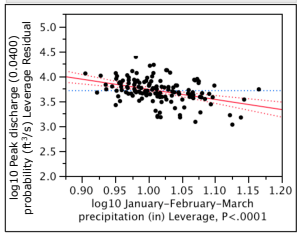
log10 Basin slope (ft/mi)

Leverage Plot



log10 January–February–March precipitation (in)

Leverage Plot

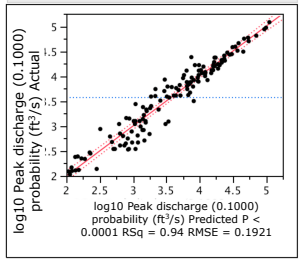


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 3-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Valley and Ridge peak flow probability classes.

Response LOG10 Peak discharge (0.1000 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.9364
RSquare Adj	0.934976
Root Mean Square Error	0.192135
Mean of Response	3.57029
Observations (or Sum Wgts)	138

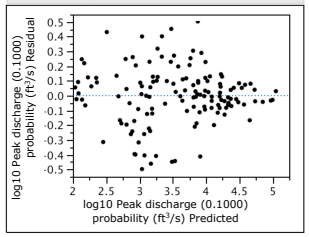
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	3	72.832255	24.2774	657.6408
Error	134	4.946734	0.0369	Prob > F
C. Total	137	77.778988		<.0001*

Parameter Estimates

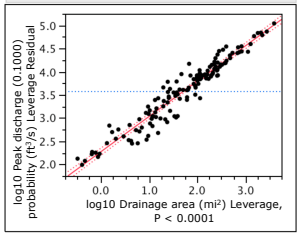
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	2.6517612	0.302455	8.77	<.0001*	
log10 Drainage area (mi²)	0.7599206	0.01851	41.06	<.0001*	1.1072075
log10 Basin slope (ft/mi)	0.4857354	0.115337	4.21	<.0001*	1.587414
log10 January–February–March precipitation (in)	−1.601262	0.341521	−4.69	<.0001*	1.4610863

Residual by Predicted Plot



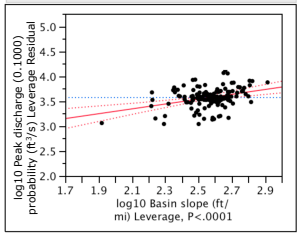
log10 Drainage area (mi²)

Leverage Plot



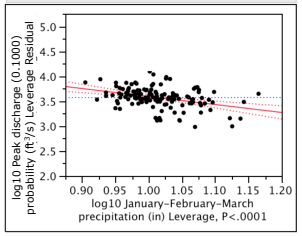
log10 Basin slope (ft/mi)

Leverage Plot



log10 January–February–March precipitation (in)

Leverage Plot

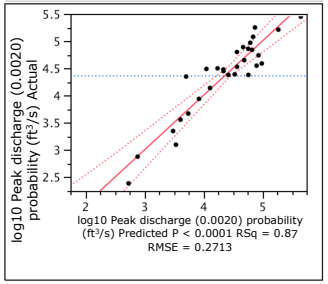


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 3-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Mesozoic Basins peak flow probability classes.

Response LOG10 Peak discharge (0.0020 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.872184
RSquare Adj	0.857435
Root Mean Square Error	0.271326
Mean of Response	4.362
Observations (or Sum Wgts)	30

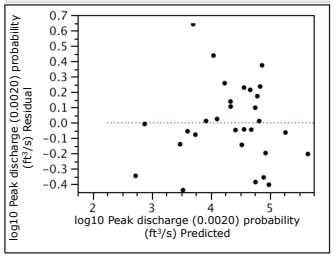
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	3	13.061018	4.35367	59.1389
Error	26	1.914062	0.07362	Prob > F
C. Total	29	14.975080		<.0001*

Parameter Estimates

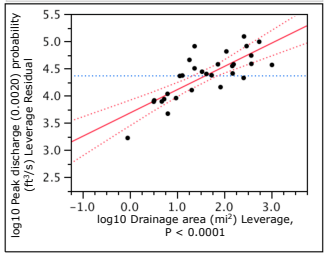
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	37.580829	8.199208	4.58	0.0001*	
log10 Drainage area (mi²)	0.4270417	0.064173	6.65	<.0001*	2.1492049
log10 Basin slope (ft/mi)	1.6701315	0.425384	3.93	0.0006*	2.987781
log10 Mean annual precipitation (in)	-22.6619	5.237034	-4.33	0.0002*	1.6743576

Residual by Predicted Plot



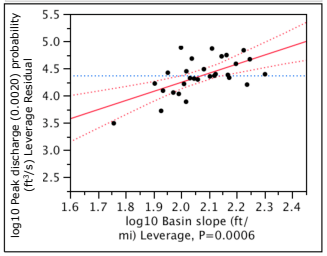
log10 Drainage area (mi²)

Leverage Plot



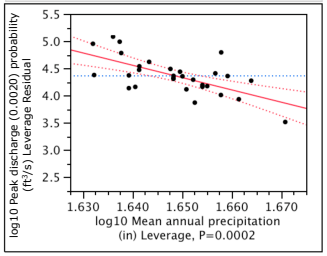
log10 Basin slope (ft/mi)

Leverage Plot



log10 Mean annual precipitation (in)

Leverage Plot

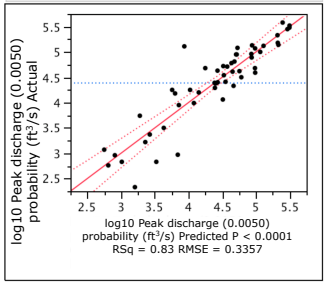


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 3-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Mesozoic Basins peak flow probability classes.

Response LOG10 Peak discharge (0.0050 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.833892
RSquare Adj	0.823926
Root Mean Square Error	0.335683
Mean of Response	4.386111
Observations (or Sum Wgts)	54

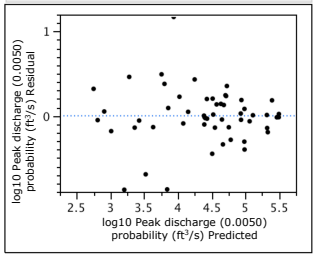
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	3	28.284533	9.42818	83.6699
Error	50	5.634150	0.11268	Prob > F
C. Total	53	33.918683		<.0001*

Parameter Estimates

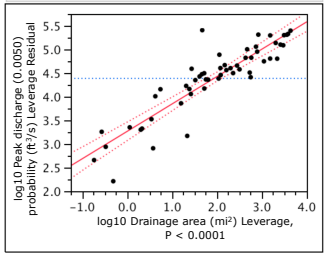
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	15.192502	6.07948	2.50	0.0158*	
log10 Drainage area (mi²)	0.5802769	0.039348	14.75	<.0001*	1.2390195
Wetland (%)	-0.086777	0.03469	-2.50	0.0157*	1.0027024
log10 Mean annual precipitation (in)	-7.170386	3.703911	-1.94	0.0585	1.2413775

Residual by Predicted Plot



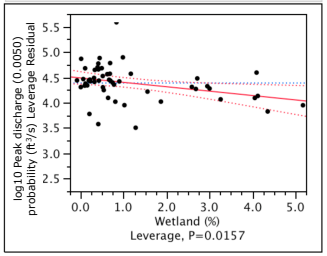
log10 Drainage area (mi²)

Leverage Plot



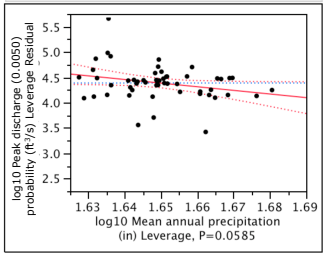
Wetland (%)

Leverage Plot



log10 Mean annual precipitation (in)

Leverage Plot

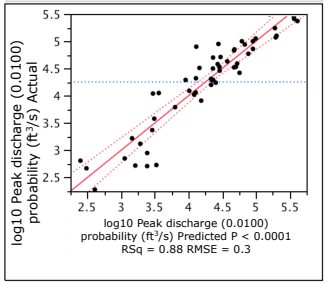


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 3-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Mesozoic Basins peak flow probability classes.

Response LOG10 Peak discharge (0.0100 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.875583
RSquare Adj	0.868264
Root Mean Square Error	0.299981
Mean of Response	4.252182
Observations (or Sum Wgts)	55

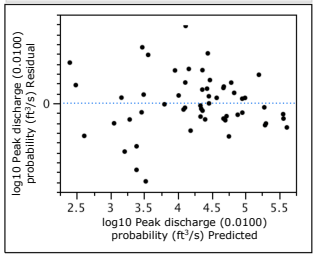
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	3	32.297910	10.7660	119.6368
Error	51	4.589428	0.0900	Prob > F
C. Total	54	36.887338		<.0001*

Parameter Estimates

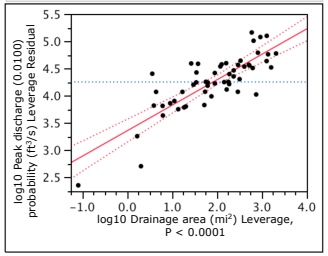
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	19.269797	5.69883	3.38	0.0014*	
log10 Drainage area (mi²)	0.4677893	0.045198	10.35	<.0001*	2.0715324
log10 Basin slope (ft/mi)	1.1937781	0.262606	4.55	<.0001*	2.5152799
log10 Mean annual precipitation (in)	-11.19016	3.590417	-3.12	0.0030*	1.5258559

Residual by Predicted Plot



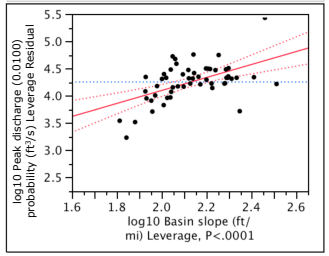
log10 Drainage area (mi²)

Leverage Plot



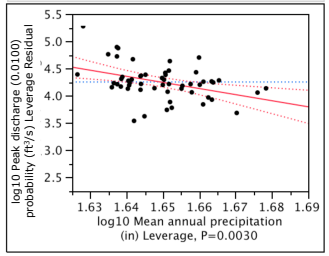
log10 Basin slope (ft/mi)

Leverage Plot



log10 Mean annual precipitation (in)

Leverage Plot

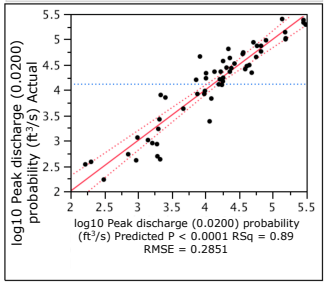


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 3-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Mesozoic Basins peak flow probability classes.

Response LOG10 Peak discharge (0.0200 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.888427
RSquare Adj	0.882229
Root Mean Square Error	0.285126
Mean of Response	4.112586
Observations (or Sum Wgts)	58

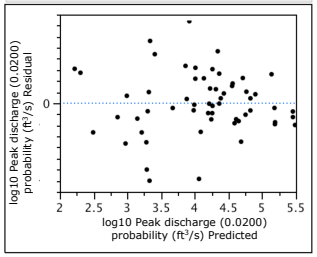
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	3	34.956688	11.6522	143.3296
Error	54	4.390024	0.0813	Prob > F
C. Total	57	39.346712		<.0001*

Parameter Estimates

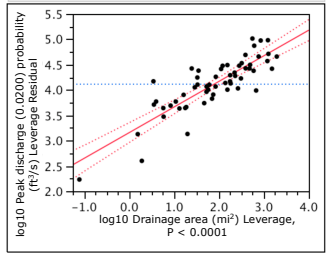
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	18.049068	5.407276	3.34	0.0015*	
log10 Drainage area (mi²)	0.5067045	0.042554	11.91	<.0001*	2.0769671
log10 Basin slope (ft/mi)	1.035467	0.245764	4.21	<.0001*	2.5492662
log10 Mean annual precipitation (in)	-10.36528	3.408601	-3.04	0.0036*	1.5579983

Residual by Predicted Plot



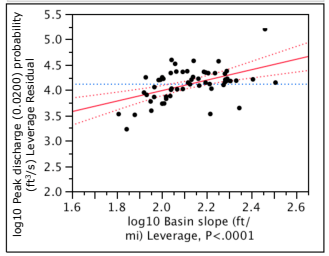
log10 Drainage area (mi²)

Leverage Plot



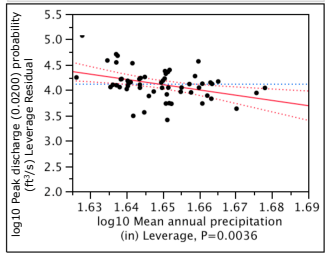
log10 Basin slope (ft/mi)

Leverage Plot



log10 Mean annual precipitation (in)

Leverage Plot

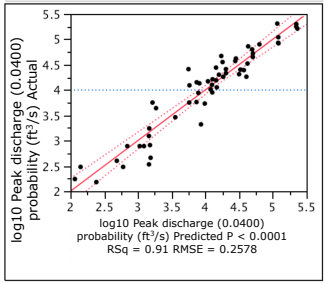


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 3-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Mesozoic Basins peak flow probability classes.

Response LOG10 Peak discharge (0.0400 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.910064
RSquare Adj	0.905067
Root Mean Square Error	0.257818
Mean of Response	3.996724
Observations (or Sum Wgts)	58

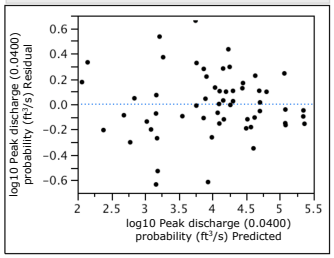
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	3	36.321079	12.1070	182.1418
Error	54	3.589398	0.0665	Prob > F
C. Total	57	39.910478		<.0001*

Parameter Estimates

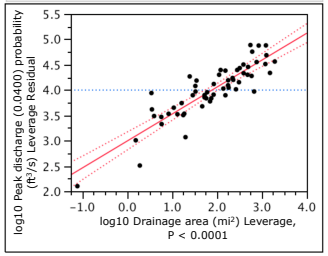
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	16.807292	4.889404	3.44	0.0011*	
log10 Drainage area (mi²)	0.5331151	0.038479	13.85	<.0001*	2.0769671
log10 Basin slope (ft/mi)	0.922583	0.222227	4.15	0.0001*	2.5492662
log10 Mean annual precipitation (in)	-9.567543	3.082149	-3.10	0.0030*	1.5579983

Residual by Predicted Plot



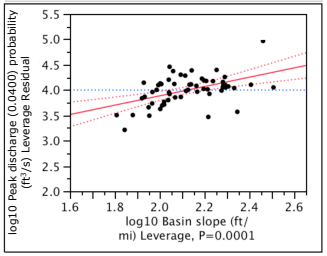
log10 Drainage area (mi²)

Leverage Plot



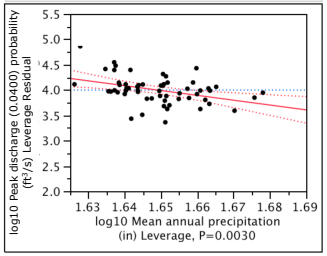
log10 Basin slope (ft/mi)

Leverage Plot



log10 Mean annual precipitation (in)

Leverage Plot

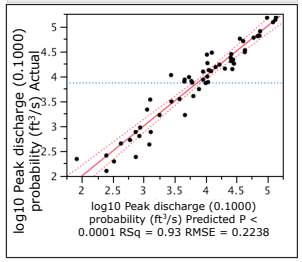


Appendix 2. Curves and residual plots for candidate multi-parameter regional regression equations for estimating peak flows of streams in Virginia: 3-parameter equations and fit describing Log10 peak flow in cubic feet per second (ft^3/s) estimated as a function of selected basin characteristics for selected Mesozoic Basins peak flow probability classes.

Response LOG10 Peak discharge (0.1000 probability)

Whole Model

Actual by Predicted Plot



Summary of Fit

RSquare	0.92834
RSquare Adj	0.924284
Root Mean Square Error	0.223824
Mean of Response	3.861754
Observations (or Sum Wgts)	57

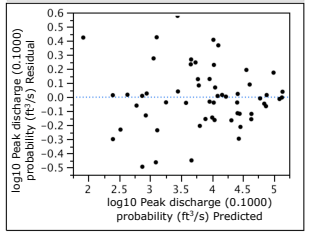
Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Ratio
Model	3	34.396879	11.4656	228.8682
Error	53	2.655145	0.0501	Prob > F
C. Total	56	37.052025		<.0001*

Parameter Estimates

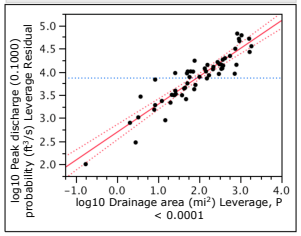
Term	Estimate	Std Error	t Ratio	Prob>|t|	VIF
Intercept	5.3951372	1.103221	4.89	<.0001*	
log10 Drainage area (mi²)	0.6036222	0.035714	16.90	<.0001*	2.1322061
log10 Basin slope (ft/mi)	0.4967545	0.174118	2.85	0.0062*	1.9384835
log10 January–February–March precipitation (in)	-3.689468	1.060849	-3.48	0.0010*	1.2174386

Residual by Predicted Plot



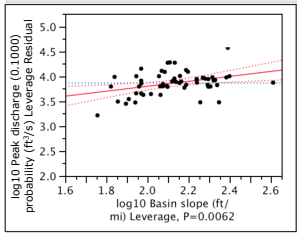
log10 Drainage area (mi²)

Leverage Plot



log10 Basin slope (ft/mi)

Leverage Plot



log10 January–February–March precipitation (in)

Leverage Plot

