

Appendix E

**Calculation Moderation method (Soil Moderation)
by Process Extension in SPSS software**

Run MATRIX procedure:

***** PROCESS Procedure for SPSS Release 2.10 ****

Written by Andrew F. Hayes, Ph.D. www.afhayes.com
Documentation available in Hayes (2013). www.guilford.com/p/hayes3

Model = 4
Y = LANDSLID
X = SOIL
M1 = SLOPE
M2 = LANDUSE
M3 = EROSION
M4 = LITHOLOG
M5 = FAULT
M6 = RIVER
M7 = ROAD
M8 = ASPECT

Sample size
120

Outcome: SLOPE

Model Summary

R	R-sq	F	df1	df2	p
0.3431	0.1177	15.3020	1.0000	118.0000	0.0002

Model

	coeff	se	t	p	LLCI	ULCI
constant	2.0418	0.2957	6.9054	0.0000	1.4563	2.6273

SOIL 0.3953 0.1011 3.9118 0.0002 0.1952 0.5954

Outcome: LANDUSE

Model Summary

R	R-sq	F	df1	df2	p
0.3882	0.1507	22.4743	1.0000	118.0000	0.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	2.8102	0.4243	6.6227	0.0000	1.9699	3.6505
SOIL	0.6571	0.1386	4.7407	0.0000	0.3826	0.9315

Outcome: EROSION

Model Summary

R	R-sq	F	df1	df2	p
0.3319	0.1102	14.4867	1.0000	118.0000	0.0002

Model

	coeff	se	t	p	LLCI	ULCI
constant	1.4545	0.1627	8.9398	0.0000	1.1323	1.7767
SOIL	0.2274	0.0598	3.8061	0.0002	0.1091	0.3458

Outcome: LITHOLOG

Model Summary

R	R-sq	F	df1	df2	p
0.3444	0.1186	15.6503	1.0000	118.0000	0.0001

Model

	coeff	se	t	p	LLCI	ULCI
constant	1.6987	0.1950	8.7105	0.0000	1.3125	2.0849
SOIL	0.2696	0.0682	3.9560	0.0001	0.1346	0.4046

Outcome: FAULT

Model Summary

R	R-sq	F	df1	df2	p
.3076	.0946	10.4148	1.0000	118.0000	.0016

Model

	coeff	se	t	p	LLCI	ULCI
constant	1.6256	0.1184	13.7282	0.0000	1.3911	1.8601
SOIL	-0.1365	0.0423	-3.2272	0.0016	-0.2202	-0.0527

Outcome: RIVER

Model Summary

R	R-sq	F	df1	df2	p
.4623	0.2137	33.8981	1.0000	118.0000	0.0000

Model

	coeff	se	t	p	LLCI	ULCI
constant	2.7018	0.2051	13.1698	0.0000	2.2955	3.1080
SOIL	-0.3861	0.0663	-5.8222	0.0000	-0.5174	-0.2548

Outcome: ROAD

Model Summary

R	R-sq	F	df1	df2	p
0.3415	0.1166	16.8352	1.0000	118.0000	0.0001

Model

	coeff	se	t	p	LLCI	ULCI
constant	2.5882	0.1782	14.5270	0.0000	2.2353	2.9410
SOIL	-0.2644	0.0644	-4.1031	0.0001	-0.3920	-0.1368

Outcome: ASPECT

Model Summary

R	R-sq	F	df1	df2	p
0.1691	0.0286	3.4025	1.0000	118.0000	0.0676

Model

	coeff	se	t	p	LLCI	ULCI
constant	5.0849	0.6889	7.3816	0.0000	3.7208	6.4490
SOIL	0.4279	0.2320	1.8446	0.0676	-0.0315	0.8874

Outcome: LANDSLID

Coding of binary DV for analysis:

LANDSLID Analysis

0.00 0.00
1.00 1.00

Logistic Regression Summary

-2LL Model LL McFadden CoxSnell Nagelkrk n
0.1711 144.7019 0.9988 0.7006 0.9994 120.0000

Model

	coeff	se	Z	p	LLCI	ULCI
constant	-9.6596	127.2795	-0.0759	0.9395	-259.1229	239.8036
SLOPE	0.4535	8.3977	0.054	0.9569	-16.0056	16.9126
LANDUSE	0.4480	9.5734	0.0468	0.9627	-18.3155	19.2115
EROSION	7.9394	16.3552	0.4854	0.6274	-24.1163	39.9951
LITHOLOG	5.5038	9.7578	0.5640	0.5727	-13.6211	24.6287
FAULT	-2.2257	54.1695	-0.0411	0.9672	-108.3961	103.9446
RIVER	-8.1013	12.7428	-0.6358	0.5249	-33.0767	16.8740
ROAD	-3.7825	10.4688	-0.3613	0.7179	-24.3010	16.7360
ASPECT	1.2495	8.9019	0.1404	0.8884	-16.1980	18.6970
SOIL	0.8087	9.3479	0.0865	0.9311	-17.5130	19.1303

***** TOTAL EFFECT MODEL *****

Outcome: LANDSLID

Logistic Regression Summary

-2LL Model LL McFadden CoxSnell Nagelkrk n
121.0841 23.7888 0.1642 0.1798 0.2565 120.0000

Model

	coeff	se	Z	p	LLCI	ULCI
constant	-1.4853	0.5470	-2.7152	0.0066	-2.5575	-0.4131
SOIL	1.0385	0.2388	4.3480	0.0000	0.5704	1.5066

***** TOTAL, DIRECT, AND INDIRECT EFFECTS **

Total effect of X on Y

Effect	SE	Z	p	LLCI	ULCI
1.0385	0.2388	4.3480	0.0000	0.5704	1.5066

Direct effect of X on Y

Effect	SE	Z	p	LLCI	ULCI
0.8087	9.3479	0.0865	0.9311	-17.5130	19.1303

Indirect effect of X on Y

Effect	Boot SE	BootLLCI	BootULCI	
TOTAL	8.7295	1.7986	5.8518	12.6210
SLOPE	0.1793	1.2595	-1.8512	3.2375
LANDUSE	0.2943	1.0288	-1.8250	1.9137
EROSION	1.8057	0.6248	1.1493	4.7237
LITHOLOG	1.4838	0.6026	0.7620	3.7425
FAULT	0.3037	0.8067	-1.0575	1.0972
RIVER	3.1279	1.4570	0.9612	6.9822
ROAD	1.0000	0.7890	0.0128	3.2355
ASPECT	0.5347	0.4144	0.0153	2.0178
(C1)	-0.1151	2.0421	-3.5040	4.3411
(C2)	-1.6264	1.4950	-4.4684	0.9251
(C3)	-1.3046	1.4904	-4.2623	1.2941
(C4)	-0.1244	1.3662	-2.5124	3.3335
(C5)	-2.9486	2.3211	-7.7078	1.6171
(C6)	-0.8207	1.6765	-4.0914	2.4282
(C7)	-0.3555	1.3966	-2.7121	2.4535
(C8)	-1.5114	1.2013	-5.0373	-0.0148
(C9)	-1.1895	1.0800	-4.5790	0.1373
(C10)	-0.0094	1.3509	-2.8672	2.2160
(C11)	-2.8335	1.6322	-6.3709	-0.1370
(C12)	-0.7057	1.3363	-4.5499	1.1687
(C13)	-0.2404	1.0686	-2.6499	1.3316
(C14)	0.3219	0.8836	-1.2808	2.2859
(C15)	1.5020	1.0460	0.6776	3.8950
(C16)	-1.3221	1.6093	-4.1900	2.2140
(C17)	0.8057	0.8350	-0.6653	2.6127
(C18)	1.2710	0.7105	0.3726	5.0336
(C19)	1.1801	1.0136	0.2412	3.0598
(C20)	-1.6440	1.5151	-4.7434	1.0671
(C21)	0.4838	1.0419	-1.9407	2.4645
(C22)	0.9491	0.6596	0.0050	2.6717
(C23)	-2.8242	1.8050	-7.3604	-0.1416
(C24)	-0.6963	1.1786	-2.9968	0.6497
(C25)	-0.2310	1.0024	-2.3641	0.6031
(C26)	2.1279	1.5791	-0.7391	5.5047
(C27)	2.5931	1.5539	0.5480	6.5549
(C28)	0.4653	0.8701	-0.9066	2.6815

Normal theory tests for specific indirect effects

	Effect	se	Z	p
SLOPE	0.1793	3.4266	0.0523	0.9583

LANDUSE	0.2943	6.4291	0.0458	0.9635
EROSION	1.8057	3.8752	0.4660	0.6412
LITHOLOG	1.4838	2.7393	0.5417	0.5880
FAULT	0.3037	7.7388	0.0392	0.9687
RIVER	3.1279	5.0208	0.6230	0.5333
ROAD	1.0000	2.8592	0.3498	0.7265
ASPECT	0.5347	4.3431	0.1231	0.9020

Specific indirect effect contrast definitions

(C1)	SLOPE	minus	LANDUSE
(C2)	SLOPE	minus	EROSION
(C3)	SLOPE	minus	LITHOLOG
(C4)	SLOPE	minus	FAULT
(C5)	SLOPE	minus	RIVER
(C6)	SLOPE	minus	ROAD
(C7)	SLOPE	minus	ASPECT
(C8)	LANDUSE	minus	EROSION
(C9)	LANDUSE	minus	LITHOLOG
(C10)	LANDUSE	minus	FAULT
(C11)	LANDUSE	minus	RIVER
(C12)	LANDUSE	minus	ROAD
(C13)	LANDUSE	minus	ASPECT
(C14)	EROSION	minus	LITHOLOG
(C15)	EROSION	minus	FAULT
(C16)	EROSION	minus	RIVER
(C17)	EROSION	minus	ROAD
(C18)	EROSION	minus	ASPECT
(C19)	LITHOLOG	minus	FAULT
(C20)	LITHOLOG	minus	RIVER
(C21)	LITHOLOG	minus	ROAD
(C22)	LITHOLOG	minus	ASPECT
(C23)	FAULT	minus	RIVER
(C24)	FAULT	minus	ROAD
(C25)	FAULT	minus	ASPECT
(C26)	RIVER	minus	ROAD
(C27)	RIVER	minus	ASPECT
(C28)	ROAD	minus	ASPECT