

APPENDIX B. Results of Statistical Analysis, Upper Verde Valley Riparian Area Historical Analysis

Regression analysis using "time" as the independent variable - Cover types were tested for trends over time at various alpha levels, with smaller alpha levels indicating trends that are more statistically significant. A "positive linear" relationship means the cover type *increased* in area over time. A "negative linear" relationship means the cover type *decreased* in area over time. A "concave-up quadratic" relationship means the cover type *decreased then increased* in area over time. A "concave-down quadratic" relationship means the cover type *increased then decreased* in area over time.

Table B-1. Regression analysis results for trends over time.

Alpha	Positive linear	Negative linear	Concave-up quadratic	Concave-down quadratic
0.01	low-density residential p=0.0065, R ² =0.87	bare sediment p=0.0009, R ² =0.95	channel + sediment*	
	med-density cottonwood-willow p=0.0060, R ² =0.88		med-density mesquite* p= 0.0085, R ² =0.96	
0.05	high-density residential p=0.0116, R ² =0.83	channel + sediment* p=0.0132, R ² = 0.82	channel p=0.0279, R ² =0.91	
	high-density mesquite* p=0.0355, R ² =0.71	agriculture* p=0.0451, R ² =0.67	high-density mesquite* p=0.0123, R ² =0.95	
		med-density mesquite* p=0.0309, R ² =0.73		
0.10			commercial industrial* p=0.0668, R ² =0.84	agriculture p=0.0635, R ² =0.84
				high-density cottonwood-willow p=0.0833, R ² =0.81
				total cottonwood-willow p=0.0820, R ² =0.81
0.20			total mesquite p=0.1074, R ² =0.77	

* trend is double listed with more than one type of fit

APPENDIX B. (continued)

Regression analyses using various cover types as the independent variable - For the relationships displayed in the table below, the factor before the colon is the dependent variable and the factor after the colon is independent variable. For example, in the first case, which is a positive linear relationship, high-density mesquite increased as nonagricultural land uses increased. In the next column, for example, medium-density cottonwood-willow decreased as mesquite increased. In the third column, channel area decreased and then increased as bare sediment increased.

Table B-2. Regression analysis results for relationships between cover types.

Alpha	Positive linear	Negative linear	Concave-up quadratic
0.01	high-density mesquite: nonagricultural land use $p=0.0032$, $R^2=0.91$	med-density cottonwood-willow: med-density mesquite $p=0.0053$, $R^2=0.88$	channel: bare sediment $p=0.0015$, $R^2=0.99$
		bare sediment: med-density cottonwood-willow $p=0.0051$, $R^2=0.89$	
0.02		High density mesquite: agriculture $p=0.0144$, $R^2=0.81$	