

Appendix 1: Cross-impact questionnaire

SOCIAL-ECOLOGICAL COMPLEXITY QUESTIONS: *Completely disagree (1)--- Completely agree (7)*

a) SOCIAL COMPLEXITY INDEX:

SX_1 Actions taken by and in our borough affect the State of Alaska and region strongly.

SX_2 The business environment is very complex with many unclear factors and relationships affecting our borough.

SX_3 Actions taken at the Pan-Arctic level affect lives strongly in our borough.

SX_4 New and unpredictable economic and political events and interests in the Arctic are constantly occurring

SX_5 It is very difficult to foresee and anticipate future changes in Northern Alaska.

SX_6 The sustainability of Northern Alaska communities is highly influenced by unpredictable public policies

SX_7 There are many unexpected threats that our borough has to cope with.

b) ENVIRONMENTAL COMPLEXITY INDEX:

EX_1 Environmental changes in the northern region of Alaska will affect the state and region strongly

EX_2 The Arctic environment is very complex with many unclear factors and relationships influencing our borough.

EX_3 It is very difficult to foresee environmental change

EX_4 New and unpredictable environmental changes are constantly occurring

EX_5 The two borough's environment is highly influenced by unpredictable public policies.

EX_6 The sustainability of Northern Alaska communities is highly influenced by unpredictable environmental challenges.

c) SOCIAL SPEED OF CHANGES INDEX:

SC_1 Regional and global markets will grow for several years in ways that support sustainability in our borough.

SC_2 Opportunities for our borough look good for the next few years.

SC_3 Our borough is constantly having to cope with risks that are changing.

SC_4 The regulatory environment is continually changing.

SC_5 Social values in society are continually changing.

SC_6 There is high demand placed on Northern Alaska communities having to innovate because of new rules and regulations.

d) ENVIRONMENTAL SPEED OF CHANGES INDEX:

EC_1 The future of Northern Alaska's environment looks positive in the coming years.

EC_2 Northern Alaska's environment will support the sustainability goals of its communities in the coming years.

EC_3 There is high demand placed on northern Alaska's environment to provide resources to meet demands from users.

EC_4 Social values outside our Northern Alaska region toward the environment are continually changing

EC_5 Environmental research and monitoring needs in Northern Alaska are constantly changing.

EC_6 The rate of innovation in environmental research and stewardship is high.