

APPENDIX 1

Plant species list from studied sites at Lupin mine, NWT, Canada. The 6 letter species codes for TWINSPAN and COINSPAN analysis were developed using the first three letters of the genus and first the letters of the species name. Nomenclature follows Porsild and Cody (1980).

<u>Plant species</u>	<u>Species code</u>
<i>Antennaria spp.</i>	ANTSP
<i>Arctogrostic latifolia</i>	ARCLAT
<i>Arctostophylos spp.</i>	ARCPHY
<i>Betula glandulosa</i>	BETGLA
<i>Carex aquatilis</i>	CARAQU
<i>Carex lugens</i>	CARLUG
<i>Carex physocarpa</i>	CARPHY
<i>Cassiope tetragona</i>	CASTET
<i>Draba groenlandica</i>	DRAGRO
<i>Empetrum nigrum</i>	EMPNIG
<i>Eriophorum triste</i>	EROTRI
<i>Ledum decumbens</i>	LEDDEC
<i>Loiseleuria procumbens</i>	LOIPRO
<i>Luzula confuza</i>	LUZCON
<i>Oxytropis nigrescens</i>	OXYNIG
<i>Pedicularis sp.</i>	PEDSPP
<i>Salix spp.</i>	SALSPP
<i>Sphagnum sp.</i>	SPHSPP
<i>Trisetum spicatum var. molle</i>	TRISPI
<i>Vaccinium uliginosum</i>	VACULI
<i>Vaccinium vitis-idaea</i>	VACVIT
<u>Plant group</u>	
mosses	MOSSPP

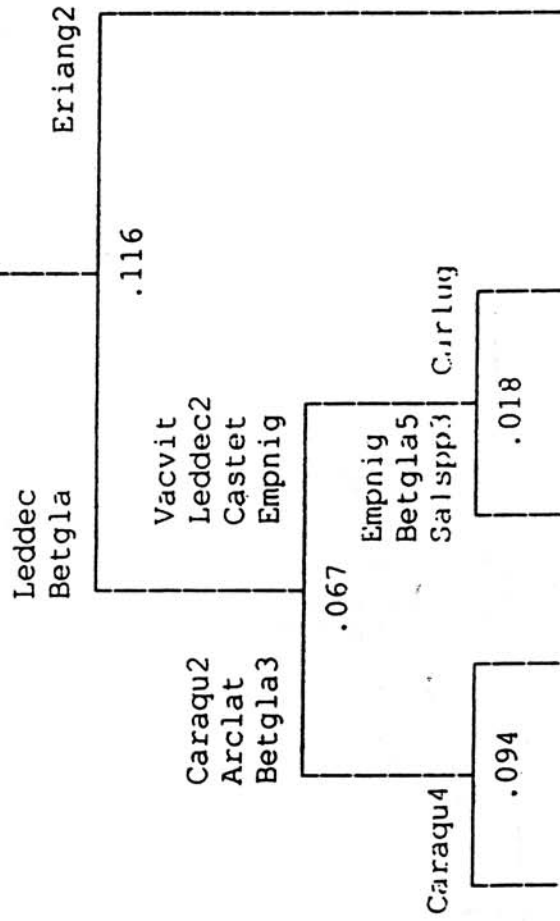
Appendix Table 2.0. Measured variables in zones at road site, Lupin mine, NWT (mean \pm standard error).

Site	Zone	Total plant cover (%)	Dust $\text{g m}^{-2} \text{day}^{-1}$	pH	Moisture ml cm^{-3}	Bulk Density g cm^{-3}
Road 1, 1996	NC	38.70 \pm 72.78	0.78 \pm 0.28	N/A	N/A	N/A
	NB	44.60 \pm 4.03	1.41 \pm 0.73	N/A	N/A	N/A
	NA	60.50 \pm 6.18	13.25 \pm 2.87	N/A	N/A	N/A
	SA	58.60 \pm 6.34	43.67 \pm 35.56	N/A	N/A	N/A
	SB	41.50 \pm 5.35	3.19 \pm 1.77	N/A	N/A	N/A
	SC	37.50 \pm 4.77	0.63 \pm 0.20	N/A	N/A	N/A
Road 1, 1997	NC	35.80 \pm 5.76	0.57 \pm 0.19	4.46 \pm 0.27	0.14 \pm 0.02	0.84 \pm 0.14
	NB	45.60 \pm 6.18	1.11 \pm 0.41	4.37 \pm 0.07	0.12 \pm 0.02	0.91 \pm 0.11
	NA	61.10 \pm 5.76	3.03 \pm 0.47	4.72 \pm 0.12	0.14 \pm 0.01	1.28 \pm 0.09
	SA	39.90 \pm 5.47	5.71 \pm 0.36	4.21 \pm 0.25	0.12 \pm 0.03	1.00 \pm 0.09
	SB	60.20 \pm 5.43	1.13 \pm 0.90	4.45 \pm 0.08	0.15 \pm 0.04	0.91 \pm 0.11
	SC	49.40 \pm 9.67	0.25 \pm 1.00	4.44 \pm 0.12	0.13 \pm 0.02	1.01 \pm 0.08
	SD	48.10 \pm 3.70	0.19 \pm 0.97	4.40 \pm 0.10	0.14 \pm 0.01	0.86 \pm 0.11
	ND	54.00 \pm 6.81	0.01 \pm 0.02	4.50 \pm 0.13	1.00 \pm 0.03	1.00 \pm 0.09
Road 2, 1997	NC	40.40 \pm 4.41	0.02 \pm 0.01	4.46 \pm 0.23	0.16 \pm 0.02	0.93 \pm 0.15
	NB	31.10 \pm 5.64	0.02 \pm 0.01	4.16 \pm 0.18	0.15 \pm 0.02	0.86 \pm 0.13
	NA	45.10 \pm 6.07	0.09 \pm 0.04	4.42 \pm 0.26	0.07 \pm 0.02	0.89 \pm 0.16
	SA	48.80 \pm 6.23	3.41 \pm 1.51	4.51 \pm 0.11	0.12 \pm 0.05	1.18 \pm 0.12
	SB	48.90 \pm 6.02	0.03 \pm 0.01	4.58 \pm 0.15	0.20 \pm 0.03	0.92 \pm 0.20
	SC	43.70 \pm 4.87	0.03 \pm 0.02	4.49 \pm 0.23	0.14 \pm 0.02	0.97 \pm 13.00

Appendix Table 3.0. Measured variables in zones at tailings pond, Lupin mine, NWT (mean \pm standard error).

Site	Zone	Total plant cover (%)	Dust $\text{g m}^{-2} \text{day}^{-1}$	pH	Moisture ml cm^{-3}	Bulk Density g cm^{-3}
Tailing, 1996	NC	43.60 \pm 5.92	2.75 \pm 0.85	N/A	N/A	N/A
	NB	51.90 \pm 6.79	8.43 \pm 2.52	N/A	N/A	N/A
	NA	37.80 \pm 8.37	25.90 \pm 3.38	N/A	N/A	N/A
	SA	16.80 \pm 6.26	47.34 \pm 10.69	N/A	N/A	N/A
	SB	30.50 \pm 5.29	47.28 \pm 11.03	N/A	N/A	N/A
	SC	35.40 \pm 4.74	18.51 \pm 5.09	N/A	N/A	N/A
	SD					
Tailing, 1997	ND	49.10 \pm 4.81	0.67 \pm 0.34	3.70 \pm 0.17	0.11 \pm 0.01	0.63 \pm 0.12
	NC	53.17 \pm 6.24	0.74 \pm 0.31	3.48 \pm 0.15	0.07 \pm 0.01	0.71 \pm 0.12
	NB	38.57 \pm 5.99	3.52 \pm 1.89	3.12 \pm 0.08	0.11 \pm 0.01	0.83 \pm 0.06
	NA	52.20 \pm 6.56	3.85 \pm 2.01	3.24 \pm 0.07	0.14 \pm 0.04	0.83 \pm 0.08
	SA	6.59 \pm 0.92	74.86 \pm 73.74	3.00 \pm 0.06	0.13 \pm 0.03	1.06 \pm 0.10
	SB	21.89 \pm 7.49	28.84 \pm 8.68	3.14 \pm 0.18	0.11 \pm 0.01	1.04 \pm 0.06
	SC	40.34 \pm 6.84	8.22 \pm 1.29	3.75 \pm 0.30	0.09 \pm 0.01	1.02 \pm 0.10
	SD	48.30 \pm 6.04	1.54 \pm 0.72	3.22 \pm 0.08	0.06 \pm 0.01	0.68 \pm 0.10

Road Site 1, 1996



Frequency (%) of noda representation in zones

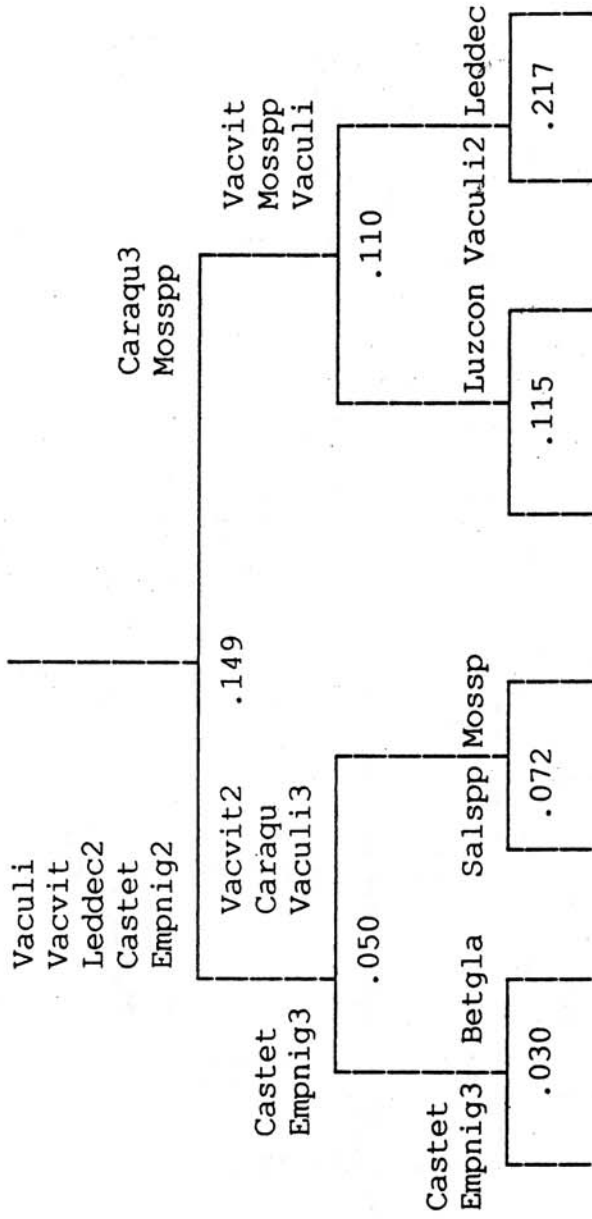
NC	0	0	9	29	0
NB	0	0	12	25	0
NA	72	50	35	3	0
SA	28	35	15	5	100
SB	0	15	15	15	0
SC	0	0	14	23	0

Mean dust deposition rate ($g\ m^{-2}\ day^{-1}$)

66.3	12.2	5.3	1.8	185.6
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APPENDIX Figure 4.0. Road site 1, 1996. COINSPAN dendrogram (Constrained indicator species analysis). Vegetation noda developed to 3 levels. Eigenvalues and indicator species are shown at each division. For decoding of indicator species, see Appendix 1. For legend to zone codes see Fig. 2.

Road Site 1, 1997



Frequency (%) of noda representation in zones

NC	23	5	26	0	0	0	11	0
NB	22	6	14	4	4	80	0	0
NA	12	11	3	0	40	0	0	0
SA	8	5	13	4	24	0	0	100
SB	7	14	1	0	36	20	22	0
SC	14	4	19	35	0	0	67	0
SD	14	2	24	57	0	0	0	0

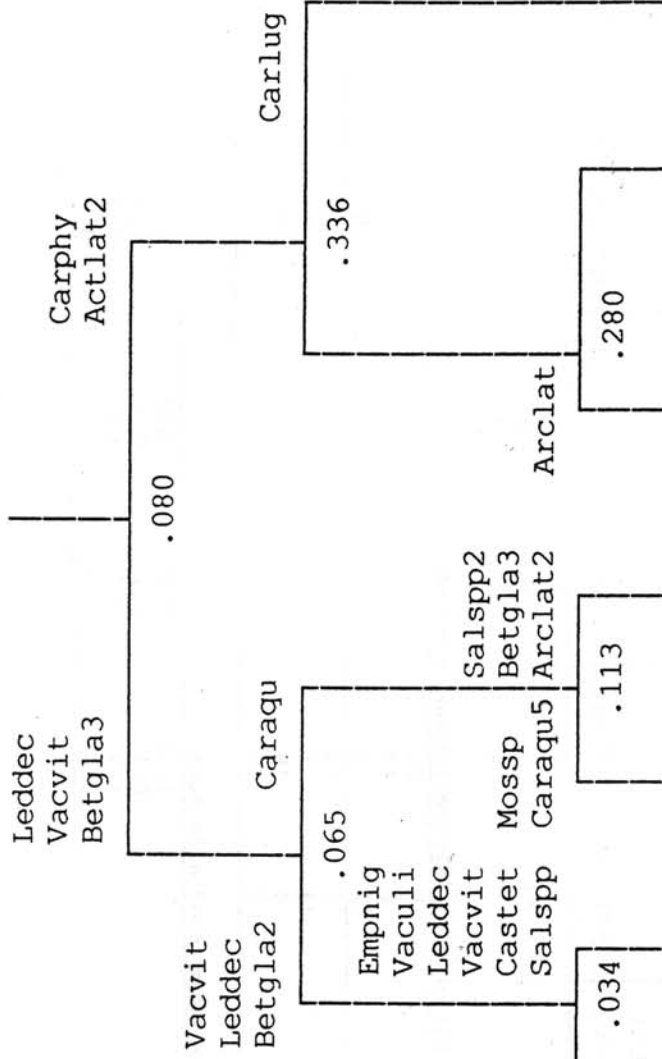
Physical variables associated with noda

Dust ^a	1.39	2.18	1.22	0.55	3.02	1.14	0.39	4.32
Moisture ^b	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2
pH	4.5	4.5	4.4	4.7	4.5	4.3	4.4	4.5
Soil Mass ^c	1.1	1.1	0.9	1.0	1.0	0.5	1.0	0.9

^a g m⁻² day⁻¹; ^b ml cm⁻³; ^c g cm⁻³

APPENDIX Figure 5.0. Road site 1, 1997. COINSPAN dendrogram (Constrained indicator species analysis). Vegetation noda developed to 3 levels. Eigenvalues and indicator species are shown at each division. For decoding of indicator species, see Appendix 1. For legend to zone codes see Fig. 2.

Road Site 2, 1997



Frequency (%) of noda representation in zones

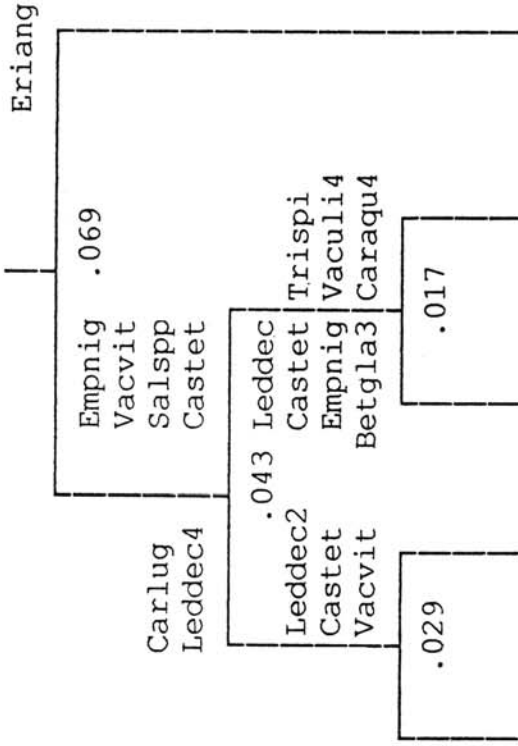
ND	58	7	18	33	0	0	0
NB	5	22	18	5	0	12	0
NA	16	2	30	24	36	63	100
SA	12	22	21	33	64	25	0
SB	4	22	0	5	0	0	0
SC	0	23	2	0	0	0	0

Physical variables associated with noda

Dust ^c	0.69	0.75	0.06	0.05	0.04	0.02	0.02
Moisture ^b	0.14	0.16	0.12	0.13	0.14	0.13	0.09
pH	4.3	4.5	4.4	4.4	4.4	4.5	4.6
Soil Mass ^c	1.1	1.0	0.8	1.0	0.8	1.2	1.0

APPENDIX Figure 6.0. Road site 2, 1997. COINSPAN dendrogram (Constrained indicator species analysis). Vegetation noda developed to 3 levels. Eigenvalues and indicator species are shown at each division. For decoding of indicator species, see Appendix 1. For legend to zone codes see Fig. 2.

Tailing Site, 1996



Frequency (%) of noda representation in zones

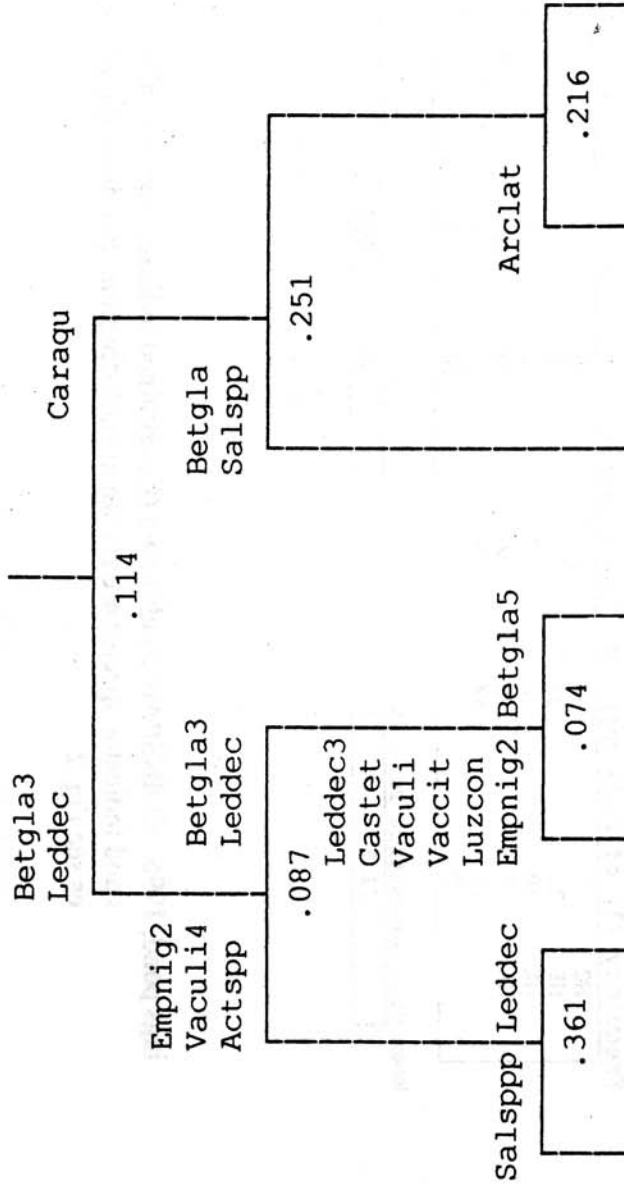
NC	3	30	11	14	0
NB	30	26	1	0	0
NA	48	8	5	0	0
SA	7	5	26	43	100
SB	10	14	28	28	0
SC	0	15	29	14	0

Mean dust deposition rate ($\text{g m}^{-2} \text{ day}^{-1}$)

21.5	13.6	34.1	38.7	56.6
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APPENDIX Figure 7.0. Tailings pond, 1996. COINSPAN dendrogram (Constrained indicator species analysis). Vegetation noda developed to 3 levels. Eigenvalues and indicator species are shown at each division. For decoding of indicator species, see Appendix 1. For legend to zone codes see Fig. 2.

Tailing Site, 1997



Frequency (%) of noda representation in zones

ND	0	27	22	5	0	5
NC	25	18	10	15	25	17
NB	25	5	4	19	25	78
NA	50	5	8	7	50	0
SA	0	0	5	19	0	0
SB	0	0	8	22	0	0
SC	0	14	18	11	0	0
SD	0	32	25	2	0	0

Physical variables associated with noda

Dust ^a	3.30	8.90	18.42	24.70	2.45	14.39	2.58
Moisture ^b	0.1	0.1	0.1	0.1	0.1	0.1	0.1
pH	3.3	3.4	3.4	3.3	3.4	3.4	3.3
Soil Mass ^c	0.7	0.8	0.8	0.9	0.8	0.9	0.8

^a g m⁻² day⁻¹; ^b ml cm⁻³; ^c g cm⁻³

APPENDIX Figure 8.0. Tailings pond, 1997. COINSPAN dendrogram (Constrained indicator species analysis). Vegetation noda developed to 3 levels. Eigenvalues and indicator species are shown at each division. For decoding of indicator species, see Appendix 1. For legend to zone codes see Fig. 2.