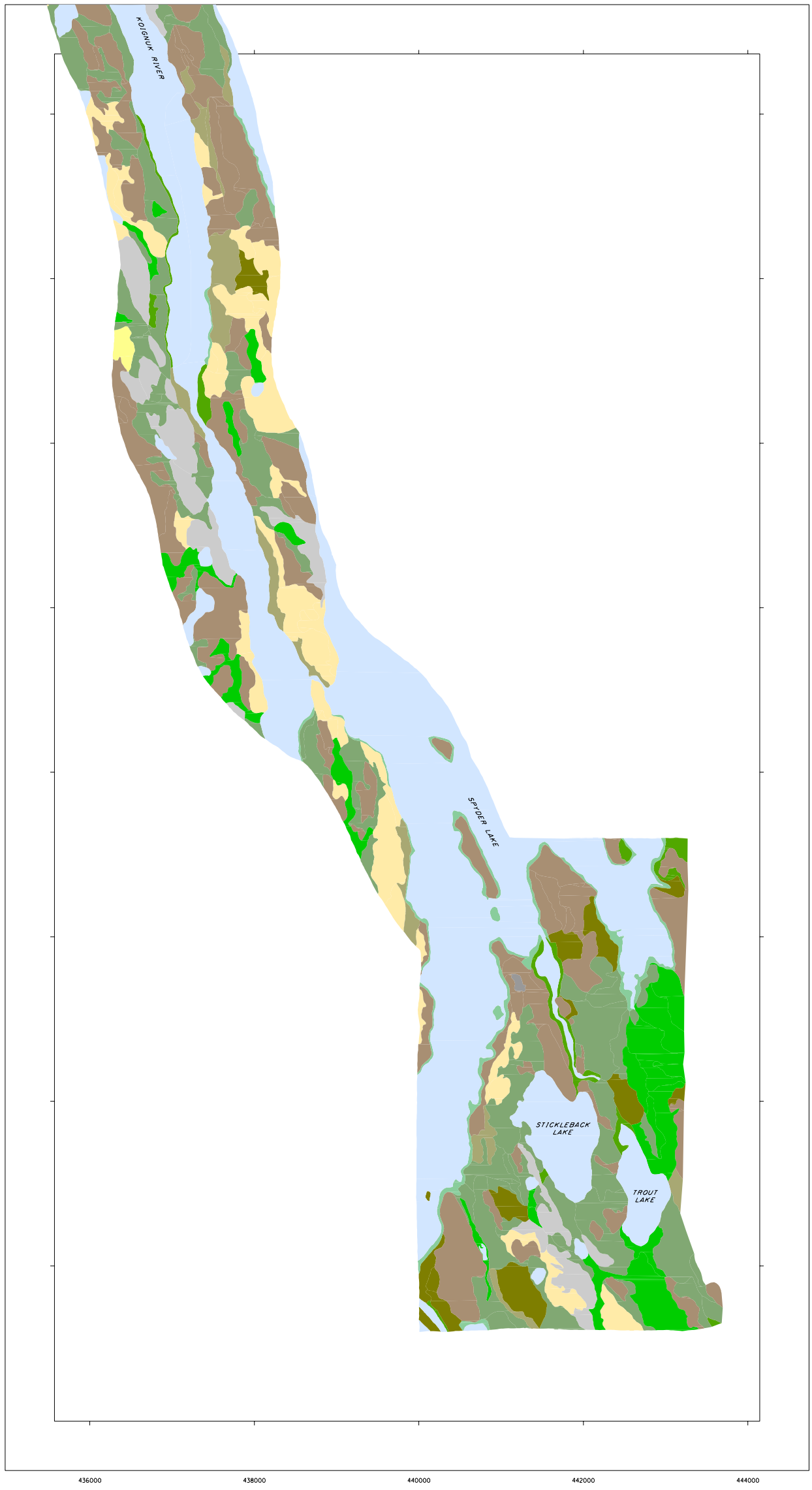
BHP

BHP WORLD MINERALS
SAN FRANCISCO, CALIFORNIA
USA

ECOSYSTEM THEME MAP

TERRESTRIAL ECOSYSTEM MAPPING FOR BHP WORLD MINERALS HOPE BAY GOLD PROJECT



BACKGROUND

This set of maps accompanies the report titled, "Terrestrial Ecosystems and Bioterrain of the Hope Bay Belt, Northwest Territories, Canada (Westroad Resource Consultants Ltd.1998)". The objective of the project was to identify and map the ecosystems and surficial geology of the study area in accordance with the British Columbia Standards for Terrestrial Ecosystem Mapping (Resources Inventory Committee, 1995; see report for citation). The four mapsheets comprising this set (scale 1:60,000) fall within the geographic area covered by the Canadian National Topographic Series (NTS) Maps, Mapsheet No's. 76-O/9, 76-O/15, 76-O/16, and 77-A/13 (scale 1:50,000).

The Ecosystem and Bioterrain Theme Maps were developed to present, in a more generalized and visually effective manner, the detailed information contained in the Ecosystem and Bioterrain Maps.

Colour theming is based on the dominant ecosystems within each polygon. In this way, a polygon with a complex of ecosystem units such as 70% DH and 30% RO is coloured as a Dryas Herb Mat (DH) dominated polygon. Similarly, a polygon typed as 40% DH, 30% TM and 30% TMm is coloured as a Eriophorum Tussock Meadow (TM) dominated polygon.

LEGEND

AQUATIC ENVIRONMENTS

- Rivers (Ril) or Lakes (LA)
- Ocean (OC)

ECOSYSTEM UNITS ASSOCIATED WITH OCEAN SHORELINE

- Marine Intertidal (MI), Backshore (MB) and Beach (BE)

ECOSYSTEM UNITS ASSOCIATED WITH LACUSTRINE, FLUVIAL AND FINE MARINE SEDIMENTS

- Low Bench Flood Plain (FP)
- Emergent Marsh (EM), Wet Meadow (WM), Patsa (B•), and Patterned Ground
- Betula-Moss (BM)
- Riparian Willow (RW) and Dry Willow (DW)
- Eriophorum Tussock Meadow (TM)

ECOSYSTEM UNITS ASSOCIATED WITH DRY ROCK OUTCROPS AND COARSE, DRY SUBSTRATES

- Dwarf Shrub-Heath (SH)
- Betula-Ledum-Lichen (BL)
- Dryas Herb Mat (DH)
- Dry Carex-Lichen (CL)

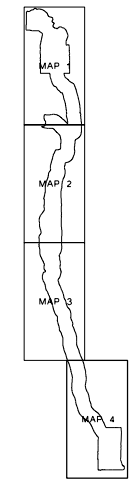
UNVEGETATED, AND/OR SPARSELY-VEGETATED ECOSYSTEM UNITS

- Bedrock (RO) and Rubble (RU)
- Exposed Soils (ES) and Mine Spoils (ME)

PROJECT CONTRIBUTIONS

Project Supervisors: Chris Nowotny, Bill Layton
Project Biologist: Chris Nowotny
Arctic Ecologist: Jim Trask
Field Crew: Chris Nowotny, Jim Trask, Beth Collingwood, Mark Brown
Mapping: Joe Boers, Bill Layton, Jim Kurta
Data Management Specialist: Bruce Johnston
Rescan Project Supervisor: Dmitry Stone
Terrain and Surficial Geology Consultation: Dan Kerr (NRC-Geological Survey of Canada)

KEY TO ADJOINING MAPS



SCALE 1:60,000	THIS MAP WAS PRODUCED DIGITALLY USING MICROSTATION PC SOFTWARE. LINE WORK WAS DIGITIZED FROM LOW ELEVATION PHOTOS USING MONO RESTITUTION AND CONTROLLED FROM A DIGITAL ELEVATION MODEL.	PRODUCED BY: WESTROAD RESOURCE CONSULTANTS LTD. QUESNEL, B.C. CANADA	MAP 4 OF 4

BHP

BHP WORLD MINERALS
SAN FRANCISCO, CALIFORNIA
USA

BIOTERRAIN THEME MAP

TERRESTRIAL ECOSYSTEM MAPPING FOR BHP WORLD MINERALS HOPE BAY GOLD PROJECT

BACKGROUND

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The Ecosystem and Bioterrain Theme Maps were developed to present, in a more generalized and visually effective manner, the detailed information contained in the Ecosystem and Bioterrain Maps.

Colour theming is based on the dominant bioterrain within each polygon. In this way, a polygon with a complex of terrain types such as 70% sTv/Rh and 30% RO is coloured as a Glacial Till (T) dominated polygon. Similarly, a polygon typed as 40% sTv/Rp, 30% zcMb and 30% sMv is coloured as a Marine (M) dominated polygon.

LEGEND

AQUATIC ENVIRONMENTS

- Rivers (Ri) and Lakes (LA)
- Ocean (OC)

SURFICIAL MATERIALS

- Fluvial (F) and Lacustrine (L)
- Organic (O)
- Marine (M)
- Glacial Till (T)
- Colluvial (C), Glaciofluvial (F^g) and Weathered Bedrock (D)
- Bedrock (RO)

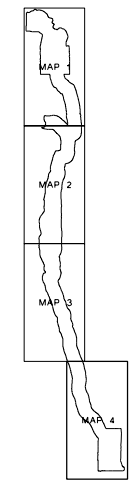
DISTURBED MATERIALS

- Anthropogenic (A)

PROJECT CONTRIBUTIONS

Project Supervisors: Chris Nowotny, Bill Layton
Project Biologist: Chris Nowotny
Arctic Ecologist: Jim Trask
Field Crew: Chris Nowotny, Jim Trask, Beth Collingwood, Mark Brown
Mapping: Joe Boers, Bill Layton, Jim Kurta
Data Management Specialist: Bruce Johnston
Rescan Project Supervisor: Dmitry Stone
Terrain and Surficial Geology Consultation: Dan Kerr (NRC-Geological Survey of Canada)

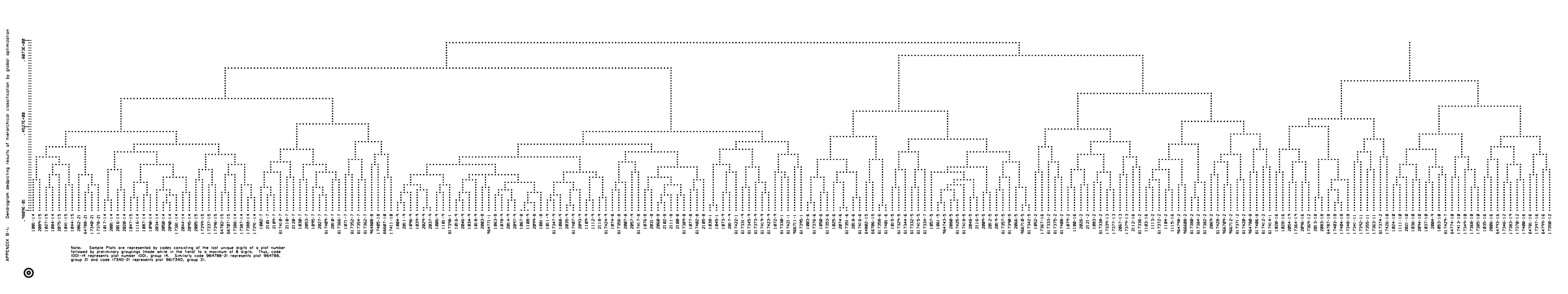
KEY TO ADJOINING MAPS



SCALE 1:60,000	THIS MAP WAS PRODUCED DIGITALLY USING MICROSTATION PC SOFTWARE. LINE WORK WAS DIGITIZED FROM LOW ELEVATION PHOTOS USING MONO RESTITUTION AND CONTROLLED FROM A DIGITAL ELEVATION MODEL.	PRODUCED BY: WESTROAD RESOURCE CONSULTANTS LTD. QUESNEL, B.C. CANADA	MAP 4 OF 4

Appendix 12.4-1
TEM Analysis for Hope Bay Belt, 1997

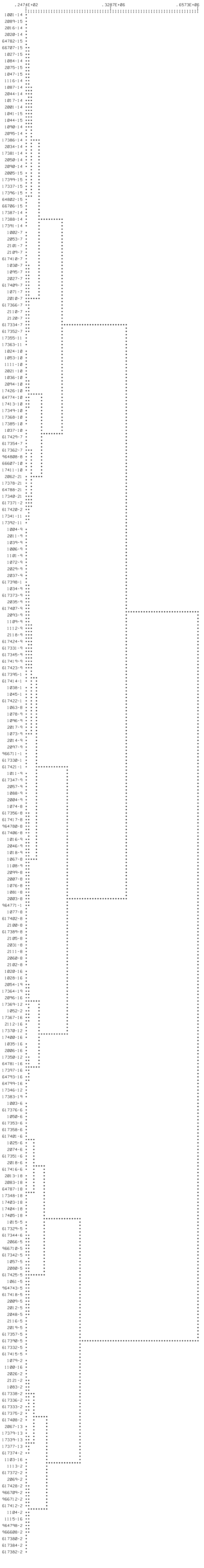
APPENDIX B-1. Dendrogram depicting results of hierarchial classification by global optimization



Note. Sample Plots are represented by codes consisting of the last unique digits of a plot number followed by preliminary groupings (made while in the field) to a maximum of 8 digits. Thus, code 1001-14 represents plot number 1001, group 14. Similarly code 964788-21 represents plot 964788, group 21 and code 17340-21 represents plot 9617340, group 21.

APPENDIX B-2: Dendrogram dedpicting results of hierarchical classification by minimization of sums of squares in new clusters

Note: Sample Plots are represented by codes consisting of the last unique digits of a plot number followed by preliminary groupings (made while in the field) to a maximum of 8 digits. Thus, code 1001-14 represents plot number 1001, group 14. Similarly code 964788-21 represents plot 964788, group 21 and code 17340-21 represents plot 9617340, group 21.



APPENDIX 12.4-1c: NON-HIER CLASSIFICATION BY GLOBAL OPTIMIZATION (for 15 CLUSTERS)

```
M (NUMBER OF OBJECTS) =             234
N (NUMBER OF VARIABLES)=            192
MCOE (COEFFICIENT)=                  35
IOPT (METHOD) =                       0
NOP (NUMBER OF PARTITIONS) =          0
INCOD (INPUT PARTITIONS)   =          2
NC (NUMBER OF CLUSTERS) =            15
IRN (OPTION FOR INIT. PARTITION) =    3
INIT (RANDOM SEED NUMBER) =        7808
NRUN (NUMBER OF RUNS)     =          20
LABOBJ (LABELS FOR OBJECTS) =         1
ISN (STANDARDIZATION)=                0
C (CONSTANT)=                      .000
IU (DISTANCE OR DISSIM.)=             1
MSTD (SAVE MATRIX)=                   0
```

```
INPUT DATA READ FROM FILE C:\APPS\SYNTAX\AAPLNDAT.TXT

OUTPUT SAVED IN FILE server C:\data\rescan\reports\97\analysis\NHGO15Rb.doc

LABELS READ FROM FILE C:\APPS\SYNTAX\AACOMMLB.TXT
```

```
RUNS    1-20

STEP   OBJECT FROM CLUSTER TO CLUSTER       RATIO

97 234 617429-7       1          9      .41385E+00
116 233 617428-2      5          7      .41480E+00
135 225 617419-9      6          4      .41484E+00
150 217 17411-10     11          7      .41357E+00
135 233 617428-2      7         11      .41315E+00
157 225 617419-9      9          1      .41582E+00
109 225 617419-9     14          3      .41406E+00
137 117  2112-16      8          9      .41328E+00
127 148 617334-7     14         13      .41398E+00
110 166 617354-7     12          5      .41309E+00
147 117  2112-16     10          1      .41305E+00
134 217 17411-10      6          9      .41343E+00
127 179 617371-2     15          3      .41403E+00
122 225 617419-9     15          4      .41407E+00
109 234 617429-7      6          4      .41305E+00
122 148 617334-7      9         11      .41291E+00
121 225 617419-9      3         11      .41359E+00
86 233 617428-2       7         14      .41373E+00
112 202 17396-15      3          2      .41310E+00
108 225 617419-9     15         13      .41357E+00
```

◎

CLUSTER 1

1052-2	1079-2	1083-2	1100-16	2026-2
2112-16	2121-2	617333-2	617336-2	617338-2
617375-2	617408-2			

CLUSTER 2

2062-21	2067-13	2089-15	64788-21	966709-2
966712-2	17340-21	17355-11	617362-7	617371-2
17378-21	617420-2	617428-2		

CLUSTER 3

17339-13	17341-11	17363-11	17377-13	17379-13
17392-11	617412-2			

CLUSTER 4

1045-1	2105-8	964780-8	966711-1	617331-9
617395-1	617406-8	617414-1	617419-9	617422-1

CLUSTER 5

1015-5	1057-5	1061-5	2009-5	2012-5
2019-5	2048-5	2066-5	2080-5	2116-5
964743-5	966710-5	617329-5	617332-5	617342-5
617357-5	617390-5	617415-5	617418-5	617425-5

CLUSTER 6

1003-6	1025-6	1050-6	2018-6	2074-6
617344-6	617351-6	617353-6	617358-6	617376-6
617401-6	617416-6			

CLUSTER 7

1020-16	1103-16	1104-2	1113-2	1115-16
2069-2	964798-2	966608-2	617372-2	617380-2
617382-2	617384-2			

CLUSTER 8

2013-18	2083-18	64787-18	17348-18	17403-18
17404-18	17405-18			

CLUSTER 9

1001-14	1017-14	1027-15	1041-15	1044-15
1047-15	1084-14	1087-14	1090-14	1116-14
2001-14	2005-15	2016-14	2020-14	2034-14
2044-14	2050-14	2075-15	2090-14	2095-14
64782-15	66707-15	17337-15	17381-14	17386-14
17387-14	17388-14	17391-14	17396-15	17399-15
617417-8				

CLUSTER 10

1035-16	2006-16	64781-16	64793-16	64799-16
17346-12	17350-12	17383-19	17397-16	

CLUSTER 11

1024-10	1036-10	1037-10	1053-10	1111-10
2021-10	2094-10	64774-10	17349-10	17368-10
17385-10	17413-10			

CLUSTER 12

1004-9	1006-9	1011-9	1016-9	1018-9
1034-9	1038-1	1039-9	1063-8	1067-8
1072-9	1073-9	1074-8	1076-8	1077-8
1078-9	1081-8	1088-9	1096-9	1101-9
1108-9	1109-9	1112-9	2003-8	2004-9
2007-8	2011-9	2014-9	2017-9	2029-9
2031-8	2035-9	2037-9	2046-9	2057-9
2060-8	2093-9	2097-9	2099-8	2100-8
2102-8	2111-8	2118-9	964771-1	617330-1
617345-9	617347-9	617356-8	617373-9	617389-8
617398-1	617402-8	617407-9	617421-1	617423-9
617424-9				

CLUSTER 13

1028-16	2054-19	2096-16	17364-19	17367-16
17369-12	17370-12	17400-16		

CLUSTER 14

1002-7	1030-7	1071-7	1095-7	2010-7
2027-7	2053-7	2101-7	2109-7	2110-7
2120-7	617334-7	617352-7	617354-7	617366-7
617409-7	617410-7	617429-7		

CLUSTER 15

64802-15	964808-8	66607-10	66706-15	617374-2
17411-10	17426-10			

APPENDIX 12.4-1d: FUZZY CLUSTERING CLASSIFICATION OF GROUP A PLOTS (9 CLUSTERS)

INPUT AND RUN PARAMETERS

```
M (NUMBER OF INDIVIDUALS (COLUMNS)) =   142
N (NUMBER OF VARIABLES (ROWS)) =        140
NC (NUMBER OF CLUSTERS) =                 9
MAXITE (MAX. NO. OF ITERATION STEPS)=    50
EPS (ITERATION THRESHOLD) =            .010
EM (COEFFICIENT OF FUZZINESS) =       1.400
ISN (STANDARDIZATION OPTION) =            0
C (CONSTANT FOR STANDARDIZATION) =     .000
LAB (OPTION FOR LABELS) =                 1
INPUT FORMAT =
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INPUT DATA READ FROM	C:\DATA\RESCAN\ANALYSIS\SYNTAX\AWPLNDAT.TXT
LABELS READ FROM	C:\DATA\RESCAN\ANALYSIS\SYNTAX\AWCOMMLB.TXT
CLUSTER MEMBERSHIP WTS. IN	C:\DATA\RESCAN\ANALYSIS\SYNTAX\FUZWTA9
TYPED OUTPUT SAVED IN	C:\DATA\RESCAN\ANALYSIS\SYNTAX\FUZA1(9)

STEP	MAX. CHANGE OF WEIGHTS	SUM OF SQUARES
0	1.000000	.3212349E+06
1	.551880	.1268003E+06
2	.239094	.1226473E+06
3	.100947	.1216920E+06
4	.221334	.1208356E+06
5	.292637	.1194900E+06
6	.152151	.1187295E+06
7	.075216	.1184725E+06
8	.061250	.1183422E+06
9	.050947	.1182510E+06
10	.055409	.1181732E+06
11	.059200	.1181000E+06
12	.061951	.1180287E+06
13	.062747	.1179568E+06
14	.066279	.1178783E+06
15	.074793	.1177851E+06
16	.085344	.1176688E+06
17	.089706	.1175291E+06
18	.081798	.1173810E+06
19	.073199	.1172519E+06
20	.059438	.1171616E+06
21	.047066	.1171101E+06
22	.034083	.1170849E+06
23	.022975	.1170738E+06
24	.014820	.1170694E+06
25	.009312	.1170675E+06

ITERATIONS TERMINATED

MEMBERSHIP WEIGHTS

INDIVIDUAL		MEMBERSHIP GROUP								
Object	Code #	outlier	WM_1	WM_2	RW_1	DW	TM	BM	RW_2	WM_3
1	1004-9	.0000	.0027	.0005	.0004	.0003	.9950	.0003	.0004	.0004
2	1006-9	.0000	.0107	.0014	.0022	.0013	.9793	.0015	.0019	.0017
3	1011-9	.0000	.0083	.0013	.0011	.0014	.9784	.0046	.0033	.0015
4	1016-9	.0000	.0005	.0001	.0000	.0001	.9986	.0002	.0002	.0001
5	1018-9	.0000	.0024	.0005	.0003	.0004	.9945	.0007	.0006	.0005
6	**1020-16**	.0027	.0660	**.5854**	.0544	.0185	.0289	.0221	.1932	.0289
7	1024-10	.0002	.0076	.0016	.0014	.0024	.0046	.9781	.0021	.0020
8	1028-16	.0003	.0101	.0118	.0048	.0029	.0039	.0021	.9595	.0046
9	1034-9	.0000	.0004	.0000	.0000	.0000	.9990	.0001	.0001	.0000
10	1035-16	.0002	.0033	.0027	.9852	.0011	.0021	.0011	.0026	.0017
11	1036-10	.0004	.0111	.0029	.0032	.0044	.0073	.9633	.0039	.0035
12	1037-10	.0010	.1041	.0128	.0116	.0196	.0366	.7723	.0243	.0177
13	1038-1	.0005	.0259	.0181	.0048	.0035	.9324	.0035	.0051	.0063
14	1039-9	.0000	.0040	.0014	.0007	.0005	.9913	.0006	.0007	.0008
15	1045-1	.0008	.0374	.0356	.0072	.0062	.8879	.0064	.0093	.0094
16	1052-2	.0025	.0146	.0044	.0035	.0028	.0036	.0023	.0129	.9533
17	1053-10	.0008	.0480	.0085	.0078	.0135	.0238	.8730	.0135	.0112
18	1063-8	.0001	.0030	.0009	.0007	.0008	.9919	.0009	.0008	.0009
19	1067-8	.0000	.0003	.0000	.0000	.0000	.9993	.0001	.0000	.0000
20	1072-9	.0007	.0421	.0088	.0079	.0073	.9079	.0067	.0088	.0097
21	1073-9	.0002	.0070	.0023	.0018	.0017	.9812	.0016	.0020	.0022
22	1074-8	.0001	.0070	.0014	.0016	.0015	.9785	.0067	.0015	.0015
23	1076-8	.0000	.0054	.0008	.0007	.0008	.9892	.0010	.0013	.0009
24	1077-8	.0002	.0095	.0017	.0012	.0017	.9796	.0024	.0018	.0020
25	1078-9	.0000	.0023	.0006	.0007	.0005	.9938	.0007	.0006	.0006
26	1079-2	.0000	.0025	.0003	.0001	.0001	.0002	.0001	.0002	.9964
27	1081-8	.0000	.0007	.0001	.0001	.0001	.9984	.0002	.0001	.0002
28	1083-2	.0014	.0095	.0022	.0016	.0014	.0019	.0013	.0022	.9784
29	1088-9	.0000	.0046	.0009	.0007	.0010	.9865	.0031	.0021	.0010
30	1096-9	.0000	.0015	.0003	.0003	.0002	.9968	.0003	.0003	.0003
31	1100-16	.0002	.0050	.0012	.0011	.0004	.0008	.0003	.0010	.9899
32	1101-9	.0003	.0437	.0046	.0061	.0036	.9276	.0045	.0047	.0050
33	1103-16	.0001	.0189	.9656	.0028	.0010	.0023	.0010	.0038	.0044
34	1104-2	.0000	.0002	.9996	.0000	.0000	.0000	.0000	.0000	.0000
35	1108-9	.0000	.0002	.0000	.0000	.0000	.9996	.0000	.0000	.0000
36	1109-9	.0000	.0043	.0006	.0007	.0006	.9906	.0018	.0007	.0007
37	1111-10	.0001	.0053	.0012	.0018	.0017	.0032	.9837	.0016	.0015
38	1112-9	.0000	.0107	.0014	.0020	.0011	.9794	.0022	.0018	.0015
39	1113-2	.0005	.1334	.7989	.0114	.0036	.0161	.0031	.0068	.0264
40	1115-16	.0000	.0015	.9969	.0004	.0001	.0002	.0001	.0002	.0005
41	2003-8	.0000	.0011	.0002	.0002	.0002	.9974	.0003	.0002	.0003
42	**2004-9**	.0016	**.2340**	.0254	.0254	.0382	.0747	**.3908**	.1749	.0351
43	2006-16	.0010	.0206	.0399	.8961	.0058	.0098	.0072	.0101	.0095
44	2007-8	.0001	.0057	.0015	.0010	.0013	.9839	.0037	.0013	.0014
45	2011-9	.0000	.0039	.0007	.0005	.0004	.9928	.0005	.0005	.0006
46	2013-18	.0002	.0025	.0010	.0009	.9904	.0014	.0010	.0012	.0013
47	2014-9	.0000	.0004	.0001	.0000	.0000	.9990	.0001	.0001	.0000
48	2017-9	.0000	.0048	.0014	.0015	.0009	.9880	.0008	.0014	.0012
49	2021-10	.0000	.0003	.0000	.0000	.0001	.0002	.9990	.0001	.0000
50	2026-2	.0005	.0278	.0065	.0013	.0010	.0014	.0009	.0017	.9589
51	2029-9	.0000	.0003	.0000	.0000	.0000	.9993	.0000	.0000	.0000
52	2031-8	.0002	.0085	.0017	.0012	.0017	.9793	.0038	.0018	.0019
53	2035-9	.0000	.0021	.0003	.0003	.0003	.9957	.0007	.0004	.0003
54	2037-9	.0000	.0003	.0000	.0000	.0000	.9993	.0000	.0000	.0000
55	2046-9	.0000	.0004	.0000	.0000	.0000	.9991	.0001	.0001	.0000
56	2054-19	.0000	.0037	.0008	.0018	.0009	.0013	.0006	.9897	.0011
57	2057-9	.0007	.1052	.0199	.0126	.0116	.7391	.0328	.0635	.0146
58	2060-8	.0000	.0066	.0011	.0010	.0012	.9834	.0038	.0015	.0012
59	**2069-2**	.0017	**.5603**	**.2430**	.0130	.0086	.0133	.0075	.0149	.1377
60	2083-18	.0005	.0049	.0022	.0019	.9798	.0030	.0022	.0026	.0027
61	2093-9	.0000	.0051	.0010	.0010	.0007	.9874	.0013	.0025	.0009
62	2094-10	.0004	.0058	.0023	.0023	.0033	.0049	.9759	.0027	.0025
63	2096-16	.0004	.0044	.0025	.0035	.0023	.0027	.0017	.9796	.0031
64	2097-9	.0000	.0010	.0003	.0002	.0002	.9975	.0003	.0003	.0002
65	2099-8	.0000	.0006	.0001	.0001	.0001	.9986	.0002	.0001	.0001
66	2100-8	.0004	.0312	.0045	.0035	.0049	.9344	.0107	.0050	.0054
67	2102-8	.0003	.0200	.0034	.0037	.0035	.9520	.0092	.0039	.0039
68	2105-8	.0011	.0416	.0106	.0075	.0098	.8923	.0151	.0106	.0114

INDIVIDUAL		MEMBERSHIP GROUP								
Object	Code #	outlier	WM_1	WM_2	RW_1	DW	TM	BM	RW_2	WM_3
69	2111-8	.0001	.0104	.0015	.0017	.0015	.9778	.0036	.0017	.0017
70	**2112-16**	.0064	.0865	.0274	**.3472**	.0149	.0240	.0143	.0361	.4433
71	2118-9	.0002	.0167	.0034	.0091	.0028	.9505	.0048	.0091	.0034
72	2121-2	.0025	.0840	.1306	.0088	.0058	.0085	.0052	.0107	.7438
73	964771-1	.0000	.0024	.0005	.0003	.0004	.9947	.0005	.0006	.0005
74	64774-10	.0016	.0176	.0075	.0078	.0104	.0147	.9229	.0089	.0086
75	**964780-8**	.0106	.1640	.0622	.0548	.0608	**.4468**	.0647	.0661	.0699
76	**64781-16**	.0039	.1076	.1177	**.5696**	.0194	.0294	.0213	.0962	.0349
77	64787-18	.0000	.0000	.0000	.0000	.9999	.0000	.0000	.0000	.0000
78	64793-16	.0062	.0491	.0305	.7379	.0248	.0358	.0326	.0507	.0325
79	964798-2	.0005	.0947	.8640	.0072	.0040	.0083	.0036	.0061	.0115
80	64799-16	.0003	.0080	.0029	.9692	.0018	.0034	.0020	.0085	.0038
81	**964808-8**	.0051	.1687	.0424	.0344	.0500	**.4428**	.1579	.0494	.0492
82	**66607-10**	.0093	.1100	.0449	.0441	.0600	.0818	**.5434**	.0546	.0519
83	966608-2	.0002	.0347	.9500	.0027	.0014	.0021	.0013	.0023	.0054
84	966709-2	.0007	.9011	.0278	.0127	.0081	.0145	.0071	.0109	.0170
85	966711-1	.0036	.0550	.0220	.0171	.0191	.8139	.0255	.0207	.0233
86	966712-2	.0002	.9629	.0190	.0024	.0016	.0032	.0014	.0025	.0069
87	617330-1	.0005	.0330	.0055	.0037	.0046	.9371	.0042	.0052	.0063
88	617331-9	.0009	.0149	.0057	.0051	.0057	.9386	.0133	.0102	.0056
89	**617333-2**	.0263	.1724	.0598	.0515	.0563	.0684	.0509	.0708	**.4436**
90	617336-2	.0036	.1723	.0118	.0103	.0088	.0126	.0083	.0131	.7592
91	617338-2	.0004	.0037	.0010	.0005	.0004	.0005	.0004	.0006	.9925
92	**17341-11**	.0121	**.3241**	.0836	.0686	.0923	.1193	.0804	.1027	.1169
93	617345-9	.0001	.0032	.0010	.0008	.0009	.9899	.0018	.0011	.0010
94	17346-12	.0003	.0124	.0053	.9448	.0034	.0065	.0066	.0162	.0044
95	617347-9	.0001	.0105	.0017	.0014	.0016	.9740	.0035	.0055	.0018
96	17348-18	.0000	.0043	.0010	.0009	.9848	.0018	.0020	.0038	.0013
97	17349-10	.0014	.0272	.0089	.0089	.0123	.0189	.9006	.0110	.0108
98	17350-12	.0031	.0297	.0148	.8763	.0122	.0175	.0120	.0180	.0163
99	**17355-11**	.0043	**.5433**	.0531	.0398	.0612	.0928	.0503	.0716	.0837
100	617356-8	.0002	.0067	.0016	.0016	.0017	.9766	.0079	.0021	.0017
101	**17363-11**	.0108	**.3454**	.0801	.0662	.0887	.1174	.0768	.1036	.1111
102	17364-19	.0000	.0031	.0007	.0012	.0007	.0010	.0005	.9912	.0016
103	**17367-16**	.0163	.0627	.0253	.0453	.0238	.0285	.0190	**.4659**	**.3133**
104	17368-10	.0009	.0106	.0046	.0048	.0062	.0093	.9532	.0053	.0051
105	17369-12	.0002	.0037	.0015	.0022	.0024	.0025	.0022	.9833	.0019
106	**17370-12**	.0011	.0309	.0104	.2641	.0110	.0168	.0085	**.6431**	.0140
107	617371-2	.0013	.8659	.0256	.0109	.0121	.0191	.0105	.0165	.0381
108	**617372-2**	.0007	.2694	**.5716**	.0118	.0082	.0708	.0090	.0284	.0302
109	617373-9	.0000	.0034	.0011	.0010	.0007	.9904	.0008	.0018	.0009
110	**617374-2**	**1.0000**	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
111	617375-2	.0024	.0138	.0032	.0026	.0026	.0033	.0023	.0039	.9659
112	617380-2	.0014	.0194	.9349	.0091	.0054	.0070	.0050	.0077	.0100
113	617382-2	.0000	.0025	.9937	.0007	.0004	.0008	.0004	.0006	.0009
114	17383-19	.0002	.0097	.0047	.9690	.0014	.0028	.0015	.0069	.0038
115	617384-2	.0004	.0086	.9758	.0030	.0018	.0024	.0017	.0026	.0038
116	17385-10	.0014	.0130	.0061	.0067	.0084	.0118	.9375	.0084	.0068
117	617389-8	.0000	.0056	.0008	.0006	.0008	.9892	.0012	.0009	.0009
118	**17392-11**	.0099	**.3501**	.0800	.0657	.0875	.1160	.0747	.1008	.1154
119	617395-1	.0027	.0588	.0200	.0182	.0189	.7845	.0242	.0503	.0225
120	17397-16	.0015	.0267	.0219	.8868	.0054	.0083	.0056	.0264	.0173
121	617398-1	.0000	.0085	.0011	.0012	.0011	.9840	.0014	.0012	.0013
122	**17400-16**	.0014	.0458	.0171	**.5894**	.0100	.0169	.0086	.2761	.0345
123	617402-8	.0002	.0106	.0023	.0016	.0021	.9760	.0022	.0023	.0026
124	17403-18	.0000	.0000	.0000	.0000	.9998	.0000	.0000	.0000	.0000
125	17404-18	.0000	.0002	.0000	.0000	.9992	.0000	.0000	.0002	.0000
126	17405-18	.0014	.0505	.0119	.0104	.7218	.0261	.1470	.0155	.0153
127	617406-8	.0021	.0974	.0216	.0174	.0224	.7261	.0641	.0249	.0240
128	617407-9	.0000	.0007	.0001	.0001	.0001	.9984	.0002	.0002	.0001
129	617408-2	.0066	.1518	.0225	.0191	.0186	.0251	.0163	.0263	.7137
130	**17411-10**	.0048	.1428	.0363	.0443	.0482	.0718	**.5525**	.0550	.0443
131	**617412-2**	.0100	**.5425**	.0643	.0581	.0393	.0645	.0367	.0504	.1342
132	17413-10	.0008	.0097	.0041	.0044	.0054	.0130	.9524	.0059	.0044
133	**617414-1**	.0023	.2019	.0309	.0282	.0206	**.6103**	.0391	.0400	.0268
134	**617417-8**	.0014	.1592	.0196	.0190	.0241	**.6036**	.1243	.0244	.0245
135	617419-9	.0008	.0223	.0071	.0063	.0065	.9042	.0090	.0355	.0083
136	617420-2	.0018	.8150	.0212	.0115	.0117	.0298	.0102	.0166	.0823
137	617421-1	.0005	.0157	.0043	.0031	.0038	.9587	.0049	.0043	.0047
138	617422-1	.0019	.0299	.0142	.0086	.0096	.9035	.0092	.0112	.0118
139	617423-9	.0001	.0043	.0011	.0009	.0011	.9867	.0018	.0029	.0011
140	617424-9	.0000	.0096	.0014	.0021	.0012	.9774	.0023	.0043	.0015
141	**17426-10**	.0177	.1174	.0632	.0618	.0805	.1018	**.4169**	.0715	.0691
142	617428-2	.0002	.9334	.0152	.0024	.0019	.0047	.0022	.0032	.0368

PARTITION DEFINED BY THE HIGHEST WEIGHT FOR EACH INDIVIDUAL (Object #s)

CLUSTER 1:

110

CLUSTER 2:

59 84 86 92 99 101 107 118 131 136
142

CLUSTER 3:

6 33 34 39 40 79 83 108 112 113
115

CLUSTER 4:

10 43 76 78 80 94 98 114 120 122

CLUSTER 5:

46 60 77 96 124 125 126

CLUSTER 6:

1 2 3 4 5 9 13 14 15 18
19 20 21 22 23 24 25 27 29 30
32 35 36 38 41 44 45 47 48 51
52 53 54 55 57 58 61 64 65 66
67 68 69 71 73 75 81 85 87 88
93 95 100 109 117 119 121 123 127 128
133 134 135 137 138 139 140

CLUSTER 7:

7 11 12 17 37 42 49 62 74 82
97 104 116 130 132 141

CLUSTER 8:

8 56 63 102 103 105 106

CLUSTER 9:

16 26 28 31 50 70 72 89 90 91
111 129

COEFFICIENT OF OVERALL SEPARATION= 115.58710

BEZDEK PARTITION COEFFICIENT= .81399

PART. COEFF. NORMALIZED= .79074

PARTITION ENTROPY= .45075

NORMALIZED PARTITION ENTROPY= .48125

APPENDIX 12.4-1e: FUZZY CLUSTERING CLASSIFICATION OF GROUP B PLOTS (7 CLUSTERS)

INPUT AND RUN PARAMETERS

```
M (NUMBER OF INDIVIDUALS (COLUMNS)) =    92
N (NUMBER OF VARIABLES (ROWS)) =        139
NC (NUMBER OF CLUSTERS) =                 7
MAXITE (MAX. NO. OF ITERATION STEPS)=    25
EPS (ITERATION THRESHOLD) =            .010
EM (COEFFICIENT OF FUZZINESS) =       1.500
ISN (STANDARDIZATION OPTION) =            0
C (CONSTANT FOR STANDARDIZATION) =     .000
LAB (OPTION FOR LABELS) =                 1
INPUT FORMAT =
```

INPUT DATA READ FROM	C:\DATA\RESCAN\ANALYSIS\SYNTAX\ADPLNDAT.TXT
LABELS READ FROM	C:\DATA\RESCAN\ANALYSIS\SYNTAX\ADCOMMLB.TXT
CLUSTER MEMBERSHIP WEIGHTS IN	C:\DATA\RESCAN\ANALYSIS\SYNTAX\FUZWTD7
TYPED OUTPUT SAVED IN	C:\DATA\RESCAN\ANALYSIS\SYNTAX\FUZD(7)

STEP	MAX. CHANGE OF WEIGHTS	SUM OF SQUARES
0	1.000000	.1077680E+06
1	.738451	.4499916E+05
2	.347942	.3925368E+05
3	.155250	.3838607E+05
4	.108374	.3826627E+05
5	.082370	.3817213E+05
6	.081948	.3808400E+05
7	.085691	.3800990E+05
8	.079677	.3795416E+05
9	.067187	.3791572E+05
10	.053535	.3789088E+05
11	.042688	.3787556E+05
12	.032610	.3786654E+05
13	.024438	.3786133E+05
14	.018151	.3785840E+05
15	.013258	.3785685E+05
16	.009848	.3785595E+05

ITERATIONS TERMINATED

MEMBERSHIP WEIGHTS

INDIVIDUAL		MEMBERSHIP GROUP						
Object	Code #	DH	MI	SH	BL	CL	MB/BL	BL
1	1001-14	.0090	.0114	.0522	.2733	.0199	.6054	.0289
2	1002-7	.0042	.0031	.9541	.0099	.0046	.0138	.0102
3	1003-6	.0074	.0013	.0039	.0113	.9501	.0062	.0199
4	1015-5	.2371	.0021	.0068	.0070	.0216	.0089	.7166
5	1017-14	.0104	.0125	.0758	.1482	.0174	.7063	.0294
6	1025-6	.0147	.0046	.0113	.0145	.9093	.0166	.0291
7	1027-15	.0029	.0039	.0468	.0639	.0055	.8678	.0092
8	1030-7	.0058	.0072	.8552	.0398	.0114	.0645	.0162
9	1041-15	.0050	.0062	.0331	.0993	.0090	.8326	.0147
10	1044-15	.0060	.0076	.0389	.1267	.0125	.7880	.0202
11	1047-15	.0016	.0021	.0107	.0357	.0029	.9424	.0047
12	1050-6	.0125	.0017	.0042	.0064	.9454	.0059	.0240
13	1057-5	.7490	.0023	.0057	.0055	.0064	.0060	.2252
14	1061-5	.9635	.0002	.0005	.0005	.0008	.0006	.0339
15	1071-7	.0208	.0208	.5928	.1027	.0290	.1792	.0547
16	1084-14	.0019	.0029	.0192	.0637	.0041	.9015	.0067
17	1087-14	.0027	.0034	.0159	.0790	.0057	.8854	.0079
18	1090-14	.0028	.0035	.0153	.0676	.0053	.8975	.0079
19	1095-7	.0009	.0008	.9781	.0054	.0012	.0106	.0029
20	1116-14	.0035	.0045	.0243	.0759	.0067	.8748	.0103
21	2001-14	.0087	.0104	.0491	.1755	.0156	.7157	.0252
22	2005-15	.0080	.0086	.0290	.7573	.0518	.1192	.0262
23	2009-5	.7220	.0030	.0078	.0070	.0076	.0082	.2445
24	2010-7	.0076	.0092	.6397	.0840	.0134	.2225	.0236
25	2012-5	.9199	.0005	.0014	.0013	.0022	.0015	.0732
26	2016-14	.0018	.0021	.0129	.8099	.0051	.1621	.0061
27	2018-6	.0038	.0025	.0050	.0136	.9597	.0081	.0072
28	2019-5	.0507	.0005	.0026	.0029	.0027	.0029	.9377
29	2020-14	.0027	.0031	.0176	.4866	.0068	.4740	.0092
30	2027-7	.0010	.0012	.9521	.0128	.0019	.0274	.0036
31	2034-14	.0030	.0035	.0143	.5575	.0075	.4051	.0091
32	2044-14	.0018	.0022	.0097	.0899	.0037	.8873	.0054
33	2048-5	.9158	.0004	.0011	.0010	.0015	.0011	.0790
34	2050-14	.0014	.0017	.0077	.2032	.0034	.7780	.0045
35	2053-7	.0022	.0025	.9590	.0105	.0033	.0173	.0052
36	**2062-21**	.0302	.0424	.1477	**.2407**	.0579	**.3851**	.0962
37	2066-5	.9260	.0008	.0017	.0022	.0048	.0018	.0627
38	**2067-13**	.0280	**.2080**	.1279	.1958	.0525	**.3025**	.0852
39	2074-6	.0030	.0010	.0021	.0033	.9828	.0028	.0049
40	2075-15	.0154	.0187	.0792	.2462	.0302	.5600	.0503
41	2080-5	.9530	.0000	.0003	.0003	.0005	.0003	.0456
42	2089-15	.0286	.0338	.0976	.3472	.0623	.3528	.0778
43	2090-14	.0016	.0018	.0077	.3360	.0038	.6439	.0052
44	2095-14	.0004	.0005	.0022	.0322	.0008	.9628	.0012
45	2101-7	.0012	.0009	.9836	.0037	.0014	.0056	.0035
46	2109-7	.0012	.0010	.9839	.0038	.0015	.0054	.0032
47	2110-7	.0130	.0112	.7979	.0476	.0169	.0705	.0429
48	2116-5	.4230	.0006	.0019	.0018	.0020	.0020	.5688
49	2120-7	.0230	.0063	.8164	.0247	.0127	.0360	.0808
50	964743-5	.9626	.0002	.0005	.0004	.0007	.0005	.0352
51	64782-15	.0005	.0006	.0026	.9501	.0016	.0428	.0018
52	**64788-21**	.0300	.0299	.1314	**.2378**	.0500	**.3984**	.1225
53	64802-15	.0164	.0162	.0407	.7399	.0505	.1010	.0353
54	66706-15	.0235	.0222	.0523	.6634	.0657	.1230	.0499
55	66707-15	.0022	.0029	.0199	.5834	.0066	.3758	.0091
56	966710-5	.9056	.0015	.0030	.0035	.0110	.0031	.0724
57	617329-5	.4041	.0057	.0146	.0162	.1661	.0167	.3766
58	617332-5	.0956	.0042	.0149	.0155	.0115	.0186	.8397
59	617334-7	.0810	.0179	.1595	.1014	.0460	.1865	.4077
60	17337-15	.0019	.0022	.0088	.8951	.0060	.0795	.0065
61	17339-13	.0022	.9761	.0043	.0050	.0030	.0057	.0037
62	**17340-21**	.0193	.0242	.0975	**.3868**	.0482	**.3525**	.0717
63	617342-5	.8645	.0020	.0041	.0046	.0192	.0044	.1012
64	617344-6	.1193	.0109	.0283	.0440	.5832	.0404	.1739
65	617351-6	.0037	.0012	.0026	.0042	.9787	.0036	.0061
66	617352-7	.0320	.0155	.3025	.2125	.0420	.2466	.1489
67	617353-6	.0018	.0003	.0009	.0020	.9897	.0014	.0038
68	617354-7	.0261	.0293	.4483	.1429	.0467	.2375	.0693
69	617357-5	.1508	.0008	.0026	.0039	.0031	.0033	.8355
70	617358-6	.0201	.0153	.0304	.1652	.6758	.0537	.0395
71	617362-7	.0498	.0456	.3277	.1646	.0689	.2065	.1370
72	617366-7	.0044	.0050	.8559	.0404	.0079	.0722	.0142

INDIVIDUAL		MEMBERSHIP GROUP						
Object	Code #	DH	MI	SH	BL	CL	MB/BL	BL
73	617376-6	.0199	.0035	.0100	.0417	.8513	.0176	.0560
74	17377-13	.0000	.9998	.0000	.0000	.0000	.0000	.0000
75	17378-21	.0187	.0245	.0941	.4172	.0466	.3315	.0674
76	17379-13	.0034	.9561	.0079	.0096	.0050	.0114	.0065
77	17381-14	.0019	.0022	.0109	.4141	.0046	.5604	.0060
78	17386-14	.0058	.0072	.0281	.3199	.0134	.6081	.0174
79	17387-14	.0037	.0040	.0135	.8757	.0112	.0820	.0097
80	17388-14	.0037	.0039	.0133	.8287	.0100	.1306	.0099
81	617390-5	.4110	.0036	.0096	.0191	.0645	.0125	.4796
82	17391-14	.0008	.0009	.0032	.9330	.0023	.0574	.0024
83	17396-15	.0048	.0046	.0153	.8727	.0176	.0717	.0133
84	17399-15	.0251	.0105	.0516	.5072	.0676	.2119	.1261
85	617401-6	.0149	.0110	.0247	.1591	.7092	.0478	.0333
86	617409-7	.0003	.0004	.9913	.0026	.0006	.0038	.0010
87	617410-7	.0186	.0161	.8292	.0356	.0209	.0444	.0351
88	617415-5	.1887	.0023	.0078	.0071	.0069	.0078	.7794
89	617416-6	.0016	.0008	.0018	.0037	.9864	.0027	.0031
90	617418-5	.8999	.0008	.0020	.0018	.0023	.0020	.0911
91	617425-5	.9831	.0001	.0003	.0003	.0005	.0003	.0154
92	617429-7	.0190	.0191	.3155	.1397	.0284	.4220	.0563

PARTITION DEFINED BY THE HIGHEST WEIGHT FOR EACH INDIVIDUAL

CLUSTER 1:
13 14 23 25 33 37 41 50 56 57
63 90 91

CLUSTER 2:
61 74 76

CLUSTER 3:
2 8 15 19 24 30 35 45 46 47
49 66 68 71 72 86 87

CLUSTER 4:
22 26 29 31 51 53 54 55 60 62
75 79 80 82 83 84

CLUSTER 5:
3 6 12 27 39 64 65 67 70 7
85 89

CLUSTER 6:
1 5 7 9 10 11 16 17 18 20
21 32 34 36 38 40 42 43 44 52
77 78 92

CLUSTER 7:
4 28 48 58 59 69 81 88

COEFFICIENT OF OVERALL SEPARATION= 61.70400

BEZDEK PARTITION COEFFICIENT= .67070

PART. COEFF. NORMALIZED= .61581

PARTITION ENTROPY= .68815

NORMALIZED PARTITION ENTROPY= .74482

◎

APPENDIX 12.4-1f: NON-METRIC SCALING ORDINATION OF GROUP A1 PLOTS

```
M (NUMBER OF OBJECTS)          =   68
N (NUMBER OF VARIABLES)        =   84
MCOE (DISTANCE FUNCTION)       =   35
NDIM (NO. OF DIMENSIONS)       =    2
INCF (OPTION FOR INIT. CONFIG.)=    0
LABOBJ (LABELS FOR OBJECTS)    =    1
ISN (DATA STANDARDIZATION)     =    0
INIT (RANDOM SEED VALUE)       = 2569
MSTD (SAVE MATRIX)             =    2
NPL (NO. OF PLOTS IN BATCH)    =    0
C (STANDARDIZING CONST.)       = .000

INPUT FORMAT
```

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 INPUT DATA READ FROM FILE C:\DATA\RESCAN\ANALYSIS\SYNTAX\AW1PLDAT.TXT


 TYPED OUTPUT SAVED IN FILE C:\DATA\RESCAN\ANALYSIS\SYNTAX\ORDINW1A


 COORDINATES WRITTEN TO FILE C:\DATA\RESCAN\ANALYSIS\SYNTAX\COORDW1A

 MATRIX SAVED IN FILE C:\DATA\RESCAN\ANALYSIS\SYNTAX\DISTW1A

 LABELS READ FROM C:\DATA\RESCAN\ANALYSIS\SYNTAX\AW1PTCOM.TXT
```

COORDINATES OF OBJECTS

1	1004-9	-.019	.023
2	1006-9	-.040	.003
3	1011-9	.059	-.016
4	1016-9	.024	.028
5	1018-9	.010	.039
6	1034-9	.018	.016
7	1038-1	-.065	.099
8	1039-9	-.018	.046
9	1045-1	-.059	.146
10	1063-8	-.025	.076
11	1067-8	-.010	.016
12	1072-9	-.124	.045
13	1073-9	-.045	.095
14	1074-8	.029	-.058
15	1076-8	-.014	-.041
16	1077-8	-.050	-.050
17	1078-9	-.014	.061
18	1081-8	-.021	-.009
19	1088-9	.055	-.017
20	1096-9	-.021	.032
21	1101-9	-.069	-.011
22	1108-9	-.007	.006
23	1109-9	.008	-.033
24	1112-9	.011	-.041
25	2003-8	-.033	.014
26	2004-9	.218	-.230
27	2007-8	.004	-.059
28	2011-9	-.034	.022
29	2014-9	-.000	.036
30	2017-9	-.031	.064
31	2029-9	.002	.009
32	2031-8	-.033	-.071
33	2035-9	.022	-.019
34	2037-9	.002	.025

35	2046-9	.015	.011
36	2057-9	.112	-.059
37	2060-8	.004	-.066
38	2093-9	.039	-.020
39	2097-9	-.014	.051
40	2099-8	-.014	.008
41	2100-8	-.027	-.092
42	2102-8	-.019	-.091
43	2105-8	-.097	-.113
44	2111-8	-.011	-.065
45	2118-9	.075	-.012
46	964771-1	-.033	.030
47	964780-8	-.353	-.219
48	964808-8	.087	-.297
49	966711-1	-.026	.276
50	617330-1	-.097	.069
51	617331-9	.122	.098
52	617345-9	.027	.075
53	617347-9	.065	-.008
54	617356-8	.054	-.046
55	617373-9	.035	.054
56	617389-8	-.032	-.045
57	617395-1	.152	.176
58	617398-1	-.043	-.010
59	617402-8	-.083	-.032
60	617406-8	-.073	-.184
61	617407-9	.020	-.005
62	617414-1	.230	.010
63	617417-8	.025	-.166
64	617419-9	.127	.058
65	617421-1	-.021	.126
66	617422-1	-.096	.201
67	617423-9	.062	.043
68	617424-9	.057	-.003

ID.NUMBER	COORDINATES	
19	.05520	-.01706
31	.00164	.00860

HORIZONTAL AXIS IS DIMENSION 1

VERTICAL AXIS IS DIMENSION 2

ID.NUMBER	COORDINATES	
35	.01505	.01088
37	.00435	-.06624
40	-.01406	.00787
42	-.01937	-.09084
44	-.01088	-.06522
46	-.03284	.03025
68	.05705	-.00269

HORIZONTAL AXIS

MINIMUM VALUE= -.35283

MAXIMUM VALUE= .23003

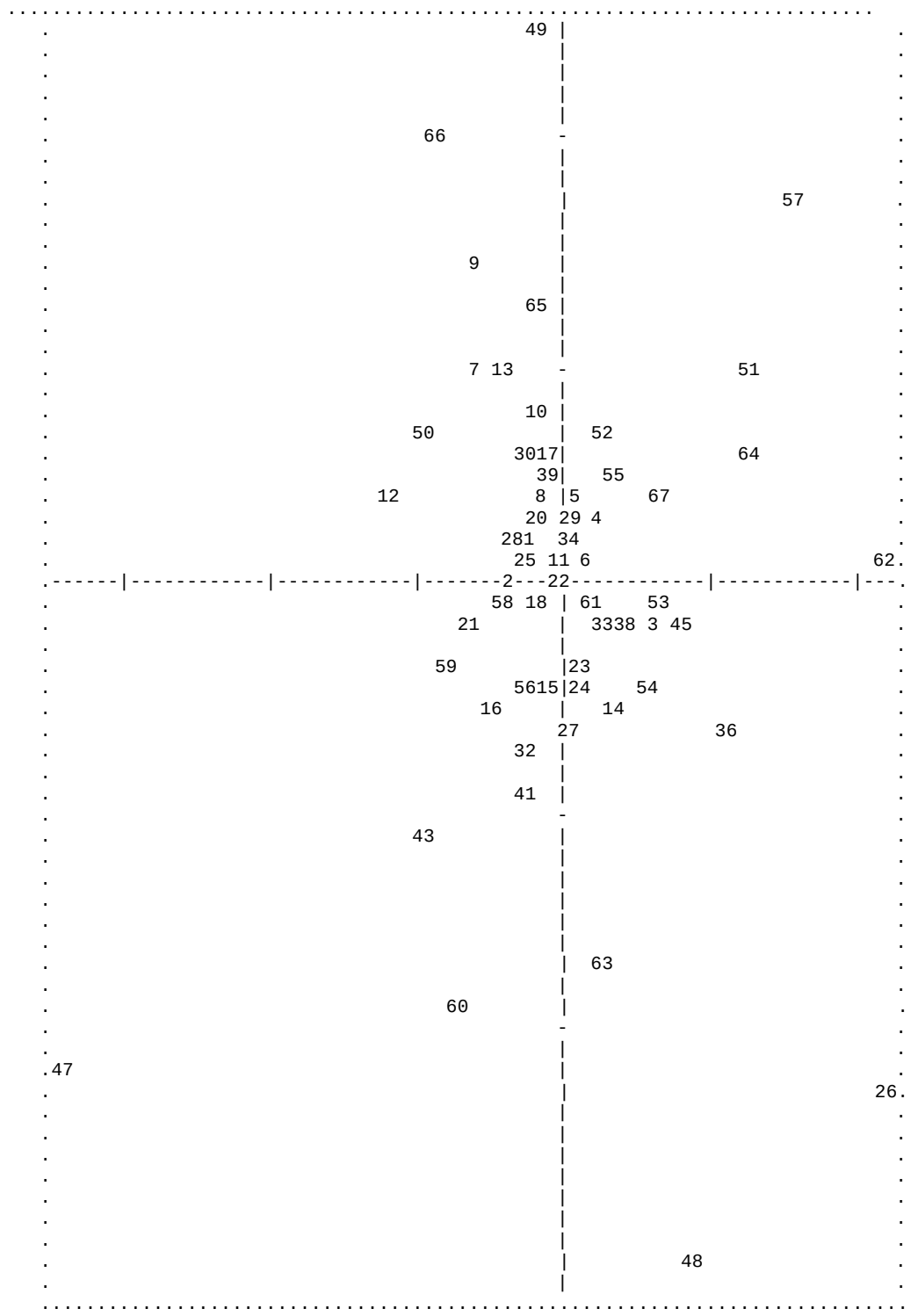
SCALING UNIT = .00777

ONE TIC= .100

VERTICAL AXIS

MINIMUM VALUE= -.29745
MAXIMUM VALUE= .27617
SCALING UNIT = .00956
ONE TIC= .100

OVERLAPPING OBJECTS (NOT PLOTTED)



Note: Three types of Eriophorum Tussock Meadow communities were originally recognized in the field. Two were amalgamated to form the TM community. The other is recognized as a nutrient-poor modified type (TMp)

APPENDIX 12.4-1g: NON-METRIC SCALING ORDINATION OF GROUP A2 PLOTS

Input Parameters

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 M (NUMBER OF OBJECTS)           =   74
 N (NUMBER OF VARIABLES)         =  130
 MCOE (DISTANCE FUNCTION)        =   35
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 INCF (OPTION FOR INIT. CONFIG.)=    0
 LABOBJ (LABELS FOR OBJECTS)     =    1
 ISN (DATA STANDARDIZATION)      =    0
 INIT (RANDOM SEED VALUE)        = 8363
 MSTD (SAVE MATRIX)              =    2
 NPL (NO. OF PLOTS IN BATCH)     =    0
 C (STANDARDIZING CONST.)        = .000
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COORDINATES WRITTEN TO  C:\DATA\RESCAN\ANALYSIS\SYNTAX\COORDW2A

MATRIX SAVED IN         C:\DATA\RESCAN\ANALYSIS\SYNTAX\DISTW2A

LABELS READ FROM        C:\DATA\RESCAN\ANALYSIS\SYNTAX\AW2PTCOM.TXT
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COORDINATES OF OBJECTS

1	1020-16	-.047	.096
2	1024-10	-.024	-.071
3	1028-16	-.035	.071
4	1035-16	-.104	.056
5	1036-10	-.037	-.083
6	1037-10	-.015	-.045
7	1052-2	.084	.057
8	1053-10	-.020	-.058
9	1079-2	.048	.019
10	1083-2	.100	.044
11	1100-16	.039	.034
12	1103-16	-.008	.035
13	1104-2	-.016	.070
14	1111-10	-.035	-.063
15	1113-2	.002	.038
16	1115-16	-.011	.053
17	2006-16	-.098	.066
18	2013-18	.119	-.115
19	2021-10	-.031	-.089
20	2026-2	.048	.038
21	2054-19	-.029	-.000
22	2069-2	.023	.042
23	2083-18	.137	-.128
24	2094-10	-.054	-.140
25	2096-16	-.076	.120
26	2112-16	.030	.054
27	2121-2	.045	.059
28	64774-10	-.061	-.164
29	64781-16	-.099	.096
30	64787-18	.038	-.073
31	64793-16	-.201	.046
32	964798-2	.002	.071
33	64799-16	-.094	.042
34	66607-10	-.023	-.172
35	966608-2	.007	.076
36	966709-2	.000	.009
37	966712-2	.011	.020
38	617333-2	.166	.023
39	617336-2	.068	.016
40	617338-2	.083	.052
41	17341-11	.108	-.049
42	17346-12	-.062	.002
43	17348-18	.018	-.052
44	17349-10	-.043	-.111
45	17350-12	-.198	.085
46	17355-11	.025	-.025
47	17363-11	.087	-.052
48	17364-19	-.023	.007
49	17367-16	.110	.096
50	17368-10	-.074	-.151
51	17369-12	-.092	-.023
52	17370-12	-.069	.022
53	617371-2	.022	-.003
54	617372-2	-.002	.021
55	617374-2	.288	.112
56	617375-2	.111	.035
57	617380-2	-.014	.205
58	617382-2	-.003	.127
59	17383-19	-.038	.023
60	617384-2	.005	.159
61	17385-10	-.093	-.163
62	17392-11	.074	-.043
63	17397-16	-.086	.093
64	17400-16	-.042	.030
65	17403-18	.057	-.078
66	17404-18	.048	-.063
67	17405-18	.008	-.080
68	617408-2	.085	.014
69	17411-10	-.054	-.079
70	617412-2	.069	.103
71	17413-10	-.089	-.147
72	617420-2	.040	.006
73	17426-10	-.121	-.229
74	617428-2	.015	.007

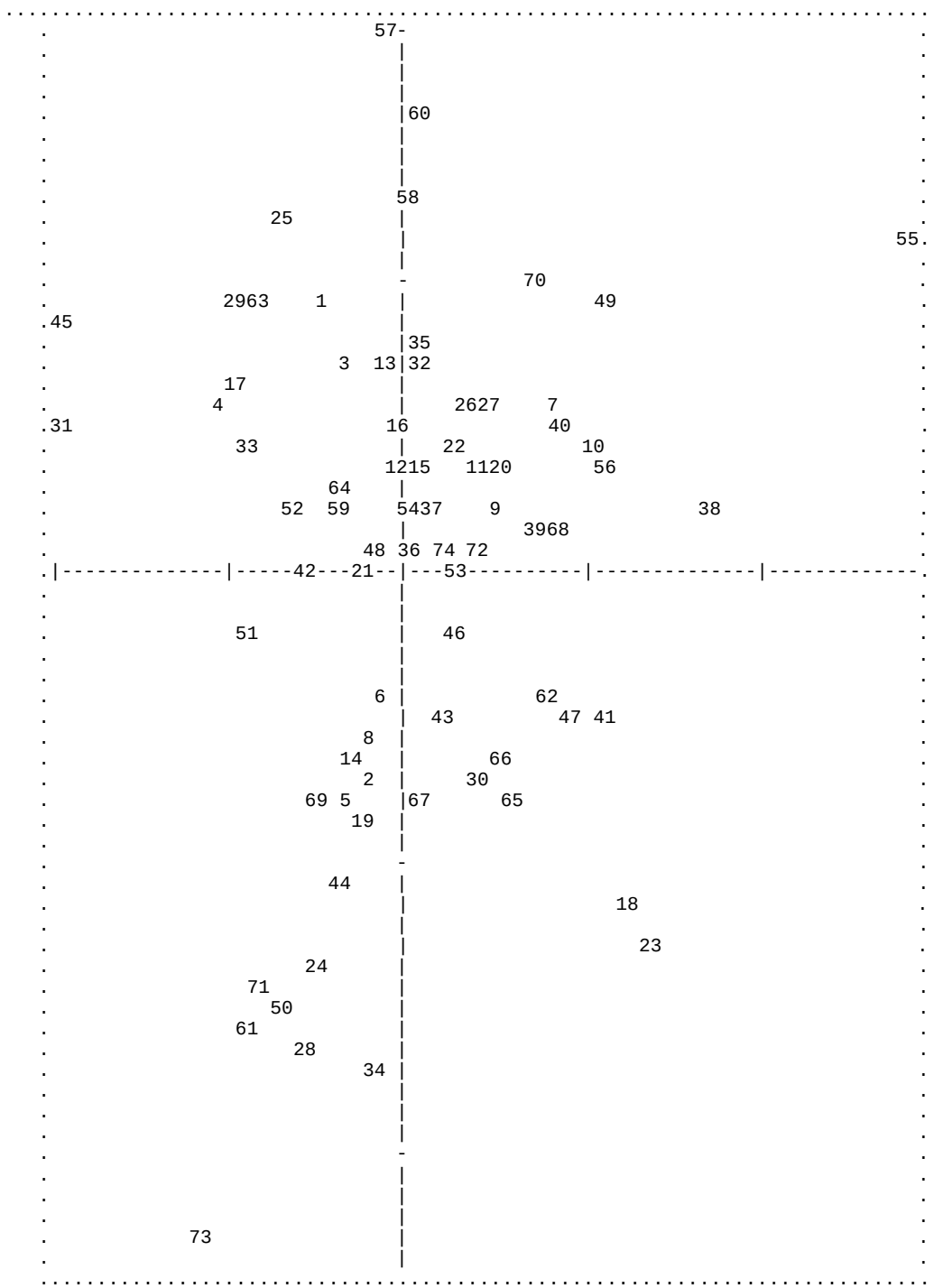
HORIZONTAL AXIS IS DIMENSION 1
VERTICAL AXIS IS DIMENSION   2

HORIZONTAL AXIS

MINIMUM VALUE=   -.20093
MAXIMUM VALUE=   .28804
SCALING UNIT =   .00652
ONE TIC=   .100

VERTICAL AXIS

MINIMUM VALUE=   -.22866
MAXIMUM VALUE=   .20515
SCALING UNIT =   .00723
ONE TIC=   .100



COMMUNITIES IDENTIFIED IN ANALYSIS

RW = Riparian Willow
WM_1 = Wet Meadow (high *Eriophorum*)
WM_2 = Wet Meadow (high *Carex*)
EM = Emergent Marsh
FP = Low Bench Floodplain
DW = Dry Willow
BM = Betula Moss

APPENDIX 12.4-1h: NON-METRIC SCALING ORDINATION OF GROUP B PLOTS

```
INPUT PARAMETERS

 M (NUMBER OF OBJECTS)          =   92
 N (NUMBER OF VARIABLES)        =  139
 MCOE (DISTANCE FUNCTION)       =   35
 NDIM (NO. OF DIMENSIONS)       =    2
 INCF (OPTION FOR INIT. CONFIG.)=    0
 LABOBJ (LABELS FOR OBJECTS)    =    1
 ISN (DATA STANDARDIZATION)     =    0
 INIT (RANDOM SEED VALUE)       = 3712
 MSTD (SAVE MATRIX)             =    2
 NPL (NO. OF PLOTS IN BATCH)    =    0
 C (STANDARDIZING CONST.)     =   .000
 INPUT FORMAT
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  TYPED OUTPUT SAVED IN FILE C:\DATA\RESCAN\reports\97\final\apdx_b8.doc

  COORDINATES WRITTEN TO FILE C:\DATA\RESCAN\ANALYSIS\SYNTAX\COORDD4

  MATRIX SAVED IN FILE C:\DATA\RESCAN\ANALYSIS\SYNTAX\DISTD4


  LABELS READ FROM C:\DATA\RESCAN\ANALYSIS\SYNTAX\ADCOMMLB.TXT
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COORDINATES OF OBJECTS

1	1001-14	.007	.041	21	2001-14	.024	.074
2	1002-7	.116	-.016	22	2005-15	-.039	.036
3	1003-6	-.065	-.030	23	2009-5	.006	-.153
4	1015-5	-.026	-.078	24	2010-7	.059	.032
5	1017-14	.042	.072				
6	1025-6	-.099	-.037	25	2012-5	-.026	-.140
7	1027-15	.036	.043				
8	1030-7	.079	.021	26	2016-14	-.009	.047
9	1041-15	.026	.065				
10	1044-15	.020	.043	27	2018-6	-.142	.014
11	1047-15	.025	.057				
12	1050-6	-.081	-.056	28	2019-5	-.010	-.067
13	1057-5	-.000	-.140				
14	1061-5	-.020	-.141	29	2020-14	-.003	.047
15	1071-7	.103	.034				
16	1084-14	.023	.040	30	2027-7	.053	.020
17	1087-14	.016	.063				
18	1090-14	.017	.071	31	2034-14	-.012	.069
19	1095-7	.064	.008	32	2044-14	.009	.064
20	1116-14	.029	.061	33	2048-5	-.014	-.140
				34	2050-14	-.000	.061
				35	2053-7	.121	.026
				36	2062-21	.029	.014
				37	2066-5	-.056	-.150

38	2067-13	.051	.061
39	2074-6	-.138	-.037
40	2075-15	.015	.028
41	2080-5	-.020	-.116
42	2089-15	-.024	.091
43	2090-14	-.007	.054
44	2095-14	.007	.049
45	2101-7	.084	-.010
46	2109-7	.109	-.005
47	2110-7	.072	-.010
48	2116-5	-.007	-.103
49	2120-7	.057	-.041
50	964743-5	-.017	-.141
51	64782-15	-.017	.044
52	64788-21	.014	.003
53	64802-15	-.084	.111
54	66706-15	-.095	.121
55	66707-15	.002	.029
56	966710-5	-.069	-.175
57	617329-5	-.061	-.100
58	617332-5	.007	-.076
59	617334-7	.017	-.031
60	17337-15	-.025	.050
61	17339-13	.120	.224
62	17340-21	-.000	.017
63	617342-5	-.071	-.159
64	617344-6	-.099	-.077
65	617351-6	-.137	-.036
66	617352-7	.024	-.008
67	617353-6	-.087	-.037
68	617354-7	.098	.022
69	617357-5	-.012	-.085
70	617358-6	-.135	.048
71	617362-7	.103	-.031
72	617366-7	.063	.020
73	617376-6	-.063	-.025
74	17377-13	.096	.180
75	17378-21	-.004	.021
76	17379-13	.085	.179
77	17381-14	-.003	.057
78	17386-14	-.004	.068
79	17387-14	-.042	.078
80	17388-14	-.033	.081
81	617390-5	-.052	-.085
82	17391-14	-.023	.062
83	17396-15	-.047	.059
84	17399-15	-.017	.000
85	617401-6	-.108	.035
86	617409-7	.083	.024
87	617410-7	.193	-.015
88	617415-5	.004	-.100
89	617416-6	-.127	-.007
90	617418-5	-.010	-.164
91	617425-5	-.028	-.155
92	617429-7	.065	.037

HORIZONTAL AXIS IS DIMENSION 1

VERTICAL AXIS IS DIMENSION 2

HORIZONTAL AXIS

MINIMUM VALUE= -.14190

MAXIMUM VALUE= .19348

SCALING UNIT = .00447

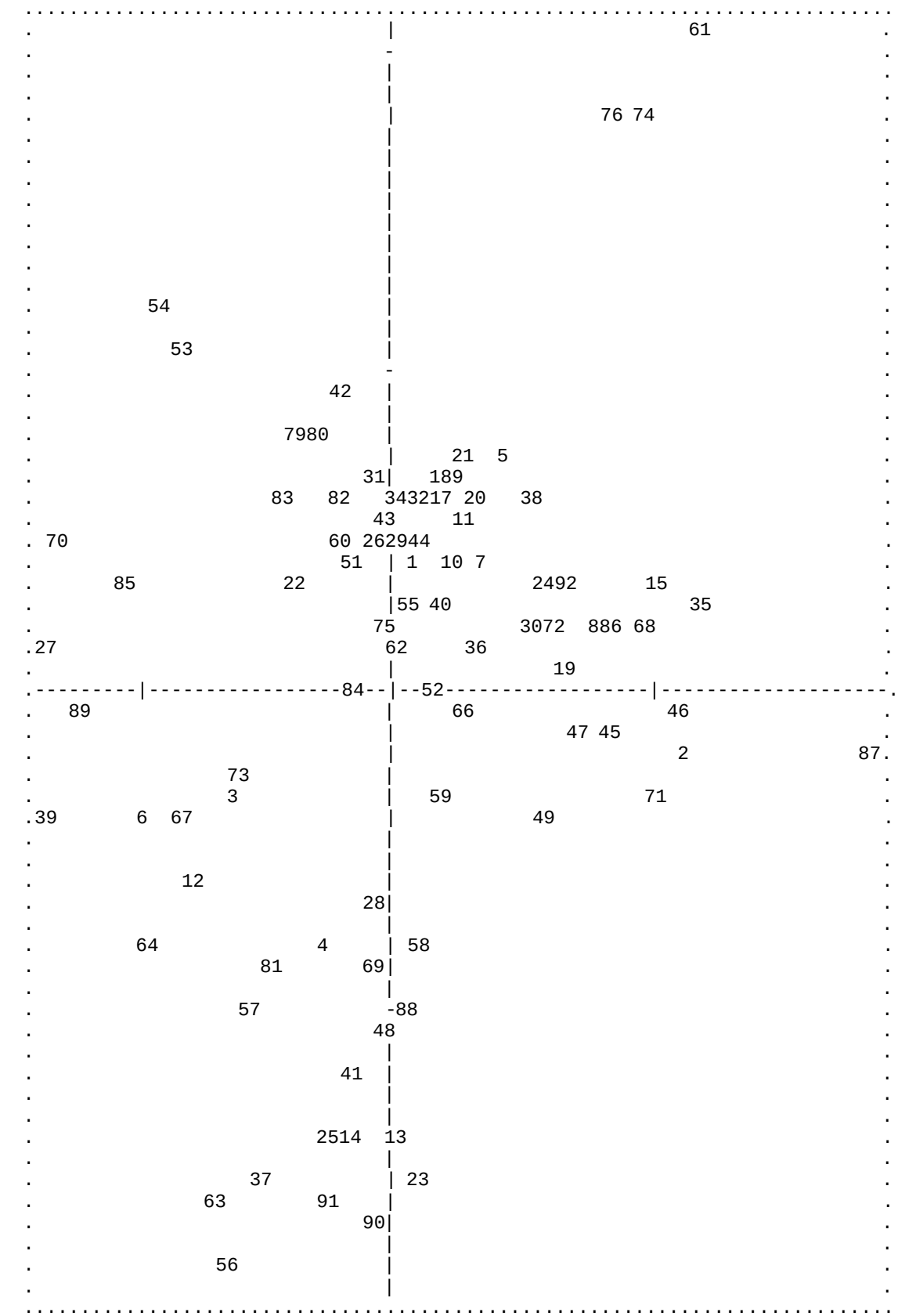
ONE TIC= .100

VERTICAL AXIS

MINIMUM VALUE= -.17475
MAXIMUM VALUE= .22396
SCALING UNIT = .00665
ONE TIC= .100

OVERLAPPING OBJECTS (NOT PLOTTED)

ID.NUMBER	COORDINATES	
16	.02330	.03981
33	-.01361	-.13958
50	-.01680	-.14113
65	.13711	-.03634
77	-.00332	.05736
78	-.00378	.06778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54
53
42
7980
21 5
31
189
83 82 343217 20 38
43
11
70
60 262944
51
1 10 7
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22
2492
15
55 40
35
75
3072 886 68
27
62
36
19
89
66
46
47 45
2
87
73
3
59
71
39
6 67
49
12
28
64
4
58
81
69
57
88
48
41
2514 13
37
23
63
91
90
56

Communities identified in Analysis:

BL = Betula-Ledum-Lichen
BLb= Betula-Ledum-Lichen (bouldery)
MB = Marine Backshore
MI = Marine Intertidal
SH = Dwarf Shrub-Heath
DH = Dryas Herb Mat
CL = Dry Carex Lichen

Appendix 12.4-2
Relative Soil Moisture and Nutrient Regime Terminology Used in Terrestrial Ecosystem Classification

Appendix 12.4-2: Relative Soil Moisture and Nutrient Regime Terminology Used in Terrestrial Ecosystem Classification

Relative Soil Moisture Regimes[1]

Very Xeric (0)	Water is removed extremely rapidly in relation to supply; soil is moist for a negligible time after precipitation.
Xeric (1)	Water is removed rapidly in relation to supply; soil is moist for brief periods of time after precipitation.
Subxeric (2)	Water is removed rapidly in relation to supply; soil is moist for short periods of time after precipitation.
Submesic (3)	Water is removed rapidly in relation to supply; water is available for moderately short periods of time after precipitation.
Mesic (4)	Water is removed somewhat slowly in relation to supply; soil may remain moist for a significant, but sometimes short period of the year. Available soil moisture reflects climatic inputs.
Subhygric (5)	Water is removed slowly enough to keep the soil wet for for a significant part of the growing season; some temporary seepage and possible mottling is present below 20 cm.
Hygric (6)	Water is removed slowly enough to keep the soil wet for most of the growing season; permanent seepage and mottling; weak gleying may be evident.
Subhydric (7)	Water is removed slowly enough to keep the water table at or near the surface for most of the year; gleyed mineral or organic soils; permanent seepage less than 30 cm below the surface.
Hydric (8)	Water is removed so slowly that the water table is at or above the soil surface all year; gleyed mineral or organic soils

Relative Soil Nutrient Regimes[1]

Five classes of relative nutrient regimes (A -very poor, B - poor, C - medium, D - rich, and E - very rich) are used to characterize soils. Field determination of a soil's relative nutrient regime is a subjective process requiring the consideration of the following properties;

- humus form
- nature of the A horizon (Ah or Ae)
- soil depth
- organic matter content
- soil texture
- coarse fragment content
- seepage or flooding, and
- parent material mineralogy

[1] taken from Meidinger and Pojar 1991

Appendix 12.4-3
List of Plants Identified in the Hope Bay Belt Study Area

APPENDIX 12.4-3: List of Plants Identified in the Hope Bay Belt Study Area

Botanical name	Code	Common Name
Shrubs		
Andromeda polifolia (H)	ANDR POL	bog rosemary
Arctostaphylos alpina (P)	ARCT ALP	red bearberry
Arctostaphylos rubra (P)	ARCT RUB	alpine bearberry
Betula glandulosa (P)	BETU GLA	dwarf birch
Cassiope tetragona (P)	CASS TET	arctic white-heather
Empetrum nigrum (P)	EMPE NIG	crowberry
Ledum decumbens (P)	LEDU DEC	northern Labrador tea
Rhododendron lapponicum (P)	RHOD LAP	Lapland rosebay
Rubus chamaemorus (P)	RUBU CHA	cloudberry
Salix alaxensis (P)	SALI ALA	Alaska willow
Salix arctica (P)	SALI ARC	arctic willow
Salix arctophila (P)	SALI ARO	
Salix glauca (H)	SALI GLA	gray-leaved willow
Salix lanata ssp. richardsonii (P)	SALI LAN	Richardson's willow
Salix planifolia (P)	SALI PLA	plane-leaved willow
Salix polaris (P)	SALI POL	snowbed willow
Salix reticulata (P)	SALI RET	net-veined willow
Vaccinium uliginosum var. alpinum (P)	VACC ULI	alpine bilberry
Vaccinium Vitis-idaea var. minus (P)	VACC VIT	lingonberry
Herbs		
Achillea nigrescens (P)	ACHI NIG	yarrow
Androsace septentrionalis (P)	ANDR SEP	fairy candelabra
Anemone parviflora (P)	ANEM PAR	northern anenome
Anenome Richardsonii (P)	ANEM RIC	yellow anenome
Antennaria angustata (P)	ANTE ANG	pussytoes
Antennaria friesiana (H)	ARME MAR	pussytoes
Arabis arenicola (P)	ARAB ARE	rock-cress
Armeria maritima ssp. labradorica (P)	ARME MAR	thrift
Arnica alpina ssp. angustifolia (P)	ARNI ALP	alpine arnica
Astragalus alpinus (P)	ASTR ALP	hairy arctic milk-vetch
Astragalus eucosmus (P)	ASTR EUC	milk-vetch
Caltha palustis var. arctica (P)	CALT PAL	marsh marigold
Campanula uniflora (P)	CAMP UNI	arctic harebell
Cardamine pratensis (P)	CARD PRA	cuckoo flower
Castilleja elegans (P)	CAST ELE	elegant paintbrush
Cerastium Beeringianum (P)	CERA BEE	mouse-ear chick-weed
Chrysanthemum integrifolium (P)	CHRY INT	chrysanthemum
Chrysosplenium tetrandrum (P)	CHRY TET	golden saxifrage

APPENDIX 12.4-3: List of Plants Identified in the Hope Bay Belt Study Area

Botanical name	Code	Common Name
Crepis nana (P)	CREP NAN	dwarf hawk's-beard
Cystopteris fragilis (P)	CYST FRA	fragile fern
Draba alpina (P)	DRAB ALP	alpine draba
Draba Bellii (P)	DRAB BEL	
Draba cinerea (P)	DRAB CIN	
Draba glabella (P)	DRAB GLA	smoothish draba
Draba lactea (P)	DRAB LAC	
Draba nivalis (P)	DRAB NIV	
Dryas integrifolia (P)	DRYA INT	arctic avens
Dryopteris fragrans (P)	DRYO FRA	fragrant fern
Epilobium latifolium (P)	EPIL LAT	broad-leaved willow-herb
Epilobium palustre (H)	EPIL PAL	swamp willow-herb
Equisetum arvense (P)	EQUI ARV	common horsetail
Equisetum scirpoides (P)	EQUI SCI	dwarf scouring-rush
Erigeron eriocephalus (P)	ERIG ERI	arctic fleabane
Erigeron humilis (P)	ERIG HUM	mountain fleabane
Erysium Pallasii (P)	ERYS PALL	Pallas' wallflower
Eutrema Edwardsii (P)	EUTR EDW	Edward's eutrema
Habenaria obtusata (P)	HABE OBT	northern bog orchid
Hedysarum alpinum (P)	HEDY ALP	liquorice-root
Hedysarum Mackenzii (P)	HEDY MAC	northern sweet-vetch
Hippurus vulgaris (P)	HIPP VUL	mare's tail
Honckenya peploides (P)	HONC PEP	seabeach sandwort
Kobresia myosuroides (P)	KOBR MYO	Bellard's Kobresia
Kobresia simpliciuscula (P)	KOBR SIM	simple Kobresia
Lesquerella arctica (P)	LESQ ARC	arctic bladder pod
Lycopodium selago (P)	LYCO SEL	fir club-moss
Melandrium affine (P)	MELA AFF	arctic lynchis
Melandrium apetalum ssp. arcticum (P)	MELA APE	nodding bladder campion
Minuartia rubella (P)	MINU RUB	reddish sandwort
Oxyria digyna (P)	OXYR DIG	mountain sorrel
Oxytropis arctica (P)	OXYT ARC	arctic oxytrope
Oxytropis arctobia (P)	OXYT ARO	silvery oxytrope
Oxytropis Maydelliana (P)	OXYT MAY	Maydell's oxytrope
Papaver radicatum (P)	PAPA RAD	arctic poppy
Parnassia Kotzebuei (P)	PARN KOT	Kotzebue's grass-of-Parnassus
Pedicularis arctica (P)	PEDI ARC	arctic lousewort
Pedicularis capitata (P)	PEDI CAP	capitate lousewort
Pedicularis labradorica (P)	PEDI LAB	Labrador lousewort
Pedicularis lanata (P)	PEDI LAN	woolly lousewort
Pedicularis lapponica (P)	PEDI LAP	Lapland lousewort
Pedicularis sudetica (P)	PEDI SUD	Sudetan lousewort
Petasites frigidus (P)	PETA FRI	sweet coltsfoot
Plantago juncoides (P)	PLAN JUN	seaside plantain

APPENDIX 12.4-3: List of Plants Identified in the Hope Bay Belt Study Area

Botanical name	Code	Common Name
Polygonum viviparum (P)	POLY VIV	alpine bistort
Potentilla Egedii (P)	POTE EGE	pacific silverweed
Potentilla hyparctica (P)	POTE HYP	arctic cinquefoil
Potentilla palustris (P)	POTE PAL	marsh cinquefoil
Potentilla pulchella (P)	POTE PUL	bright cinquefoil
Pyrola grandiflora (P)	PYRO GRA	large-flowered wintergreen
Ranunculus Gmelinii (P)	RANU GME	yellow water crowfoot
Ranunculus nivalis (P)	RANU NIV	snow-buttercup
Ranunculus Pallasii (P)	RANU PAL	Palla's buttercup
Ranunculus pedatifidus var. leiocarpus (P)	RANU PED	northern buttercup
Saxifraga caespitosa ssp. eucaespitosa (P)	SAXI CAE	tufted saxifrage
Saxifraga cernua (P)	SAXI CER	nodding saxifrage
Saxifraga foliolosa (P)	SAXI FOL	
Saxifraga hirculus (P)	SAXI HIR	yellow marsh saxifrage
Saxifraga nivalis (P)	SAXI NIV	alpine saxifrage
Saxifraga oppositifolia (P)	SAXI OPP	purple saxifrage
Saxifraga punctata ssp. Porsildiana (P)	SAXI PUN	heart-leaved saxifrage
Saxifraga rivularis (P)	SAXI RIV	brook saxifrage
Saxifraga tricuspidata (P)	SAXI TRI	prickly saxifrage
Senecio atropurpureus (P)	SENE ATR	groundsel
Silene acaulis var. acaulis (P)	SILE ACA	moss campion
Stellaria humifusa (P)	STEL HUM	low chickweed
Stellaria laeta (P)	STEL LAE	
Stellaria monantha (P)	STEL MON	
Taraxacum hyperborea (P)	TARA HYP	
Taraxacum lacerum (P)	TARA LAC	
Tofieldia coccinea (P)	TOFI COC	northern false asphodel
Tofieldia pusilla (P)	TOFI PUS	common false asphodel
Woodsia glabella (P)	WOOD GLA	smooth cliff fern

Grasses

Agropyron boreale ssp. boreal (H)	AGRO LAT	broadglumed wheatgrass
Agropyron trachycaulum (H)	AGRO TRA	
Alopecurus alpinus (P)	ALOP ALP	alpine foxtail
Arctagrostis latifolia (P)	ARCT LAT	polar grass
Artcophila fulva (P)	ARCT FUL	
Calamagrostis canadensis var. Langsdorfii (P)	CALA CAN	bluejoint reedgrass
Calamagrostis lapponica var. nearctica (P)	CALA LAP	
Calamagrostis neglecta (P)	CALA NEG	slimstem reedgrass
Deschampsia caespitosa (P)	DESC CAE	tufted hairgrass
Dupontia Fisheri ssp. psilosantha (P)	DUPO PSI	goose-grass
Elymus arenarius ssp. mollis (P)	ELYM ARE	lyme grass
Festuca brachyphylla (P)	FEST BRA	alpine fescue

APPENDIX 12.4-3: List of Plants Identified in the Hope Bay Belt Study Area

Botanical name	Code	Common Name
Hierochloe alpina (P)	HIER ALP	alpine sweet grass
Hierochloe pauciflora (P)	HIER PAU	sweet grass
Poa arctica (P)	POA ARC	arctic bluegrass
Poa glauca (P)	POA GLA	glaucous bluegrass
Puccinelia phryganodes (P)	PUCC PHR	creeping alkaligrass
Trisetum spicatum (P)	TRIS SPI	spike trisetum

Sedges and Rushes

Carex amblyorhyncha (P)	CARE AMB	
Carex aquatilis var. stans (P)	CARE AQU	water sedge
Carex atrofusca (P)	CARE ATR	
Carex Bigelowii (P)	CARE BIG	Bigelow's sedge
Carex capillaris (P)	CARE CAP	hair sedge
Carex filifolia (P)	CARE FIL	thread-leaved sedge
Carex glacialis (P)	CARE GLA	
Carex holostoma (P)	CARE HOL	
Carex maritima (P)	CARE MAR	curved sedge
Carex membranacea (P)	CARE MEM	fragile sedge
Carex microglochin (P)	CARE MIC	few-seeded bog sedge
Carex misandra (P)	CARE MIS	few-flowered sedge
Carex nardina var. atriceps (P)	CARE NAR	spikenard sedge
Carex physocarpa (P)	CARE PHY	russet sedge
Carex rariflora (P)	CARE RAR	several-flowered sedge
Carex rupestris (P)	CARE RUP	curly sedge
Carex scirpoidea (P)	CARE SCI	single-spike sedge
Carex subspathacea (P)	CARE SUB	Hoppner sedge
Carex gynocrates (P)	CARE SYN	yellow bog-sedge
Carex ursina (P)	CARE URS	bear sedge
Carex vaginata (P)	CARE VAG	sheathed sedge
Eriophorum angustifolium (P)	ERIO ANG	tall cotton-grass
Eriophorum Scheuchzeri (P)	ERIO SCH	Scheuchzeri's cotton-grass
Eriophorum vaginatum (P)	ERIO VAG	sheathed cotton-grass
Juncus albescens (P)	JUNC ALB	three-flowered rush
Juncus balticus var. alaskanus (P)	JUNC BAL	Baltic rush
Juncus biglumis (P)	JUNC BIG	two-flowered rush
Juncus castaneus (P)	JUNC CAS	chestnut rush
Luzula confusa (P)	LUZU CON	northern wood-rush
Luzula nivalis (P)	LUZU NIV	arctic wood-rush
Luzula Wahlenbergii (P)	LUZU WAH	Piper's rush
Scirpus caespitosus ssp. austriacus (P)	SCIR CAE	tufted clubrush

Mosses

APPENDIX 12.4-3: List of Plants Identified in the Hope Bay Belt Study Area

Botanical name	Code	Common Name
Aulacomnium palustre (V)	AULA PAL	glow moss
Aulacomnium turgidum (V)	AULA TUR	
Bryum pseudotriquetrum (V)	BRYU PSE	tall clustered thread moss
Calliergon giganteum (V)	CALL GIG	giant water moss
Cinclidium arcticum (L)	CINC ARC	
Dicranum elongatum (L)	DICR ELO	
Dicranum groenlandicum (L)	DICR GRO	
Drepanocladus brevifolius (L)	DREP BRE	
Drepanocladus revolvens (V)	DREP REV	red hook moss
Hylocomium splendens (V)	HYLO SPL	step moss
Hypnum plicatulum (L)	HYPN PLI	
Hypnum pratense (V)	HYPN PRA	meadow pigtail moss
Onchophorus wahlenbergii (V)	ONCH WAH	mountain curved-back moss
Plagiomnium ellipticum (V)	PLAG ELL	marsh magnificent moss
Polytrichastrum alpinum	POLY ALP	alpine hair-cap
Polytrichum piliferum (V)	POLY PIL	awned hair-cap
Polytrichum swartzii (L)	POLY SWA	
Ptilidium ciliare (V)	PTIL CIL	northern naugehyde liverwort
Racomitrium lanuginosum (V)	RACO LAN	hoary rock moss
Sphagnum squarrosum (S)	SPHA SQU	squarrose peat moss
Tomenthypnum nitens (V)	TOME NIT	golden fuzzy fen moss

Lichens

Cetraria spp. (V)	FRUTICOSE	
Cladina spp. (V)	FRUTICOSE	
Cladonia spp. (V)	FRUTICOSE	
Dactylina arctica (V)	FRUTICOSE	brown finger lichen
Peltigera spp. (V)	FOLIOSE	
Rhizocarpon geographicum (V)	CRUSTOSE	map lichen
Stereocaulon spp. (V)	CRUSTOSE	
Thamnolia subuliformis (V)	FRUTICOSE	

(P) - Porsild & Cody, 1988
(H) - Hulten, 1968
(V)- Vitt, 1988
(L) - LaFarge-England, 1997

Appendix 12.4-4
Key to Ecosystem Units of the Hope Bay Belt Study Area, N.W.T., Canada

APPENDIX 12.4-4: Key to Ecosystem Units of the Hope Bay Belt Study Area, N.W.T., Canada

1a. *Eriophorum vaginatum* present at high cover (>35%)

2a. *Ledum decumbens* present at low cover (<10%)

TM Ecosytem Unit:

- SMR: 4 - 5 (6)
- SNR: C - B (D)
- Slope: 0-5 (-10)
- Soil Texture: fine (SiCl)
- Terrain: almost exclusively occurs on marine

2b. *Ledum decumbens* present at moderate to high cover (>10%)

TMp Ecosytem Unit:

- SMR: 4-5 (6)
- SNR: B (C)
- Slope: 0 – 5 (-10)
- Soil texture: organic veneer overlying fines
- Terrain: almost exclusively occurs on marine
- Water Table: usually present

1b. *Eriophorum vaginatum* absent or present at low cover (<10%)

3a. Total shrub cover high (>10%)

4a. *Salix glauca* is dominant shrub

DW Ecosytem Unit:

- SMR: (3) 4 (5)
- SNR: C - B
- Soils: almost always occurs on fine marine
- slopes variable (5-55%)

4b. *Salix glauca* is not dominant shrub

5a. S*alix lanata* and/or *pulchra* present at high cover (>55%)

RW Ecosytem Unit:

- SMR: 5 – 6 (7)
- SNR: C – D
- Slopes 0-7 (occasionally higher to 20)%
- Soil texture and terrain variable
- Water table presence variable

5b. *Salix lanata* and/or *S. pulchra* present at low to moderate cover

6a. *Cassiope tetragona* present at moderate to high cover (>20%)

SH Ecosytem Unit:

- SMR: 4 (3)
- SNR: C – B
- Soil texture and terrain variable
- Water table: may or may not be present

6b. *Cassiope tetragona* absent or present at low cover

◎

7a *Betula glandulosa* present at high cover (>40%)

BM Ecosytem Unit:

- SMR: (3) 4 (5)
- SNR: C – B
- Soil textures and terrain variable
- Water table may or may not be present

7b *Betula glandulosa* present at low to moderate cover (<40%)

8a. Total shrub cover high (>50%); boulder cover low (<5%)

BL Ecosytem Unit:

- SMR: (1) 2 – 3 (4)
- SNR: B – A
- Soil texture: coarse (S and LS)
- Terrain: till (glaciofluvial)
- Water table: may or may not be present

8b. Total shrub cover moderate (<50%); boulder cover moderate to high (>5%)

BLb Ecosytem Unit:

- SMR: 4 – 3
- SNR: C – B
- Soil textures and terrain variable
- Terrain: till (glaciofluvial)
- Water table: may or may not be present

3b. Total shrub cover low (<10%)

9a. Dry Sites

10a. Ocean backshore with *Elymus arenarius* present (*Puccinellia phryganodes* absent; if present go to 12a.)

MB Ecosytem Unit:

- SMR: 1 (2)
- SNR: A
- Slope 0-10%
- Soil texture: S with little or no structure
- Water table: >1m depth

10b. Inland sites with *Elymus arenarius* absent

11a. *Dryas integrifolia* present at moderate to high cover (40-70%)

DH Ecosytem Unit:

- SMR: (1) 2 - 3 (4)
- SNR: C – B
- Slopes: 0-7%
- Soil texture variable SL to LS
- Terrain: till, sandy/gravelly marine & weathered bedrock

11b. *Dryas integrifolia* present at low to moderate cover (<30%)

CL Ecosytem Unit:

- SMR: 1-2 (3)
- SNR: B - A (C)
- Slopes: 0-7%
- Soil texture: coarse - S (LS)
- Terrain: till, glaciofluvial,sandy marine

9b. Wet Sites

12a. Saltwater influence; *Puccinellia phryganodes* present; intertidal

MI Ecosytem Unit:

- SMR: 1-2 (3)
- SNR: B - A (C)
- Slopes: 0-7%
- Soil texture: sand veneer overlying fines
- Terrain: marine
- Water table: fluctuating

12b. Freshwater seepage or inundation

13a. *Hippuris vulgaris* and/or *Caltha palustris* and/or *Potentilla palustris* present at moderate to high cover; pockets of standing open water may be present

14a. *Dupontia fisheri* present

FP Ecosytem Unit:

- SMR: 7 - 6
- SNR: C - D
- Slopes: 0-2%
- Soil texture: bedded sands and silts (occasionally clayey)
- Terrain: fluvial

14b. *Dupontia fisheri* absent

EM Ecosytem Unit:

- SMR:
- SNR: C - D (E)
- Slopes: 0%
- Soil texture: organic
- Terrain: organic plain
- Water table: at or above surface throughout growing season

13b. *Hippuris vulgaris* and/or *Caltha palustris* and/or *Potentilla palustris* absent or present at low cover

WM Ecosytem Unit:

- SMR: 6 – 7 (8)
- SNR: C - D (E)
- Slopes: 0 - 1.5 (-7)%
- Soil texture: organic or fine to moderate
- Terrain: marine, or org. veneer overlying variable mineral deposits
- Water table: at or near the surface throughout growing season

Appendix 12.4-5
Photographic Representation of Ecosystem Units

APPENDIX 12.4-5: PHOTOGRAPHIC REPRESENTATION OF ECOSYSTEM UNITS

Plate 1 Dry Carex-Lichen (CL) Ecosystem Unit situated on crest of esker.

Plate 2 **Betula-Ledum-Lichen (BL) Ecosystem Unit situated on washed glacial til plain.**

Plate 3 **Dryas Herb Mat (DH) Ecosystem Unit situated on glacial till overlying bedrock.**

Plate 4 Betula-Moss (BM) Ecosystem Unit situated on sandy fluvial plain.

Plate 5 Dwarf-Shrub-Heath (SH) Ecosystem Unit situated on mid-slope of bedrock outcrop overlain by washed glacial til.

Plate 6 Dwarf Shrub-Heath (SH) Ecosystem Unit situated on steep side-slope of diabase cuesta overlain by blocky colluvium or glacial till.

Plate 7 **Eriophorum Tussock Meadow (TM) Ecosystem Unit situated on level to gently-sloped fine marine substrates.**

Plate 8 **Aerial view of Dry Willow (DW) Ecosystem (dull green) situated on the banks of the Koignuk River; Riperian Willow(RW) Unit is seen here as the bright green linear seepage channel and strips adjacent to the River.**

Plate 9 **Riparian Willow (RW) Ecosystem Unit situated on gently-sloped fluvial sands along the banks of the Koignuk River. In the background (light brown), adjacent to the river, lies the Low Bench Floodplain unit.**

Plate 10 **Low Bench Floodplain (FP) Ecosystem Unit situated on level fluvial banks of the Koignuk River. The unit is fringed by the Riparian Willow unit visible in the upper left-hand corner of the photo.**

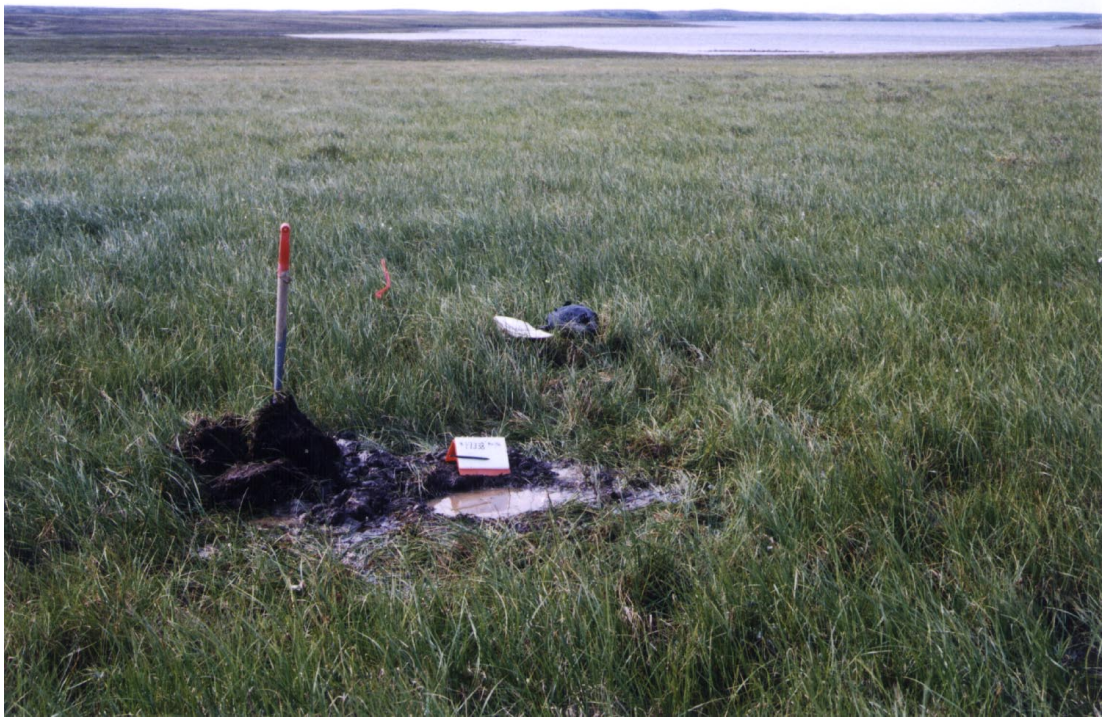

Plate 11 **Wet Meadow TM Ecosystem Unit dominated by *Carex aquatilis* var. *stans* and situated on a level organic plain adjacent to lake.**

Plate 12 **Wet Meadow TM Ecosystem Unit dominated by *Eriophorum angustifolium* and situated on a level organic plain adjacent to lake.**

Plate 13 **Emergent Marsh (EM) Ecosystem Unit dominated by *Carex aquatilis* var. *stans* and *Potentilla palustris* (not visible) and situated at the outlet of a small unnamed creek draining into Doris Lake.**

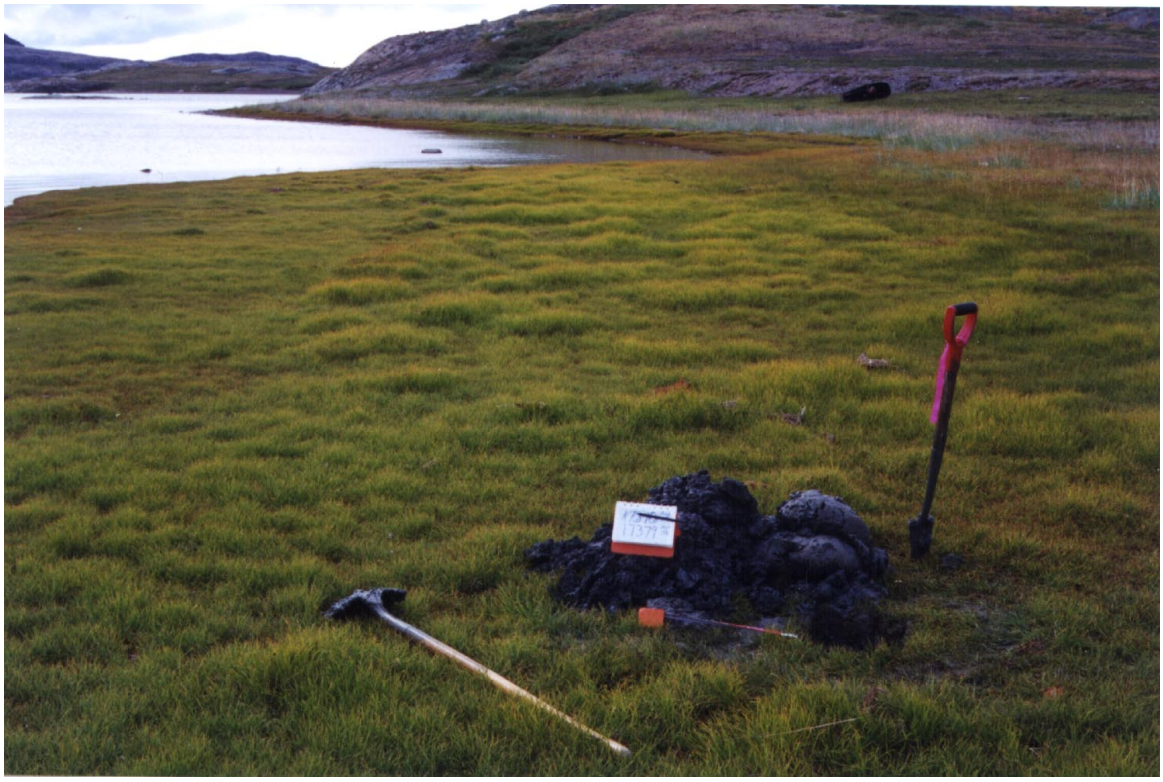

Plate 14 **Marine Intertidal (MI) Ecosystem Unit situated on marine sands over clays in Roberts Bay. Dominant species are *Puccinelia phyrganodes* and *Carex subspathacea*.**

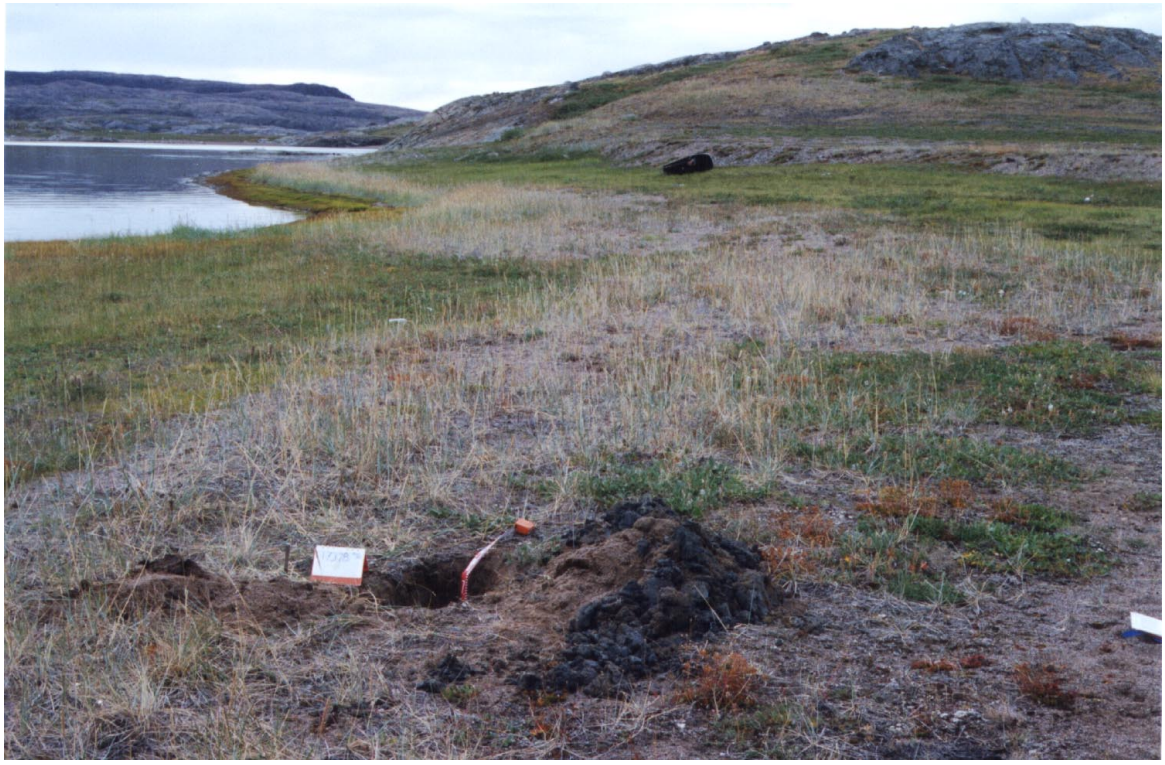

Plate 15 **Marine Backshore (MB) Ecosytem Unit situated on well-drained sands on Roberts Bay. Dominant is the graminoid *Elymus arenarius ssp. mollis.***