

APPENDIX I, Red Dog Mine 2010 Vegetation Monitoring

Teck Alaska Incorporated's
Red Dog Mine
2010 Vegetation Monitoring
in accordance with the Solid Waste Permit

INITIAL BASELINE FOR A DETERMINATION
OF TREND REGARDING FUGITIVE DUST
EFFECTS

February, 2011

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Teck Alaska Incorporated's

Red Dog Mine 2010 Vegetation Monitoring in accordance with the Solid Waste Permit

INITIAL BASELINE FOR A DETERMINATION OF TREND REGARDING FUGITIVE DUST EFFECTS AT THE RED DOG MINE AND ASSOCIATED FACILITIES

1.0 INTRODUCTION

1.1 General

Cedar Creek Associates, Inc. (Cedar Creek) was retained in 2010 by Teck Alaska Incorporated (Teck) to survey previously established long-term vegetation monitoring plots surrounding the Red Dog mine and to establish and survey long-term monitoring points at the port site and along the DeLong Mountain Regional Transportation System (DMTS) road. A requirement for monitoring of these transects is included in the Waste Management, Reclamation and Closure Monitoring Plan, and by reference, monitoring is also required by the ADEC Solid Waste Permit (SWP) that supports the DMTS Fugitive Dust Risk Assessment. The object of this monitoring effort is to provide for a means to precisely and consistently evaluate the effectiveness of dust control efforts as expressed by vegetation community health primarily through two key measures: 1) moss and lichen cover, and 2) vascular plant cover and composition. Point-intercept vegetation sampling was conducted on 55 established plots (AT plots) located systematically along nine radial lines surrounding the Red Dog mine at distances of 000 meters (m), 500 m, 1,000 m, 1,500 m, 2,500 m and 4,000 m from the origin. Origins are within 50 meters of active mine facilities and four of the 000 meter plots required re-location due to past and planned expansion of facilities. Furthermore, one of the radial alignments exhibits an extra plot at 700 m due to existence of a unique snowbank area.

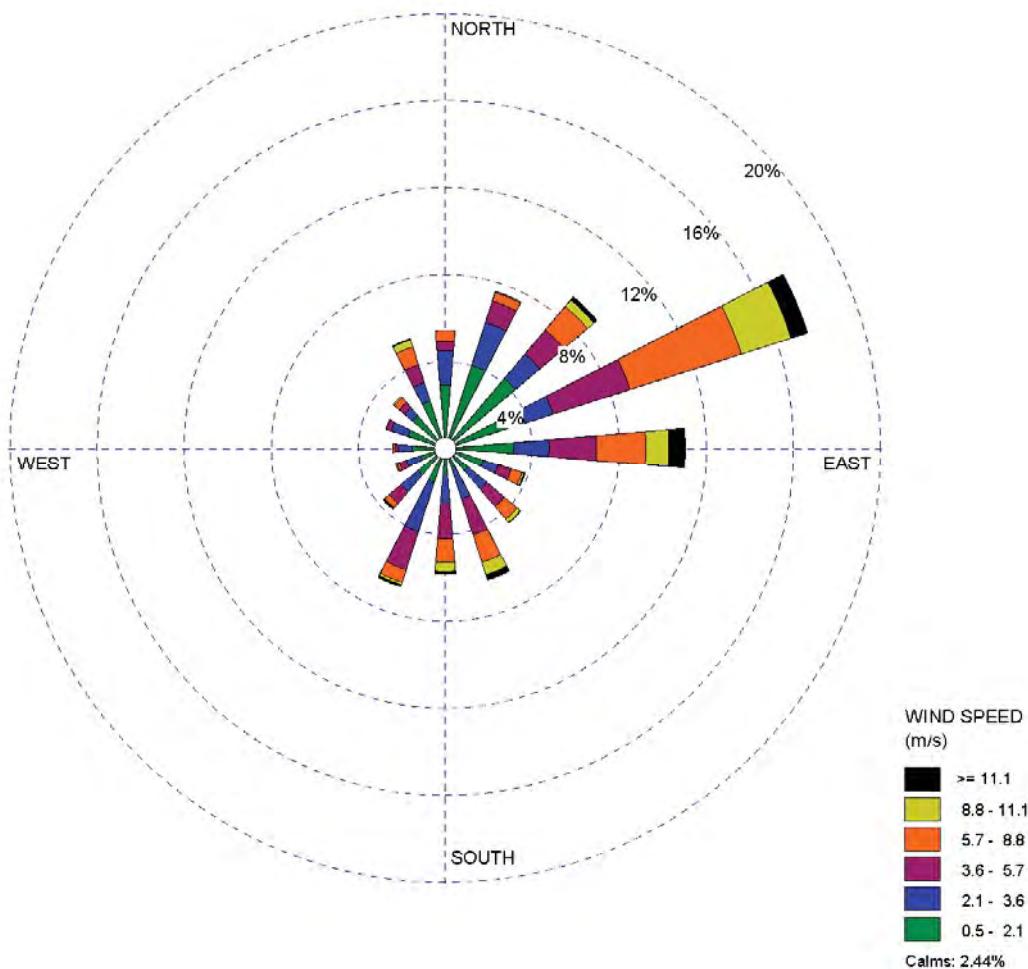
Vegetation sampling also occurred at four sites established along the DMTS road and/or port facilities. Three monitoring transects parallel to the DMTS road were established at each of these four sites at distances of 100 meters, 1,000 m and 2,000 m for a total of 12 stations (RAT points).

The final portion of the monitoring program was the establishment and sampling of four control areas (CAT plots), generally agreed to be unaffected by fugitive dust (upwind of and at a considerable distance from facilities), to help distinguish changes in vegetation community dynamics caused by natural forces and yearly or long-term climate fluctuations as opposed to the effects of mine-related activities.

Although many of the sampled plots / transects had been established at a previous time, comparisons over time cannot occur with confidence due to increased levels of sampling error associated with the older techniques. Therefore, the data collection effort in 2010 should be considered as the initial baseline against which future comparisons can be made. The statistical power of this initial baseline is substantial given that a total of 84,000 potential intercepts were recorded in 2010. All sampling was conducted from July 25 – August 4, 2010 by Cedar Creek's Senior Range/Wildlife Ecologist, Mr. Steven R. Viert and Sr. Plant Ecologist, Mr. Erik M. Mohr.

1.2 Wind Direction

Wind direction has played an important role in influencing the effects of fugitive dust. The chart of directional data presented below is taken from a meteorological station at the mill site and indicates a predominantly east to northeast direction of oncoming wind. The easterly wind direction especially holds true for wind speeds greater than 8.8 meters per second (19.7 miles per hour) whereby metal-laden dust particles are likely to be entrained and transported downwind from roads, ore stockpiles and exposed tailings beaches. Undisturbed vegetation to the west of the mine (downwind) has exhibited the most notable negative effects of fugitive dust both in this survey and previous surveys, and the wind rose corroborates these findings. In addition, there are notable micro-site points of impact that result from local topographical influences on the wind (e.g., the ridge immediately west of the pit area).



2.0 SAMPLING METHODS

2.1 Sample Point Location

A total of 71 long-term vegetation monitoring points have been established around the Red Dog Mine, DMTS road, and port facilities areas (Map 1 and Table A) since 2006. ABR, Inc. (ABR) established 55 plots (5m X 10m or 50 m²) during the summer of 2006 along nine 4-kilometer long transects radiating out from mine facilities (AT points). Plots were spaced at 0 m, 500 m, 1,000 m, 1,500 m, 2,500 m, and 4,000 m intervals along these radial alignments (Map 5). Plot locations were also established based on landscape features (wind shelter, snow bed locations, slope, and aspect) as well as plant community structure. One radial alignment (AT3) exhibited a 7th plot at the 700 m interval to facilitate data collection from a unique snowbank area.

Cedar Creek relocated and surveyed 50 of the original 55 points in 2010. Four of the remaining five points (AT1-000, AT3-060, AT4-060, and AT7-200) had to be moved due to past and planned facilities expansion. The final point (AT4-500) could not be relocated in the field given apparently errant GPS coordinates and was, therefore, re-established in a nearby location that exhibited similar species and community structure as indicated by the original data set. It should be noted that over the four years between surveys, approximately one-half the wooden corner stakes were either displaced by or chewed on by wildlife and had to be replaced. In the vast majority of circumstances, the original hole left by a displaced stake was relocated and the stake replaced.

In addition to the monitoring effort around the mine, 12 long-term vegetation monitoring transects were established by Cedar Creek along the DMTS road and near the port facilities (RAT points). These transects were placed at intervals 100 m, 1,000 m, and 2,000 m downwind (northwest) of the disturbances (Maps 2 and 3), with alignments perpendicular to the road alignment. These transects are also to be co-located with dust collection jars. Contrary to the 50 m² plots around the mine (containing 500 1st intercepts each), these monitoring points are 100 m long transects (containing 1000 1st intercepts each) that run parallel to the road / disturbance with stakes placed at both ends and in the center.

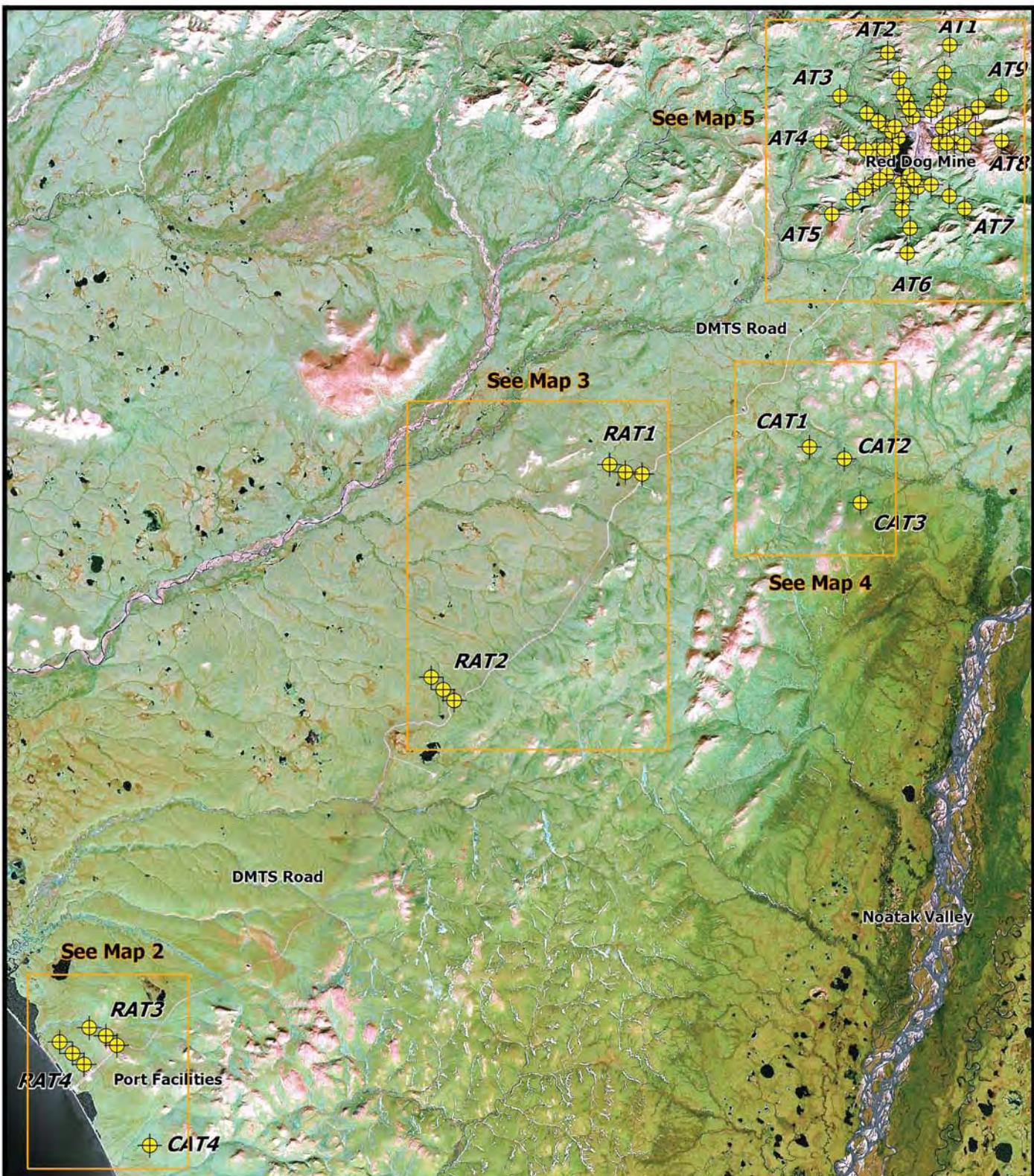
The remaining four long-term vegetation monitoring points were established in areas that occur several miles upwind (easterly direction) of the mine, DMTS road, and port facilities (CAT points – Maps 2 and 4). It can be reasonably hypothesized that these points are exhibiting very little or no effects from fugitive dust and therefore can be used as “control” points. As control points, data will be compared over

Table A Red Dog - 2010

Vegetation Sample Points UTM Coordinates

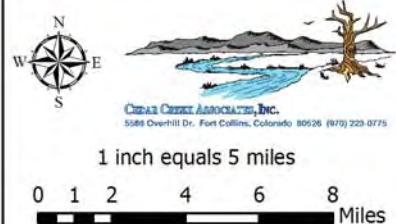
Datum: NAD 83 - 03 N

Area		Easting	Northing	Area		Easting	Northing
AT 1	000	590419	7553328	CAT 1		583279	7533565
	500	590730	7553611	CAT 2		585342	7532879
	1000	590818	7554104	CAT 3		586275	7530320
	1500	590920	7554574	CAT 4	N End	544685	7492659
	2500	591166	7555546		Center	544649	7492622
	4000	591482	7557176		S End	544613	7492587
AT 2	000	589309	7552932	RAT 1	100	N End	573513
	500	589097	7553412		Center	573490	7532025
	1000	588947	7553874		S End	573468	7531989
	1500	588771	7554263		1000	N End	572531
	2500	588501	7555212		Center	572514	7532125
	4000	587854	7556728		S End	572495	7532085
AT 3	060	588483	7551734	RAT 2	2000	N End	571610
	500	588106	7552078		Center	571597	7532535
	700	588261	7552374		S End	571582	7532491
	1000	587721	7552380		100	N End	562488
	1500	587272	7552700		Center	562453	7518729
	2500	586616	7553177		S End	562417	7518698
AT 4	4000	585048	7554181		2000	N End	561854
	060	588112	7551049		Center	561824	7519367
	500	587635	7551055		S End	561797	7519329
	1000	587199	7551047	RAT 3	1000	N End	561182
	1500	586567	7551023		Center	561151	7520104
	2500	585537	7551434		S End	561112	7520069
AT 5	4000	583938	7551511		100	N End	542762
	000	587777	7549574		Center	542723	7498494
	500	587369	7549272		S End	542691	7498466
	1000	586983	7548994		1000	N End	542097
	1500	586495	7548715		Center	542054	7499090
	2500	585791	7548098		S End	542011	7499061
AT 6	4000	584561	7547247		2000	N End	541106
	200	588633	7549054		Center	541066	7499546
	500	588727	7548481		S End	541028	7499512
	1000	588717	7547982	RAT 4	100	N End	540821
	1500	588677	7547492		Center	540783	7497427
	2500	589144	7546432		S End	540751	7497391
AT 7	4000	588986	7544971		2000	N End	540162
	000	589141	7549546		Center	540119	7498023
	500	589370	7549287		S End	540089	7497991
	1000	589598	7548824		1000	N End	539416
	1500	590381	7548974		Center	539373	7498693
	2500	591447	7548292		S End	539332	7498663
AT 8	4000	592350	7547583				
	000	590821	7551401				
	500	591305	7551394				
	1000	591739	7551473				
	1500	592302	7551308				
	2500	592975	7552252				
AT 9	4000	594522	7551547				
	000	591063	7552320				
	500	591467	7552577				
	1000	591960	7552831				
	1500	592357	7553043				
	2500	593150	7553543				
	4000	594486	7554210				



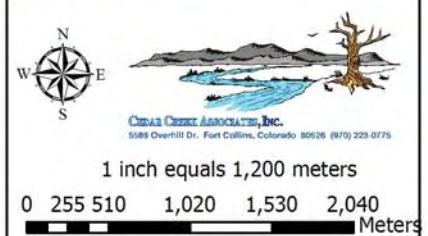
Map 1
Red Dog Mine - 2010
Vegetation Monitoring
Vicinity Map

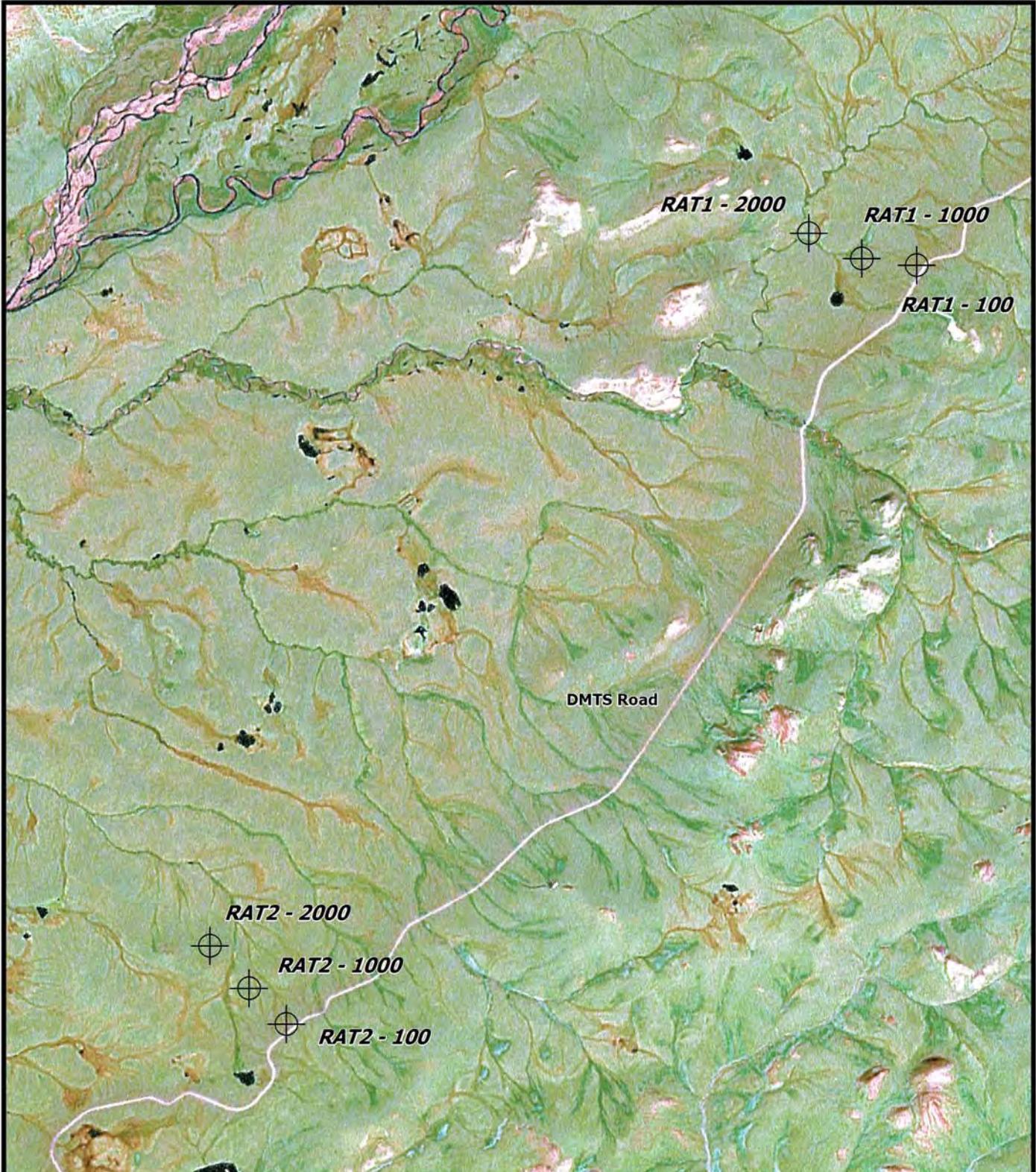
Note: Enlarged views of sample point locations can be found on Maps 2 - 5





Map 2
Red Dog Mine - 2010
**Vegetation Monitoring
Sample Point Locations**
Port Facilities



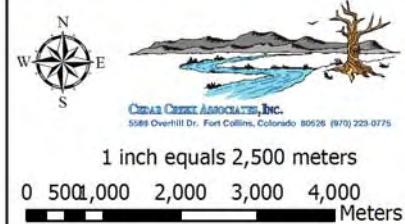


Map 3

Red Dog Mine - 2010

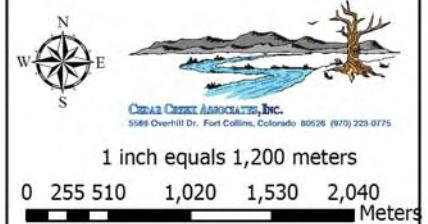
Vegetation Monitoring
Sample Point Locations

DMTS Road





Map 4
Red Dog Mine - 2010
Vegetation Monitoring
Sample Point Locations
CAT 1- 3 Locations





time to determine if environmental influences have occurred, which can then be used to adjust any detected differences in mine-influenced data sets to account for environmental effects. Except in this regard, these points will not be directly compared to AT or RAT data. In effect, these control points were established to isolate changes in cover and composition values over time that are linked to fluctuations in precipitation, temperature, frost/freeze cycles or any other "natural" variable. For example, if these CAT points show a 10% decline in moss cover in 2015 as compared with 2010, one can reasonably assume that a concomitant 10% decline in moss cover in AT and RAT points can be attributed to environmental variability and any decline or increase beyond this would then be attributed to other causes such as mine-related activities or mitigation.

There is temptation to directly compare the CAT data to AT or RAT data or consider the CAT values as expected or target values. This comparison must be avoided given that variability of the vegetation communities in the general vicinity of the Red Dog Mine, DMTS road, and port facilities is not adequately captured with only four control points. A systematic survey of the region with upward of 50 sample points would likely be required to adequately capture the variability of moss, lichen, and vascular plant communities in the area and thus obtain statistically reliable and useful reference or expected cover and composition values.

2.2 Determination of Ground Cover

Ground cover at each sample point was determined utilizing the point-intercept methodology (also referred to as "line-point") using laser instrumentation as illustrated on Figures 1 and 2. The procedure for sampling each AT and CAT-1, 2, & 3 point was as follows (Figure 1). First, the four corners of the plot were located with the aid of a GPS and five flags were systematically placed along each of the short sides of the 5m x 10m plot. Flags were placed at intervals of 1 m with the end flags located ½ meter from the corners. A transect of 10 meters length was then extended between each of the five pairs of flags (Figure 1). At each one-meter interval along each transect, a "laser point bar" was situated vertically above the ground surface, and a set of 10 readings recorded as to hits on vegetation (by species), litter, rock (>2mm), or bare soil. Hits were determined at each meter interval by activating a battery of 10 specialized lasers situated along the bar at 10-centimeter intervals and recording the variable intercepted by each of the narrow (0.02"), tightly focused beams. In this manner, a total of 100 first-intercepts (1st hits) per transect were recorded resulting in 1 percent cover per intercept. This methodology was then repeated on each of the five 10-meter long transects for a total of 500 first-intercepts per plot.

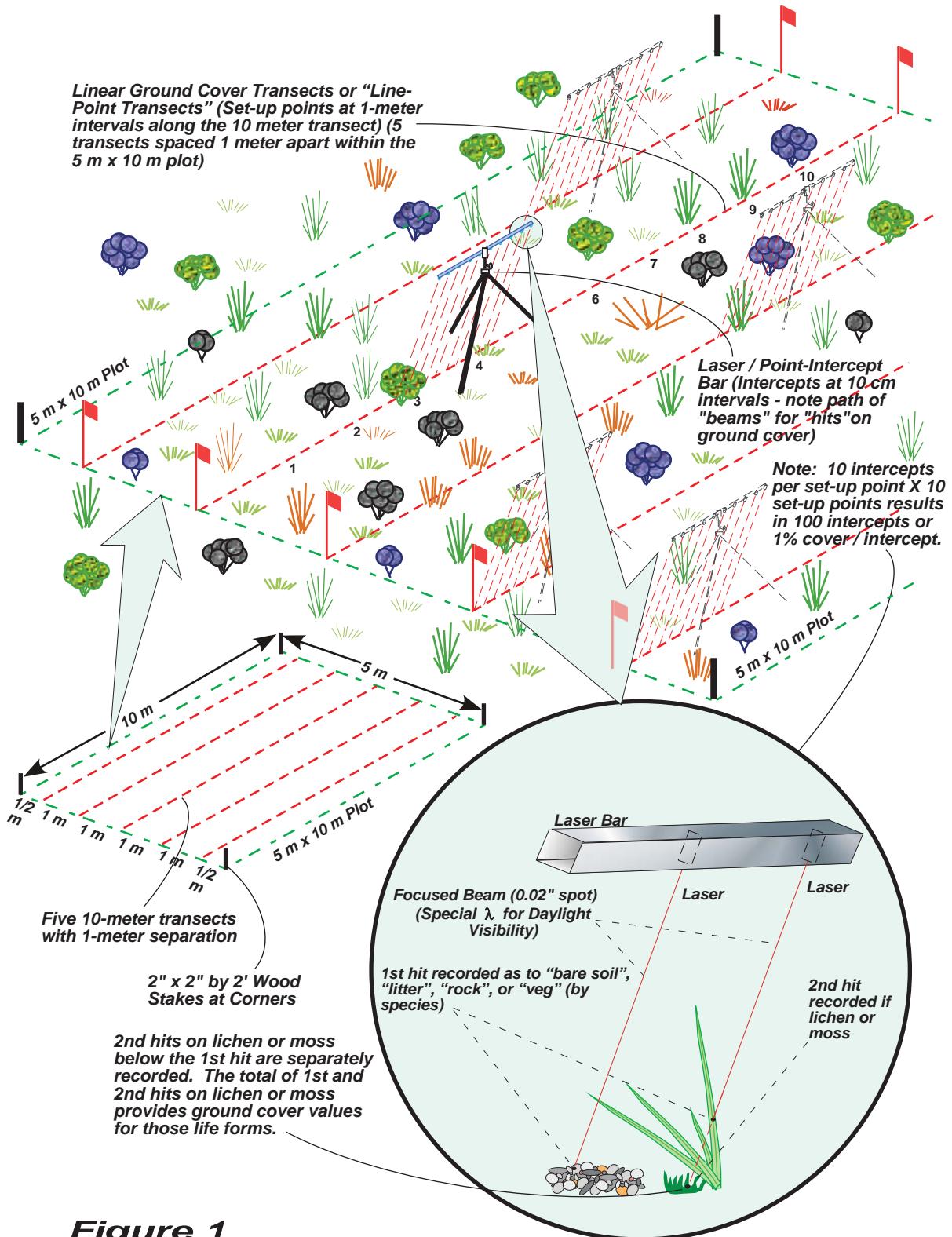


Figure 1

Typical Sampling Configuration for Ground Cover Monitoring (AT & CAT 1, 2, & 3 Plots) with Cedar Creek Laser-Point Bar

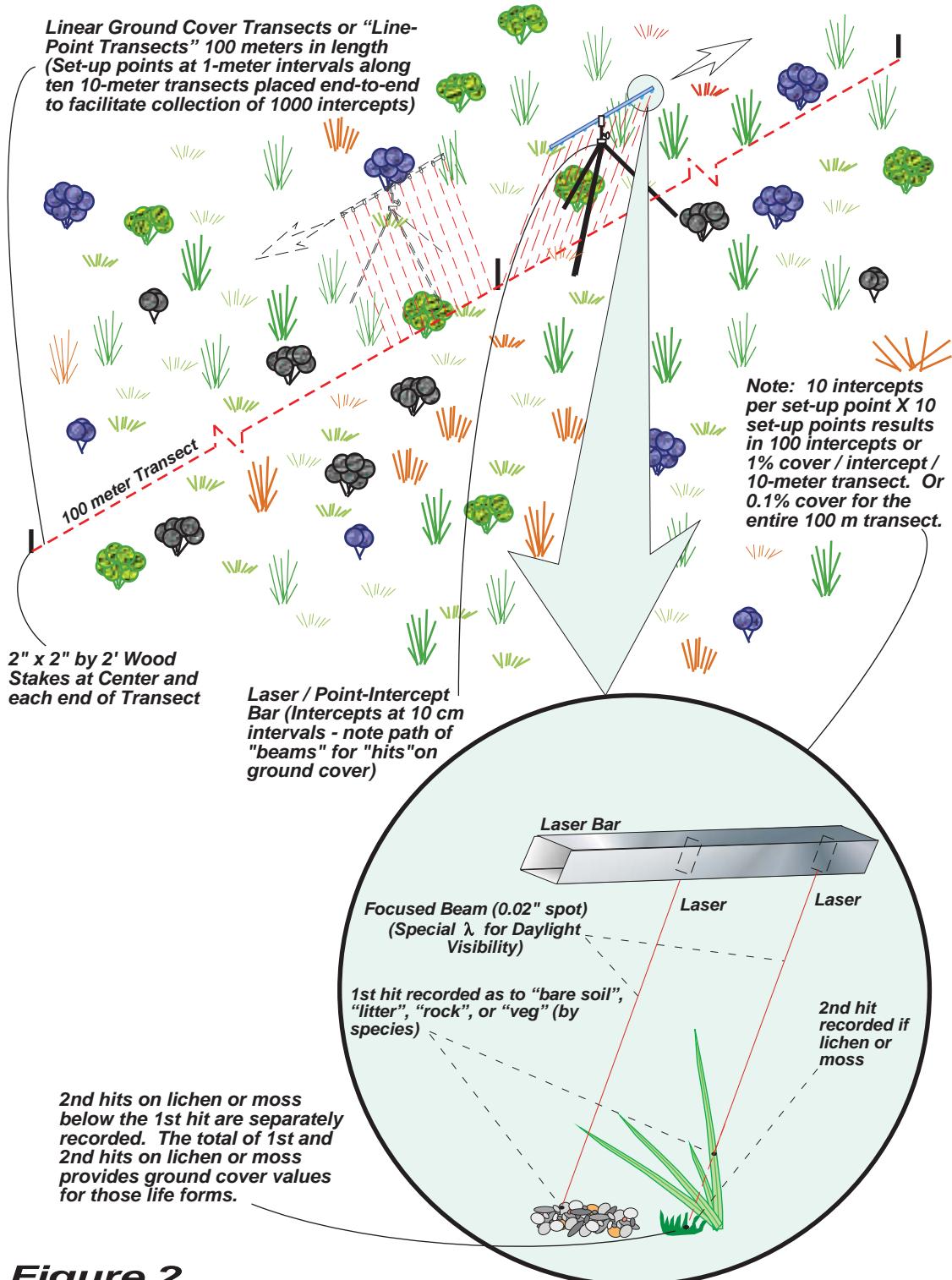


Figure 2

Typical Sampling Configuration for Ground Cover Monitoring (RAT & CAT₄ Plots) with Cedar Creek Laser-Point Bar

To facilitate an assessment of total moss and lichen cover that occurs at ground level (basal cover), second hits (beyond the 100 maximum 1st hits) are recorded when an overstory vascular plant stratum or standing litter is present. In this instance, the primary overstory hit is moved to the side allowing the laser to penetrate to ground level and any intercepts on underlying live moss or lichen are recorded separately as "2nd hits". Second hits are not recorded for any other variable. The combination of 1st and 2nd hit data for moss and lichen cover provides a strongly repeatable value for this variable.

The procedure for sampling each RAT site and the CAT-4 point is identical to that stated above except for the orientation of the sampling unit. As indicated on Figure 2, a continuous 100 meter long transect was established parallel to the road / disturbance instead of the 50 m² plot used for AT and CAT-1, 2, & 3 points. Stakes were placed and GPS coordinates recorded at each end of the 100 m long transect as well as the center point. A series of five 10-meter long transects were placed end to end on each side of the center stake in the direction of the two outer stakes for a total of 1,000 1st intercepts per site. In other words, ten transects, each being 10 meters in length, were placed end to end to form the 100-meter transect. Data were recorded and compiled for each segregate 10-meter transect. First hits and second hits were recorded in an identical manner as stated above for the 5m x 10m plots.

Vascular plant identification and nomenclature follows Flora of Alaska and Neighboring Territories (Hulten 1968) and moss and lichen identification and nomenclature follows Common Interior Alaska Cryptogams (Laursen and Seppelt 2009).

2.3 Sample Adequacy Determination

Due to the design and sample layout of this survey, collection of an adequate sample was not considered a priority of the long-term monitoring program. However, sample adequacy was determined for each sampling effort and only three of the 71 points were not measured to an intense level of adequacy. Sample means and standard deviations for total non-stratified vegetation ground cover were the parameters utilized for calculations of sample adequacy. The Cochran formula (a standard formula for the determination of sampling adequacy) was utilized as follows:

$$n_{min} = (t^2 s^2) / (0.1 \bar{x})^2$$

Where: n = the number of actual samples collected (5 or 10);
 t = the "one-tailed" value from the t distribution for $\alpha=0.1$ with $n-1$ degrees of freedom;
 s^2 = the variance of the estimate as calculated from the samples;
 \bar{x} = the mean of the estimate as calculated from the samples.

2.4 2006 and 2007 Data Versus 2010 Data - Comparison Limitations

Unfortunately, numerous factors prevent a direct comparison of data collected in 2006 by ABR or in 2007 by Exponent versus 2010 data collected by Cedar Creek. These factors primarily involve differences in precision of measured variables, but also involve complications resulting from differing methodologies.

Although the point-intercept method was used for both ABR (2006) and Cedar Creek (2010) surveys, differing precision in the equipment used, differences in the number and type of observations recorded, and differing recording methods (multiple-hit versus first-hit) overly complicate any potential comparisons. Based on interpretation of published data (detailed methodology was not presented), it appears that ABR placed 100 pins in the 50 m² plot and recorded all "touches" to a vertical pin. Cedar Creek has made the assumption that "pins" were used for this effort in 2006 given that is the most common practice utilized by vegetation professionals when implementing point-intercept methods*.

One of the significant disadvantages of using the pin method is that they historically employ the use of 2 mm to 5 mm rods. When lowered through the vegetation canopy, they tend to "corkscrew" so most field personnel simply lower the rods to the ground and record "side touches". In effect, this process results in a micro-plot that can easily overstate cover. To the contrary, if ABR utilized "laser pointers" mounted on an aluminum rod in 2006, there are still at least two precision issues in comparison to the laser equipment utilized by Cedar Creek. First, a single rod (monopod) cannot be held consistently and firmly in a plumb orientation; a tripod is necessary. Monopods result in a "wobbling" point that can lead to unintended bias. Second, and more important, "laser pointers" are not finely focused, specialized lasers as are found in Cedar Creek's laser equipment. Such "pointers" most commonly exhibit a laser beam that is 2 mm in diameter as opposed to the 0.5 mm dot of the focused and specialized lasers in Cedar Creek's equipment (which are mounted on tripods). These 0.5 mm dots are 1/16th of the area of 2 mm laser beams or pins and are 1/100th the area of 5 mm pins. Because vegetation stems and leaves are usually in the 2 mm to 60 mm range, with the vast majority in the 2 mm to 4 mm range, the ratio of perimeter to surface area is substantial making the opportunity for error also substantial. For most terrestrial applications sample error using "tight-focus" laser instrumentation has been shown to be in the 1% range. Because of the larger perimeter to area ratio of tundra vegetation (especially grasses), a 2 mm pin or laser tends to result in sampling error in the 5 to 15% range. In addition, there is also a reduction in observer bias when using finely focused lasers versus pins. When a narrow laser beam hits and illuminates a "target", it is usually an obvious yes or no decision. When using pins, a thorough

* Although it is assumed that point-intercepts were defined by pins in 2006, in 2008 ABR performed similar studies at the Red Dog Mine using "laser pointers" mounted on an "aluminum rod".

inspection is required to determine if there is any physical contact between measuring device and vegetation thereby increasing observer error and between-observer differences.

Another factor complicating comparison involves both repeatability and accuracy obtained given the number of observations at each plot. Cedar Creek systematically placed 500 1st intercepts per plot in 2010 versus the 100 multi-intercepts (unknown distribution) per plot employed by ABR in 2006. A systematic spread of intercepts that is easily replicated in future years ensures a less biased placement of intercepts that captures variation in cover and composition present in the plot. Also, the use of a higher number of intercepts (500 in 2010 versus 100 in 2006) increases the statistical power by a factor of 5X and thereby ensures far greater confidence that future changes in vegetation cover and composition are the result of environmental or mine-caused factors and not observer bias or sampling error.

The final limitation to 2006 versus 2010 data comparison is with regard to the use of multiple hits along a single pathway. It appears from analyses of data that ABR recorded all distinct hits or touches on the intercept path in their survey in 2006 with the logical assumption that multiple recording was stopped when the intercept reached the semi-porous moss and lichen layer. Their reported data indicate a total multi-layer "cover" ranging from 12 to 270 hits per transect on all AT points. Cedar Creek used a far more repeatable approach in 2010 by recording 1st hit data for all ground cover (maximum of 100 intercepts / 100% cover) and recording second hits only where moss or lichens were encountered in the understory. A true ground cover based on the 100 hits per transect was achieved with a total vegetation cover ranging from 12% to 92% in 2010. In addition, a total moss and lichen cover (technically determined at the basal layer) out of 100 possible hits was achieved with a range of 0% to 87% exhibited during the 2010 survey. Given the assumption that one cannot record multiple hits on a dense multi-layer plant such moss, data collected in 2006 can be assumed to provide a repeatable estimate of basal cover of moss and lichen and thus be comparable to the 2010 results. However, because of the differences between intercept diameters stated earlier in this section, a defensible comparison of these two data sets is compromised. The differences in point width (5 mm or 2 mm for pins/pointer lasers versus 0.5 mm for specialized lasers) is especially important as a majority of the mosses and especially the lichens encountered were diminutive.

With regard to the 2007 data collected by Exponent along the DMTS road, compatibility with Cedar Creek data is far more limited than ABR's 2006 data. Even though Exponent only recorded non-overlapping cover (maximum of 100% cover) which is comparable to the repeatable method used by Cedar Creek, they utilized 1 m² quadrats (1 meter x 1 meter frames) along with mental integration techniques to "estimate" the cover values of the various species and ground cover components. Such

"mental integration" techniques utilize a significant amount of observer judgment to place the various observed parameters into cover classes. Because of this judgment, bias is introduced into the data set simply due to the observer, which in turn adds substantially to sample variability with a concomitant reduction in repeatability. The amount of sampling error that occurs with this technique can often be as much as 30%, sometimes more. A very experienced observer may be able to maintain an error factor below 10%, but even this amount of error can compromise the utility of the data set, especially in comparison to the 1% error associated with properly implemented point-intercept sampling. For example, if a native community experiences a 5% shift in ground cover, properly executed point-intercept data should allow detection of such a change. To the contrary, such a shift is still contained within the "noise" (sampling error) of quadrat data and therefore, confident conclusions cannot be drawn.

3.0 RESULTS & DISCUSSION

3.1 General

Analysis of data from 55 plots surrounding the Red Dog Mine, 12 points along the DMTS road and port facilities, and 4 control points is presented in the following sections (total of 84,000 potential intercepts). An overall summary of these data is presented on Table 1 on the following page while additional summary tables and charts as well as raw data tables are presented in Appendix A. To document conditions at the time of survey in 2010 as well as to provide visual evidence of each plot and the immediate environs, a total of 258 photographs were collected and are presented in Appendix A. At each of the AT and CAT 1-3 plots, a photograph was taken from each corner looking toward the plot center resulting in a total of four photos for each plot. At each RAT and CAT 4 point, a photograph was taken standing at the center point of the 100-meter transect looking at each end point for a total of two photos for each transect.

The primary objective of this survey was to provide baseline vegetation, moss, and lichen cover values to facilitate long-term monitoring of representative sites (both with and without perceived impacts) within a 4,000 m radius of the mine and within 2,000 m downwind of the DMTS road and port facilities. Such monitoring is designed to document improvements, or the lack thereof, to local floral communities in response to dust suppression mitigation measures implemented by Red Dog operations.

Vegetation communities within a 4,000 m radius of the Red Dog Mine are dominated by dwarf birch (*Betula nana*) and bog blueberry (*Vaccinium uliginosum* ssp. *alpinum*) while vegetation communities along the DMTS road and port facilities are dominated by tussock cottongrass (*Eriophorum vaginatum* ssp. *vaginatum*). A more detailed description of vegetation communities around the mine (AT plots) is presented in Section 3.2; while more detail regarding the vegetation adjacent to the road and port facilities' (RAT points) is presented in Section 3.3. Furthermore, additional descriptions of area vegetation communities can be found in various baseline and/or other investigative reports developed for the Red Dog Mine.

Four control points (CAT 1 – 4) were established and surveyed in 2010 and a summary of data regarding these vegetation communities and cover values is presented in Section 3.4. These sites were established as “control areas” as opposed to “comparison”, “reference”, or “analog” areas to provide documentation of changes that may occur over time due to changing environmental factors (i.e. to isolate changes in cover and composition values over time that are linked to fluctuations in precipitation,

Table 1 Red Dog Mine - 2010

Summary of Pertinent Data (see Key for Explanations)

	000-200 m	500 m	1000 m	1500 m	2500 m	4000 m
AT 1	<i>Ledum palustre</i> - <i>Betula nana</i> VC: 84 ML: 42	<i>Ledum palustre</i> - <i>Eriophorum vag.</i> VC: 85 ML: 42	<i>Eriophorum vag.</i> - <i>Vaccinium ulig.</i> VC: 86 ML: 38	<i>Betula nana</i> - <i>Salix pulchra</i> VC: 85 ML: 35	<i>Salix reticulata</i> - <i>Arctagrostis lat.</i> VC: 77 ML: 64	VC: 68 ML: 31
AT 2	<i>Ledum palustre</i> - <i>Salix pulchra</i> VC: 76 ML: 9	<i>Salix pulchra</i> - <i>Equisetum arvense</i> VC: 87 ML: 51	<i>Carex aquatilis</i> - <i>Salix reticulata</i> VC: 69 ML: 44	<i>Salix pulchra</i> - <i>Aulacomnium Moss</i> VC: 79 ML: 63	<i>Crustose Lichen</i> - <i>Eriophorum nigrum</i> VC: 65 ML: 28	VC: 81 ML: 60
AT 3	<i>Calamagrostis can.</i> - <i>Ledum palustre</i> VC: 44 ML: 0	<i>Betula nana</i> - <i>Vaccinium ulig.</i> VC: 33 ML: 2	<i>Vaccinium ulig.</i> - <i>Betula nana</i> VC: 80 ML: 27	<i>Betula nana</i> - <i>Salix pulchra</i> VC: 86 ML: 19	<i>Betula nana</i> - <i>Vaccinium vitis-idaea</i> VC: 89 ML: 64	VC: 84 ML: 57
AT 4	<i>Carex bigelowii</i> - <i>Vaccinium ulig.</i> VC: 76 ML: 0	<i>Betula nana</i> - <i>Vaccinium ulig.</i> VC: 66 ML: 7	<i>Carex microchaeta</i> - <i>Festuca altaica</i> VC: 42 ML: 0	<i>Salix pulchra</i> - <i>Vaccinium ulig.</i> VC: 83 ML: 56	<i>Dryas octopetala</i> - <i>Salix reticulata</i> VC: 83 ML: 37	VC: 76 ML: 53
AT 5	<i>Betula nana</i> - <i>Empetrum nigrum</i> VC: 69 ML: 15	<i>Hypothecium Moss</i> - <i>Carex bigelowii</i> VC: 87 ML: 87	<i>Salix reticulata</i> - <i>Festuca altaica</i> VC: 82 ML: 4	<i>Betula nana</i> - <i>Vaccinium ulig.</i> VC: 88 ML: 36	<i>Betula nana</i> - <i>Vaccinium vitis-idaea</i> VC: 85 ML: 37	VC: 74 ML: 28
AT 6	<i>Salix pulchra</i> - <i>Carex aquatilis</i> VC: 66 ML: 19	<i>Festuca altaica</i> - <i>Vaccinium ulig.</i> VC: 79 ML: 37	<i>Betula nana</i> - <i>Vaccinium vitis-idaea</i> VC: 67 ML: 35	<i>Betula nana</i> - <i>Vaccinium ulig.</i> VC: 84 ML: 44	<i>Betula nana</i> - <i>Pleurozium Moss</i> VC: 83 ML: 60	VC: 80 ML: 30
AT 7	<i>Vaccinium ulig.</i> - <i>Betula nana</i> VC: 76 ML: 32	<i>Betula nana</i> - <i>Vaccinium ulig.</i> VC: 77 ML: 31	<i>Vaccinium ulig.</i> - <i>Vaccinium vitis-idaea</i> VC: 87 ML: 35	<i>Betula nana</i> - <i>Vaccinium ulig.</i> - VC: 83 ML: 37	<i>Polytrichum Moss</i> - <i>Vaccinium vitis-idaea</i> VC: 65 ML: 40	VC: 89 ML: 56
AT 8	<i>Betula nana</i> - <i>Vaccinium ulig.</i> VC: 74 ML: 14	<i>Festuca altaica</i> - <i>Carex bigelowii</i> VC: 73 ML: 20	<i>Betula nana</i> - <i>Vaccinium vitis-idaea</i> VC: 84 ML: 55	<i>Vaccinium ulig.</i> - <i>Vaccinium vitis-idaea</i> VC: 78 ML: 44	<i>Dryas octopetala</i> - <i>Hypothecium Moss</i> VC: 84 ML: 39	VC: 87 ML: 29
AT 9	<i>Betula nana</i> - <i>Vaccinium ulig.</i> VC: 82 ML: 17	<i>Dryas octopetala</i> - <i>Stereocaulon Lichen</i> VC: 90 ML: 49	<i>Vaccinium ulig.</i> - <i>Betula nana</i> VC: 92 ML: 55	<i>Betula nana</i> - <i>Vaccinium ulig.</i> VC: 85 ML: 63	<i>Vaccinium ulig.</i> - <i>Dryas octopetala</i> VC: 88 ML: 43	VC: 86 ML: 34
					Key:	
					1st Dominant Species	Within Expected Values for Community
					2nd Dominant Species	Below Expected Values for Community
						Significantly Below Expected Values for Community
			1000 m	1000 m	2000 m	
RAT 1	<i>Eriophorum vag.</i> - <i>Vaccinium ulig.</i> VC: 75 ML: 22	<i>Eriophorum vag.</i> - <i>Ledum palustre</i> VC: 80 ML: 25	<i>Eriophorum vag.</i> - <i>Ledum palustre</i> VC: 81 ML: 34		CAT 1 <i>Cladonia</i> Lichen - <i>Vaccinium vitis-idaea</i> VC: 86 ML: 64	
RAT 2	<i>Eriophorum vag.</i> - <i>Carex bigelowii</i> VC: 80 ML: 34	<i>Eriophorum vag.</i> - <i>Vaccinium ulig.</i> VC: 83 ML: 49	<i>Eriophorum vag.</i> - <i>Ledum palustre</i> VC: 83 ML: 35		CAT 2 <i>Eriophorum vag.</i> - <i>Betula nana</i> VC: 86 ML: 32	
RAT 3	<i>Eriophorum vag.</i> - <i>Vaccinium ulig.</i> VC: 77 ML: 19	<i>Eriophorum vag.</i> - <i>Ledum palustre</i> VC: 78 ML: 44	<i>Eriophorum vag.</i> - <i>Vaccinium ulig.</i> VC: 76 ML: 27		CAT 3 <i>Vaccinium ulig.</i> - <i>Ledum palustre</i> VC: 84 ML: 60	
RAT 4	<i>Eriophorum vag.</i> - <i>Betula nana</i> VC: 69 ML: 33	<i>Eriophorum vag.</i> - <i>Ledum palustre</i> VC: 77 ML: 22	<i>Eriophorum vag.</i> - <i>Vaccinium ulig.</i> VC: 75 ML: 27		CAT 4 <i>Ledum palustre</i> - <i>Eriophorum vag.</i> VC: 81 ML: 44	

temperature, frost/freeze cycles or any other “natural” variable). In this manner, the control points are compared to themselves over time as are the AT and RAT sites. If a change resulting from environmental factors is detected in the control points, then a concomitant change would be expected in the AT and RAT sites. Any change in sites within the impact zone of the mine and facilities that is above and beyond that found in the control areas could then be attributable to mining and/or sampling error (hence the need to minimize sampling error).

A secondary objective of this survey is aid in the identification of an “impact footprint” (i.e., identification of those areas and/or circumstances that are presently exhibiting changes/reductions in vegetation, moss, or lichen cover values that can be linked to the effects of metal-laden dust deposition from mine-related facilities). In this regard, there are several small areas around the mine that are known based on observation or previous surveys to be slightly to heavily impacted by fugitive dust deposition. Section 3.5 presents data and discussion regarding these areas, the role of prevailing winds, and the apparent limits of impact. The effects of fugitive dust on areas along the DMTS road and port facilities are not as well known and less obvious than those found at the mine. As discussed in Section 3.6, it appears there may be slight impacts 100 meters from the road, but no significant effects were evident at 1,000 meters and 2,000 meters distant from road or port facilities.

3.2 AT Points (Red Dog Mine Area)

A total of 55 long-term monitoring plots were sampled in 2010 along nine radial lines extending perpendicular to the mine and/or facilities. Plots were spaced at distances of 0-200 m, 500 m, 1,000 m, 1,500 m, 2,500 m and 4,000 m from the perimeter of mine-related disturbances (Map 5). One additional point along the 3rd radial alignment (AT3) was placed at the 700 m mark to facilitate sampling in a unique snow accumulation area. Soil profile conditions of these plots varied from wet, deep-topsoil valley bottoms and flats to dry, steep, wind-swept ridges with thin to nearly non-existent soil veneers. Table 1 indicates a wide variety of dominant and sub-dominant species found within these 55 plots. However, dwarf birch and bog blueberry were the most prevalent species observed, with one or the other being the first or second dominant species on nearly half the plots. Tealeaf willow (*Salix pulchra*) and narrow mountain cranberry (*Vaccinium vitis-idaea* ssp. *minus*) were the first or second dominant species on nearly one-sixth of the plots; while white mountain-avens (*Dryas octopetala* ssp. *octopetala*), marsh Labrador tea (*Ledum palustre* ssp. *decumbens*), and netleaf willow (*Salix reticulata*) showed some level of dominance on nearly one-tenth of the plots. Nineteen additional species exhibited first or second dominance within these 55 plots providing strong evidence of the elevated diversity of habitats sampled.

With regard to mosses and lichens, splendid feather moss (*Hylocomium* sp.), aulacomnium moss (*Aulacomnium* sp.), cup lichen (*Cladonia* sp.), crustose lichen (various species), and tomentose snow lichen (*Stereocaulon tomentosum*) showed some level of dominance especially in the wettest (moss) and driest (lichen) locations.

Total vegetation cover ranged from 11.8% to 92.4% with total moss and lichen cover ranging from 0.2% to 87.4%. Several plots in this survey exhibited low to very low levels of moss and lichen cover, as well as moderately reduced total vegetation cover values. Previous studies have linked these lower vegetation values to the effects of the deposition of metal bearing fugitive dust originating from various nearby mine facilities. A discussion of the distribution and intensity of these effects is presented in Section 3.5 below.

3.3 RAT Areas (DMTS Road / Port Facilities Area)

A total of 12 long-term monitoring points were established at distances of 100 m, 1,000 m, and 2,000 m downwind (west and northwest) of road-related disturbances at four locations along the DMTS road and port facilities area (Maps 1 -3). All of these points showed similar vegetation cover and composition as well as presence of standing water between tussocks. Total vegetation cover ranged from 69.2% to 83.3% with total moss and lichen cover ranging from 19.3% to 48.5%. Table 1 indicates that tussock cottongrass was the dominant plant species with varying amounts of dwarf birch and bog blueberry (both deciduous shrubs), and marsh Labrador tea (an evergreen shrub), comprising the overstory. Varying amounts of several sedges were found along these monitoring transects with Bigelow's sedge (*Carex bigelowii*) and water sedge (*Carex aquatilis* ssp. *aquatilis*) the most commonly intercepted. Splendid feather moss, polytrichum moss (*Polytrichum* sp.), and sphagnum moss (*Sphagnum* sp.) were found at moderate levels throughout these transects while lichens play a small role in these communities. The impact of fugitive dust does not appear to be as significant along the road as in certain areas immediately adjacent to the mine and processing facilities. However, a slight level of impact does appear to be evident and is discussed in Section 3.6.

3.4 CAT Areas (Control Points)

Four control points were established by Cedar Creek in 2010. CAT-1, CAT-2, and CAT-3 were located in a valley south of the mine in an area previously used for reference locations (baseline studies). This area is approximately 2.5 miles (4,000 m) upwind and southeast of the DMTS road and 12 miles south of the Red Dog Mine (Maps 1 and 4). Three community types commonly found in the area

surrounding the mine were selected, and long-term monitoring plots were established. CAT-1 is located on a lichen-dominated rock outcrop that is similar to the thin-soiled AT plots located on mountain ridgelines surrounding the mine. Vascular plant cover was relatively low at 47.2% and was dominated by narrow mountain cranberry (23.4% cover) and dwarf birch (13.6% cover). Total lichen cover was relatively high here at 58.8% and was dominated by cup lichens while total moss cover was low at 5.2%. CAT-2 is located on a relatively flat, wet tussock plain very near the valley bottom and is similar to the deep soiled, wet tussock areas found closer to mining facilities at the Red Dog Mine. Vascular plant cover was relatively high at 77.4% and was dominated by tussock cottongrass (27.8% cover) and dwarf birch (12.2% cover). Total lichen cover was relatively low at 12.0% while total moss cover was moderate at 19.8% and was dominated by splendid feather moss. CAT-3 is located on a moderately sloped, shrub-dominated area and is similar to the mid-slope communities at the Red Dog Mine where standing water at the surface is typically not present and a moderately deep soil profile exists. Vascular plant cover was moderately high at 69.4% and was dominated by bog blueberry (19.8% cover) and marsh Labrador tea (15.6% cover). Total lichen cover was moderate at 21.6% while total moss cover was relatively high at 38.8% and was dominated by Shreber's big red stem moss (*Pleurozium schreberi*).

CAT-4 is located approximately 3.5 miles (5,500 meters) upwind or southeast of the port facilities in a coastal tussock plain. This site is similar to the RAT points although a slightly up-gradient location has reduced the presence of surface water and led to dominance by marsh Labrador tea over cottongrass as opposed to the typical dominance of cottongrass found in all RAT plots. Vascular plant cover was relatively high at 72.7% and was dominated by marsh Labrador tea (24.9% cover) and cottongrass (17.7% cover). Total lichen cover was very low here at 0.9% while total moss cover was relatively high at 43.2% and is dominated by sphagnum moss.

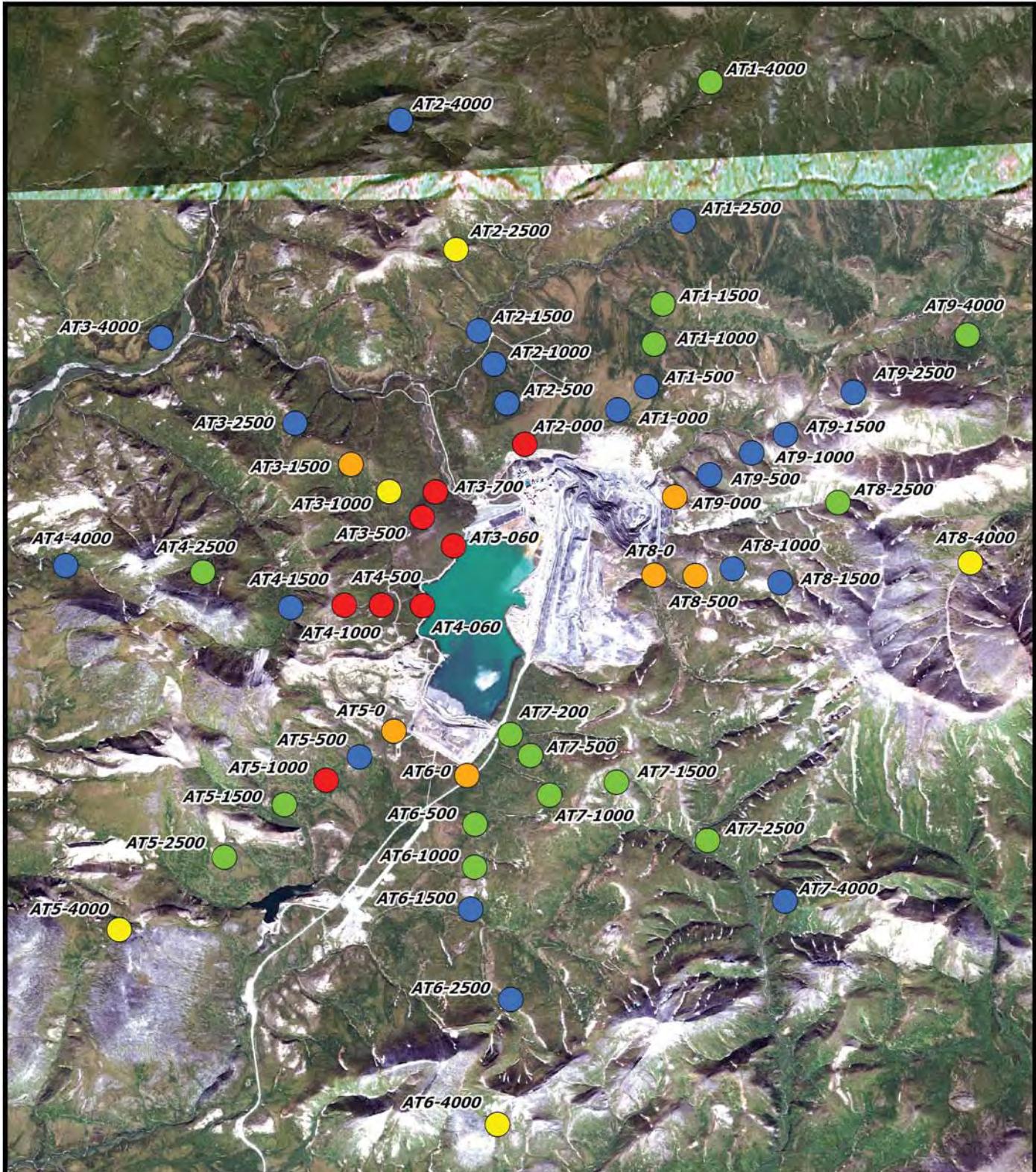
3.5 AT Points – Distance and Wind Direction Comparisons

Direction, proximity, and intensity effects of windblown fugitive dust have been noted in previous surveys, and are well known to the environmental staff at the Red Dog Mine. This section provides an analysis of data collected in 2010 and further defines areas with the most sever impacts, distribution of affected areas, and areas that appear to be unaffected by fugitive dust from mining activities. However, before in-depth analyses can commence, a note of caution regarding use and interpretation of these data is warranted. Unlike a random, systematic, or otherwise unbiased distribution of sample points, the plots established by ABR were purposefully placed at specific intervals from mining disturbances, and were also placed to provide maximum representation of a multitude of communities to show long-term effects of metal-laden dust. It is also evident that certain plots were established in areas that were already

extensively affected by dust (e.g. AT3-500, AT3-700 and AT4-1000) apparently in hopes of assessing recovery or declination rates, even though the areas surrounding these plots were not as severely impacted. In addition, plots were specifically not located in areas naturally lacking vegetation such as talus slopes or barren ridgelines. Therefore, average data in the affected zone is likely exaggerated and not representative of true overall cover values. If the main design of this survey was to delineate the distribution and intensity of affected areas and not the long-term health of vegetation communities within 4,000 meters of the mine, a different sample design would have been mandated. Although placement of these plots was purposefully biased, a reasonable amount of analysis and interpretation can be inferred from these data and is presented below.

As noted on Table 1, seven of the 55 plots were deemed significantly below expected vegetation cover or moss and lichen cover values for that community and an additional seven were deemed below expected values for that community. Spatial indication of these 14 affected plots among all plots is displayed on maps 6 and 7 on the following pages with color coding based on their total vegetation cover value and total moss and lichen cover values. Maps 6 and 7 reveals that a majority of the lower values (red and orange colored circles) are either in a westerly direction from mining facilities (tailings pond, mill and pit) or within 100 meters of disturbances (AT-000 plots). This corroborates previous findings that the prevailing easterly winds play a very important role in movement and deposition of metal-laden dust particles. Additionally it appears there are fugitive dust effects on areas directly adjacent to the active pit (AT8-000, AT8-500, and AT9-000). However, this observation may be a result of blasting on windless days, days when winds are from the west, or these areas occur in a soil-rock substrate that is already naturally high in heavy metals given their proximity to the pit.

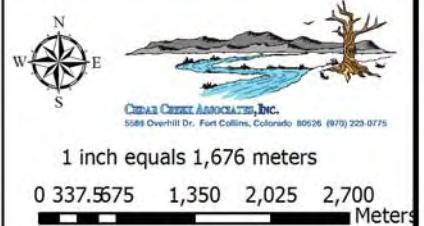
Further analysis of the intensity and proximity effects of the prevailing easterly wind is provided on Charts 1 and 2 on following pages. Data from different alignments were grouped based on wind direction into 1) downwind points (AT-3 and 4 plots), 2) partially downwind points (AT-2 and 5), and 3) upwind points (AT-1, 6, 7, 8 and 9). Data were also sorted based on distance from mine disturbances (0-200 m, 500-700 m, 1000 m, 1500 m, 2500 m, and 4,000 m). Control area data has also been included in these charts to provide "thumbnail comparisons" or "dust-unaffected" values for the area, however, such "comparisons" are informational only and should not be given undue weight for reasons previously discussed. Review of these charts indicates that with respect to vegetation cover, downwind points appear to exhibit intermittent effects out to 1,500 meters while partially downwind points appear to only present impact within the first 500 meters. There is also evidence of possible slight effects within the first 500 meters for upwind points. It can also be noted that downwind points appear to be

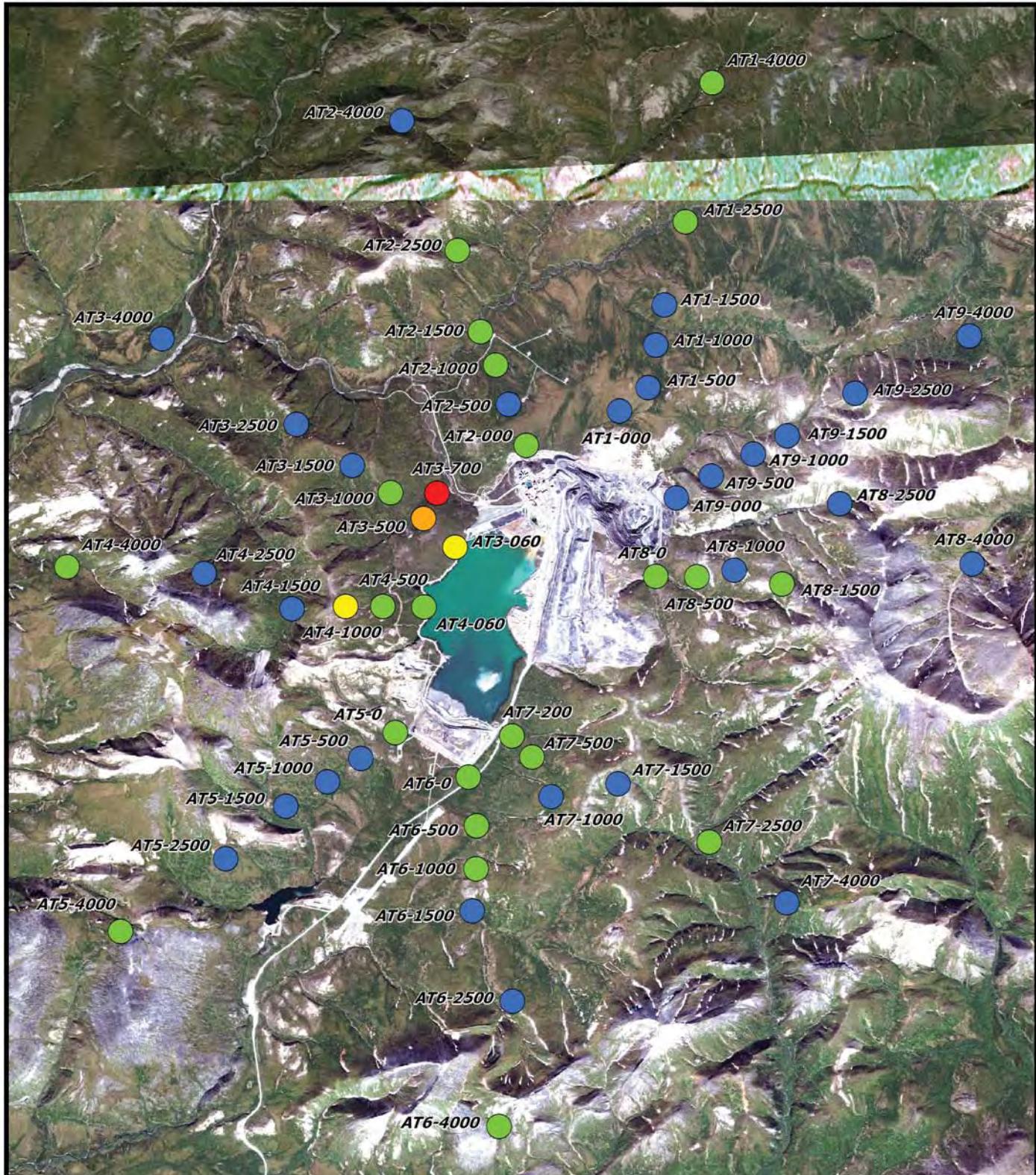


Map 6
Red Dog Mine - 2010
Vegetation Monitoring
9 Radial Survey Lines
(AT Points)

Average Moss & Lichen Cover

- 0% - 10%
- 11% - 20%
- 21% - 30%
- 31% - 40%
- 41% +





Map 7
Red Dog Mine - 2010
Vegetation Monitoring
9 Radial Survey Lines
(AT Points)

Average Vegetation Cover

- 0% - 20%
- 21% - 40%
- 41% - 60%
- 61% - 80%
- 81% +

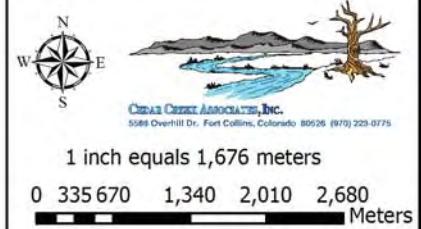


Chart 1
Red Dog Mine - AT Plots
Average Vegetation Cover Comparison by Wind Direction and Distance from Disturbance -2010

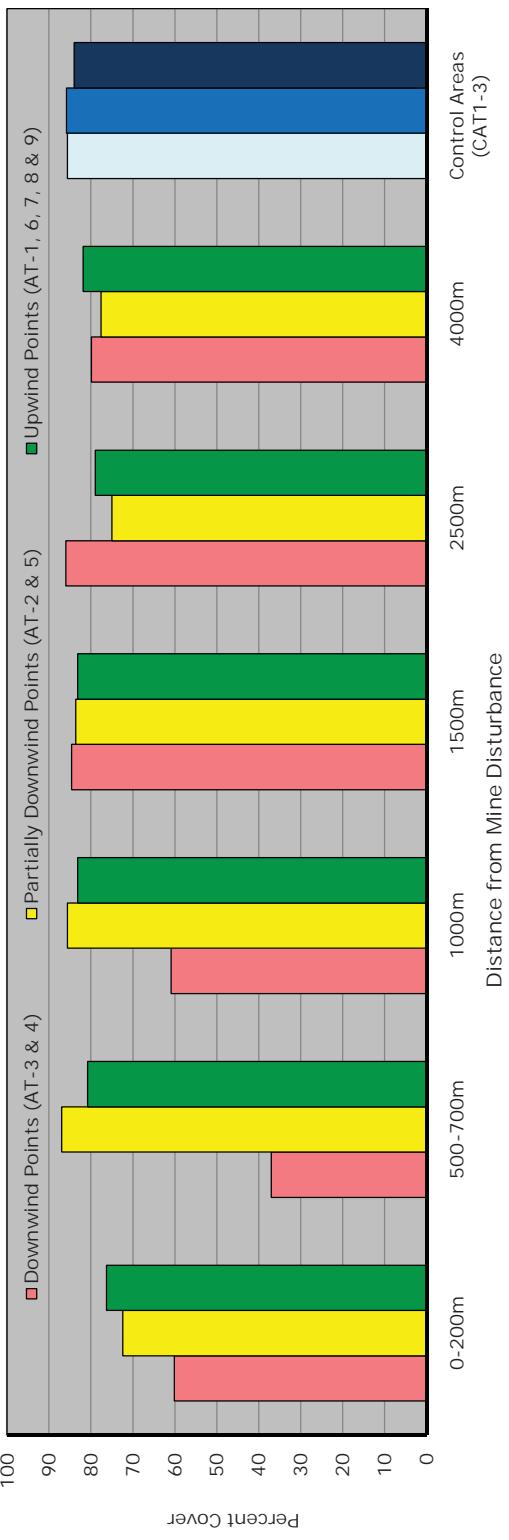
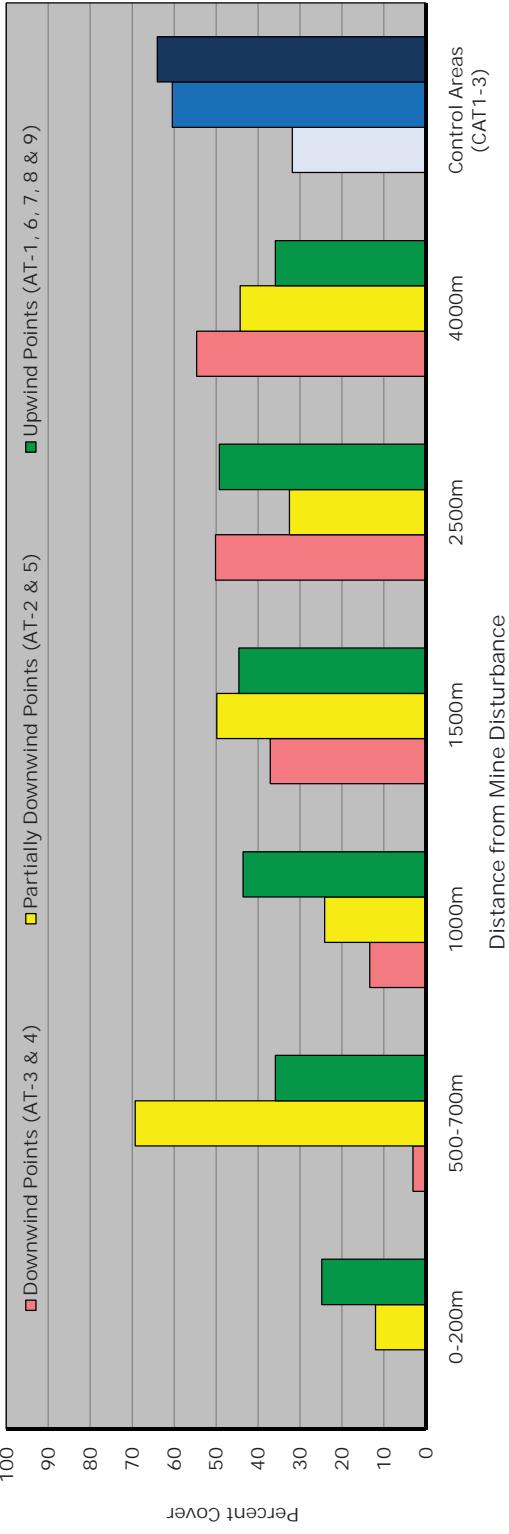


Chart 2
Red Dog Mine - AT Plots
Average Moss and Lichen Cover Comparison by Wind Direction and Distance from Disturbance -2010



significantly more impacted than partially downwind and upwind points within 1,500 meters of mine disturbances although there appears to be little difference beyond 1,500 meters.

Although there appear to be notable impacts downwind, the severity of those effects must take into consideration that several plots were specifically placed in locations exhibiting elevated effects in comparison to their immediately surrounding community. It is assumed these areas of elevated impact were sought to provide maximum opportunity for detection of recovery (i.e., if recovery occurs as a result of mitigation, it should be most notable in these impacted plots).

As stated in previous reports as well as the literature, mosses and lichens are more sensitive to elevated levels of zinc and iron sulfate than vascular plants. This hypothesis is reinforced by findings presented on Chart 2 where moss and lichen cover is notably lower in all points within 500 meters and especially in points partially and totally downwind of mine facilities (several points approach zero cover by these lifeforms). Similar to results for vegetation cover, the downwind points appear to be affected by fugitive dust within the first 1,500 meters while upwind points appear only affected within the first 500 meters. Data for partially downwind points in this chart should be viewed with caution given the placement of AT5-500 in an apparently healthy moss bog and AT5-1000 in a seemingly healthy forb-dominated meadow with an apparently natural minimal moss and lichen layer. Since these two community types were unlike any other surveyed, expected values for these two communities are unknown at this time. Overall, it appears that partially downwind points within 500 meters are noticeably affected by fugitive dust but seemingly unaffected beyond this point. Finally, total moss and lichen cover on downwind points within 1,500 meters of the mine or facilities appears to be significantly more affected by dust than upwind points. However, beyond 1,500 meters there appears to be little difference with respect to wind direction.

As a result, these analyses should provide a strong basis for future comparisons (over time) to determine whether mitigation measures are leading to recovery, or whether additional mitigation may be necessary. Future evaluations should place emphasis on those plots closer to the mine where the potential for recovery is greatest. In addition, future evaluations may be able to isolate and define the impact footprint along with a determination of "footprint shrinkage".

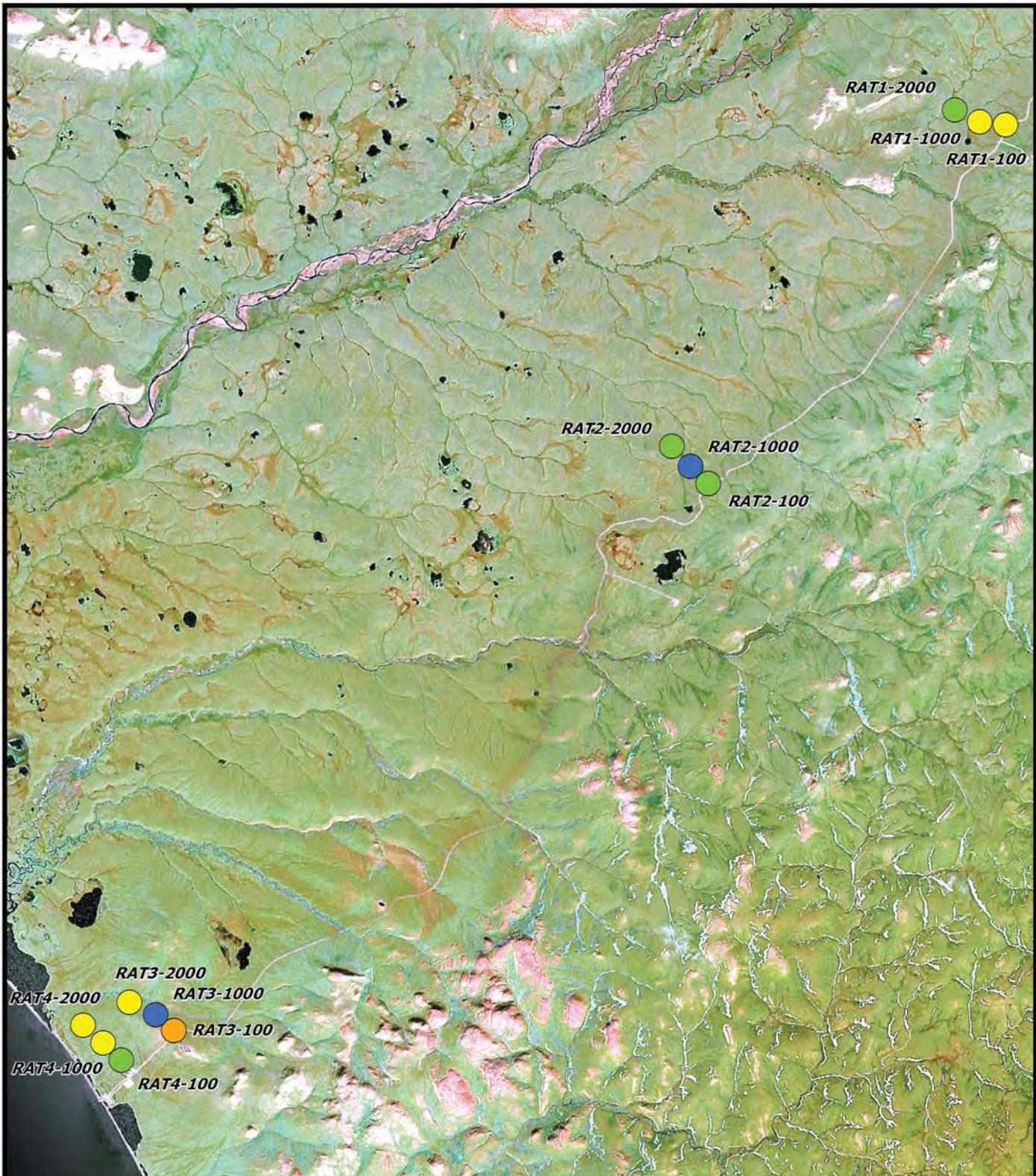
3.6 RAT Points – Distance Comparisons

Two goals govern the establishment and long-term monitoring of the RAT points along the DMTS road and port facilities. The first and primary goal is to determine long-term vegetation trends (positive,

static, or negative) in the immediate vicinity of these facilities taking into account recent corrective measures aimed to reduce fugitive dust deposition. The secondary goal is to estimate the extent and intensity of adverse effects of fugitive dust on vegetation from haulage and storage of metal-laden ore on the adjacent coastal tussock ecosystem. The first goal will be addressed as future data sets are collected and analyzed, however initial findings with regard to the second goal can be presented in this section. It should be noted, however, that although all these points are dominated by tussock cottongrass, this community is moderately variable with cottongrass ranging from 16.8% to 44.5% cover with micro-topography affecting both soil water levels and community composition. It must also be kept in mind as results are interpreted that slight to moderate variation in parameters between points is both natural and normal (i.e. natural ecosystem variability). As stated previously, CAT-4 data should not be directly compared to the RAT data set as it is a "control" and the point occurs in a somewhat drier location (less standing water) that affords greater moss growth between tussocks. Like CAT 1-3, this control point is intended to segregate natural variation in vegetation, moss, and lichen cover from variation that is mine / dust related.

Map 9 and Chart 3 on the following pages indicates that vegetation cover was relatively consistent across these 12 sample locations and no point appears to be severely or even moderately impacted by fugitive dust. RAT4-1000 exhibited the lowest average vegetation cover of all points (69.2% versus the average cover of 77.9%), however moss and lichen cover along this transect was slightly above average (32.5% versus an average of 30.9%). Given that mosses and lichens are more susceptible to dust deposition effects, the lower vegetation cover is most likely due to natural variation. The average vegetation cover of the four 100 m points is slightly less than for the average of the four 1,000 m and 2,000 m points. However, this difference cannot be considered significant given the low number of samples ($n = 4$) as well as the observed natural variation. If future data sets show consistent numbers, then additional hypotheses may be formulated.

Map 8 and Chart 4 on the following pages indicates notable variation in moss and lichen cover values across the 12 sample points although distance from road / facilities may not be the causative agent. (This study was not designed as a thorough investigation of the extent of fugitive dust impacts as a greater number of samples would be required to offer statistical validity.) Given this caveat, RAT3-100 has the lowest moss and lichen cover value at 19.3%, which is 11.6 points below the average of 30.9%; however, the vegetation cover at this point is slightly above average. This point may be an expression of slight impact, but definitive evidence is lacking. Unlike the Red Dog Mine area, there is no definitive correlation between distance from disturbance and cover values (Chart 4). The collective 100 m point average is slightly lower than the 1,000 m and 2,000 m averages (27.2% versus 34.9% and 30.6%,



Map 8

Red Dog Mine - 2010

Vegetation Monitoring

DMTS Road / Port Surveys
(RAT Points)

Average Moss & Lichen Cover

- 0% - 10%
- 11% - 20%
- 21% - 30%
- 31% - 40%
- 41% +

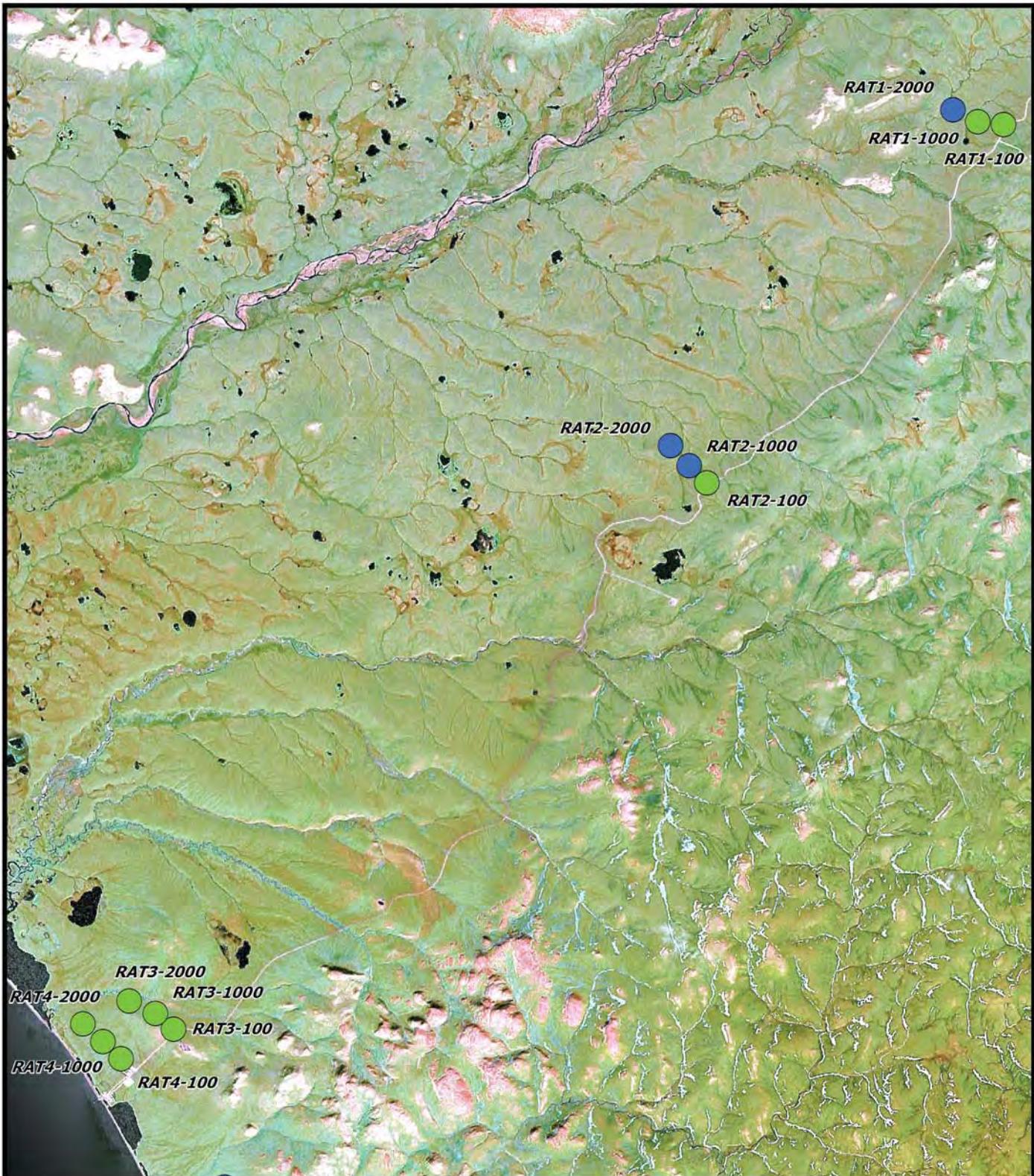


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1 inch equals 5,298 meters

0 1,000 4,000 6,000 8,000 Meters



Map 9
Red Dog Mine - 2010
Vegetation Monitoring
DMTS Road / Port Surveys
(RAT Points)

Average Vegetation Cover

- 0% - 20%
- 21% - 40%
- 41% - 60%
- 61% - 80%
- 81% +



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1 inch equals 5,298 meters

0 1,000 4,000 6,000 8,000 Meters

Chart 3
Red Dog Mine - RAT Points
Average Vegetation Cover Comparison by Distance from
Road/Disturbance -2010

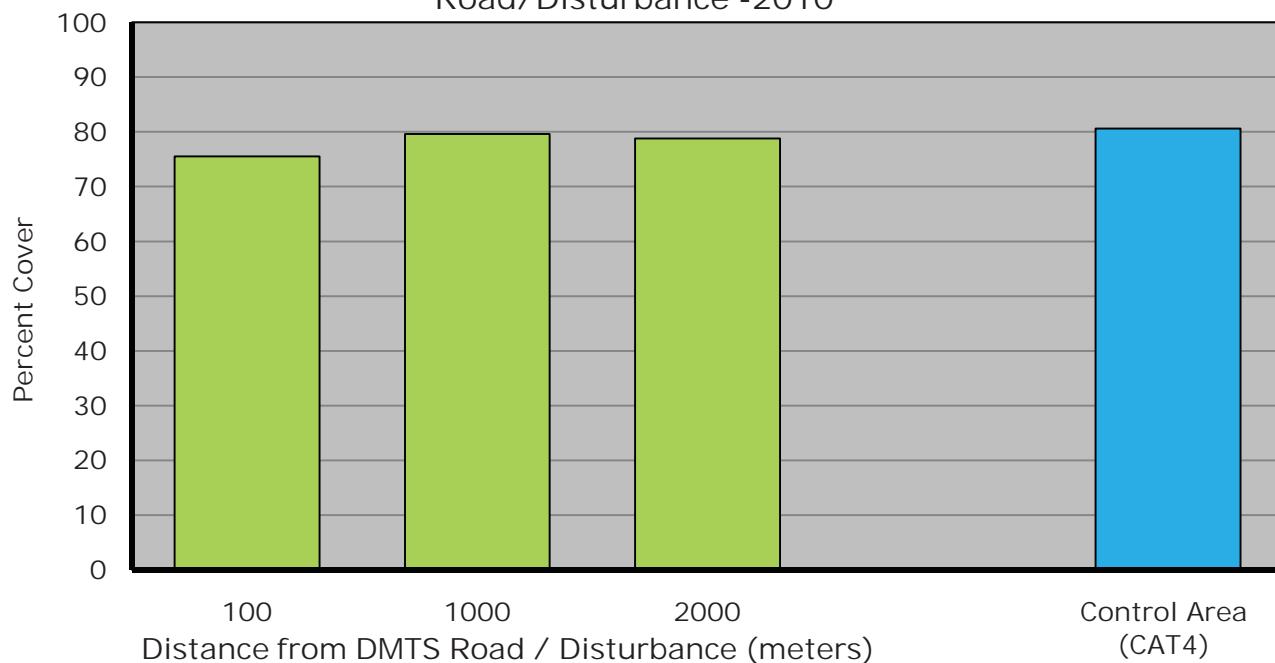
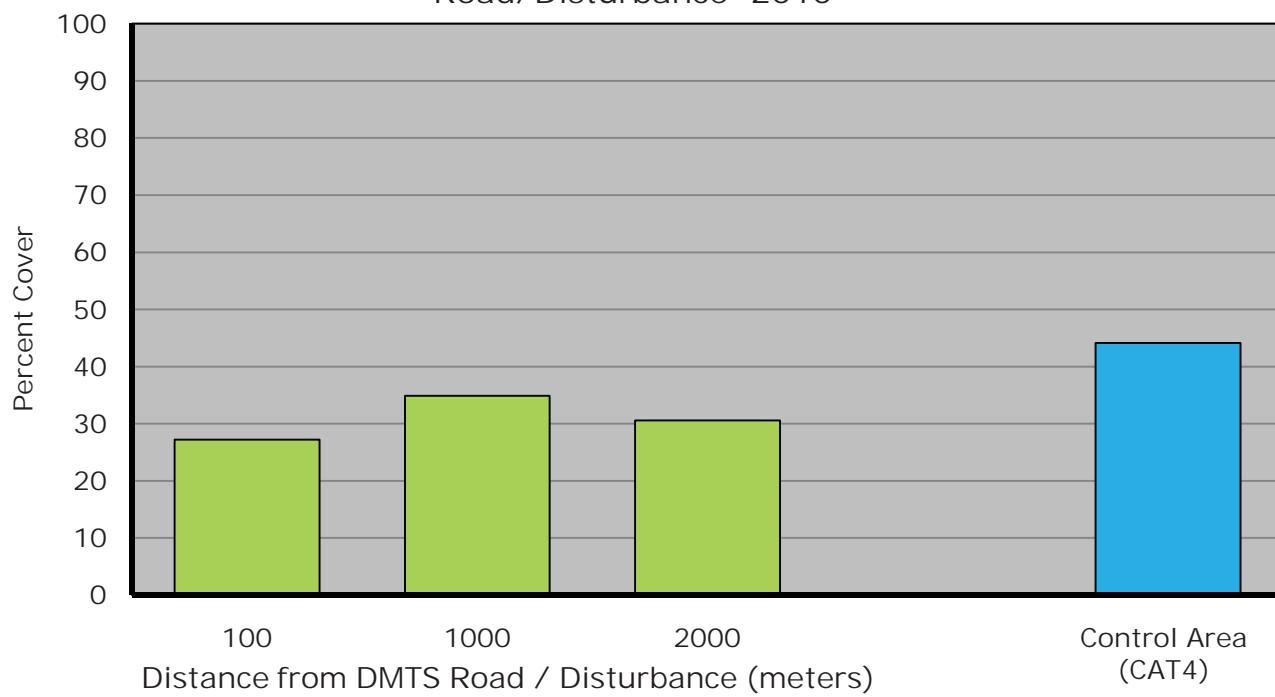


Chart 4
Red Dog Mine - RAT Points
Average Moss and Lichen Cover Comparison by Distance from
Road/Disturbance -2010



respectively). However, this observation cannot be definitively tied to dust deposition given the small differences observed (within the realm of natural variation), and given the sample size is small ($n=4$). In addition, only one set of values (RAT1) shows slowly increasing moss and lichen cover values with distance from the disturbance (DMTS road). The other sets of data are either bell-shaped with the highest value at the intermediate distance or U-shaped with the lowest value at the intermediate distance. These observations suggest natural variation is overwhelming any modest impact due to dust deposition. Although there are a few qualitative and quantitative indications that areas within 100 meters of disturbances may be showing effects of fugitive dust deposition, this result is not statistically significant. To the contrary and natural variation aside, a weak argument could be made for a small loss in moss and lichen cover and at most, a 5% reduction in total vegetation cover at the 100 m distance. However, there is no indication either quantitatively or qualitatively that fugitive dust is even slightly affecting vegetation or moss and lichen cover at 1,000 m or 2,000 m distance from the DMTS road or port facilities.

4.0 RECOMMENDATIONS

As indicated multiple times throughout this document, data presented here are offered as a baseline against which future measurements can be compared to detect change over time. Secondarily, hypotheses can be formulated with regard to the spatial extent of impact. Based on this first effort, Cedar Creek makes the following three recommendations.

First, it is recommended that the next survey of the 71 long-term monitoring points be undertaken during the summer of 2012 thereby facilitating a more rapid initial analysis should conditions be other than static. This effort would provide relatively quick feedback on the effectiveness of recent dust control mitigation measures and may provide an initial assessment of the recovery, stabilization, or continued decline of affected areas. After 2012, it is recommended that monitoring of these points continue on the proposed 3-year recurrence interval unless dramatic changes to affected or unaffected areas warrant a shorter monitoring interval.

Second, Cedar Creek recommends that a survey of unaffected communities surrounding the mine and along the DMTS road / port area be undertaken in 2012 to provide "expected" or "reference" cover values for the 67 long-term impact monitoring points. The purposeful placement of monitoring points as well as community diversity, especially around the mine, increases the variability of sampled populations that in turn complicates the segregation of affected areas versus unaffected areas. A survey of this type could provide an accurate range of acceptable cover values that could then aid an assessment of mitigation measure veracity/effectiveness and provide additional suggestions for remediation or recovery goals. As part of this effort, those monitoring points (e.g., some of the 2,500 m and 4,000 m points) that seem to be well outside the impact footprint could be utilized to supplement this database.

Finally, it may be prudent to locate additional snowbank accumulation areas downwind of the mine and processing facilities area and possibly add an additional 2 or 3 plots in these areas to supplement data from the single snowbank area (AT3-700) that is among the current monitoring points. Related to this effort would also be the addition of intermediate sample plots along the downwind alignments (3 and 4) and perhaps the two partially downwind alignments on either side (2 and 5). Intermediate plots would be established at 250 m, 750 m, and 1250 m along these alignments. At some future point (e.g., after 2015) upwind points that are distant from mine facilities (e.g., 2,500 m and 4,000 m) might be removed from the monitoring schedule unless needed for recommendation No. 2.

5.0 LITERATURE CITED

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Laursen, Gary A. and Seppelt, Rodney D. 2009. Common Interior Alaska Cryptogams. University of Alaska Press. Fairbanks, AK.

Appendix A

Tables, Charts & Photographs

Appendix A
LIST OF TABLES, CHARTS & PHOTOGRAPHS

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Table 2 Red Dog Mine - Vegetation Cover -- 2010

Average Cover Summary - AT 000-200 Plots

Percent Ground Cover Based on Point-Intercept Sampling

Sample Area—>	AT 1 000	AT 2 000	AT 3 060	AT 4 060	AT 5 000	AT 6 000	AT 7 200	AT 8 000	AT 9 000
1st Hits									
Grasses and Grass-likes									
<i>Arctagrostis latifolia</i>	Wideleaf Polargrass	-	-	0.20	-	-	-	-	-
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint	-	9.20	14.00	-	0.40	-	-	2.20
<i>Carex aquatilis</i> ssp. <i>aqu.</i>	Water Sedge	1.00	-	-	-	-	11.80	-	-
<i>Carex bigelowii</i>	Bigelow's Sedge	4.40	6.60	7.40	27.20	0.80	-	5.00	0.40
<i>Carex microchaeta</i>	Smallawned Sedge	0.20	-	-	-	-	-	-	1.20
<i>Carex podocarpa</i>	Shortstalk Sedge	-	-	-	-	2.00	-	-	-
<i>Carex scirpoidea</i>	Northern Singlespike Sedge	-	-	-	-	0.20	-	-	-
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass	7.40	-	-	-	-	-	-	-
<i>Festuca altaica</i>	Altai Fescue	-	-	-	-	1.20	-	-	-
<i>Hierochloe alpina</i>	Alpine Sweetgrass	-	-	-	-	-	-	-	0.80
<i>Luzula confusa</i>	Northern Woodrush	-	-	-	-	-	-	-	0.40
<i>Trisetum spicatum</i> ssp. <i>spi.</i>	Spike Trisetum	-	-	-	-	-	-	-	0.40
Forbs									
<i>Anemone narcissiflora</i>	Narcissus Anemone	-	-	-	-	-	-	-	0.20
<i>Antennaria friesiana</i> ssp. <i>alaskana</i>	Fries' Pussytoes	-	-	-	-	-	-	-	1.00
<i>Artemisia arctica</i> ssp. <i>arc.</i>	Boreal Sagebrush	-	-	-	-	-	-	-	0.60
<i>Equisetum arvense</i>	Field Horsetail	-	-	-	-	-	1.00	-	-
<i>Lupinus arcticus</i>	Arctic Lupine	-	-	-	-	-	-	5.60	1.80
<i>Lycopodium clavatum</i> ssp. <i>monostachyon</i>	One-cone Club Moss	-	-	-	-	0.40	-	-	-
<i>Oxytropis nigrescens</i> ssp. <i>bryophilia</i>	Blackish Oxytrop	-	-	-	-	-	-	-	0.20
<i>Petasites frigidus</i> var. <i>hyperboreus</i>	Arctic Sweet Coltsfoot	-	-	-	0.20	-	3.60	-	-
<i>Rubus chamaemorus</i>	Cloudberry	7.00	1.60	-	0.20	-	2.60	-	-
Deciduous Shrubs									
<i>Arctostaphylos alpina</i>	Alpine Bearberry	-	-	-	-	-	-	-	13.40
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	18.00	11.00	2.20	10.00	18.00	-	17.00	27.60
<i>Salix chamissonis</i>	Chamisso's Willow	-	-	-	-	0.40	-	-	-
<i>Salix phlebophylla</i>	Skeletonleaf Willow	-	-	-	-	-	-	-	0.20
<i>Salix pulchra</i>	Tealeaf Willow	-	11.40	5.20	6.80	3.20	40.40	8.00	6.20
<i>Spiraea beauverdiana</i>	Beauverd Spirea	-	-	-	0.20	-	-	-	-
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	0.60	5.60	5.40	19.60	5.80	0.20	18.40	5.00
Evergreen Shrubs									
<i>Dryas octopetala</i> ssp. <i>oct.</i>	White Mountain-avens	-	-	-	-	-	-	-	0.60
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry	-	0.60	-	3.00	16.00	-	-	-
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	24.00	20.20	9.40	7.00	7.20	-	2.20	3.20
<i>Loiseleuria procumbens</i>	Alpine Azalea	-	-	-	-	2.80	-	-	-
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	9.60	8.40	-	2.20	3.20	-	4.20	18.20
Mosses									
<i>Hylocomium splendens</i>	Splendid Feather Moss	-	1.40	-	-	-	6.60	-	-
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss	-	-	-	-	-	-	7.60	-
<i>Polytrichum</i> sp.	Polytrichum Moss	-	-	-	-	3.20	0.20	-	1.80
<i>Sphagnum</i> sp.	Sphagnum Moss	9.00	-	-	-	-	-	-	-
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	0.60	-	-	-	0.40	-	3.40	1.60
<i>Peltigera aphthosa</i>	Felt Lichen	0.20	-	-	-	-	-	2.20	0.20
<i>Peltigera</i> sp.	Felt Lichen	0.20	-	-	-	-	-	1.00	0.60
<i>Stereocalon tomentosum</i>	Tomentose Snow Lichen	-	-	-	-	3.40	-	-	2.00
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	0.40	-	-	-	0.20	-	-	0.40
	Unknown Crustose Lichen	1.60	-	-	-	-	-	-	0.20
	Unknown Rock Lichen	-	-	-	-	-	-	1.00	-

Table 2 (continued)

Average Cover Summary - AT 000-200 Plots

Percent Ground Cover Based on Point-Intercept Sampling

Sample Area—→	AT 1 000	AT 2 000	AT 3 060	AT 4 060	AT 5 000	AT 6 000	AT 7 200	AT 8 000	AT 9 000	
1st Hits										
Total Vegetation Cover										
Rock	-	-	-	-	1.00	-	-	0.20	1.80	
Litter	15.80	23.60	48.60	23.40	29.40	33.60	24.20	25.80	15.20	
Bare ground	-	0.40	7.60	0.20	0.80	-	0.20	0.20	1.40	
Average Cover by Lifeform (1st Hits only)										
Grasses and Grass-likes	13.00	15.80	21.60	27.20	4.60	11.80	5.00	5.00	1.60	
Forbs	7.00	1.60	-	0.40	0.40	7.20	5.60	1.80	2.00	
Deciduous Shrubs	18.60	28.00	12.80	36.60	27.40	40.60	43.40	38.80	52.00	
Evergreen Shrubs	33.60	29.20	9.40	12.20	29.20	-	6.40	21.40	20.20	
Mosses	9.00	1.40	-	-	3.20	6.80	7.60	1.80	2.40	
Lichens	3.00	-	-	-	4.00	-	7.60	5.00	3.40	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)										
Mosses										
<i>Drepanocladus</i> sp.	Drepanocladus Moss	-	-	-	-	-	0.80	-	-	
<i>Hylocomium splendens</i>	Splendid Feather Moss	-	6.00	-	-	-	7.60	-	-	
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss	-	-	-	-	-	-	5.40	-	
<i>Polytrichum</i> sp.	Polytrichum Moss	-	1.60	-	0.40	5.80	3.80	-	3.40	
<i>Sphagnum</i> sp.	Sphagnum Moss	22.20	-	-	-	-	-	-	-	
Lichens										
<i>Cladonia</i> sp.	Cup Lichen	2.60	-	-	-	1.00	-	8.40	-	
<i>Masonalea richardsonii</i>	Richardson's Masonalea Lichen	-	-	-	0.40	-	-	0.20	-	
<i>Peltigera aphthosa</i>	Felt Lichen	0.40	-	-	-	-	2.40	-	-	
<i>Peltigera</i> sp.	Felt Lichen	-	-	-	-	-	-	1.00	0.40	
<i>Stereocalon tomentosum</i>	Tomentose Snow Lichen	-	-	-	-	-	-	-	1.00	
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	2.80	-	-	-	0.20	-	-	1.60	
	Unknown Crustose Lichen	1.40	-	-	-	0.40	-	-	0.80	
1st and 2nd Hits Combined	Total Moss Cover	31.20	9.00	-	0.40	9.00	19.00	13.00	5.20	4.40
	Total Lichen Cover	10.20	-	-	-	6.00	-	19.40	9.00	12.60
	Total Moss and Lichen Cover	41.40	9.00	-	0.40	15.00	19.00	32.40	14.20	17.00

Table 3 Red Dog Mine - Vegetation Cover -- 2010

Average Cover Summary - AT 500 & 700 Plots

Percent Ground Cover Based on Point-Intercept Sampling

Sample Area—→	AT 1 500	AT 2 500	AT 3 500	AT 3 700	AT 4 500	AT 5 500	AT 6 500	AT 7 500	AT 8 500	AT 9 500
1st Hits										
Grasses and Grass-likes										
<i>Arctagrostis latifolia</i> Wideleaf Polargrass										
<i>Calamagrostis canadensis</i> ssp. <i>can.</i> Bluejoint										
<i>Carex aquatilis</i> ssp. <i>aqu.</i> Water Sedge										
<i>Carex bigelowii</i> Bigelow's Sedge										
<i>Carex microchaeta</i> Smallawned Sedge										
<i>Carex podocarpa</i> Shortstalk Sedge										
<i>Carex scirpoidea</i> Northern Singlespike Sedge										
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i> Tuftsock Cottongrass										
<i>Festuca altaica</i> Altai Fescue										
<i>Hierochloe alpina</i> Alpine Sweetgrass										
<i>Luzula confusa</i> Northern Woodrush										
<i>Luzula multiflora</i> ssp. <i>mul.</i> Common Woodrush										
<i>Luzula wahlenbergii</i> ssp. <i>wah.</i> Wahlenberg's Woodrush										
<i>Poa alpigena</i> Kentucky Bluegrass										
Forbs										
<i>Aconitum delphiniiifolium</i> Larkspurleaf Monkshood										
<i>Anemone narcissiflora</i> Narcissus Anemone										
<i>Anemone parviflora</i> Smallflowered Anemone										
<i>Arnica lessingii</i> Nodding Arnica										
<i>Artemisia arctica</i> ssp. <i>arc.</i> Boreal Sagebrush										
<i>Aster sibiricus</i> Arctic Aster										
<i>Cerastium beeringianum</i> var. <i>bee.</i> Bering Chickweed										
<i>Dodecatheon frigidum</i> Western Arctic Shootingstar										
<i>Epilobium palustre</i> Marsh Willowherb										
<i>Equisetum arvense</i> Field Horsetail										
<i>Equisetum scirpoides</i> Dwarf Scouringrush										
<i>Linnaea borealis</i> ssp. <i>bor.</i> Twinflower										
<i>Lycopodium clavatum</i> ssp. <i>monostachyon</i> One-cone Club Moss										
<i>Petasites frigidus</i> var. <i>hyperboreus</i> Arctic Sweet Coltsfoot										
<i>Polemonium acutiflorum</i> Tall Jacob's Ladder										
<i>Primula sibirica</i> Siberian Primrose										
<i>Rubus arcticus</i> ssp. <i>arc.</i> Arctic Blackberry										
<i>Rubus chamaemorus</i> Cloudberry										
<i>Saussurea angustifolia</i> Narrow-leaf Saw Wort										
<i>Saxifraga hieracifolia</i> Stiffstem Saxifrage										
<i>Saxifraga punctata</i> ssp. <i>nelsoniana</i> Heartleaf Saxifrage										
<i>Solidago multiradiata</i> var. <i>mul.</i> Rocky Mountain Goldenrod										
<i>Stellaria laeta</i> Chickweed										
<i>Valeriana capitata</i> Valerian										
Deciduous Shrubs										
<i>Betula nana</i> ssp. <i>exilis</i> Dwarf Birch										
<i>Salix chamissonis</i> Chamisso's Willow										
<i>Salix lanata</i> ssp. <i>richardsonii</i> Richardson's Willow										
<i>Salix phlebophylla</i> Skeletonleaf Willow										
<i>Salix pulchra</i> Tealeaf Willow										
<i>Salix reticulata</i> Netleaf Willow										
<i>Spiraea beauverdiana</i> Beauverd Spirea										
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i> Bog Blueberry										
Evergreen Shrubs										
<i>Andromeda polifolia</i> Bog Rosemary										
<i>Cassiope tetragona</i> ssp. <i>tet.</i> White Arctic Mtn. Heather										
<i>Dryas integrifolia</i> ssp. <i>integrifolia</i> Entireleaf Mountain Avens										
<i>Dryas octopetala</i> ssp. <i>oct.</i> White Mountain-avens										
<i>Empetrum nigrum</i> ssp. <i>hermafroditum</i> Black Crowberry										
<i>Ledum palustre</i> ssp. <i>decumbens</i> Marsh Labrador Tea										
<i>Loiseleuria procumbens</i> Alpine Azalea										
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i> Narrow Mtn. Cranberry										
Mosses										
<i>Aulacomnium acuminatum</i> Acutetip Aulacomnium Moss										
<i>Hylocomium splendens</i> Splendid Feather Moss										
<i>Pleurozium schreberi</i> Shreber's Big Red Stem Moss										
<i>Polytrichum</i> sp. Polytrichum Moss										
<i>Sphagnum</i> sp. Sphagnum Moss										
Lichens										
<i>Cladonia deformis</i> Deformed Cup Lichen										
<i>Cladonia</i> sp. Cup Lichen										
<i>Flavocetraria cucullata</i> Flavocetraria Lichen										
<i>Masonhalea richardsonii</i> Richardson's Masonhalea Lichen										
<i>Peltigera aphthosa</i> Felt Lichen										
<i>Peltigera</i> sp. Felt Lichen										
<i>Stereocaulon tomentosum</i> Tomentose Snow Lichen										
<i>Thamnolia vermicularis</i> Whiteworm Lichen										
<i>Unknown Crustose Lichen</i> Unknown Crustose Lichen										
<i>Unknown Rock Lichen</i> Unknown Rock Lichen										

Table 3 (continued)

Average Cover Summary - AT 500 & 700 Plots

		Percent Ground Cover Based on Point-Intercept Sampling									
Sample Area—>		AT 1 500	AT 2 500	AT 3 500	AT 3 700	AT 4 500	AT 5 500	AT 6 500	AT 7 500	AT 8 500	AT 9 500
1st Hits											
Total Vegetation Cover		84.60	86.60	33.00	11.80	66.20	87.40	79.20	77.00	73.20	90.40
Rock	-	-	-	1.80	-	-	-	-	-	0.20	0.40
Litter	15.40	13.40	58.40	64.40	33.60	12.60	20.60	23.00	26.00	9.20	-
Bare ground	-	-	8.60	22.00	0.20	-	0.20	-	0.60	-	-
Average Cover by Lifeform (1st Hits only)											
Grasses and Grass-likes		21.20	1.60	3.20	2.20	2.60	25.40	28.00	5.00	31.80	8.00
Forbs		14.20	39.00	-	-	-	16.20	18.00	2.60	2.40	0.20
Deciduous Shrubs		14.60	29.60	26.60	9.40	43.00	10.20	20.00	37.80	13.40	7.40
Evergreen Shrubs		23.80	-	2.80	-	16.60	1.40	3.20	24.00	14.60	39.20
Mosses		9.60	16.20	-	-	0.40	32.60	7.60	6.20	0.40	1.00
Lichens		1.20	0.20	0.40	0.20	3.60	1.60	2.40	1.40	10.60	34.60
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)											
Mosses											
<i>Aulacomnium acuminatum</i>	Acutetip Aulacomnium Moss	-	20.00	-	-	-	-	-	-	-	-
<i>Aulacomnium</i> sp.	Aulacomnium Moss	-	-	-	-	-	-	-	0.80	-	-
<i>Hylocomium splendens</i>	Splendid Feather Moss	-	11.60	-	-	-	49.60	24.00	16.20	-	-
<i>Polytrichum</i> sp.	Polytrichum Moss	-	-	-	-	0.60	-	-	0.80	1.60	-
<i>Sphagnum</i> sp.	Sphagnum Moss	26.40	-	-	-	-	1.40	-	-	-	-
Lichens											
<i>Cladonia</i> sp.	Cup Lichen	-	0.60	-	-	1.60	-	0.60	1.80	4.20	2.40
<i>Flavocetraria cucullata</i>	Flavocetraria Lichen	2.60	-	-	-	-	-	-	-	-	-
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen	-	-	-	-	-	-	-	-	-	0.60
<i>Peltigera aphthosa</i>	Felt Lichen	-	-	-	-	-	0.60	1.20	-	-	0.20
<i>Peltigera</i> sp.	Felt Lichen	1.00	2.60	-	-	-	1.20	0.40	4.00	-	-
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen	-	-	-	-	0.40	-	-	-	2.40	8.40
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	0.20	-	1.20	-	-	-	0.20	-	0.20	0.40
	Unknown Crustose Lichen	1.40	-	0.20	-	0.60	0.40	0.60	-	0.80	1.20
1st and 2nd Hits Combined	Total Moss Cover	36.00	47.80	-	-	1.00	83.60	31.60	24.00	2.00	1.00
	Total Lichen Cover	6.40	3.40	1.80	0.20	6.20	3.80	5.40	7.20	18.20	47.80
	Total Moss and Lichen Cover	42.40	51.20	1.80	0.20	7.20	87.40	37.00	31.20	20.20	48.80

Table 4 Red Dog Mine - Vegetation Cover -- 2010

Average Cover Summary - AT 1000 Plots

Percent Ground Cover Based on Point-Intercept Sampling

Sample Area—>	AT 1 1000	AT 2 1000	AT 3 1000	AT 4 1000	AT 5 1000	AT 6 1000	AT 7 1000	AT 8 1000	AT 9 1000
1st Hits									
Grasses and Grass-likes									
<i>Arctagrostis latifolia</i>	Wideleaf Polargrass	-	-	3.20	-	-	-	-	-
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint	-	-	0.20	-	0.60	-	-	0.40
<i>Carex aquatilis</i> ssp. <i>aqu.</i>	Water Sedge	-	19.60	0.60	-	-	-	-	-
<i>Carex bigelowii</i>	Bigelow's Sedge	3.40	5.80	0.40	-	-	-	0.40	0.60
<i>Carex microchaeta</i>	Smallawned Sedge	-	-	-	17.60	-	1.00	4.00	0.40
<i>Carex podocarpa</i>	Shortstalk Sedge	-	-	0.60	-	2.80	-	-	0.60
<i>Carex scirpoidea</i>	Northern Singlespike Sedge	-	-	-	-	0.40	-	-	-
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass	34.20	-	-	-	-	-	-	-
<i>Festuca altaica</i>	Altai Fescue	-	0.20	1.00	12.20	12.20	-	4.00	0.40
<i>Festuca brachyphylla</i>	Alpine Fescue	-	-	-	-	-	-	-	0.80
<i>Hierochloe alpina</i>	Alpine Sweetgrass	-	-	-	-	-	-	-	0.40
<i>Poa alpigena</i>	Kentucky Bluegrass	-	-	0.20	-	-	-	-	1.20
<i>Poa arctica</i> ssp. <i>arc.</i>	Arctic Bluegrass	-	-	-	-	3.60	-	-	-
Forbs									
<i>Aconitum delphiniiifolium</i>	Larkspurleaf Monkshood	-	-	-	-	0.20	-	-	-
<i>Anemone narcissiflora</i>	Narcissus Anemone	-	-	-	-	-	-	0.20	-
<i>Anemone parviflora</i>	Smallflowered Anemone	-	-	-	-	0.80	-	-	-
<i>Arnica lessingii</i>	Nodding Arnica	-	-	-	-	0.20	-	-	0.40
<i>Artemisia arctica</i> ssp. <i>arc.</i>	Boreal Sagebrush	-	-	-	0.20	1.00	-	0.20	0.20
<i>Aster sibiricus</i>	Arctic Aster	-	-	-	-	1.20	-	-	-
<i>Cerastium beeringianum</i> var. <i>bee.</i>	Bering Chickweed	-	-	-	-	0.40	-	-	-
<i>Dodecatheon frigidum</i>	Western Arctic Shootingstar	-	0.20	-	-	0.20	-	-	-
<i>Epilobium palustre</i>	Marsh Willowherb	-	-	-	-	0.20	-	-	-
<i>Equisetum arvense</i>	Field Horsetail	-	1.00	0.20	-	-	-	-	-
<i>Equisetum scirpoides</i>	Dwarf Scouringrush	-	0.60	-	-	-	-	-	-
<i>Galium boreale</i>	Northern Bedstraw	-	-	-	-	1.80	-	-	-
<i>Gentiana propinqua</i> ssp. <i>pro.</i>	Fourpart Dwarf Gentian	-	-	-	-	0.20	-	-	-
<i>Hedysarum alpinum</i>	Alpine Sweetvetch	-	-	-	-	7.80	-	-	-
<i>Lupinus arcticus</i>	Arctic Lupine	-	-	-	-	0.60	-	8.60	6.60
<i>Lycopodium clavatum</i> ssp. <i>monostachyon</i>	One-cone Club Moss	-	-	-	-	-	-	0.20	-
<i>Pedicularis labradorica</i>	Labrador Lousewort	-	-	0.20	-	-	-	-	0.20
<i>Petasites frigidus</i> var. <i>hyperboreus</i>	Arctic Sweet Coltsfoot	-	0.80	-	-	-	-	0.60	-
<i>Primula sibirica</i>	Siberian Primrose	-	0.80	-	-	-	-	-	-
<i>Rubus arcticus</i> ssp. <i>arc.</i>	Arctic Blackberry	-	0.60	-	-	0.40	-	-	-
<i>Rubus chamaemorus</i>	Cloudberry	5.80	-	-	-	-	-	-	-
<i>Saussurea angustifolia</i>	Narrow-leaf Saw Wort	-	-	0.20	-	2.40	-	-	0.20
<i>Senecio lugens</i>	Small Blacktip Ragwort	-	-	-	-	5.60	-	-	-
<i>Solidago multiradiata</i> var. <i>mul.</i>	Rocky Mountain Goldenrod	-	-	-	-	4.40	-	-	-
<i>Thalictrum alpinum</i>	Alpine Meadow-Rue	-	-	-	-	1.40	-	-	-
<i>Valeriana capitata</i>	Valerian	-	-	-	-	0.20	-	-	-
<i>Zygadenus elegans</i>	Mountain Deathcamas	-	-	-	-	3.20	-	-	-
Deciduous Shrubs									
<i>Arctostaphylos alpina</i>	Alpine Bearberry	-	0.20	0.40	-	-	1.80	-	-
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	4.40	-	11.20	-	-	16.40	8.20	30.00
<i>Potentilla fruticosa</i>	Shrubby Cinquefoil	-	-	-	0.80	-	-	-	-
<i>Salix glauca</i> ssp. <i>acutifolia</i>	Grayleaf Willow	-	-	1.80	-	-	-	-	-
<i>Salix lanata</i> ssp. <i>richardsonii</i>	Richardson's Willow	-	3.40	-	-	-	-	-	-
<i>Salix myrtillifolia</i>	Blueberry Willow	-	-	-	-	-	-	0.20	1.60
<i>Salix phlebophylla</i>	Skeletonleaf Willow	-	-	-	-	-	-	-	0.80
<i>Salix pulchra</i>	Tealeaf Willow	0.20	6.00	5.60	-	-	-	7.00	6.20
<i>Salix reticulata</i>	Netleaf Willow	-	16.20	-	-	29.00	-	0.20	-
<i>Spiraea beauverdiana</i>	Beauverd Spirea	-	-	-	7.60	-	-	-	-
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	12.20	-	28.00	0.20	-	5.40	25.40	6.20
Evergreen Shrubs									
<i>Cassiope tetragona</i> ssp. <i>tet.</i>	White Arctic Mtn. Heather	-	-	-	0.60	-	-	-	0.40
<i>Dryas octopetala</i> ssp. <i>oct.</i>	White Mountain-avens	-	-	0.60	-	0.20	-	-	11.40
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry	2.20	-	9.40	1.20	-	0.20	-	-
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	6.80	-	2.20	-	-	2.40	7.20	0.40
<i>Loiseleuria procumbens</i>	Alpine Azalea	-	-	-	2.20	-	-	-	-
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	6.20	0.40	3.80	0.20	-	14.80	10.60	9.20
Mosses									
<i>Aulacomnium acuminatum</i>	Acutetip Aulacomnium Moss	-	0.40	-	-	-	-	-	-
<i>Aulacomnium</i> sp.	Aulacomnium Moss	-	1.40	-	-	-	-	-	-
<i>Aulacomnium turgidum</i>	Turgid Aulacomnium Moss	-	-	2.00	-	-	-	-	-
<i>Hylocomium splendens</i>	Splendid Feather Moss	-	5.00	1.80	-	0.60	-	5.60	6.40
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss	-	-	-	-	0.80	-	0.20	-
<i>Polytrichum</i> sp.	Polytrichum Moss	-	1.20	-	-	-	2.20	-	7.40
<i>Sphagnum</i> sp.	Sphagnum Moss	9.80	-	-	-	-	-	-	-
<i>Tomentypnum nitens</i>	Tomentypnum Moss	-	3.60	-	-	-	-	-	-
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	-	-	0.60	-	-	5.80	2.20	2.00
<i>Masonalea richardsonii</i>	Richardson's Masonalea Lichen	-	-	-	-	-	-	0.40	-
<i>Peltigera aphthosa</i>	Felt Lichen	-	0.60	0.20	-	-	0.20	-	0.20
<i>Peltigera</i> sp.	Felt Lichen	0.80	0.40	3.20	-	-	0.60	1.40	1.40
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen	-	-	2.00	-	-	-	0.40	-
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	-	0.40	-	-	-	3.80	-	0.20
	Unknown Crustose Lichen	-	-	-	0.20	-	11.60	-	1.60

Table 4 (continued)

Average Cover Summary - AT 1000 Plots

Percent Ground Cover Based on Point-Intercept Sampling

Sample Area—→	AT 1 1000	AT 2 1000	AT 3 1000	AT 4 1000	AT 5 1000	AT 6 1000	AT 7 1000	AT 8 1000	AT 9 1000
1st Hits									
Total Vegetation Cover	86.00	68.80	79.60	42.20	82.40	66.80	86.60	84.40	92.40
Rock	-	-	-	10.40	-	2.80	-	-	-
Litter	14.00	31.20	20.40	41.80	17.60	23.60	13.40	15.40	7.60
Bare ground	-	-	-	5.60	-	6.80	-	0.20	-
Average Cover by Lifeform (1st Hits only)									
Grasses and Grass-likes	37.60	25.60	6.20	29.80	19.60	1.00	8.00	3.40	3.00
Forbs	5.80	4.00	0.60	0.20	32.20	-	9.60	7.00	0.80
Deciduous Shrubs	16.80	25.80	47.00	7.80	29.80	23.60	41.00	44.80	56.40
Evergreen Shrubs	15.20	0.40	16.00	4.20	0.20	17.20	18.00	9.60	17.80
Mosses	9.80	11.60	3.80	-	0.60	3.00	5.60	14.00	11.80
Lichens	0.80	1.40	6.00	0.20	-	22.00	4.40	5.60	2.60
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Aulacomnium acuminatum</i>	Acutetip Aulacomnium Moss	-	5.60	-	-	-	-	-	-
<i>Aulacomnium turgidum</i>	Turgid Aulacomnium Moss	-	-	4.80	-	-	-	-	-
<i>Hylocomium splendens</i>	Splendid Feather Moss	-	11.60	3.00	-	3.40	-	13.20	11.00
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss	-	-	-	-	-	-	0.60	-
<i>Polytrichum</i> sp.	Polytrichum Moss	-	0.80	-	-	0.20	1.00	-	14.20
<i>Sphagnum</i> sp.	Sphagnum Moss	22.20	-	-	-	-	-	-	-
<i>Tomentypnum nitens</i>	Tomentypnum Moss	-	12.00	-	-	-	-	-	-
Lichens									
<i>Cladonia deformis</i>	Deformed Cup Lichen	-	-	-	-	-	-	3.80	-
<i>Cladonia</i> sp.	Cup Lichen	1.00	-	0.60	-	-	5.80	7.80	2.00
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen	-	-	-	-	-	0.20	1.60	-
<i>Peltigera aphthosa</i>	Felt Lichen	-	-	0.20	-	-	0.40	1.00	1.20
<i>Peltigera</i> sp.	Felt Lichen	3.60	0.20	7.00	-	-	0.20	1.00	2.20
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen	-	-	0.40	-	-	-	-	-
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	0.20	-	-	-	-	1.20	-	0.20
	Unknown Crustose Lichen	-	0.80	0.80	-	-	1.20	-	0.60
1st and 2nd Hits Combined	Total Moss Cover	32.00	41.60	11.60	-	4.20	4.00	18.80	39.80
	Total Lichen Cover	5.60	2.40	15.00	0.20	-	31.00	15.80	15.60
	Total Moss and Lichen Cover	37.60	44.00	26.60	0.20	4.20	35.00	34.60	55.40
									55.20

Table 5 Red Dog Mine - Vegetation Cover -- 2010

Average Cover Summary - AT 1500 Plots

Percent Ground Cover Based on Point-Intercept Sampling

Sample Area-->	AT 1 1500	AT 2 1500	AT 3 1500	AT 4 1500	AT 5 1500	AT 6 1500	AT 7 1500	AT 8 1500	AT 9 1500
1st Hits									
Grasses and Grass-likes									
<i>Arctagrostis latifolia</i>	Wideleaf Polargrass	-	-	-	-	-	0.60	-	-
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint	3.80	3.00	2.80	-	-	0.20	0.40	-
<i>Carex bigelowii</i>	Bigelow's Sedge	8.20	1.80	0.60	2.00	-	1.00	0.20	-
<i>Carex microchaeta</i>	Smallawned Sedge	-	-	-	-	-	5.40	8.00	2.60
<i>Carex podocarpa</i>	Shortstalk Sedge	-	0.60	0.60	1.00	1.60	0.20	-	3.80
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass	8.80	-	-	-	-	0.40	-	-
<i>Festuca altaica</i>	Altai Fescue	-	-	8.00	5.00	1.20	0.80	1.60	-
<i>Hierochloe alpina</i>	Alpine Sweetgrass	-	-	-	-	-	-	1.60	0.60
<i>Luzula confusa</i>	Northern Woodrush	-	-	-	-	-	-	-	4.60
									0.20
Forbs									
<i>Aconitum delphiniiifolium</i>	Larkspurleaf Monkshood	-	0.40	-	-	-	-	-	-
<i>Anemone narcissiflora</i>	Narcissus Anemone	-	0.20	-	-	-	0.20	-	0.20
<i>Antennaria friesiana</i> ssp. <i>alaskana</i>	Fries' Pussytoes	-	-	-	-	-	-	-	-
<i>Arnica lessingii</i>	Nodding Arnica	-	-	-	-	-	-	-	0.40
<i>Artemisia arctica</i> ssp. <i>arc.</i>	Boreal Sagebrush	-	-	0.20	0.20	-	-	-	-
<i>Epilobium latifolium</i>	Dwarf Fireweed	-	-	0.20	-	-	-	-	-
<i>Equisetum arvense</i>	Field Horsetail	1.40	-	-	-	-	-	-	-
<i>Lupinus arcticus</i>	Arctic Lupine	-	-	1.60	0.80	1.40	-	0.60	3.80
<i>Minuartia arctica</i>	Arctic Stichwort	-	-	-	-	-	-	-	0.80
<i>Pedicularis kanei</i> ssp. <i>kan.</i>	Woolly Lousewort	-	-	-	-	-	-	-	0.20
<i>Pedicularis labradorica</i>	Labrador Lousewort	-	-	-	0.40	-	-	-	-
<i>Petasites frigidus</i> var. <i>hyperboreus</i>	Arctic Sweet Coltsfoot	1.60	-	-	-	-	-	-	-
<i>Polemonium acutiflorum</i>	Tall Jacob's Ladder	-	1.00	-	-	-	-	-	-
<i>Primula sibirica</i>	Siberian Primrose	-	-	-	-	0.20	-	-	-
<i>Rubus arcticus</i> ssp. <i>arc.</i>	Arctic Blackberry	-	1.60	-	-	-	-	-	-
<i>Rubus chamaemorus</i>	Cloudberry	1.40	-	0.40	0.20	-	-	-	-
<i>Stellaria laeta</i>	Chickweed	-	-	0.60	-	-	-	-	-
<i>Valeriana capitata</i>	Valerian	-	0.20	-	-	-	-	-	-
Deciduous Shrubs									
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	13.80	-	54.40	1.60	55.60	30.60	12.00	2.80
<i>Potentilla fruticosa</i>	Shrubby Cinquefoil	-	2.60	-	-	-	-	-	-
<i>Salix myrtillifolia</i>	Blueberry Willow	-	-	-	-	-	-	-	3.40
<i>Salix phlebophylla</i>	Skeletonleaf Willow	-	-	-	-	-	-	-	-
<i>Salix pulchra</i>	Tealeaf Willow	11.40	48.80	9.40	21.20	2.80	1.00	10.00	5.20
<i>Salix reticulata</i>	Netleaf Willow	-	3.00	-	0.60	0.20	-	-	1.20
<i>Spiraea beauverdiana</i>	Beauverd Spirea	1.00	-	0.60	-	-	-	-	-
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	7.80	-	1.20	17.60	16.20	17.60	26.00	20.80
									13.40
Evergreen Shrubs									
<i>Andromeda polifolia</i>	Bog Rosemary	0.20	-	-	-	-	-	0.20	-
<i>Cassiope tetragona</i> ssp. <i>tet.</i>	White Arctic Mtn. Heather	-	-	-	-	-	-	0.40	2.60
<i>Dryas octopetala</i> ssp. <i>oct.</i>	White Mountain-avens	-	-	-	-	2.20	-	0.40	-
<i>Empetrum nigrum</i> ssp. <i>hermafordinum</i>	Black Crowberry	2.20	-	-	2.60	0.20	2.80	4.80	-
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	11.20	-	-	4.60	-	1.20	2.60	1.00
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	4.80	-	1.20	2.60	0.40	6.20	3.80	14.80
									3.20
Mosses									
<i>Aulacomnium acuminatum</i>	Acutetip Aulacomnium Moss	-	10.60	-	-	-	-	-	-
<i>Aulacomnium</i> sp.	Aulacomnium Moss	-	-	-	-	-	7.00	-	-
<i>Hylocomium splendens</i>	Splendid Feather Moss	-	2.40	2.40	16.40	5.40	5.20	10.20	0.20
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss	-	-	1.20	-	-	-	-	-
<i>Polytrichum</i> sp.	Polytrichum Moss	-	0.20	-	-	-	0.40	-	7.60
<i>Sphagnum</i> sp.	Sphagnum Moss	6.00	-	-	-	-	-	-	5.00
<i>Tomentypnum nitens</i>	Tomentypnum Moss	-	2.40	-	-	-	-	-	-
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	-	-	-	2.20	0.40	1.80	-	7.00
<i>Flavocetraria cucullata</i>	Flavocetraria Lichen	-	-	-	-	-	-	-	1.20
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen	-	-	-	-	-	-	-	2.40
<i>Peltigera aphthosa</i>	Felt Lichen	-	-	-	1.00	-	-	-	-
<i>Peltigera</i> sp.	Felt Lichen	0.20	0.20	0.60	2.80	0.40	0.80	-	0.60
<i>Stereocalpon tomentosum</i>	Tomentose Snow Lichen	-	-	-	-	-	-	-	1.20
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	-	-	-	0.20	-	0.20	-	0.20

Table 5 (continued)

Average Cover Summary - AT 1500 Plots

Percent Ground Cover Based on Point-Intercept Sampling

Sample Area-->	AT 1 1500	AT 2 1500	AT 3 1500	AT 4 1500	AT 5 1500	AT 6 1500	AT 7 1500	AT 8 1500	AT 9 1500
1st Hits									
Total Vegetation Cover									
Rock	-	-	-	-	-	-	-	6.60	0.20
Litter	14.80	21.00	14.00	16.80	11.80	15.80	17.40	13.80	14.80
Bare ground	-	-	-	-	-	-	-	0.80	-
Average Cover by Lifeform (1st Hits only)									
Grasses and Grass-likes	20.80	5.40	12.00	8.00	2.80	8.00	12.40	3.20	14.80
Forbs	4.40	3.40	3.00	1.60	1.60	0.20	0.60	4.20	2.00
Deciduous Shrubs	34.00	54.40	65.60	41.00	74.80	49.20	48.00	28.80	36.80
Evergreen Shrubs	18.40	-	1.20	9.80	2.80	10.20	11.40	16.60	9.60
Mosses	6.00	15.60	3.60	16.40	5.40	12.60	10.20	7.80	16.60
Lichens	1.60	0.20	0.60	6.40	0.80	4.00	-	18.20	5.20
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Aulacomnium acuminatum</i>	Acutetip Aulacomnium Moss	-	26.40	-	-	-	-	-	-
<i>Aulacomnium</i> sp.	Aulacomnium Moss	-	-	-	-	-	-	-	-
<i>Hylocomium splendens</i>	Splendid Feather Moss	-	12.20	8.60	21.60	25.00	10.00	8.60	26.20
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss	-	-	2.20	-	-	-	-	-
<i>Polytrichum</i> sp.	Polytrichum Moss	-	-	-	0.60	-	1.40	-	3.20
<i>Sphagnum</i> sp.	Sphagnum Moss	25.80	-	-	-	-	-	-	-
<i>Tomentypnum nitens</i>	Tomentypnum Moss	-	8.60	-	-	-	-	-	-
Lichens									
<i>Cladonia deformis</i>	Deformed Cup Lichen	-	-	0.20	-	-	-	-	-
<i>Cladonia</i> sp.	Cup Lichen	0.80	0.40	1.60	4.20	2.60	6.40	0.40	7.40
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen	-	-	-	0.20	-	-	-	-
<i>Peltigera aphthosa</i>	Felt Lichen	-	-	-	1.80	0.40	0.20	-	1.20
<i>Peltigera</i> sp.	Felt Lichen	0.20	-	1.60	4.60	1.80	-	-	1.80
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen	-	-	-	-	-	-	-	0.20
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	-	-	-	-	-	0.60	-	0.80
	Unknown Crustose Lichen	0.60	-	0.20	-	-	0.20	-	6.40
1st and 2nd Hits Combined									
Total Moss Cover		31.80	62.80	14.40	38.60	30.40	32.60	36.40	11.20
Total Lichen Cover		3.20	0.60	4.20	17.00	5.80	11.40	0.40	33.00
Total Moss and Lichen Cover		35.00	63.40	18.60	55.60	36.20	44.00	36.80	44.20
									62.80

Table 6 Red Dog Mine - Vegetation Cover -- 2010

Average Cover Summary - AT 2500 Plots

Percent Ground Cover Based on Point-Intercept Sampling

Sample Area—>	AT 1 2500	AT 2 2500	AT 3 2500	AT 4 2500	AT 5 2500	AT 6 2500	AT 7 2500	AT 8 2500	AT 9 2500	
1st Hits										
Grasses and Grass-likes										
<i>Arctagrostis latifolia</i>	Wideleaf Polargrass	16.40	-	0.20	1.60	-	0.60	4.20	-	0.60
<i>Carex aquatilis</i> ssp. <i>aqu.</i>	Water Sedge	0.20	-	-	-	-	-	-	-	-
<i>Carex bigelowii</i>	Bigelow's Sedge	-	-	-	0.40	-	0.20	1.00	-	-
<i>Carex microchaeta</i>	Smallawned Sedge	-	-	-	-	-	1.00	6.00	2.40	1.00
<i>Carex podocarpa</i>	Shortstalk Sedge	-	3.60	1.00	1.60	0.20	-	-	0.80	0.20
<i>Carex scirpoidea</i>	Northern Singlespike Sedge	-	-	-	-	-	-	-	-	0.20
<i>Festuca altaica</i>	Altai Fescue	-	6.60	-	-	-	0.60	2.80	9.40	-
<i>Festuca brachyphylla</i>	Alpine Fescue	-	-	0.20	-	-	-	-	-	-
<i>Hierochloe alpina</i>	Alpine Sweetgrass	-	-	0.60	-	0.20	-	-	0.40	0.40
<i>Poa arctica</i> ssp. <i>arc.</i>	Arctic Bluegrass	1.60	-	-	-	-	-	-	-	-
<i>Trisetum spicatum</i> ssp. <i>spi.</i>	Spike Trisetum	-	-	-	-	-	-	-	0.80	-
Forbs										
<i>Anemone narcissiflora</i>	Narcissus Anemone	-	-	-	-	-	-	-	0.60	0.20
<i>Anenome parviflora</i>	Smallflowered Anemone	-	-	-	2.80	-	-	-	0.40	-
<i>Arnica lessingii</i>	Nodding Arnica	-	-	-	-	-	-	-	0.40	0.40
<i>Artemisia arctica</i> ssp. <i>arc.</i>	Boreal Sagebrush	-	4.20	0.40	-	-	0.20	3.60	0.20	-
<i>Boykinia richardsonii</i>	Richardson's Brookfoam	-	-	-	0.40	-	-	-	-	0.60
<i>Epilobium latifolium</i>	Dwarf Fireweed	-	-	-	0.20	-	-	-	-	-
<i>Equisetum arvense</i>	Field Horsetail	-	-	-	1.00	-	-	-	-	-
<i>Gentiana glauca</i>	Pale Gentian	-	0.60	-	-	-	-	0.20	0.20	-
<i>Lupinus arcticus</i>	Arctic Lupine	-	-	6.20	-	-	10.80	-	-	-
<i>Oxytropis nigrescens</i> ssp. <i>bryophila</i>	Blackish Oxytropis	-	-	-	5.80	-	-	-	-	-
<i>Pedicularis labradorica</i>	Labrador Lousewort	-	-	-	-	-	0.20	-	0.40	-
<i>Petasites frigidus</i> var. <i>hyperboreus</i>	Arctic Sweet Coltsfoot	2.00	-	-	0.20	-	0.40	-	-	-
<i>Polemonium acutiflorum</i>	Tall Jacob's Ladder	-	-	-	-	-	-	-	-	0.20
<i>Polygonum bistorta</i> ssp. <i>plumosum</i>	Meadow Bistort	-	-	-	-	-	-	0.20	-	-
<i>Primula sibirica</i>	Siberian Primrose	-	-	-	1.40	-	-	-	1.00	-
<i>Rubus arcticus</i> ssp. <i>arc.</i>	Arctic Blackberry	10.80	-	-	-	-	-	-	-	-
<i>Senecio lugens</i>	Small Blacktip Ragwort	-	-	-	0.80	-	-	0.20	-	-
<i>Valeriana capitata</i>	Valerian	-	-	-	0.20	-	-	0.40	-	-
Deciduous Shrubs										
<i>Arctostaphylos alpina</i>	Alpine Bearberry	-	-	1.60	0.40	0.60	-	-	-	-
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	2.00	0.60	31.80	-	58.60	23.00	-	-	-
<i>Salix Chamissonis</i>	Chamisso's Willow	-	2.20	-	-	-	-	5.00	6.80	-
<i>Salix glauca</i> ssp. <i>acutifolia</i>	Grayleaf Willow	-	-	1.60	-	0.80	-	-	-	-
<i>Salix myrtillifolia</i>	Blueberry Willow	-	2.40	-	-	-	-	4.40	2.00	-
<i>Salix phlebophylla</i>	Skeletonleaf Willow	-	-	-	-	-	-	-	-	1.40
<i>Salix pulchra</i>	Tealeaf Willow	26.60	-	3.00	-	-	6.20	1.00	0.40	-
<i>Salix reticulata</i>	Netleaf Willow	-	-	-	14.80	-	-	-	-	-
<i>Spiraea beauverdiana</i>	Beauverd Spirea	0.60	3.40	-	-	0.20	-	2.40	-	-
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	-	3.60	11.20	-	0.20	6.40	0.40	0.20	23.00
Evergreen Shrubs										
<i>Cassiope tetragona</i> ssp. <i>tet.</i>	White Arctic Mtn. Heather	-	1.20	-	-	-	-	4.60	8.60	6.40
<i>Dryas octopetala</i> ssp. <i>oct.</i>	White Mountain-avens	-	-	-	37.40	-	-	-	28.20	22.80
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry	0.20	12.00	0.60	-	1.60	0.20	0.80	0.20	1.00
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	1.00	-	1.40	-	-	0.80	-	-	0.80
<i>Loiseleuria procumbens</i>	Alpine Azalea	-	1.40	-	-	-	-	-	-	-
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	0.80	6.40	11.60	-	11.00	5.20	6.20	3.00	9.80
Mosses										
<i>Drepanocladus</i> sp.	Drepanocladus Moss	-	-	-	9.80	-	-	-	-	-
<i>Hylocomium splendens</i>	Splendid Feather Moss	6.80	-	5.20	3.40	-	-	-	11.60	6.00
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss	-	-	0.20	-	-	16.60	-	-	0.60
<i>Polytrichum</i> sp.	Polytrichum Moss	1.40	0.40	-	-	1.60	8.20	11.00	0.60	3.80
<i>Rhytidium rugosum</i>	Rhytidium Moss	-	-	9.60	-	2.00	-	-	-	-
<i>Sphagnum</i> sp.	Sphagnum Moss	5.40	-	-	-	-	-	-	-	-
Lichens										
<i>Cladonia</i> sp.	Cup Lichen	-	0.60	1.60	-	4.00	-	2.60	1.20	4.40
<i>Flavocetraria cucullata</i>	Flavocetraria Lichen	-	-	-	-	-	1.20	-	-	0.40
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen	-	-	-	-	0.80	-	0.20	0.20	-
<i>Peltigera aphthosa</i>	Felt Lichen	-	-	-	0.20	0.20	0.40	-	-	0.40
<i>Peltigera</i> sp.	Felt Lichen	0.80	-	1.20	0.20	1.20	0.40	3.40	0.80	1.80
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen	-	3.00	0.20	-	0.80	-	-	-	-
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	-	-	-	-	-	-	-	-	0.20
	Unknown Crustose Lichen	-	12.80	-	-	1.00	-	3.80	3.20	1.40

Table 6 (continued)

Average Cover Summary - AT 2500 Plots

Percent Ground Cover Based on Point-Intercept Sampling

Sample Area—>	AT 1 2500	AT 2 2500	AT 3 2500	AT 4 2500	AT 5 2500	AT 6 2500	AT 7 2500	AT 8 2500	AT 9 2500
1st Hits									
Total Vegetation Cover									
Rock	-	9.00	-	-	1.00	-	0.20	0.40	1.40
Litter	23.40	21.40	10.60	17.40	14.00	17.40	32.00	15.60	9.80
Bare ground	-	4.60	-	-	-	-	3.00	-	1.20
Average Cover by Lifeform (1st Hits only)									
Grasses and Grass-likes	18.20	10.20	2.00	3.60	0.40	2.40	14.00	13.80	2.40
Forbs	12.80	4.80	6.60	12.80	-	11.60	5.00	3.20	1.00
Deciduous Shrubs	29.20	12.20	49.20	15.20	60.40	35.60	13.20	9.40	24.40
Evergreen Shrubs	2.00	21.00	13.60	37.40	12.60	6.20	11.60	40.00	40.80
Mosses	13.60	0.40	15.00	13.20	3.60	24.80	11.00	12.20	10.40
Lichens	0.80	16.40	3.00	0.40	8.00	2.00	10.00	5.40	8.60
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Drepanocladus</i> sp.	Drepanocladus Moss	-	-	-	15.60	-	-	-	-
<i>Hylocomium splendens</i>	Splendid Feather Moss	19.80	-	18.80	6.80	-	-	18.00	6.20
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss	-	-	1.20	-	-	21.60	-	-
<i>Polytrichum</i> sp.	Polytrichum Moss	11.20	-	-	-	1.00	9.80	12.80	0.60
<i>Rhytidium rugosum</i>	Rhytidium Moss	-	-	16.80	-	2.00	-	-	-
<i>Sphagnum</i> sp.	Sphagnum Moss	14.80	-	-	-	-	-	-	-
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	0.60	1.00	1.00	-	14.60	-	2.80	2.20
<i>Flavocetraria cucullata</i>	Flavocetraria Lichen	-	-	-	-	-	2.20	-	-
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen	-	-	0.20	-	-	-	-	-
<i>Peltigera aphthosa</i>	Felt Lichen	-	-	2.00	0.40	-	-	0.40	-
<i>Peltigera</i> sp.	Felt Lichen	2.80	-	5.00	0.20	1.80	-	1.20	0.20
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen	-	2.60	0.60	-	3.60	-	0.80	-
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	-	-	-	-	-	-	-	0.40
	Unknown Crustose Lichen	-	7.00	-	-	2.80	-	1.00	0.40
	Unknown Rock Lichen	-	0.20	-	-	-	-	-	0.80
1st and 2nd Hits Combined	Total Moss Cover	59.40	0.40	51.80	35.60	6.60	56.20	23.80	30.80
	Total Lichen Cover	4.20	27.20	11.80	1.00	30.80	4.20	16.20	8.20
	Total Moss and Lichen Cover	63.60	27.60	63.60	36.60	37.40	60.40	40.00	39.00
									43.00

Table 7 Red Dog Mine - Vegetation Cover -- 2010

Average Cover Summary - AT 4000 Plots

Percent Ground Cover Based on Point-Intercept Sampling

Sample Area—>	AT 1 4000	AT 2 4000	AT 3 4000	AT 4 4000	AT 5 4000	AT 6 4000	AT 7 4000	AT 8 4000	AT 9 4000
1st Hits									
Grasses and Grass-likes									
<i>Arctagrostis latifolia</i>	Wideleaf Polagrass	-	-	0.80	-	-	0.60	-	2.80
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint	-	-	1.40	-	-	-	7.80	2.80
<i>Carex atrofusca</i>	Darkbrown Sedge	-	-	-	-	-	-	-	11.40
<i>Carex bigelowii</i>	Bigelow's Sedge	-	-	1.00	22.20	0.60	0.20	4.80	-
<i>Carex microchaeta</i>	Smallawned Sedge	4.40	-	-	-	9.00	0.40	0.20	-
<i>Carex podocarpa</i>	Shortstalk Sedge	0.60	0.80	-	-	1.00	-	-	-
<i>Carex scirpoidea</i>	Northern Singlespike Sedge	-	-	-	-	1.80	-	-	-
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass	-	-	-	0.60	-	-	-	19.80
<i>Festuca altaica</i>	Altai Fescue	-	0.80	-	0.40	0.80	-	-	9.80
<i>Festuca brachyphylla</i>	Alpine Fescue	-	-	-	-	-	-	-	-
<i>Hierochloe alpina</i>	Alpine Sweetgrass	0.60	0.20	-	-	-	0.20	-	-
<i>Poa alpigena</i>	Kentucky Bluegrass	-	-	-	-	-	-	0.20	-
Forbs									
<i>Aconitum delphinifolium</i>	Larkspurleaf Monkshood	-	-	-	-	-	-	-	0.20
<i>Anenome parviflora</i>	Smallflowered Anemone	-	-	-	-	-	-	-	7.80
<i>Arnica lessingii</i>	Nodding Arnica	-	-	-	-	-	-	-	2.00
<i>Artemisia arctica</i> ssp. <i>arc.</i>	Boreal Sagebrush	-	-	-	-	-	-	-	5.00
<i>Astragalus umbellatus</i>	Tundra Milkvetch	-	-	-	-	3.40	-	-	-
<i>Epilobium latifolium</i>	Dwarf Fireweed	-	-	-	-	-	0.40	-	0.40
<i>Equisetum arvense</i>	Field Horsetail	-	-	-	11.40	-	-	-	2.20
<i>Geum glaciale</i>	Glacier Avens	-	-	-	-	0.80	-	-	-
<i>Lupinus arcticus</i>	Arctic Lupine	-	-	-	-	-	-	0.60	7.40
<i>Pedicularis labradorica</i>	Labrador Lousewort	0.40	-	-	-	1.60	-	-	0.40
<i>Pedicularis</i> sp.	Lousewort	-	-	-	0.20	-	-	-	-
<i>Petasites frigidus</i> var. <i>hyperboreus</i>	Arctic Sweet Coltsfoot	-	-	-	0.20	-	-	-	2.60
<i>Polygonum acutiflorum</i>	Tall Jacob's Ladder	-	-	0.20	-	-	-	-	-
<i>Polygonum bistorta</i> ssp. <i>plumosum</i>	Meadow Bistort	-	-	-	-	0.80	-	-	-
<i>Polygonum viviparum</i>	Alpine Bistort	-	-	-	-	-	-	-	0.20
<i>Primula sibirica</i>	Siberian Primrose	-	-	-	-	-	-	-	6.80
<i>Rubus arcticus</i> ssp. <i>arc.</i>	Arctic Blackberry	-	-	0.20	-	-	-	-	-
<i>Rubus chamaemorus</i>	Cloudberry	-	-	-	0.80	-	-	-	21.00
<i>Saussurea angustifolia</i>	Narrow-leaf Saw Wort	-	-	-	-	0.20	-	-	-
<i>Saxifraga punctata</i> ssp. <i>nelsoniana</i>	Heartleaf Saxifrage	-	-	-	-	-	-	-	0.20
<i>Senecio lugens</i>	Small Blacktip Ragwort	-	-	-	-	0.20	-	-	-
<i>Tofieldia coccinea</i>	Northern Asphodel	-	-	-	-	0.20	-	-	-
<i>Valeriana capitata</i>	Valerian	-	-	-	-	-	-	-	0.20
Deciduous Shrubs									
<i>Arctostaphylos alpina</i>	Alpine Bearberry	-	-	-	-	1.00	10.40	-	-
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	26.20	14.60	34.60	-	-	-	17.40	-
<i>Salix chamissonis</i>	Chamisso's Willow	-	-	-	-	-	-	-	13.00
<i>Salix glauca</i> ssp. <i>acutifolia</i>	Grayleaf Willow	-	-	-	4.60	-	1.00	-	-
<i>Salix lanata</i> ssp. <i>richardsonii</i>	Richardson's Willow	-	-	6.40	-	-	-	-	-
<i>Salix myrtillifolia</i>	Blueberry Willow	-	-	-	-	-	-	-	5.00
<i>Salix pulchra</i>	Tealeaf Willow	1.20	0.80	13.80	7.40	-	0.40	3.60	-
<i>Salix reticulata</i>	Netleaf Willow	-	-	-	4.60	9.20	1.40	-	-
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	5.80	19.00	9.40	1.80	2.60	37.80	27.00	-
Evergreen Shrubs									
<i>Cassiope tetragona</i> ssp. <i>tet.</i>	White Arctic Mtn. Heather	0.40	-	-	0.80	4.80	0.80	-	-
<i>Dryas integrifolia</i> ssp. <i>integrifolia</i>	Entireleaf Mountain Avens	-	-	-	-	20.20	-	-	-
<i>Dryas octopetala</i> ssp. <i>oct.</i>	White Mountain-avens	-	-	-	0.20	0.80	8.60	-	0.60
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry	-	1.00	-	2.00	0.20	1.00	4.60	-
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	0.40	0.20	0.40	2.00	-	-	6.20	-
<i>Rhododendron lapponicum</i>	Lapland Rosebay	-	-	-	-	-	-	-	0.20
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	10.80	7.80	2.80	3.40	1.20	5.00	3.80	-
Mosses									
<i>Aulacomnium turgidum</i>	Turgid Aulacomnium Moss	-	-	-	-	-	-	-	3.00
<i>Drepanocladus</i> sp.	Drepanocladus Moss	-	0.60	-	-	-	-	-	-
<i>Hylocomium splendens</i>	Splendid Feather Moss	-	-	12.40	13.00	7.60	-	10.60	5.20
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss	0.80	-	-	-	-	-	-	-
<i>Polytrichum</i> sp.	Polytrichum Moss	4.60	8.60	-	-	-	-	-	-
<i>Sphagnum</i> sp.	Sphagnum Moss	-	-	-	-	-	2.60	-	3.60
<i>Tomentypnum nitens</i>	Tomentypnum Moss	-	-	-	-	5.60	2.40	-	-
	Unknown Moss	-	0.40	-	-	-	-	-	-
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	5.20	17.20	0.20	0.20	0.20	7.60	-	0.20
<i>Flavocetraria cucullata</i>	Flavocetraria Lichen	0.80	0.60	-	-	-	0.80	-	-
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen	-	0.20	-	-	-	-	-	-
<i>Peltigera aphthosa</i>	Felt Lichen	4.60	1.00	0.40	-	-	0.40	-	0.80
<i>Peltigera</i> sp.	Felt Lichen	1.00	1.80	-	-	-	0.40	-	1.60
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen	-	5.80	-	-	-	-	-	-
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	-	0.20	-	-	0.20	-	-	-
	Unknown Crustose Lichen	0.20	-	-	-	-	-	-	-

Table 7 (continued)

Average Cover Summary - AT 4000 Areas Plots

Percent Ground Cover Based on Point-Intercept Sampling

Sample Area—→	AT 1 4000	AT 2 4000	AT 3 4000	AT 4 4000	AT 5 4000	AT 6 4000	AT 7 4000	AT 8 4000	AT 9 4000
1st Hits									
Total Vegetation Cover									
Rock	-	2.60	-	-	-	0.40	-	-	-
Litter	31.80	15.80	16.00	24.20	25.80	19.40	10.80	13.40	14.00
Bare ground	0.20	-	-	-	0.20	0.40	-	-	-
Average Cover by Lifeform (1st Hits only)									
Grasses and Grass-likes	5.60	1.80	3.20	23.20	13.20	1.40	12.80	27.00	19.80
Forbs	0.40	-	0.40	12.60	7.20	0.40	0.60	35.40	21.00
Deciduous Shrubs	33.20	34.40	64.20	18.40	12.80	51.00	48.00	18.00	9.40
Evergreen Shrubs	11.60	9.00	3.20	8.40	27.20	15.40	14.60	0.60	26.60
Mosses	5.40	9.60	12.40	13.00	13.20	2.40	13.20	5.20	6.60
Lichens	11.80	26.80	0.60	0.20	0.40	9.20	-	0.40	2.60
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Aulacomnium turgidum</i>	Turgid Aulacomnium Moss	-	-	-	-	-	-	-	4.80
<i>Drepanocladus</i> sp.	Drepanocladus Moss	-	0.60	-	-	-	-	-	-
<i>Hylocomium splendens</i>	Splendid Feather Moss	-	-	42.20	38.80	7.00	-	33.00	22.60
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss	1.00	-	-	-	-	-	-	-
<i>Polytrichum</i> sp.	Polytrichum Moss	4.00	7.00	-	-	-	-	-	-
<i>Sphagnum</i> sp.	Sphagnum Moss	-	-	-	-	-	7.40	-	15.40
<i>Tomentypnum nitens</i>	Tomentypnum Moss	-	-	-	-	6.80	3.60	-	-
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	4.80	10.40	0.40	0.40	0.80	11.20	1.80	-
<i>Flavocetraria cucullata</i>	Flavocetraria Lichen	0.40	-	0.60	-	-	3.60	0.40	-
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen	-	1.20	-	-	-	-	-	-
<i>Peltigera aphthosa</i>	Felt Lichen	2.60	0.20	0.40	0.20	-	-	-	0.40
<i>Peltigera</i> sp.	Felt Lichen	0.60	1.20	-	-	-	-	-	1.20
<i>Stereocalon tomentosum</i>	Tomentose Snow Lichen	-	3.20	-	-	0.20	-	-	-
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	-	-	-	-	-	-	-	0.20
1st and 2nd Hits Combined	Total Moss Cover	10.40	17.20	54.60	51.80	27.00	6.00	53.60	27.80
	Total Lichen Cover	20.20	43.00	2.00	0.80	1.40	24.00	2.20	1.60
	Total Moss and Lichen Cover	30.60	60.20	56.60	52.60	28.40	30.00	55.80	29.40

Table 8 Red Dog Mine - Vegetation Cover -- 2010

Average Cover Summary - RAT Sample Points

Percent Ground Cover Based on Point-Intercept Sampling

Sample Area—>	RAT 1 100	RAT 1 1000	RAT 1 2000	RAT 2 100	RAT 2 1000	RAT 2 2000	RAT 3 100	RAT 3 1000	RAT 3 2000	RAT 4 100	RAT 4 1000	RAT 4 2000
1st Hits												
Grasses and Grass-likes												
<i>Arctagrostis latifolia</i>	Wideleaf Polagrass	-	-	-	0.70	-	0.20	0.40	-	-	-	-
<i>Carex aquatilis</i> ssp. <i>aqu.</i>	Water Sedge	1.40	0.50	0.30	0.20	-	-	4.80	0.10	1.40	5.20	6.40
<i>Carex bigelowii</i>	Bigelow's Sedge	3.50	1.40	2.90	16.00	10.90	5.70	1.90	1.20	3.10	1.10	0.20
<i>Carex microchaeta</i>	Smallawned Sedge	0.10	0.40	-	-	-	-	-	-	-	-	-
<i>Carex podocarpa</i>	Shortstalk Sedge	0.30	-	0.10	-	-	-	-	-	-	-	-
<i>Carex scirpoidea</i>	Northern Singlespike Sedge	-	-	0.10	-	-	-	-	-	-	-	-
<i>Eriophorum angustifolium</i> ssp. <i>subarcticum</i>	Tall Cottongrass	0.50	0.30	0.20	0.40	0.20	-	-	-	-	-	1.00
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass	44.50	34.90	32.10	18.10	16.80	22.30	24.60	19.00	26.30	24.00	29.90
<i>Festuca brachyphylla</i>	Alpine Fescue	-	-	-	0.10	-	-	-	-	-	-	-
<i>Luzula multiflora</i> ssp. <i>mul.</i>	Common Woodrush	0.10	-	-	-	-	-	-	-	-	-	-
Forbs												
<i>Pedicularis labradorica</i>	Labrador Lousewort	-	-	-	-	-	-	-	-	0.10	-	-
<i>Petasites frigidus</i> var. <i>hyperboreus</i>	Arctic Sweet Coltsfoot	-	-	0.10	0.20	-	0.80	-	-	1.30	-	-
<i>Rubus chamaemorus</i>	Cloudberry	2.00	2.30	0.40	3.50	3.70	4.90	6.70	5.20	2.40	3.80	5.30
Deciduous Shrubs												
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	3.40	6.20	6.50	9.50	8.00	9.60	10.80	8.50	6.00	11.30	4.50
<i>Salix pulchra</i>	Tealeaf Willow	0.10	-	0.40	3.10	0.10	1.50	0.10	-	-	0.50	-
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	11.80	4.90	1.20	9.50	13.70	8.10	11.10	8.60	12.40	1.40	7.90
Evergreen Shrubs												
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry	0.30	0.10	0.10	2.00	1.40	1.50	0.20	2.10	2.30	0.10	0.60
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	1.50	13.20	16.50	4.00	10.70	12.10	9.10	14.70	8.30	9.10	13.30
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	0.50	8.00	8.10	2.20	6.50	7.90	4.10	5.70	5.30	2.00	3.50
Mosses												
<i>Hylocomium splendens</i>	Splendid Feather Moss	-	6.00	4.50	8.60	-	0.30	-	6.90	5.10	0.20	5.40
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss	-	-	-	-	0.20	-	-	-	-	-	-
<i>Polytrichum</i> sp.	Polytrichum Moss	0.90	0.90	4.30	1.60	0.40	7.40	1.20	5.50	1.30	9.10	7.10
<i>Sphagnum</i> sp.	Sphagnum Moss	4.50	-	-	0.30	9.90	-	2.10	-	-	-	-
Lichens												
<i>Cladonia deformis</i>	Deformed Cup Lichen	-	-	-	-	-	-	-	0.10	-	-	-
<i>Cladonia</i> sp.	Cup Lichen	-	0.40	1.40	-	0.80	0.20	0.20	0.10	0.30	-	0.30
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen	-	-	0.10	-	-	-	-	-	-	-	-
<i>Peltigera aphthosa</i>	Felt Lichen	-	-	0.40	-	-	0.10	-	0.10	-	-	-
<i>Peltigera</i> sp.	Felt Lichen	-	-	0.60	-	-	0.10	-	-	-	-	-
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen	-	-	0.80	-	-	-	-	-	-	-	-
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	-	-	-	-	-	0.10	-	-	-	-	-
	Unknown Crustose Lichen	-	-	-	-	-	0.30	0.10	0.40	2.00	-	0.30
1st Hits												
Total Vegetation Cover	75.40	79.50	81.00	80.10	83.30	83.10	77.40	78.10	76.30	69.20	77.30	74.60
Rock	-	-	-	-	-	-	-	-	-	-	-	-
Litter	24.20	20.30	18.80	19.80	16.70	16.90	22.60	21.90	23.70	30.80	22.70	25.40
Bare ground	0.40	0.20	0.20	0.10	-	-	-	-	-	-	-	-
Average Cover by Lifeform (1st Hits only)												
Grasses and Grass-likes	50.40	37.50	35.70	35.50	27.90	28.20	31.70	20.30	30.80	30.30	36.50	33.00
Forbs	2.00	2.30	0.50	3.70	3.70	5.70	6.70	5.20	2.40	5.20	5.30	5.40
Deciduous Shrubs	15.30	11.10	8.10	22.10	21.80	19.20	22.00	17.10	18.40	13.20	12.40	14.90
Evergreen Shrubs	2.30	21.30	24.70	8.20	18.60	21.50	13.40	22.50	15.90	11.20	17.40	13.90
Mosses	5.40	6.90	8.80	10.50	10.50	7.70	3.30	12.40	6.40	9.30	5.40	7.10
Lichens	-	0.40	3.20	0.10	0.80	0.80	0.30	0.60	2.40	-	0.30	0.30
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)												
Mosses												
<i>Hylocomium splendens</i>	Splendid Feather Moss	-	13.30	7.70	14.60	-	-	-	14.20	11.00	0.40	16.40
<i>Polytrichum</i> sp.	Polytrichum Moss	1.00	2.00	8.00	8.50	1.50	24.90	4.70	15.20	5.30	22.70	-
<i>Sphagnum</i> sp.	Sphagnum Moss	15.70	-	-	-	34.10	-	10.80	-	-	-	19.30
Lichens												
<i>Cladonia</i> sp.	Cup Lichen	-	1.80	3.00	0.40	1.00	0.90	0.10	0.70	0.30	0.10	0.70
<i>Dactylina arctica</i>	Arctic Dactylina Lichen	-	-	-	0.10	-	-	-	-	-	-	-
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen	-	-	-	0.20	-	0.10	-	-	-	-	-
<i>Peltigera aphthosa</i>	Felt Lichen	0.20	-	0.50	-	-	-	-	-	-	-	-
<i>Peltigera</i> sp.	Felt Lichen	-	0.70	2.20	-	0.10	-	0.10	-	-	-	-
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen	-	-	0.20	-	0.20	0.10	-	-	-	-	-
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	-	0.10	-	-	0.30	0.10	-	-	-	-	-
	Unknown Crustose Lichen	-	-	-	-	0.10	-	0.60	1.10	-	-	-
	Unknown Rock Lichen	0.10	-	-	-	-	-	-	-	-	-	-
1st and 2nd Hits Combined												
Total Moss Cover	22.10	22.20	24.50	33.60	46.10	32.60	18.80	41.80	22.70	32.40	21.80	26.40
Total Lichen Cover	0.30	3.00	9.10	0.80	2.40	2.10	0.50	1.90	3.80	0.10	0.40	1.00
Total Moss and Lichen Cover	22.40	25.20	33.60	34.40	48.50	34.70	19.30	43.70	26.50	32.50	22.20	27.40

Table 9 Red Dog Mine - Vegetation Cover -- 2010					
Average Cover Summary - CAT Sample Points					
Percent Ground Cover Based on Point-Intercept Sampling					
Sample Area——>		CAT - 1	CAT - 2	CAT - 3	CAT - 4
1st Hits					
Grasses and Grass-likes					
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint	-	0.20	0.40	-
<i>Carex aquatilis</i> ssp. <i>aqu.</i>	Water Sedge	-	-	-	0.40
<i>Carex bigelowii</i>	Bigelow's Sedge	-	3.00	7.60	6.50
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass	-	27.80	-	17.70
<i>Hierochloe alpina</i>	Alpine Sweetgrass	0.80	-	-	-
Forbs					
<i>Petasites frigidus</i> var. <i>hyperboreus</i>	Arctic Sweet Coltsfoot	-	1.80	-	0.30
<i>Rubus chamaemorus</i>	Cloudberry	-	3.20	-	2.10
<i>Saussurea angustifolia</i>	Narrow-leaf Saw Wort	-	-	0.20	0.10
Deciduous Shrubs					
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	13.60	12.20	9.40	10.90
<i>Salix phlebophylla</i>	Skeletonleaf Willow	0.80	-	-	-
<i>Salix pulchra</i>	Tealeaf Willow	-	-	0.80	0.70
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	5.20	5.40	19.80	0.30
Evergreen Shrubs					
<i>Empetrum nigrum</i> ssp. <i>hermafordinum</i>	Black Crowberry	0.60	2.00	6.20	0.30
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	1.40	10.80	15.60	24.90
<i>Loiseleuria procumbens</i>	Alpine Azalea	1.40	-	-	-
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	23.40	11.00	9.40	8.50
Mosses					
<i>Aulacomnium</i> sp.	Aulacomnium Moss	-	2.00	-	-
<i>Hylocomium splendens</i>	Splendid Feather Moss	-	2.00	2.80	1.70
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss	0.80	-	7.00	-
<i>Polytrichum</i> sp.	Polytrichum Moss	-	0.40	-	-
<i>Sphagnum</i> sp.	Sphagnum Moss	-	-	-	6.00
<i>Tomentypnum nitens</i>	Tomentypnum Moss	4.20	-	-	-
Lichens					
<i>Cladonia</i> sp.	Cup Lichen	25.40	1.00	2.00	0.20
<i>Dactylina arctica</i>	Arctic Dactylina Lichen	0.60	-	-	-
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen	0.60	-	-	-
<i>Peltigera aphthosa</i>	Felt Lichen	-	1.00	1.60	-
<i>Peltigera</i> sp.	Felt Lichen	-	1.00	-	-
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen	0.60	0.60	0.40	-
	Unknown Crustose Lichen	6.20	0.40	0.80	-
1st Hits					
Total Vegetation Cover		85.60	85.80	84.00	80.60
Rock		3.20	-	-	-
Litter		11.20	14.20	16.00	19.40
Bare ground		-	-	-	-
Average Cover by Lifeform (1st Hits only)					
Grasses and Grass-likes		0.80	31.00	8.00	24.60
Forbs		-	5.00	0.20	2.50
Deciduous Shrubs		19.60	17.60	30.00	11.90
Evergreen Shrubs		26.80	23.80	31.20	33.70
Mosses		5.00	4.40	9.80	7.70
Lichens		33.40	4.00	4.80	0.20
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)					
Mosses					
<i>Aulacomnium</i> sp.	Aulacomnium Moss	-	7.20	-	-
<i>Hylocomium splendens</i>	Splendid Feather Moss	-	7.80	8.20	12.90
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss	0.20	-	20.80	-
<i>Polytrichum</i> sp.	Polytrichum Moss	-	0.40	-	-
<i>Sphagnum</i> sp.	Sphagnum Moss	-	-	-	22.60
Lichens					
<i>Cladonia</i> sp.	Cup Lichen	19.00	3.80	11.00	0.60
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen	0.20	-	-	-
<i>Peltigera aphthosa</i>	Felt Lichen	-	3.20	3.60	-
<i>Peltigera</i> sp.	Felt Lichen	-	1.00	-	0.10
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen	1.80	-	0.40	-
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	-	-	0.40	-
	Unknown Crustose Lichen	4.40	-	1.40	-
1st and 2nd Hits Combined		Total Moss Cover	5.20	19.80	38.80
		Total Lichen Cover	58.80	12.00	21.60
		Total Moss and Lichen Cover	64.00	31.80	60.40
					44.10

Chart 5
Red Dog Mine - AT 000-200 Sample Plots
Average Cover Values by Lifeform

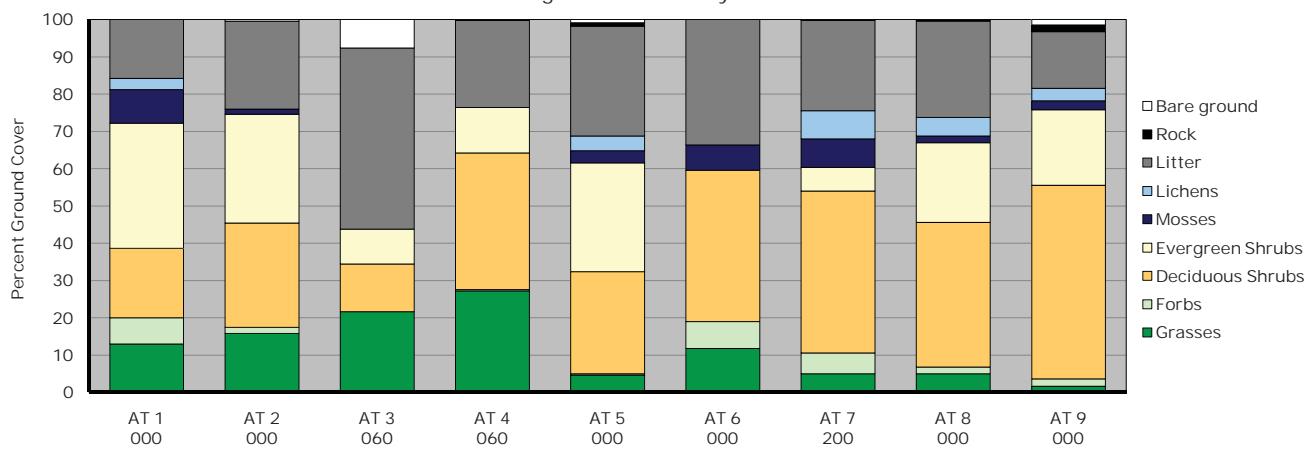


Chart 6
Red Dog Mine - AT 500 & 700 Sample Plots
Average Cover Values by Lifeform

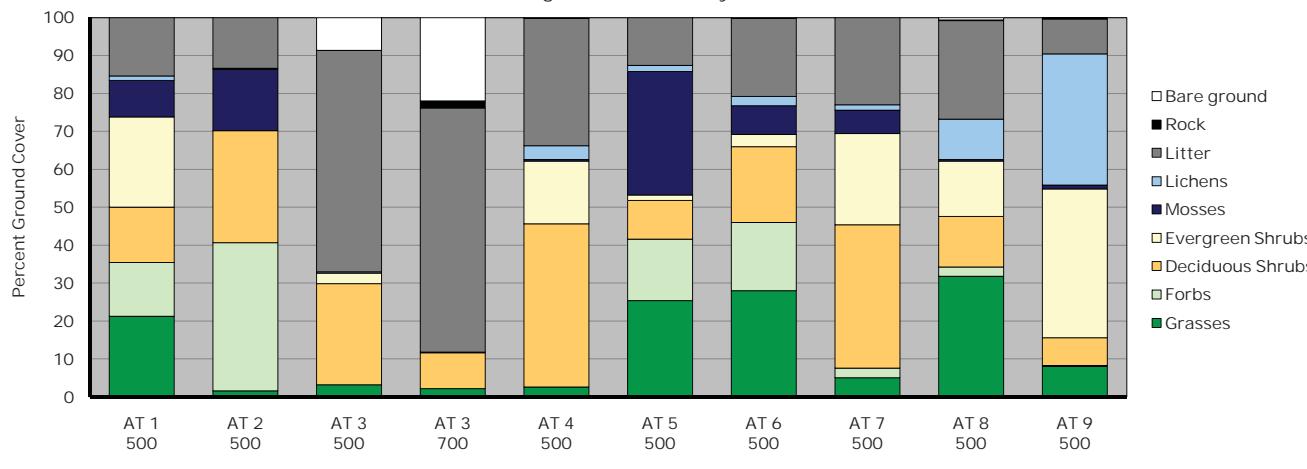


Chart 7
Red Dog Mine - AT 1000 Sample Plots
Average Cover Values by Lifeform

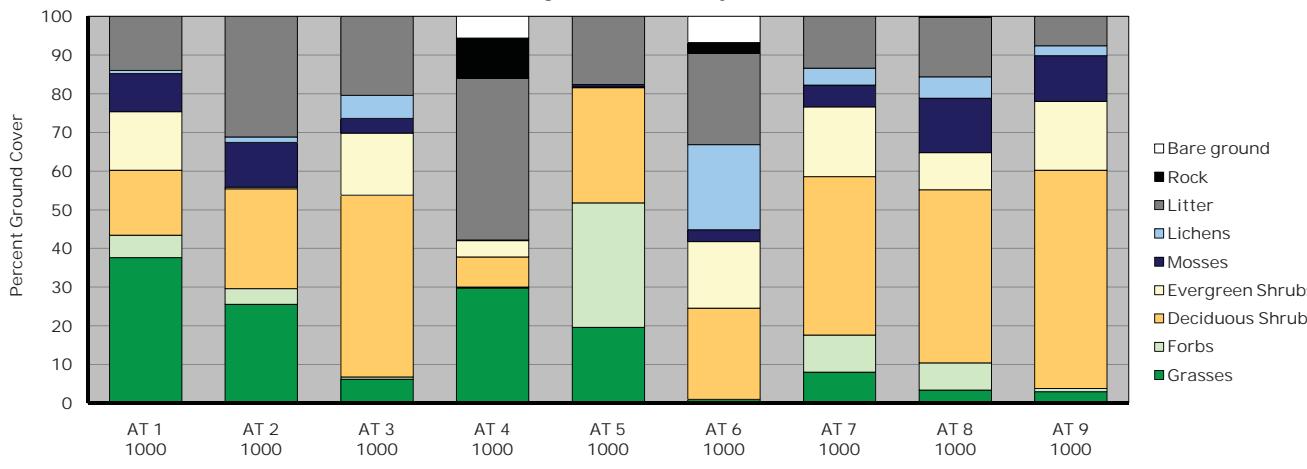


Chart 8
Red Dog Mine - AT 1500 Areas
Average Cover Values by Lifeform

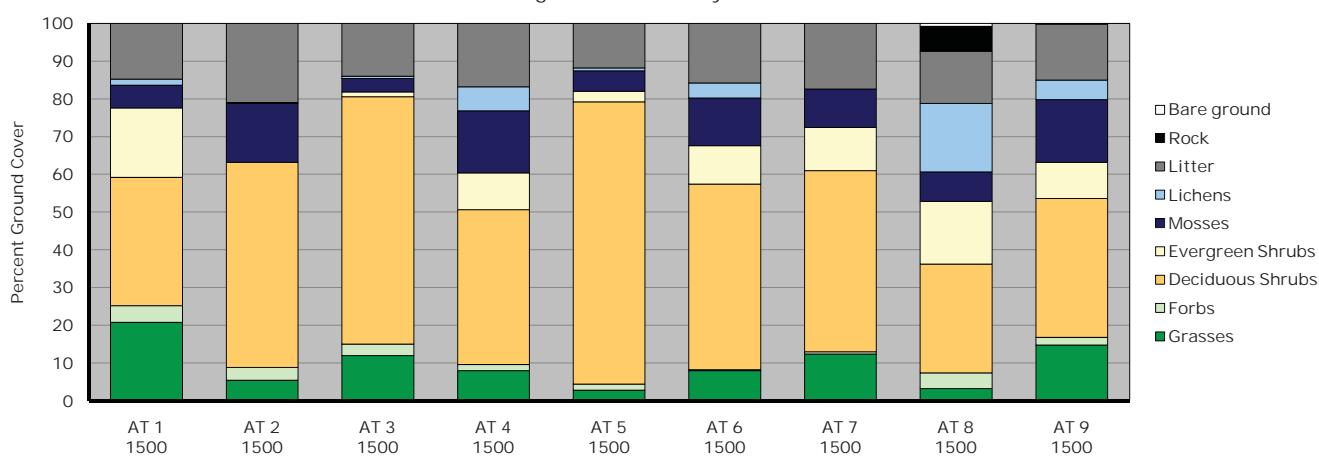


Chart 9
Red Dog Mine - AT 2500 Sample Plots
Average Cover Values by Lifeform

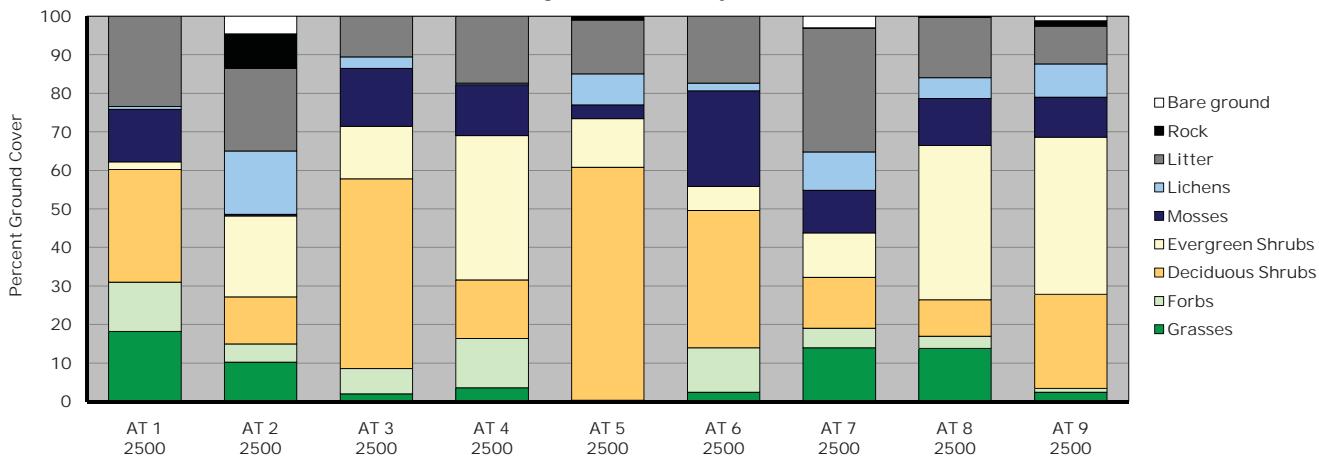
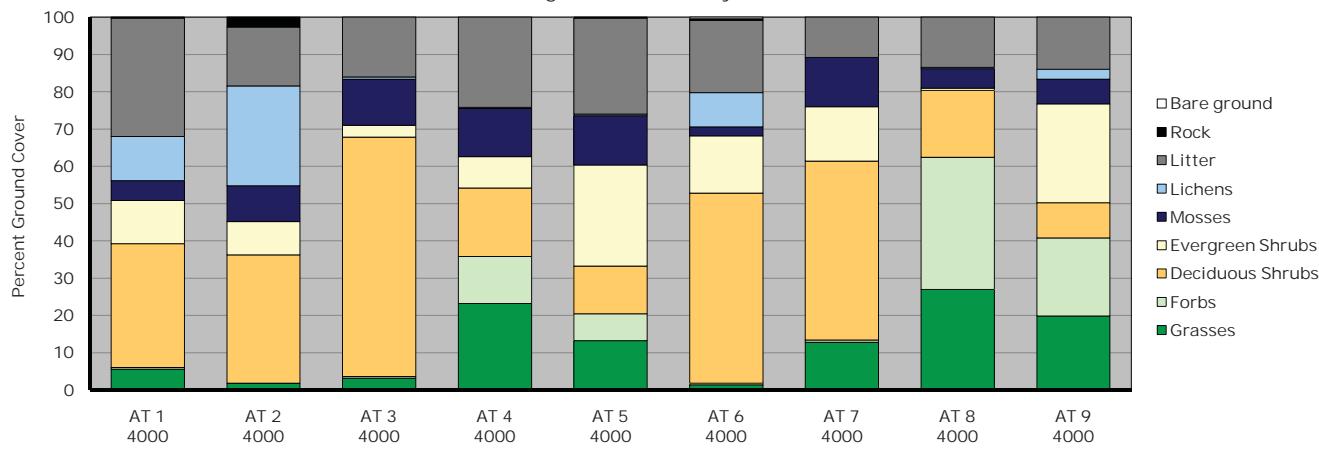


Chart 10
Red Dog Mine - AT 4000 Sample Plots
Average Cover Values by Lifeform



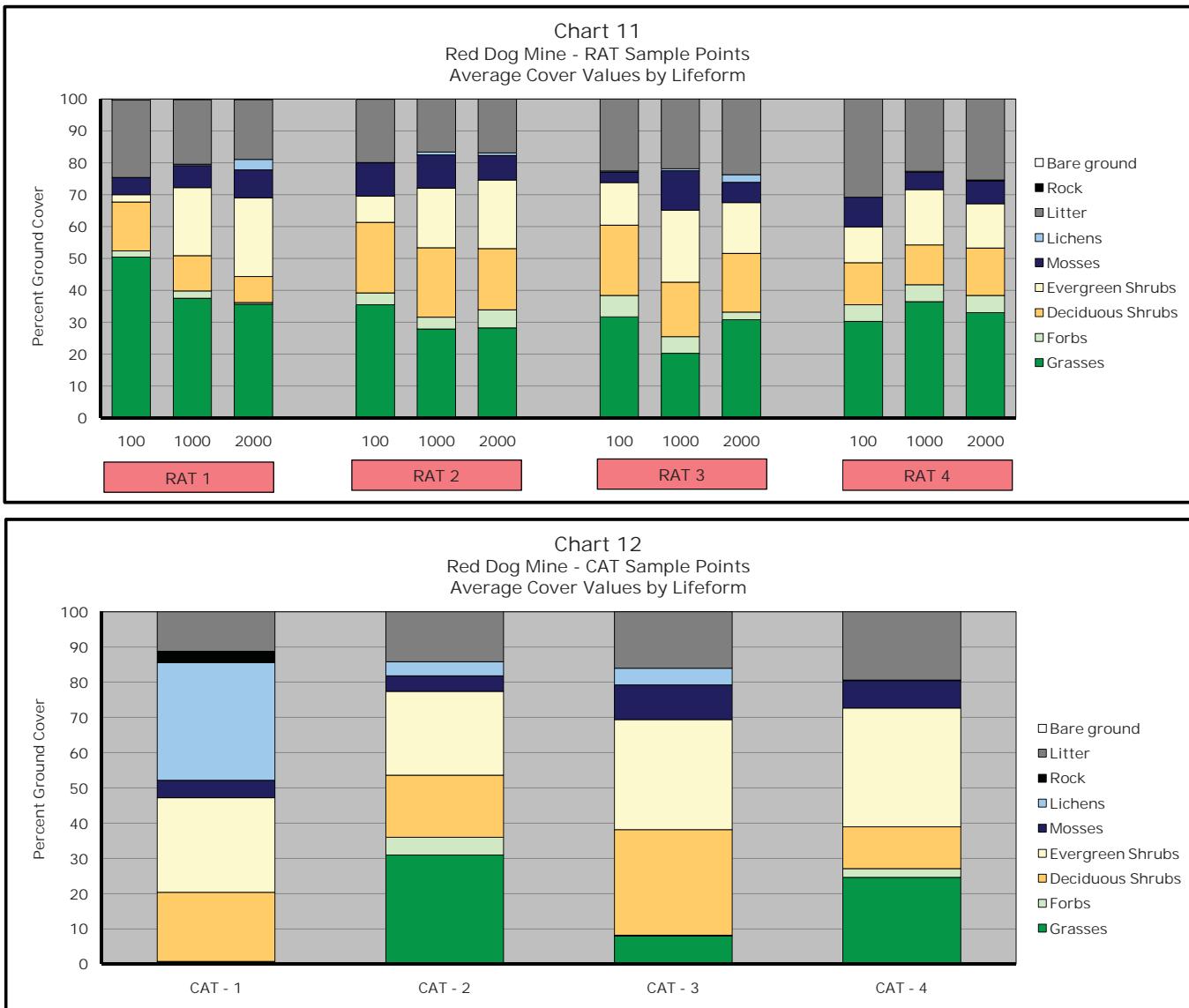


Chart 13
Red Dog Mine - AT 000-200 Plots
Total Average Cover (1st and 2nd Hits) by Moss & Lichen

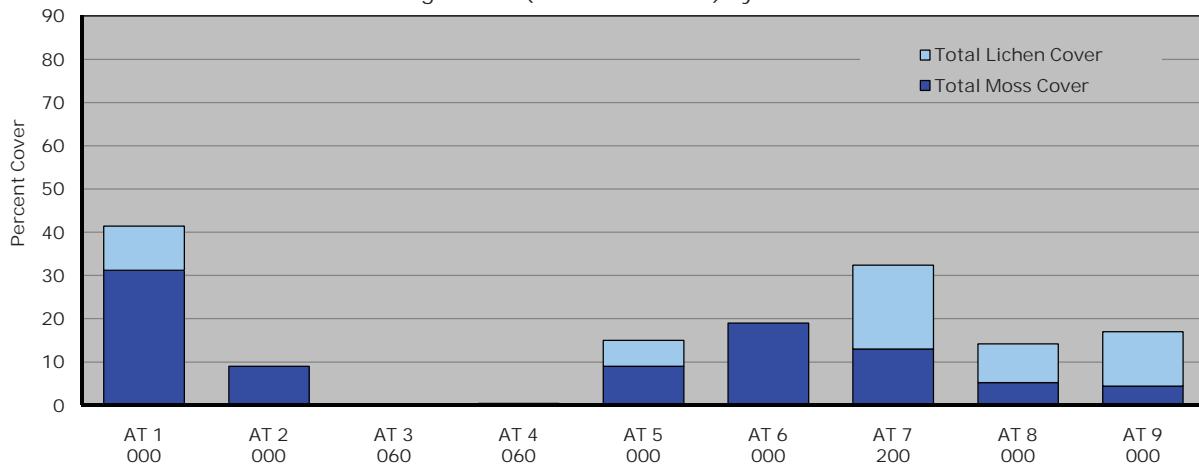


Chart 14
Red Dog Mine - AT 500 & 700 Plots
Total Average Cover (1st and 2nd Hits) by Moss & Lichen

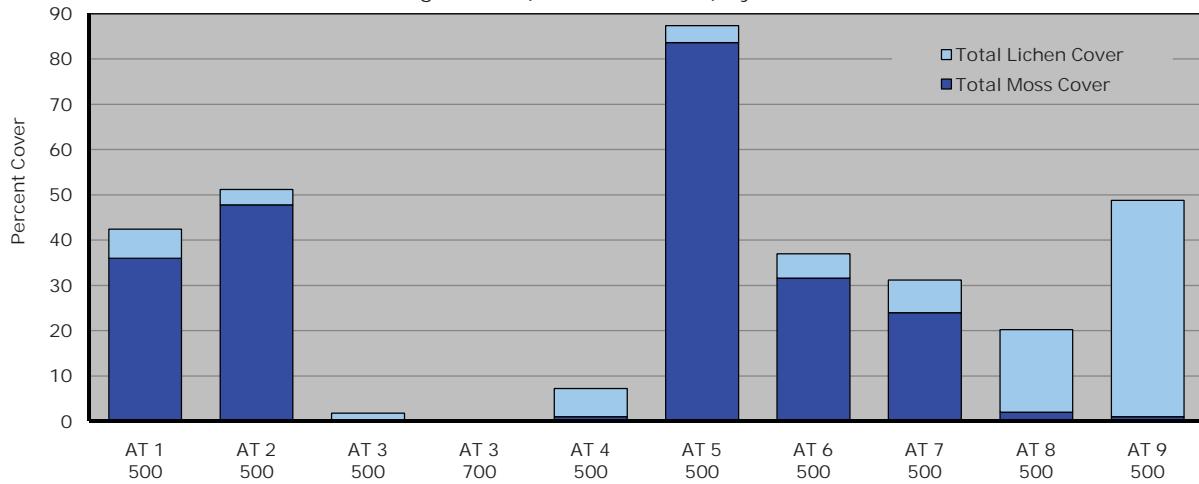


Chart 15
Red Dog Mine - AT 1000 Plots
Total Average Cover (1st and 2nd Hits) by Moss & Lichen

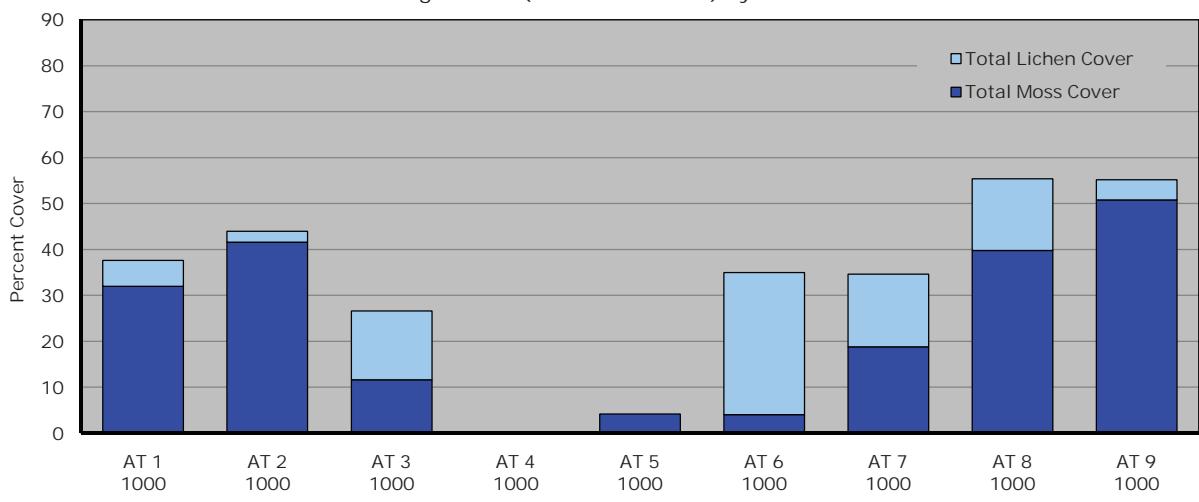


Chart 16
Red Dog Mine - AT 1500 Plots
Total Average Cover (1st and 2nd Hits) by Moss & Lichen

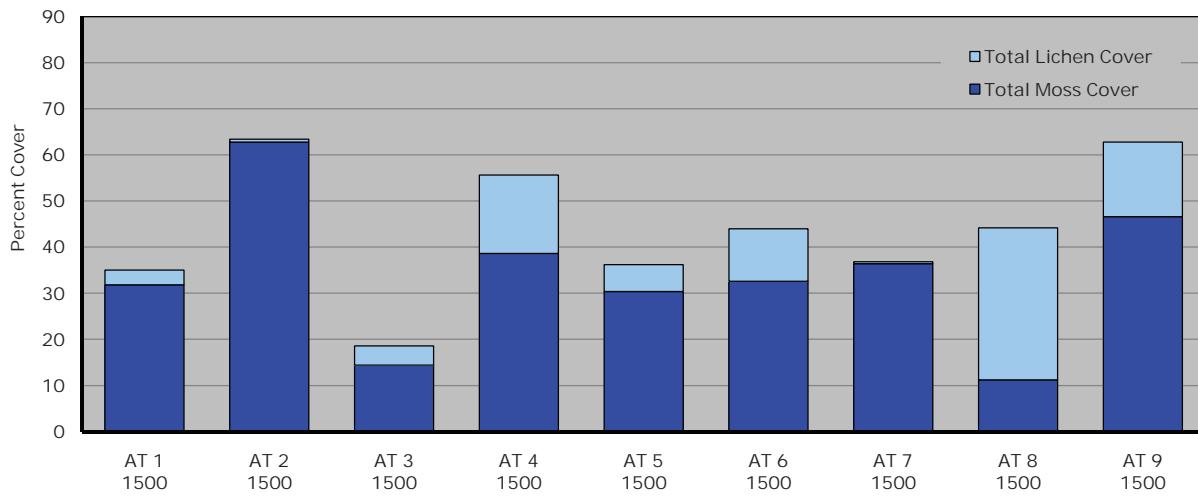


Chart 17
Red Dog Mine - AT 2500 Plots
Total Average Cover (1st and 2nd Hits) by Moss & Lichen

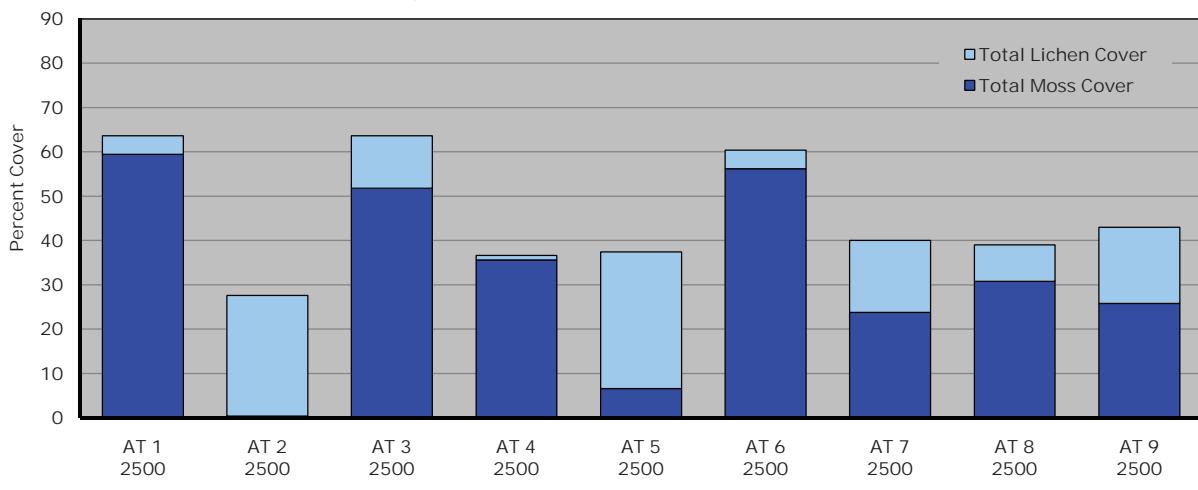


Chart 18
Red Dog Mine - AT 4000 Plots
Total Average Cover (1st and 2nd Hits) by Moss & Lichen

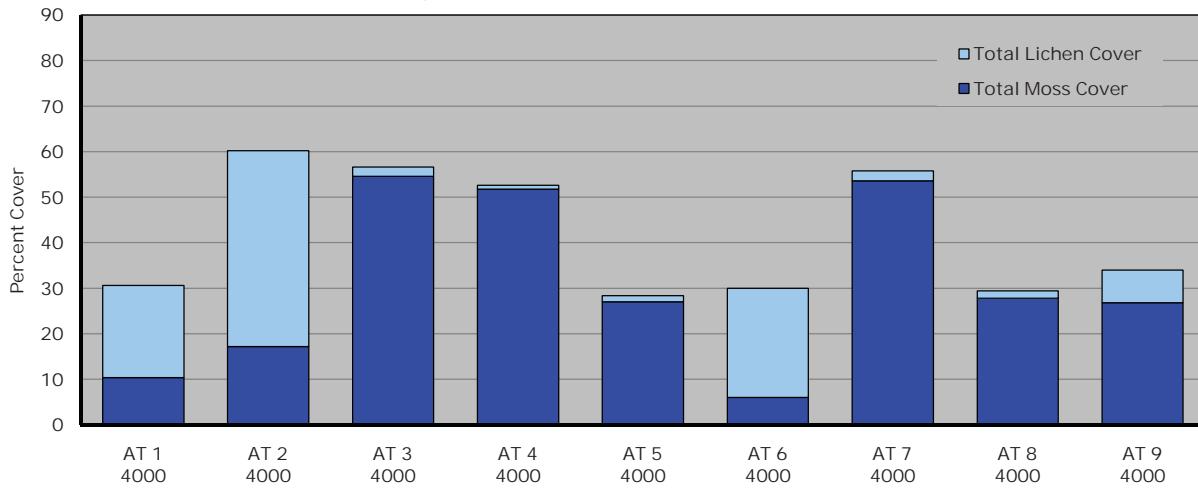


Chart 19
 Red Dog Mine - RAT Points
 Total Average Cover (1st and 2nd Hits) by Moss & Lichen

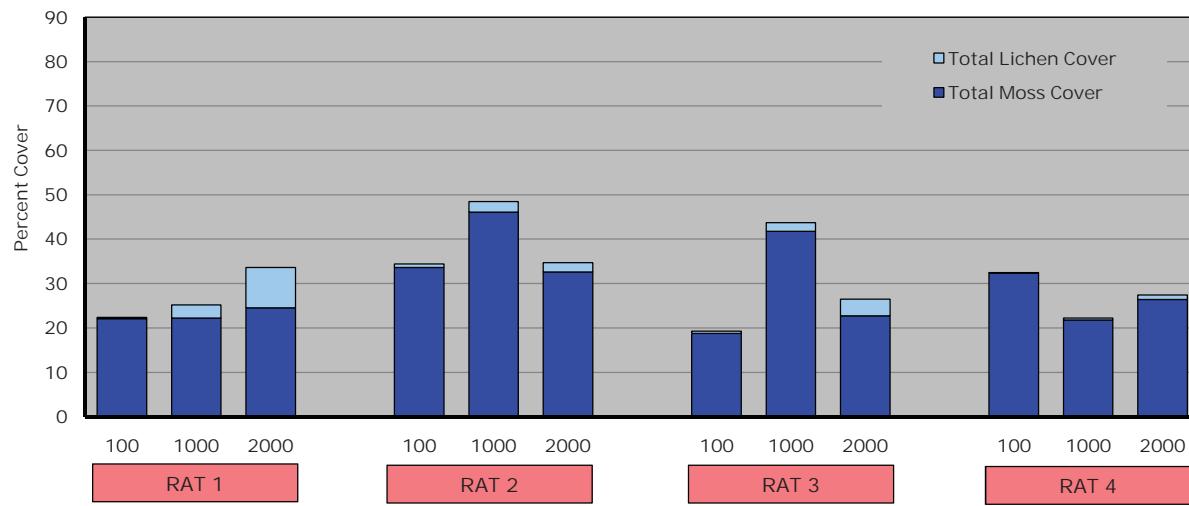


Chart 20
 Red Dog Mine - CAT Plots
 Total Average Cover (1st and 2nd Hits) by Moss & Lichen

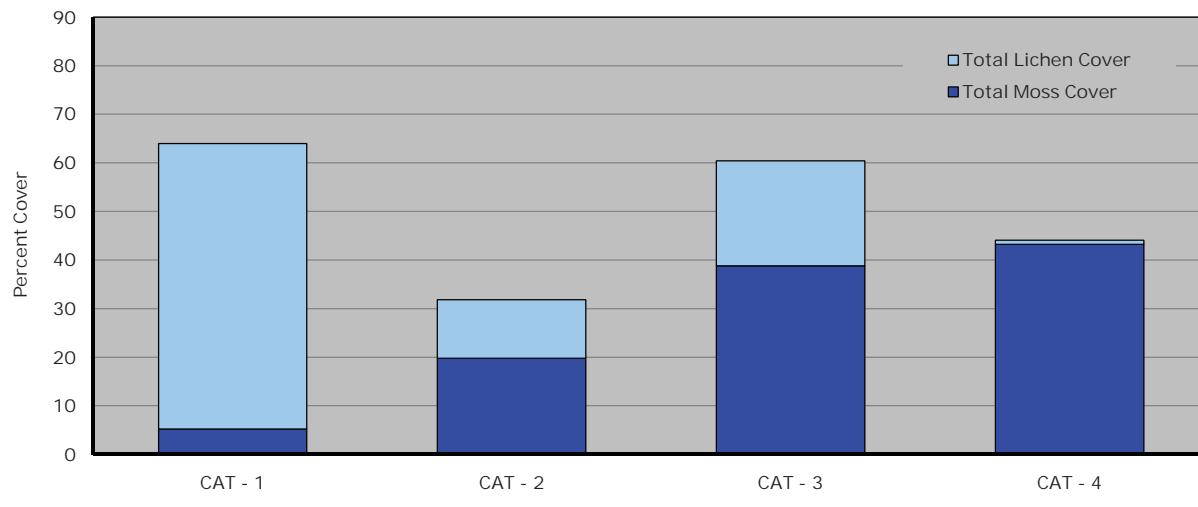


Table 10 Red Dog Mine - Vegetation Cover -- 2010

Relative Cover Summary - AT 000-200 Plots

Percent Ground Cover Based on Point-Intercept Sampling

Sample Area—>	AT 1 000	AT 2 000	AT 3 060	AT 4 060	AT 5 000	AT 6 000	AT 7 200	AT 8 000	AT 9 000
1st Hits									
Grasses and Grass-likes									
<i>Arctagrostis latifolia</i>	Wideleaf Polagrass	-	-	0.46	-	-	-	-	-
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint	-	12.11	31.96	-	0.58	-	-	2.98
<i>Carex aquatilis</i> ssp. <i>aqu.</i>	Water Sedge	1.19	-	-	-	-	17.77	-	-
<i>Carex bigelowii</i>	Bigelow's Sedge	5.23	8.68	16.89	35.60	1.16	-	6.61	0.54
<i>Carex microchaeta</i>	Smallawned Sedge	0.24	-	-	-	-	-	-	1.63
<i>Carex podocarpa</i>	Shortstalk Sedge	-	-	-	-	2.91	-	-	-
<i>Carex scirpoidea</i>	Northern Singlespike Sedge	-	-	-	-	0.29	-	-	-
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass	8.79	-	-	-	-	-	-	-
<i>Festuca altaica</i>	Altai Fescue	-	-	-	-	1.74	-	-	-
<i>Hierochloe alpina</i>	Alpine Sweetgrass	-	-	-	-	-	-	-	1.08
<i>Luzula confusa</i>	Northern Woodrush	-	-	-	-	-	-	-	0.54
<i>Trisetum spicatum</i> ssp. <i>spi.</i>	Spike Trisetum	-	-	-	-	-	-	-	0.49
Forbs									
<i>Anemone narcissiflora</i>	Narcissus Anemone	-	-	-	-	-	-	-	0.25
<i>Antennaria friesiana</i> ssp. <i>alaskana</i>	Fries' Pussytoes	-	-	-	-	-	-	-	1.23
<i>Artemisia arctica</i> ssp. <i>arc.</i>	Boreal Sagebrush	-	-	-	-	-	-	-	0.74
<i>Equisetum arvense</i>	Field Horsetail	-	-	-	-	-	1.51	-	-
<i>Lupinus arcticus</i>	Arctic Lupine	-	-	-	-	-	-	7.41	2.44
<i>Lycopodium clavatum</i> ssp. <i>monostachyon</i>	One-cone Club Moss	-	-	-	-	0.58	-	-	-
<i>Oxytropis nigrescens</i> ssp. <i>bryophila</i>	Blackish Oxytropis	-	-	-	-	-	-	-	0.25
<i>Petasites frigidus</i> var. <i>hyperboreus</i>	Arctic Sweet Coltsfoot	-	-	-	0.26	-	5.42	-	-
<i>Rubus chamaemorus</i>	Cloudberry	8.31	2.11	-	0.26	-	3.92	-	-
Deciduous Shrubs									
<i>Arctostaphylos alpina</i>	Alpine Bearberry	-	-	-	-	-	-	-	16.42
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	21.38	14.47	5.02	13.09	26.16	-	22.49	37.40
<i>Salix chamissonis</i>	Chamisso's Willow	-	-	-	-	0.58	-	-	45.59
<i>Salix phlebophylla</i>	Skeletonleaf Willow	-	-	-	-	-	-	-	-
<i>Salix pulchra</i>	Tealeaf Willow	-	15.00	11.87	8.90	4.65	60.84	10.58	8.40
<i>Spiraea beauverdiana</i>	Beauverd Spirea	-	-	-	0.26	-	-	-	-
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	0.71	7.37	12.33	25.65	8.43	0.30	24.34	6.78
Evergreen Shrubs									
<i>Dryas octopetala</i> ssp. <i>oct.</i>	White Mountain-avens	-	-	-	-	-	-	-	0.74
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry	-	0.79	-	3.93	23.26	-	-	-
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	28.50	26.58	21.46	9.16	10.47	-	2.91	4.34
<i>Loiseleuria procumbens</i>	Alpine Azalea	-	-	-	-	4.07	-	-	-
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	11.40	11.05	-	2.88	4.65	-	5.56	24.66
Mosses									
<i>Hylocomium splendens</i>	Splendid Feather Moss	-	1.84	-	-	-	9.94	-	-
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss	-	-	-	-	-	-	10.05	-
<i>Polytrichum</i> sp.	Polytrichum Moss	-	-	-	-	4.65	0.30	-	0.25
<i>Sphagnum</i> sp.	Sphagnum Moss	10.69	-	-	-	-	-	-	2.44
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	0.71	-	-	-	0.58	-	4.50	2.17
<i>Peltigera aphthosa</i>	Felt Lichen	0.24	-	-	-	-	-	2.91	0.27
<i>Peltigera</i> sp.	Felt Lichen	0.24	-	-	-	-	-	1.32	0.81
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen	-	-	-	-	4.94	-	-	0.25
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	0.48	-	-	-	0.29	-	-	1.96
<i>Unknown</i> Crustose Lichen	Unknown Rock Lichen	1.90	-	-	-	-	-	-	0.27
Relative Cover by Lifeform (1st Hits Only)									
Grasses and Grass-likes		15.44	20.79	49.32	35.60	6.69	17.77	6.61	6.78
Forbs		8.31	2.11	-	0.52	0.58	10.84	7.41	2.44
Deciduous Shrubs		22.09	36.84	29.22	47.91	39.83	61.14	57.41	52.57
Evergreen Shrubs		39.90	38.42	21.46	15.97	42.44	-	8.47	29.00
Mosses		10.69	1.84	-	-	4.65	10.24	10.05	2.44
Lichens		3.56	-	-	-	5.81	-	10.05	6.78

Table 11 Red Dog Mine - Vegetation Cover -- 2010

Relative Cover Summary - AT 500 & 700 Plots

Percent Ground Cover Based on Point-Intercept Sampling

Sample Area—>	AT 1 500	AT 2 500	AT 3 500	AT 3 700	AT 4 500	AT 5 500	AT 6 500	AT 7 500	AT 8 500	AT 9 500
1st Hits										
Grasses and Grass-likes										
<i>Arctagrostis latifolia</i>	Wideleaf Polargrass	-	-	4.85	-	-	-	0.78	-	-
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint	-	-	0.61	-	-	5.05	-	3.83	-
<i>Carex aquatilis</i> ssp. <i>aqu.</i>	Water Sedge	-	0.23	-	-	-	-	-	-	-
<i>Carex bigelowii</i>	Bigelow's Sedge	2.84	-	-	-	0.60	23.80	7.58	5.71	7.38
<i>Carex microchaeta</i>	Smallawned Sedge	0.24	-	-	-	0.60	-	-	5.19	1.77
<i>Carex podocarpa</i>	Shortstalk Sedge	-	-	1.21	18.64	2.42	-	3.54	-	0.22
<i>Carex scirpoidea</i>	Northern Singlespike Sedge	-	-	-	-	-	3.66	-	-	-
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass	21.99	-	-	-	-	-	0.25	-	-
<i>Festuca altaica</i>	Altai Fescue	-	-	2.42	-	-	18.69	-	27.05	5.53
<i>Hierochloe alpina</i>	Alpine Sweetgrass	-	-	0.61	-	-	-	-	-	1.11
<i>Luzula confusa</i>	Northern Woodrush	-	-	-	-	0.30	-	0.25	-	-
<i>Luzula multiflora</i> ssp. <i>mul.</i>	Common Woodrush	-	-	-	-	-	-	-	-	0.22
<i>Luzula wahlenbergii</i> ssp. <i>wah.</i>	Wahlenberg's Woodrush	-	1.62	-	-	-	-	-	-	-
<i>Poa alpigena</i>	Kentucky Bluegrass	-	-	-	-	-	1.14	-	-	-
Forbs										
<i>Aconitum delphinifolium</i>	Larkspurleaf Monkshood	-	0.92	-	-	-	-	2.27	-	-
<i>Anemone narcissiflora</i>	Narcissus Anemone	-	0.23	-	-	-	-	1.26	-	0.22
<i>Anemone parviflora</i>	Smallflowered Anemone	-	-	-	-	-	-	1.01	-	-
<i>Arnica lessingii</i>	Nodding Arnica	-	-	-	-	-	-	1.01	-	-
<i>Artemisia arctica</i> ssp. <i>arc.</i>	Boreal Sagebrush	-	-	-	-	-	-	6.82	-	0.27
<i>Aster sibiricus</i>	Arctic Aster	-	-	-	-	-	-	0.51	-	-
<i>Cerastium beeringianum</i> var. <i>bee.</i>	Bering Chickweed	-	-	-	-	-	0.46	-	-	-
<i>Dodecatheon frigidum</i>	Western Arctic Shootingstar	-	0.92	-	-	-	0.92	-	-	-
<i>Epilobium palustre</i>	Marsh Willowherb	-	0.92	-	-	-	-	-	-	-
<i>Equisetum arvense</i>	Field Horsetail	-	33.03	-	-	-	7.09	1.52	-	-
<i>Equisetum scirpoides</i>	Dwarf Scouringrush	-	-	-	-	-	6.86	-	-	-
<i>Linnaea borealis</i> ssp. <i>bor.</i>	Twinsflower	-	-	-	-	-	-	-	0.82	-
<i>Lycopodium clavatum</i> ssp. <i>monostachyon</i>	One-cone Club Moss	-	-	-	-	-	-	-	2.19	-
<i>Petasites frigidus</i> var. <i>hyperboreus</i>	Arctic Sweet Coltsfoot	-	3.93	-	-	-	2.06	0.51	2.86	-
<i>Polemonium acutiflorum</i>	Tall Jacob's Ladder	-	3.46	-	-	-	0.92	-	-	-
<i>Primula sibirica</i>	Siberian Primrose	-	-	-	-	-	-	4.29	-	-
<i>Rubus arcticus</i> ssp. <i>arc.</i>	Arctic Blackberry	-	0.69	-	-	-	-	-	-	-
<i>Rubus chamaemorus</i>	Cloudberry	16.78	-	-	-	-	-	-	-	-
<i>Saussurea angustifolia</i>	Narrow-leaf Saw Wort	-	-	-	-	-	-	0.52	-	-
<i>Saxifraga hieracifolia</i>	Stiffstem Saxifrage	-	-	-	-	-	0.23	-	-	-
<i>Saxifraga punctata</i> ssp. <i>nelsoniana</i>	Heartleaf Saxifrage	-	0.23	-	-	-	-	-	-	-
<i>Solidago multiradiata</i> var. <i>mul.</i>	Rocky Mountain Goldenrod	-	-	-	-	-	-	3.28	-	-
<i>Stellaria media</i>	Chickweed	-	0.23	-	-	-	-	-	-	-
<i>Valeriana capitata</i>	Valerian	-	0.46	-	-	-	-	0.25	-	-
Deciduous Shrubs										
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	17.26	-	48.48	3.39	53.78	2.06	-	30.65	3.01
<i>Salix camissonis</i>	Chamisso's Willow	-	-	-	3.39	-	-	9.34	-	-
<i>Salix lanata</i> ssp. <i>richardsonii</i>	Richardson's Willow	-	-	-	-	0.69	-	-	-	-
<i>Salix phlebophylla</i>	Skeletonleaf Willow	-	-	-	-	-	0.46	-	-	0.66
<i>Salix pulchra</i>	Tealeaf Willow	-	33.95	4.85	-	1.21	4.12	2.53	7.01	-
<i>Salix reticulata</i>	Netleaf Willow	-	0.23	-	-	-	4.35	-	-	-
<i>Spiraea beauverdiana</i>	Beauverd Spirea	-	-	-	-	0.30	-	0.25	-	4.10
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	-	-	27.27	72.88	9.67	-	13.13	11.43	11.20
Evergreen Shrubs										
<i>Andromeda polifolia</i>	Bog Rosemary	-	-	-	-	-	-	-	0.52	-
<i>Cassiope tetragona</i> ssp. <i>tet.</i>	White Arctic Mtn. Heather	-	-	-	-	6.34	-	-	-	1.55
<i>Dryas integrifolia</i> ssp. <i>integrifolia</i>	Entireleaf Mountain Avens	-	-	-	-	1.60	-	-	-	-
<i>Dryas octopetala</i> ssp. <i>oct.</i>	White Mountain-avens	-	-	-	-	-	-	-	-	30.09
<i>Empetrum nigrum</i> ssp. <i>hermaphroditum</i>	Black Crowberry	-	-	3.64	-	-	-	2.78	11.43	0.27
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	23.40	-	3.03	-	4.53	-	-	9.35	-
<i>Loiseleuria procumbens</i>	Alpine Azalea	-	-	-	-	-	-	-	-	0.66
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	4.73	-	1.82	-	14.20	-	1.26	9.87	9.84
Mosses										
<i>Aulacomnium acuminatum</i>	Acutetip Aulacomnium Moss	-	12.01	-	-	-	-	-	-	-
<i>Hylocomium splendens</i>	Splendid Feather Moss	-	6.70	-	-	-	34.55	9.60	8.05	-
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss	-	-	-	-	-	0.69	-	-	-
<i>Polytrichum</i> sp.	Polytrichum Moss	-	-	-	-	0.60	-	-	-	0.55
	Sphagnum sp.	11.35	-	-	-	-	2.06	-	-	-
Lichens										
<i>Cladonia deformis</i>	Deformed Cup Lichen	-	-	-	-	-	-	-	-	0.22
<i>Cladonia</i> sp.	Cup Lichen	-	-	-	-	0.91	-	-	0.52	7.38
<i>Flavocetraria cucullata</i>	Flavocetraria Lichen	0.71	-	-	-	-	-	-	-	4.65
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen	-	-	-	-	-	-	-	-	-
<i>Peltigera aphthosa</i>	Felt Lichen	0.24	-	-	-	-	0.69	-	-	1.11
<i>Peltigera</i> sp.	Felt Lichen	-	0.23	-	-	-	1.14	1.52	1.30	-
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen	-	-	-	-	-	-	-	-	6.83
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	-	-	0.61	-	-	-	-	-	0.22
	Unknown Crustose Lichen	0.47	-	0.61	1.69	4.53	-	1.52	-	7.96
	Unknown Rock Lichen	-	-	-	-	-	-	-	-	0.27
Relative Cover by Lifeform (1st Hits Only)										
Grasses and Grass-likes		25.06	1.85	9.70	18.64	3.93	29.06	35.35	6.49	43.44
Forbs		16.78	45.03	-	-	-	18.54	22.73	3.38	3.28
Deciduous Shrubs		17.26	34.18	80.61	79.66	64.95	11.67	25.25	49.09	18.31
Evergreen Shrubs		28.13	-	8.48	-	25.08	1.60	4.04	31.17	19.95
Mosses		11.35	18.71	-	-	0.60	37.30	9.60	8.05	0.55
Lichens		1.42	0.23	1.21	1.69	5.44	1.83	3.03	1.82	14.48
										38.27

Table 12 Red Dog Mine - Vegetation Cover -- 2010

Relative Cover Summary - AT 1000 Plots

Percent Ground Cover Based on Point-Intercept Sampling

Sample Area—>	AT 1 1000	AT 2 1000	AT 3 1000	AT 4 1000	AT 5 1000	AT 6 1000	AT 7 1000	AT 8 1000	AT 9 1000
1st Hits									
Grasses and Grass-likes									
<i>Arctagrostis latifolia</i>	Wideleaf Polargrass	-	-	4.02	-	-	-	-	-
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint	-	-	0.25	-	0.73	-	-	0.47
<i>Carex aquatilis</i> ssp. <i>aqu.</i>	Water Sedge	-	28.49	0.75	-	-	-	-	-
<i>Carex bigelowii</i>	Bigelow's Sedge	3.95	8.43	0.50	-	-	-	-	0.47
<i>Carex microchaeta</i>	Smallawned Sedge	-	-	-	41.71	-	1.50	4.62	0.47
<i>Carex podocarpa</i>	Shortstalk Sedge	-	-	0.75	-	3.40	-	-	0.71
<i>Carex scirpoidea</i>	Northern Singlespike Sedge	-	-	-	-	0.49	-	-	-
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass	39.77	-	-	-	-	-	-	-
<i>Festuca altaica</i>	Altai Fescue	-	0.29	1.26	28.91	14.81	-	4.62	0.47
<i>Festuca brachyphylla</i>	Alpine Fescue	-	-	-	-	-	-	-	0.95
<i>Hierochloe alpina</i>	Alpine Sweetgrass	-	-	-	-	-	-	-	0.47
<i>Poa alpigena</i>	Kentucky Bluegrass	-	-	0.25	-	-	-	-	1.30
<i>Poa arctica</i> ssp. <i>arc.</i>	Arctic Bluegrass	-	-	-	-	4.37	-	-	1.30
Forbs									
<i>Aconitum delphiniiifolium</i>	Larkspurleaf Monkshood	-	-	-	-	0.24	-	-	-
<i>Anemone narcissiflora</i>	Narcissus Anemone	-	-	-	-	-	-	0.24	-
<i>Anemone parviflora</i>	Smallflowered Anemone	-	-	-	-	0.97	-	-	-
<i>Arnica lessingii</i>	Nodding Arnica	-	-	-	-	0.24	-	-	0.43
<i>Artemisia arctica</i> ssp. <i>arc.</i>	Boreal Sagebrush	-	-	-	0.47	1.21	-	0.23	0.24
<i>Aster sibiricus</i>	Arctic Aster	-	-	-	-	1.46	-	-	-
<i>Cerastium beeringianum</i> var. <i>bee.</i>	Bering Chickweed	-	-	-	-	0.49	-	-	-
<i>Dodecatheon frigidum</i>	Western Arctic Shootingstar	-	0.29	-	-	0.24	-	-	-
<i>Epilobium palustre</i>	Marsh Willowherb	-	-	-	-	0.24	-	-	-
<i>Equisetum arvense</i>	Field Horsetail	-	1.45	0.25	-	-	-	-	-
<i>Equisetum scirpoides</i>	Dwarf Scouringrush	-	0.87	-	-	-	-	-	-
<i>Galium boreale</i>	Northern Bedstraw	-	-	-	-	2.18	-	-	-
<i>Gentiana propinqua</i> ssp. <i>pro.</i>	Fourpart Dwarf Gentian	-	-	-	-	0.24	-	-	-
<i>Hedysarum alpinum</i>	Alpine Sweetvetch	-	-	-	-	9.47	-	-	-
<i>Lupinus arcticus</i>	Arctic Lupine	-	-	-	-	0.73	-	9.93	7.82
<i>Lycopodium clavatum</i> ssp. <i>monostachyon</i>	One-cone Club Moss	-	-	-	-	-	-	0.23	-
<i>Pedicularis labradorica</i>	Labrador Lousewort	-	-	0.25	-	-	-	-	0.22
<i>Petasites frigidus</i> var. <i>hyperboreus</i>	Arctic Sweet Coltsfoot	-	1.16	-	-	-	-	0.69	-
<i>Primula sibirica</i>	Siberian Primrose	-	1.16	-	-	-	-	-	-
<i>Rubus arcticus</i> ssp. <i>arc.</i>	Arctic Blackberry	-	0.87	-	-	0.49	-	-	-
<i>Rubus chamaemorus</i>	Cloudberry	6.74	-	-	-	-	-	-	-
<i>Saussurea angustifolia</i>	Narrow-leaf Saw Wort	-	-	0.25	-	2.91	-	-	0.22
<i>Senecio lugens</i>	Small Bladdertop Ragwort	-	-	-	-	6.80	-	-	-
<i>Solidago multiradiata</i> var. <i>mul.</i>	Rocky Mountain Goldenrod	-	-	-	-	5.34	-	-	-
<i>Thalictrum alpinum</i>	Alpine Meadow-Rue	-	-	-	-	1.70	-	-	-
<i>Valeriana capitata</i>	Valerian	-	-	-	-	0.24	-	-	-
<i>Zygadenus elegans</i>	Mountain Deathcamas	-	-	-	-	3.88	-	-	-
Deciduous Shrubs									
<i>Arctostaphylos alpina</i>	Alpine Bearberry	-	0.29	0.50	-	-	2.69	-	-
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	5.12	-	14.07	-	-	24.55	9.47	35.55
<i>Potentilla fruticosa</i>	Shrubby Cinquefoil	-	-	-	-	0.97	-	-	22.29
<i>Salix glauca</i> ssp. <i>acutifolia</i>	Grayleaf Willow	-	-	2.26	-	-	-	-	-
<i>Salix lanata</i> ssp. <i>richardsonii</i>	Richardson's Willow	-	4.94	-	-	-	-	-	-
<i>Salix myrtillifolia</i>	Blueberry Willow	-	-	-	-	-	0.23	1.90	0.43
<i>Salix phlebophylla</i>	Skeletonleaf Willow	-	-	-	-	-	-	0.95	-
<i>Salix pulchra</i>	Tealeaf Willow	0.23	8.72	7.04	-	-	8.08	7.35	13.20
<i>Salix reticulata</i>	Netleaf Willow	-	23.55	-	35.19	-	0.23	-	0.22
<i>Spiraea beauverdiana</i>	Beauverd Spirea	-	-	-	18.01	-	-	-	-
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	14.19	-	35.18	0.47	-	8.08	29.33	7.35
Evergreen Shrubs									
<i>Cassiope tetragona</i> ssp. <i>tet.</i>	White Arctic Mtn. Heather	-	-	-	1.42	-	-	-	0.43
<i>Dryas octopetala</i> ssp. <i>oct.</i>	White Mountain-avens	-	-	0.75	-	0.24	-	-	12.34
<i>Empetrum nigrum</i> ssp. <i>hermafroditum</i>	Black Crowberry	2.56	-	11.81	2.84	-	-	0.23	-
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	7.91	-	2.76	-	-	3.59	8.31	0.47
<i>Loiseleuria procumbens</i>	Alpine Azalea	-	-	-	5.21	-	-	-	3.03
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	7.21	0.58	4.77	0.47	-	22.16	12.24	10.90
Mosses									
<i>Aulacomnium acuminatum</i>	Acutetip Aulacomnium Moss	-	0.58	-	-	-	-	-	-
<i>Aulacomnium</i> sp.	Aulacomnium Moss	-	2.03	-	-	-	-	-	-
<i>Aulacomnium turgidum</i>	Turgid Aulacomnium Moss	-	-	2.51	-	-	-	-	-
<i>Hylocomium splendens</i>	Splendid Feather Moss	-	7.27	2.26	-	0.73	-	6.47	7.58
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss	-	-	-	-	-	1.20	-	0.24
<i>Polytrichum</i> sp.	Polytrichum Moss	-	1.74	-	-	-	3.29	-	8.77
<i>Sphagnum</i> sp.	Sphagnum Moss	11.40	-	-	-	-	-	-	-
<i>Tomentypnum nitens</i>	Tomentypnum Moss	-	5.23	-	-	-	-	-	-
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	-	-	0.75	-	-	8.68	2.54	2.37
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen	-	-	-	-	-	0.46	-	-
<i>Peltigera aphthosa</i>	Felt Lichen	-	0.87	0.25	-	-	0.30	-	0.47
<i>Peltigera</i> sp.	Felt Lichen	0.93	0.58	4.02	-	-	0.90	1.62	1.66
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen	-	-	2.51	-	-	-	0.46	-
<i>Thamnolia vermicularis</i>	Whitemorm Lichen	-	0.58	-	-	-	5.69	-	0.24
	Unknown Crustose Lichen	-	-	-	0.47	-	17.37	-	0.43
Relative Cover by Lifeform (1st Hits Only)									
Grasses and Grass-likes	43.72	37.21	7.79	70.62	23.79	1.50	9.24	4.03	3.25
Forbs	6.74	5.81	0.75	0.47	39.08	-	11.09	8.29	0.87
Deciduous Shrubs	19.53	37.50	59.05	18.48	36.17	35.33	47.34	53.08	61.04
Evergreen Shrubs	17.67	0.58	20.10	9.95	0.24	25.75	20.79	11.37	19.26
Mosses	11.40	16.86	4.77	-	0.73	4.49	6.47	16.59	12.77
Lichens	0.93	2.03	7.54	0.47	-	32.93	5.08	6.64	2.81

Table 13 Red Dog Mine - Vegetation Cover -- 2010

Relative Cover Summary - AT 1500 Plots

Percent Ground Cover Based on Point-Intercept Sampling

Sample Area—>	AT 1 1500	AT 2 1500	AT 3 1500	AT 4 1500	AT 5 1500	AT 6 1500	AT 7 1500	AT 8 1500	AT 9 1500
1st Hits									
Grasses and Grass-likes									
<i>Arctagrostis latifolia</i>	Wideleaf Polargrass	-	-	-	-	-	-	0.73	-
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint	4.46	3.80	3.26	-	-	0.24	0.48	-
<i>Carex bigelowii</i>	Bigelow's Sedge	9.62	2.28	0.70	2.40	-	1.19	0.24	-
<i>Carex microchaeta</i>	Smallawned Sedge	-	-	-	-	-	6.41	9.69	3.30
<i>Carex podocarpa</i>	Shortstalk Sedge	-	0.76	0.70	1.20	1.81	0.24	-	4.47
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass	10.33	-	-	-	-	0.48	-	-
<i>Festuca altaica</i>	Altai Fescue	-	-	9.30	6.01	1.36	0.95	1.94	-
<i>Hierochloe alpina</i>	Alpine Sweetgrass	-	-	-	-	-	-	1.94	0.76
<i>Luzula confusa</i>	Northern Woodrush	-	-	-	-	-	-	-	5.41
Forbs									
<i>Aconitum delphinifolium</i>	Larkspurleaf Monkshood	-	0.51	-	-	-	-	-	-
<i>Anemone narcissiflora</i>	Narcissus Anemone	-	0.25	-	-	-	0.24	-	0.25
<i>Antennaria friseana</i> ssp. <i>alaskana</i>	Fries' Pussytoes	-	-	-	-	-	-	0.25	0.71
<i>Arnica lessingii</i>	Nodding Arnica	-	-	-	-	-	-	-	0.47
<i>Artemisia arctica</i> ssp. <i>arc.</i>	Boreal Sagebrush	-	-	0.23	0.24	-	-	-	-
<i>Epilobium latifolium</i>	Dwarf Fireweed	-	-	0.23	-	-	-	-	-
<i>Equisetum arvense</i>	Field Horsetail	1.64	-	-	-	-	-	-	-
<i>Lupinus arcticus</i>	Arctic Lupine	-	-	1.86	0.96	1.59	-	0.73	4.82
<i>Minuartia arctica</i>	Arctic Stichwort	-	-	-	-	-	-	-	0.94
<i>Pedicularis kanei</i> ssp. <i>kan.</i>	Woolly Lousewort	-	-	-	-	-	-	-	0.24
<i>Pedicularis labradorica</i>	Labrador Lousewort	-	-	-	0.48	-	-	-	-
<i>Petasites frigidus</i> var. <i>hyperboreus</i>	Arctic Sweet Coltsfoot	1.88	-	-	-	-	-	-	-
<i>Polemonium acutiflorum</i>	Tall Jacob's Ladder	-	1.27	-	-	-	-	-	-
<i>Primula sibirica</i>	Siberian Primrose	-	-	-	-	0.23	-	-	-
<i>Rubus arcticus</i> ssp. <i>arc.</i>	Arctic Blackberry	-	2.03	-	-	-	-	-	-
<i>Rubus chamaemorus</i>	Cloudberry	1.64	-	0.47	0.24	-	-	-	-
<i>Stellaria laeta</i>	Chickweed	-	-	0.70	-	-	-	-	-
<i>Valeriana capitata</i>	Valerian	-	0.25	-	-	-	-	-	-
Deciduous Shrubs									
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	16.20	-	63.26	1.92	63.04	36.34	14.53	3.55
<i>Potentilla fruticosa</i>	Shrubby Cinquefoil	-	3.29	-	-	-	-	-	-
<i>Salix myrtillifolia</i>	Blueberry Willow	-	-	-	-	-	-	-	4.00
<i>Salix phlebophylla</i>	Skeletonleaf Willow	-	-	-	-	-	-	-	-
<i>Salix pulchra</i>	Tealeaf Willow	13.38	61.77	10.93	25.48	3.17	1.19	12.11	6.60
<i>Salix reticulata</i>	Netleaf Willow	-	3.80	-	0.72	0.23	-	-	1.41
<i>Spiraea beauverdiana</i>	Beauverd Spirea	1.17	-	0.70	-	-	-	-	-
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	9.15	-	1.40	21.15	18.37	20.90	31.48	26.40
Evergreen Shrubs									
<i>Andromeda polifolia</i>	Bog Rosemary	0.23	-	-	-	-	-	0.24	-
<i>Cassiope tetragona</i> ssp. <i>tet.</i>	White Arctic Mtn. Heather	-	-	-	-	-	-	0.51	3.06
<i>Dryas octopetala</i> ssp. <i>oct.</i>	White Mountain-avens	-	-	-	2.49	-	-	0.51	-
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry	2.58	-	-	3.13	0.23	3.33	5.81	-
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	13.15	-	-	5.53	-	1.43	3.15	1.27
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	5.63	-	1.40	3.13	0.45	7.36	4.60	3.53
Mosses									
<i>Aulacomnium acuminatum</i>	Acutetip Aulacomnium Moss	-	13.42	-	-	-	-	-	-
<i>Aulacomnium</i> sp.	Aulacomnium Moss	-	-	-	-	-	8.31	-	-
<i>Hylocomium splendens</i>	Splendid Feather Moss	-	3.04	2.79	19.71	6.12	6.18	12.35	0.25
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss	-	-	1.40	-	-	-	-	-
<i>Polytrichum</i> sp.	Polytrichum Moss	-	0.25	-	-	-	0.48	-	9.64
<i>Sphagnum</i> sp.	Sphagnum Moss	7.04	-	-	-	-	-	-	-
<i>Tomentypnum nitens</i>	Tomentypnum Moss	-	3.04	-	-	-	-	-	-
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	-	-	-	2.64	0.45	2.14	-	8.88
<i>Flavocetraria cucullata</i>	Flavocetraria Lichen	-	-	-	-	-	-	-	1.41
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen	-	-	-	-	-	-	-	3.05
<i>Peltigera aphthosa</i>	Felt Lichen	-	-	-	1.20	-	-	-	-
<i>Peltigera</i> sp.	Felt Lichen	0.23	0.25	0.70	3.37	0.45	0.95	-	0.25
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen	-	-	-	-	-	-	-	1.41
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	-	-	-	0.24	-	0.24	-	0.24
	Unknown Crustose Lichen	1.64	-	-	0.24	-	1.43	-	7.36
Relative Cover by Lifeform (1st Hits Only)									
Grasses and Grass-likes		24.41	6.84	13.95	9.62	3.17	9.50	15.01	4.06
Forbs		5.16	4.30	3.49	1.92	1.81	0.24	0.73	5.33
Deciduous Shrubs		39.91	68.86	76.28	49.28	84.81	58.43	58.11	36.55
Evergreen Shrubs		21.60	-	1.40	11.78	3.17	12.11	13.80	21.07
Mosses		7.04	19.75	4.19	19.71	6.12	14.96	12.35	9.90
Lichens		1.88	0.25	0.70	7.69	0.91	4.75	-	23.10

Table 14 Red Dog Mine - Vegetation Cover -- 2010

Relative Cover Summary - AT 2500 Plots

Percent Ground Cover Based on Point-Intercept Sampling

Sample Area—>	AT 1 2500	AT 2 2500	AT 3 2500	AT 4 2500	AT 5 2500	AT 6 2500	AT 7 2500	AT 8 2500	AT 9 2500	
1st Hits										
Grasses and Grass-likes										
<i>Arctagrostis latifolia</i>	Wideleaf Polagrass	21.41	-	0.22	1.94	-	0.73	6.48	-	0.68
<i>Carex aquatilis</i> ssp. <i>aqu.</i>	Water Sedge	0.26	-	-	-	-	-	-	-	-
<i>Carex bigelowii</i>	Bigelow's Sedge	-	-	-	0.48	-	0.24	1.54	-	-
<i>Carex microchaeta</i>	Smallawned Sedge	-	-	-	-	-	1.21	9.26	2.86	1.14
<i>Carex podocarpa</i>	Shortstalk Sedge	-	5.54	1.12	1.94	0.24	-	-	0.95	0.23
<i>Carex scripoides</i>	Northern Singlespike Sedge	-	-	-	-	-	-	-	-	0.23
<i>Festuca altaica</i>	Altai Fescue	-	10.15	-	-	-	0.73	4.32	11.19	-
<i>Festuca brachyphylla</i>	Alpine Fescue	-	-	0.22	-	-	-	-	-	-
<i>Hierochloe alpina</i>	Alpine Sweetgrass	-	-	0.67	-	0.24	-	-	0.48	0.46
<i>Poa arctica</i> ssp. <i>arc.</i>	Arctic Bluegrass	2.09	-	-	-	-	-	-	-	-
<i>Trisetum spicatum</i> ssp. <i>spi.</i>	Spike Trisetum	-	-	-	-	-	-	-	0.95	-
Forbs										
<i>Anemone narcissiflora</i>	Narcissus Anemone	-	-	-	-	-	-	-	0.71	0.23
<i>Anemone parviflora</i>	Smallflowered Anemone	-	-	-	3.39	-	-	-	0.48	-
<i>Arnica lessingii</i>	Nodding Arnica	-	-	-	-	-	-	0.62	0.48	-
<i>Artemisia arctica</i> ssp. <i>arc.</i>	Boreal Sagebrush	-	6.46	0.45	-	-	0.24	5.56	0.24	-
<i>Boykinia richardsonii</i>	Richardson's Brookfoam	-	-	-	0.48	-	-	-	-	0.68
<i>Epilobium latifolium</i>	Dwarf Fireweed	-	-	-	0.24	-	-	-	-	-
<i>Equisetum arvense</i>	Field Horsetail	-	-	-	1.21	-	-	-	-	-
<i>Gentiana glauca</i>	Pale Gentian	-	0.92	-	-	-	-	0.31	0.24	-
<i>Lupinus arcticus</i>	Arctic Lupine	-	-	6.94	-	-	13.08	-	-	-
<i>Oxytropis nigrescens</i> ssp. <i>bryophylla</i>	Blackish Oxytropae	-	-	-	7.02	-	-	-	-	-
<i>Pedicularis labradorica</i>	Labrador Lousewort	-	-	-	-	-	0.24	-	0.48	-
<i>Petasites frigidus</i> var. <i>hyperboreus</i>	Arctic Sweet Coltsfoot	2.61	-	-	0.24	-	0.48	-	-	-
<i>Polemonium acutiflorum</i>	Tall Jacob's Ladder	-	-	-	-	-	-	-	-	0.23
<i>Polygonum bistorta</i> ssp. <i>plumosum</i>	Meadow Bistort	-	-	-	-	-	-	0.31	-	-
<i>Primula sibirica</i>	Siberian Primrose	-	-	-	1.69	-	-	-	1.19	-
<i>Rubus arcticus</i> ssp. <i>arc.</i>	Arctic Blackberry	14.10	-	-	-	-	-	-	-	-
<i>Senecio lugens</i>	Small Blacktip Ragwort	-	-	-	0.97	-	-	0.31	-	-
<i>Valeriana capitata</i>	Valerian	-	-	-	0.24	-	-	0.62	-	-
Deciduous Shrubs										
<i>Arctostaphylos alpina</i>	Alpine Bearberry	-	-	1.79	0.48	0.71	-	-	-	-
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	2.61	0.92	35.57	-	68.94	27.85	-	-	-
<i>Salix chamissonis</i>	Chamisso's Willow	-	3.38	-	-	-	-	7.72	8.10	-
<i>Salix glauca</i> ssp. <i>acutifolia</i>	Grayleaf Willow	-	-	1.79	-	0.94	-	-	-	-
<i>Salix myrtillifolia</i>	Blueberry Willow	-	3.69	-	-	-	-	6.79	2.38	-
<i>Salix phlebophylla</i>	Skeletonleaf Willow	-	-	-	-	-	-	-	-	1.60
<i>Salix pulchra</i>	Tealeaf Willow	34.73	-	3.36	-	-	7.51	1.54	0.48	-
<i>Salix reticulata</i>	Netleaf Willow	-	-	-	17.92	-	-	-	-	-
<i>Spiraea beauverdiana</i>	Beauverd Spirea	0.78	5.23	-	-	0.24	-	3.70	-	-
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	-	5.54	12.53	-	0.24	7.75	0.62	0.24	26.26
Evergreen Shrubs										
<i>Cassiope tetragona</i> ssp. <i>tet.</i>	White Arctic Mtn. Heather	-	1.85	-	-	-	-	7.10	10.24	7.31
<i>Dryas octopetala</i> ssp. <i>oct.</i>	White Mountain-avens	-	-	-	45.28	-	-	-	33.57	26.03
<i>Empetrum nigrum</i> ssp. <i>hermafordinum</i>	Black Crowberry	0.26	18.46	0.67	-	1.88	0.24	1.23	0.24	1.14
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	1.31	-	1.57	-	-	0.97	-	-	0.91
<i>Loiseleuria procumbens</i>	Alpine Azalea	-	2.15	-	-	-	-	-	-	-
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	1.04	9.85	12.98	-	12.94	6.30	9.57	3.57	11.19
Mosses										
<i>Drepanocladus</i> sp.	Drepanocladus Moss	-	-	-	11.86	-	-	-	-	-
<i>Hylocomium splendens</i>	Splendid Feather Moss	8.88	-	5.82	4.12	-	-	-	13.81	6.85
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss	-	-	0.22	-	-	20.10	-	-	0.68
<i>Polytrichum</i> sp.	Polytrichum Moss	1.83	0.62	-	-	1.88	9.93	16.98	0.71	4.34
<i>Rhytidium rugosum</i>	Rhytidium Moss	-	-	10.74	-	2.35	-	-	-	-
<i>Sphagnum</i> sp.	Sphagnum Moss	7.05	-	-	-	-	-	-	-	-
Lichens										
<i>Cladonia</i> sp.	Cup Lichen	-	0.92	1.79	-	4.71	-	4.01	1.43	5.02
<i>Flavocetraria cucullata</i>	Flavocetraria Lichen	-	-	-	-	-	1.45	-	-	0.46
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen	-	-	-	-	0.94	-	0.31	0.24	-
<i>Peltigera aphthosa</i>	Felt Lichen	-	-	-	0.24	0.24	0.48	-	-	0.46
<i>Peltigera</i> sp.	Felt Lichen	1.04	-	1.34	0.24	1.41	0.48	5.25	0.95	2.05
<i>Stereocalon tomentosum</i>	Tomentose Snow Lichen	-	4.62	0.22	-	0.94	-	-	-	-
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	-	-	-	-	-	-	-	-	0.23
	Unknown Crustose Lichen	-	19.69	-	-	1.18	-	5.86	3.81	1.60
Relative Cover by Lifeform (1st Hits Only)										
Grasses and Grass-likes		23.76	15.69	2.24	4.36	0.47	2.91	21.60	16.43	2.74
Forbs		16.71	7.38	7.38	15.50	-	14.04	7.72	3.81	1.14
Deciduous Shrubs		38.12	18.77	55.03	18.40	71.06	43.10	20.37	11.19	27.85
Evergreen Shrubs		2.61	32.31	15.21	45.28	14.82	7.51	17.90	47.62	46.58
Mosses		17.75	0.62	16.78	15.98	4.24	30.02	16.98	14.52	11.87
Lichens		1.04	25.23	3.36	0.48	9.41	2.42	15.43	6.43	9.82

Table 15 Red Dog Mine - Vegetation Cover -- 2010

Relative Cover Summary - AT 4000 Plots

Percent Ground Cover Based on Point-Intercept Sampling									
Sample Area—>	AT 1 4000	AT 2 4000	AT 3 4000	AT 4 4000	AT 5 4000	AT 6 4000	AT 7 4000	AT 8 4000	AT 9 4000
1st Hits									
Grasses and Grass-likes									
<i>Arctagrostis latifolia</i>	Wideleaf Polargrass	-	-	0.95	-	-	0.75	-	3.23
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint	-	-	1.67	-	-	-	8.74	3.23
<i>Carex atrofusca</i>	Darkbrown Sedge	-	-	-	-	-	-	-	13.16
<i>Carex bigelowii</i>	Bigelow's Sedge	-	-	1.19	29.29	0.81	0.25	5.38	-
<i>Carex microchaeta</i>	Smallawned Sedge	6.47	-	-	-	12.16	0.50	0.22	-
<i>Carex podocarpa</i>	Shortstalk Sedge	0.88	0.98	-	-	1.35	-	-	-
<i>Carex scirpoidea</i>	Northern Singlespike Sedge	-	-	-	-	2.43	-	-	-
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass	-	-	-	0.79	-	-	-	23.02
<i>Festuca altaica</i>	Altai Fescue	-	0.98	-	0.53	1.08	-	-	11.32
<i>Hierochloe alpina</i>	Alpine Sweetgrass	0.88	0.25	-	-	-	0.25	-	-
<i>Poa alpigena</i>	Kentucky Bluegrass	-	-	-	-	-	-	0.23	-
Forbs									
<i>Aconitum delphinifolium</i>	Larkspurleaf Monkshood	-	-	-	-	-	-	-	0.23
<i>Anenome parviflora</i>	Smallflowered Anemone	-	-	-	-	-	-	-	9.01
<i>Arnica lessingii</i>	Nodding Arnica	-	-	-	-	-	-	-	2.31
<i>Artemisia arctica</i> ssp. <i>arc.</i>	Boreal Sagebrush	-	-	-	-	-	-	-	5.77
<i>Astragalus umbellatus</i>	Tundra Milkvetch	-	-	-	-	4.59	-	-	-
<i>Epilobium latifolium</i>	Dwarf Fireweed	-	-	-	-	0.50	-	0.46	-
<i>Equisetum arvense</i>	Field Horsetail	-	-	-	15.04	-	-	-	2.54
<i>Geum glaciale</i>	Glacier Avens	-	-	-	-	1.08	-	-	-
<i>Lupinus arcticus</i>	Arctic Lupine	-	-	-	-	-	0.67	8.55	-
<i>Pedicularis labradorica</i>	Labrador Lousewort	0.59	-	-	-	2.16	-	-	0.46
<i>Pedicularis</i> sp.	Lousewort	-	-	-	0.26	-	-	-	-
<i>Petasites frigidus</i> var. <i>hyperboreus</i>	Arctic Sweet Coltsfoot	-	-	-	0.26	-	-	-	3.00
<i>Polemonium acutiflorum</i>	Tall Jacob's Ladder	-	-	0.24	-	-	-	-	-
<i>Polygonum bistorta</i> ssp. <i>plumosum</i>	Meadow Bistort	-	-	-	-	1.08	-	-	-
<i>Polygonum viviparum</i>	Alpine Bistort	-	-	-	-	-	-	0.23	-
<i>Primula sibirica</i>	Siberian Primrose	-	-	-	-	-	-	-	7.85
<i>Rubus arcticus</i> ssp. <i>arc.</i>	Arctic Blackberry	-	-	0.24	-	-	-	-	-
<i>Rubus chamaemorus</i>	Cloudberry	-	-	-	1.06	-	-	-	24.42
<i>Saussurea angustifolia</i>	Narrow-leaf Saw Wort	-	-	-	-	0.27	-	-	-
<i>Saxifraga punctata</i> ssp. <i>nelsoniana</i>	Heartleaf Saxifrage	-	-	-	-	-	-	0.23	-
<i>Senecio lugens</i>	Small Blacktip Ragwort	-	-	-	-	0.27	-	-	-
<i>Tofieldia coccinea</i>	Northern Asphodel	-	-	-	-	0.27	-	-	-
<i>Valeriana capitata</i>	Valerian	-	-	-	-	-	-	0.23	-
Deciduous Shrubs									
<i>Arctostaphylos alpina</i>	Alpine Bearberry	-	-	-	-	1.35	13.03	-	-
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	38.53	17.89	41.19	-	-	-	19.51	-
<i>Salix charmissonis</i>	Chamisso's Willow	-	-	-	-	-	-	-	15.01
<i>Salix glauca</i> ssp. <i>acutifolia</i>	Grayleaf Willow	-	-	-	6.07	-	1.25	-	-
<i>Salix lanata</i> ssp. <i>richardsonii</i>	Richardson's Willow	-	-	7.62	-	-	-	-	-
<i>Salix myrtillifolia</i>	Blueberry Willow	-	-	-	-	-	-	5.77	-
<i>Salix pulchra</i>	Tealeaf Willow	1.76	0.98	16.43	9.76	-	0.50	4.04	-
<i>Salix reticulata</i>	Netleaf Willow	-	-	-	6.07	12.43	1.75	-	-
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	8.53	23.28	11.19	2.37	3.51	47.37	30.27	-
Evergreen Shrubs									
<i>Cassiope tetragona</i> ssp. <i>tet.</i>	White Arctic Mtn. Heather	0.59	-	-	1.06	6.49	1.00	-	-
<i>Dryas integrifolia</i> ssp. <i>integrifolia</i>	Entireleaf Mountain Avens	-	-	-	-	27.30	-	-	-
<i>Dryas octopetala</i> ssp. <i>oct.</i>	White Mountain-avens	-	-	-	0.26	1.08	10.78	-	0.69
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry	-	1.23	-	2.64	0.27	1.25	5.16	-
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	0.59	0.25	0.48	2.64	-	-	6.95	-
<i>Rhododendron lapponicum</i>	Lapland Rosebay	-	-	-	-	-	-	-	0.23
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	15.88	9.56	3.33	4.49	1.62	6.27	4.26	-
Mosses									
<i>Aulacomnium turgidum</i>	Turgid Aulacomnium Moss	-	-	-	-	-	-	-	3.49
<i>Drepanocladus</i> sp.	Drepanocladus Moss	-	0.74	-	-	-	-	-	-
<i>Hylocomium splendens</i>	Splendid Feather Moss	-	-	14.76	17.15	10.27	-	11.88	6.00
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss	1.18	-	-	-	-	-	-	-
<i>Polytrichum</i> sp.	Polytrichum Moss	6.76	10.54	-	-	-	-	-	-
<i>Sphagnum</i> sp.	Sphagnum Moss	-	-	-	-	-	-	2.91	-
<i>Tomentypnum nitens</i>	Tomentypnum Moss	-	-	-	-	7.57	3.01	-	-
	Unknown Moss	-	0.49	-	-	7.57	-	-	-
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	7.65	21.08	0.24	0.26	0.27	9.52	-	0.23
<i>Flavocetraria cucullata</i>	Flavocetraria Lichen	1.18	0.74	-	-	-	1.00	-	-
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen	-	0.25	-	-	-	-	-	-
<i>Peltigera aphlopha</i>	Felt Lichen	6.76	1.23	0.48	-	-	0.50	-	0.93
<i>Peltigera</i> sp.	Felt Lichen	1.47	2.21	-	-	-	0.50	-	1.86
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen	-	7.11	-	-	-	-	-	-
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	-	0.25	-	-	0.27	-	-	-
	Unknown Crustose Lichen	0.29	-	-	-	-	-	-	-
Relative Cover by Lifeform (1st Hits Only)									
Grasses and Grass-likes		8.24	2.21	3.81	30.61	17.84	1.75	14.35	31.18
Forbs		0.59	-	0.48	16.62	9.73	0.50	0.67	40.88
Deciduous Shrubs		48.82	42.16	76.43	24.27	17.30	63.91	53.81	20.79
Evergreen Shrubs		17.06	11.03	3.81	11.08	36.76	19.30	16.37	10.93
Mosses		7.94	11.76	14.76	17.15	17.84	3.01	14.80	6.00
Lichens		17.35	32.84	0.71	0.26	0.54	11.53	0.46	3.02

Table 16 Red Dog Mine - Vegetation Cover -- 2010

Relative Cover Summary - RAT Sample Points

Percent Ground Cover Based on Point-Intercept Sampling												
Sample Area—>	RAT 1 100	RAT 1 1000	RAT 1 2000	RAT 2 100	RAT 2 1000	RAT 2 2000	RAT 3 100	RAT 3 1000	RAT 3 2000	RAT 4 100	RAT 4 1000	RAT 4 2000
1st Hits												
Grasses and Grass-likes												
<i>Arctagrostis latifolia</i>	Wideleaf Polargrass	-	-	-	0.87	-	0.24	0.52	-	-	-	-
<i>Carex aquatilis</i> ssp. <i>aqu.</i>	Water Sedge	1.86	0.63	0.37	0.25	-	-	6.20	0.13	1.83	7.51	8.28
<i>Carex bigelowii</i>	Bigelow's Sedge	4.64	1.76	3.58	19.98	13.09	6.86	2.45	1.54	4.06	1.59	0.26
<i>Carex microchaeta</i>	Smallawned Sedge	0.13	0.50	-	-	-	-	-	-	-	-	-
<i>Carex podocarpa</i>	Shortstalk Sedge	0.40	-	0.12	-	-	-	-	-	-	-	-
<i>Carex scirpoidea</i>	Northern Singespike S.	-	-	0.12	-	-	-	-	-	-	-	-
<i>Eriophorum angustifolium</i> ssp. <i>subarcticum</i>	Tall Cottongrass	0.66	0.38	0.25	0.50	0.24	-	-	-	-	-	1.34
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass	59.02	43.90	39.63	22.60	20.17	26.84	31.78	24.33	34.47	34.68	38.68
<i>Festuca brachyphylla</i>	Alpine Fescue	-	-	-	0.12	-	-	-	-	-	-	-
<i>Luzula multiflora</i> ssp. <i>mul.</i>	Common Woodrush	0.13	-	-	-	-	-	-	-	-	-	-
Forbs												
<i>Pedicularis labradorica</i>	Labrador Lousewort	-	-	-	-	-	-	-	-	0.14	-	-
<i>Petasites frigidus</i> var. <i>hyperboreus</i>	Arctic Sweet Coltsfoot	-	-	0.12	0.25	-	0.96	-	-	1.88	-	-
<i>Rubus chamaemorus</i>	Cloudberry	2.65	2.89	0.49	4.37	4.44	5.90	8.66	6.66	3.15	5.49	6.86
Deciduous Shrubs												
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	4.51	7.80	8.02	11.86	9.60	11.55	13.95	10.88	7.86	16.33	5.82
<i>Salix pulchra</i>	Tealeaf Willow	0.13	-	0.49	3.87	0.12	1.81	0.13	-	-	0.72	-
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	15.65	6.16	1.48	11.86	16.45	9.75	14.34	11.01	16.25	2.02	10.22
Evergreen Shrubs												
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry	0.40	0.13	0.12	2.50	1.68	1.81	0.26	2.69	3.01	0.14	0.78
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	1.99	16.60	20.37	4.99	12.85	14.56	11.76	18.82	10.88	13.15	17.21
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	0.66	10.06	10.00	2.75	7.80	9.51	5.30	7.30	6.95	2.89	4.53
Mosses												
<i>Hylocomium splendens</i>	Splendid Feather Moss	-	7.55	5.56	10.74	-	0.36	-	8.83	6.68	0.29	6.99
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss	-	-	-	-	0.24	-	-	-	-	-	-
<i>Polytrichum</i> sp.	Polytrichum Moss	1.19	1.13	5.31	2.00	0.48	8.90	1.55	7.04	1.70	13.15	-
<i>Sphagnum</i> sp.	Sphagnum Moss	5.97	-	-	0.37	11.88	-	2.71	-	-	-	-
Lichens												
<i>Cladonia deformis</i>	Deformed Cup Lichen	-	-	-	-	-	-	-	0.13	-	-	-
<i>Cladonia</i> sp.	Cup Lichen	-	0.50	1.73	-	0.96	0.24	0.26	0.13	0.39	-	-
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea L.	-	-	-	0.12	-	-	-	-	-	-	0.40
<i>Peltigera aphthosa</i>	Felt Lichen	-	-	0.49	-	-	0.12	-	0.13	-	-	-
<i>Peltigera</i> sp.	Felt Lichen	-	-	0.74	-	-	0.12	-	-	-	-	-
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen	-	-	0.99	-	-	-	-	-	-	-	-
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	-	-	-	-	-	0.12	-	-	-	-	-
	Unknown Crustose Lichen	-	-	-	-	-	0.36	0.13	0.51	2.62	-	0.39
Relative Cover by Lifeform (1st Hits Only)												
Grasses and Grass-likes		66.84	47.17	44.07	44.32	33.49	33.94	40.96	25.99	40.37	43.79	47.22
Forbs		2.65	2.89	0.62	4.62	4.44	6.86	8.66	6.66	3.15	7.51	6.86
Deciduous Shrubs		20.29	13.96	10.00	27.59	26.17	23.10	28.42	21.90	24.12	19.08	16.04
Evergreen Shrubs		3.05	26.79	30.49	10.24	22.33	25.87	17.31	28.81	20.84	16.18	22.51
Mosses		7.16	8.68	10.86	13.11	12.61	9.27	4.26	15.88	8.39	13.44	6.99
Lichens		-	0.50	3.95	0.12	0.96	0.96	0.39	0.77	3.15	-	0.39
												0.40

Table 17 Red Dog Mine - Vegetation Cover -- 2010

Relative Cover Summary - CAT Sample Plots

Percent Ground Cover Based on Point-Intercept Sampling

Sample Area—→	CAT - 1	CAT - 2	CAT - 3	CAT - 4	
1st Hits					
Grasses and Grass-likes					
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint	-	0.23	0.48	-
<i>Carex aquatilis</i> ssp. <i>aqu.</i>	Water Sedge	-	-	-	0.50
<i>Carex bigelowii</i>	Bigelow's Sedge	-	3.50	9.05	8.06
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass	-	32.40	-	21.96
<i>Hierochloe alpina</i>	Alpine Sweetgrass	0.93	-	-	-
Forbs					
<i>Petasites frigidus</i> var. <i>hyperboreus</i>	Arctic Sweet Coltsfoot	-	2.10	-	0.37
<i>Rubus chamaemorus</i>	Cloudberry	-	3.73	-	2.61
<i>Saussurea angustifolia</i>	Narrow-leaf Saw Wort	-	-	0.24	0.12
Deciduous Shrubs					
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	15.89	14.22	11.19	13.52
<i>Salix phlebophylla</i>	Skeletonleaf Willow	0.93	-	-	-
<i>Salix pulchra</i>	Tealeaf Willow	-	-	0.95	0.87
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	6.07	6.29	23.57	0.37
Evergreen Shrubs					
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry	0.70	2.33	7.38	0.37
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	1.64	12.59	18.57	30.89
<i>Loiseleuria procumbens</i>	Alpine Azalea	1.64	-	-	-
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	27.34	12.82	11.19	10.55
Mosses					
<i>Aulacomnium</i> sp.	Aulacomnium Moss	-	2.33	-	-
<i>Hylocomium splendens</i>	Splendid Feather Moss	-	2.33	3.33	2.11
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss	0.93	-	8.33	-
<i>Polytrichum</i> sp.	Polytrichum Moss	-	0.47	-	-
<i>Tomentypnum nitens</i>	Tomentypnum Moss	4.91	-	-	-
Lichens					
<i>Cladonia</i> sp.	Cup Lichen	29.67	1.17	2.38	0.25
<i>Dactylina arctica</i>	Arctic Dactylina Lichen	0.70	-	-	-
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen	0.70	-	-	-
<i>Peltigera aphthosa</i>	Felt Lichen	-	1.17	1.90	-
<i>Peltigera</i> sp.	Felt Lichen	-	1.17	-	-
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen	0.70	0.70	0.48	-
	Unknown Crustose Lichen	7.24	0.47	0.95	-
Relative Cover by Lifeform (1st Hits Only)					
Grasses and Grass-likes	0.93	36.13	9.52	30.52	
Forbs	-	5.83	0.24	3.10	
Deciduous Shrubs	22.90	20.51	35.71	14.76	
Evergreen Shrubs	31.31	27.74	37.14	41.81	
Mosses	5.84	5.13	11.67	2.11	
Lichens	39.02	4.66	5.71	0.25	

Chart 21
Red Dog Mine - AT 000-200 Plots
Relative Cover (Composition) Values - 1st hits only by Lifeform

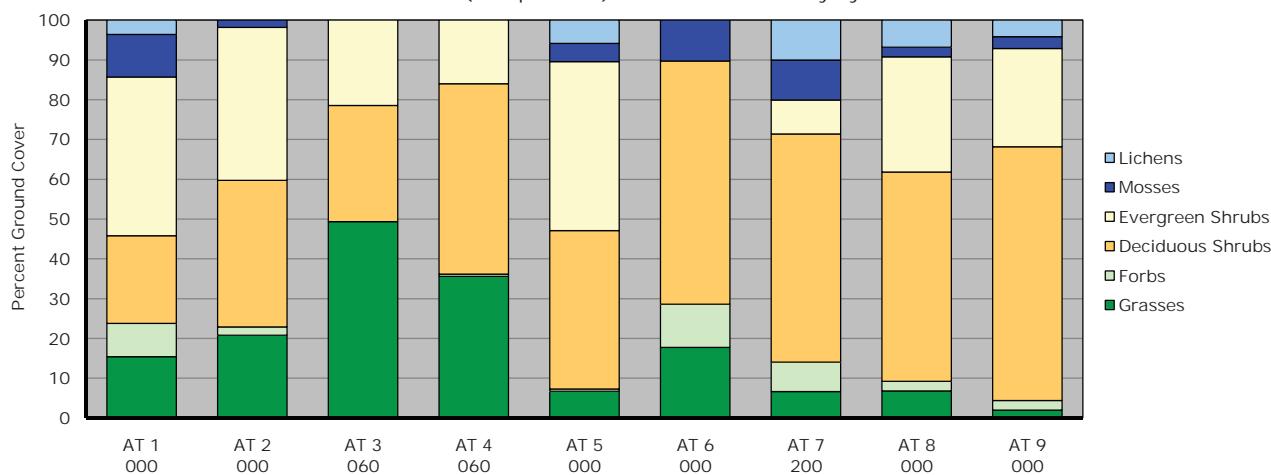


Chart 22
Red Dog Mine - AT 500 & 700 Plots
Relative Cover (Composition) Values - 1st hits only by Lifeform

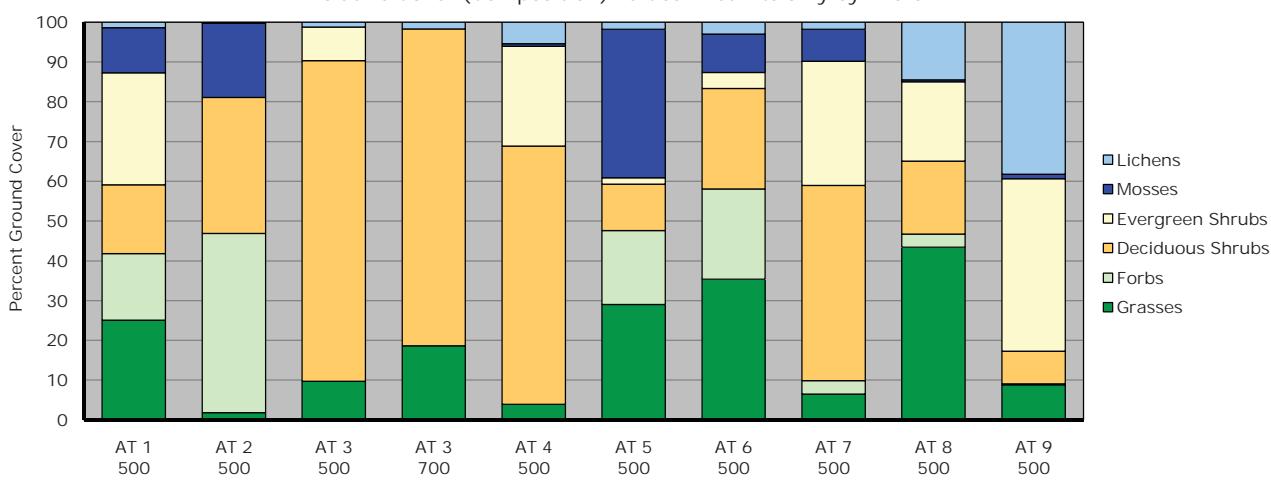


Chart 23
Red Dog Mine - AT 1000 Plots
Relative Cover (Composition) Values - 1st hits only by Lifeform

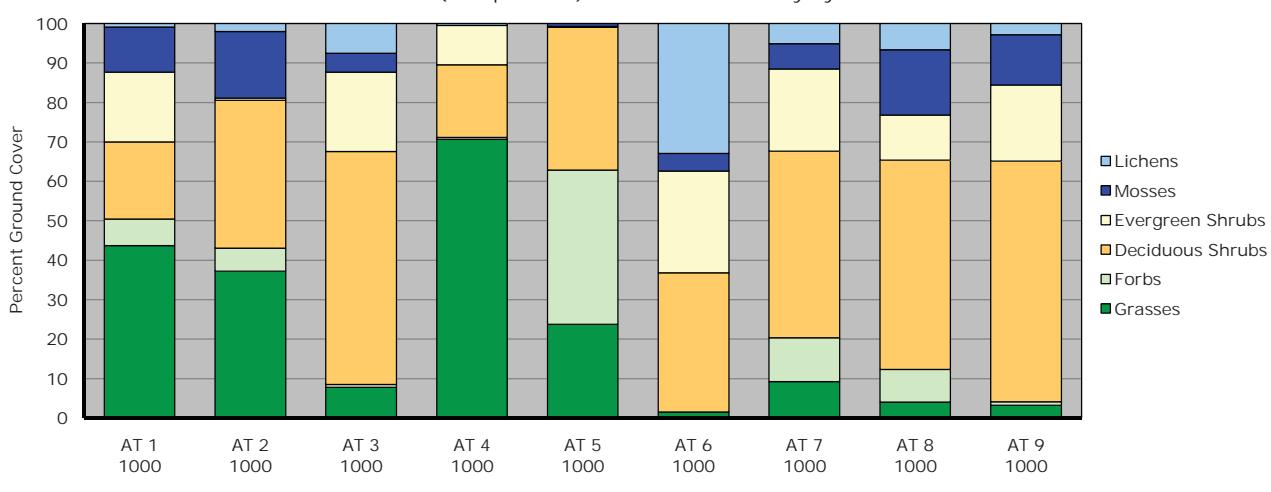


Chart 24
Red Dog Mine - AT 1500 Plots
Relative Cover (Composition) Values - 1st hits only by Lifeform

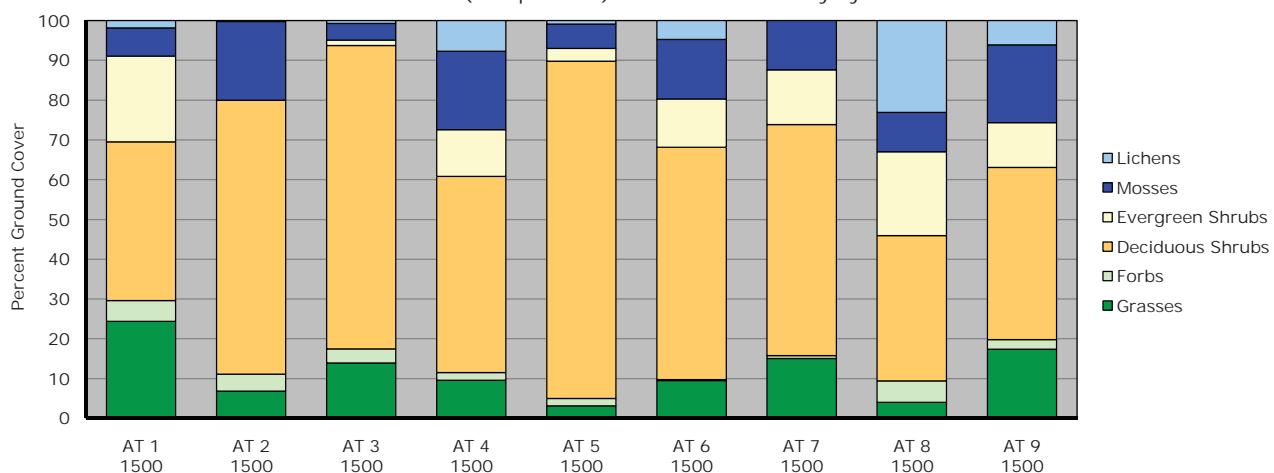


Chart 25
Red Dog Mine - AT 2500 Plots
Relative Cover (Composition) Values - 1st hits only by Lifeform

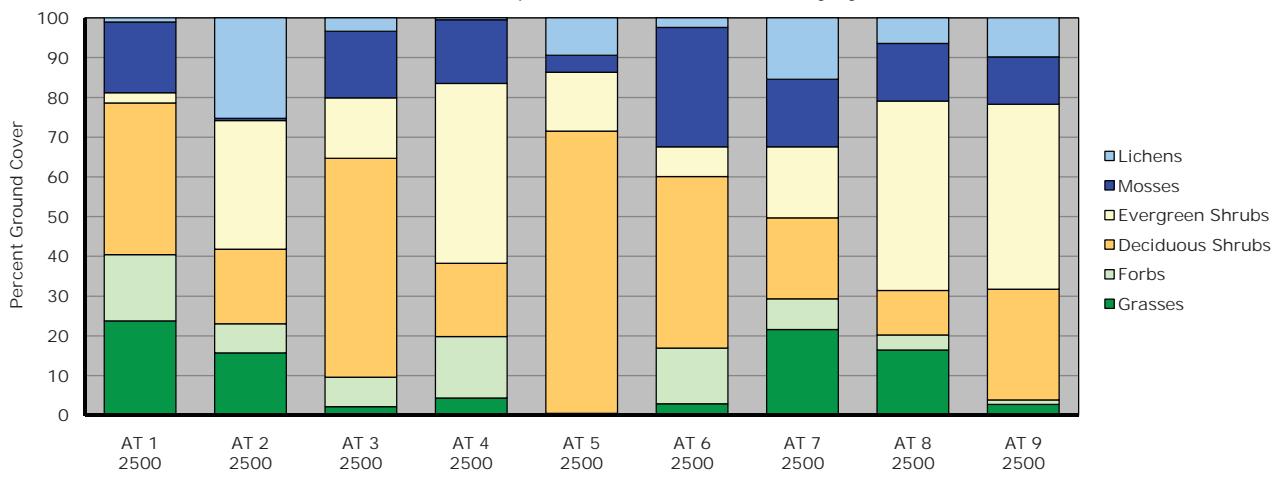
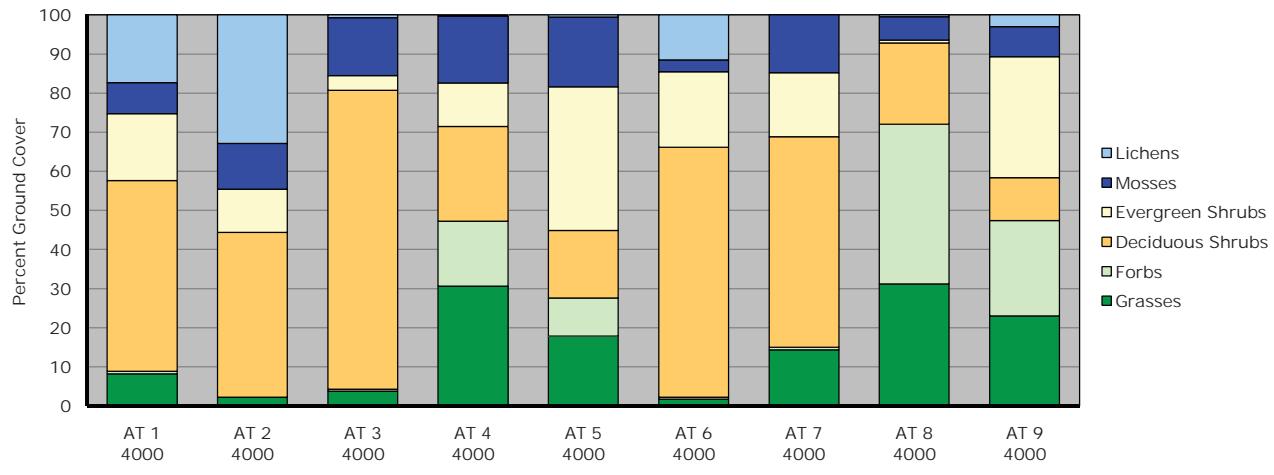


Chart 26
Red Dog Mine - AT 4000 Plots
Relative Cover (Composition) Values - 1st hits only by Lifeform



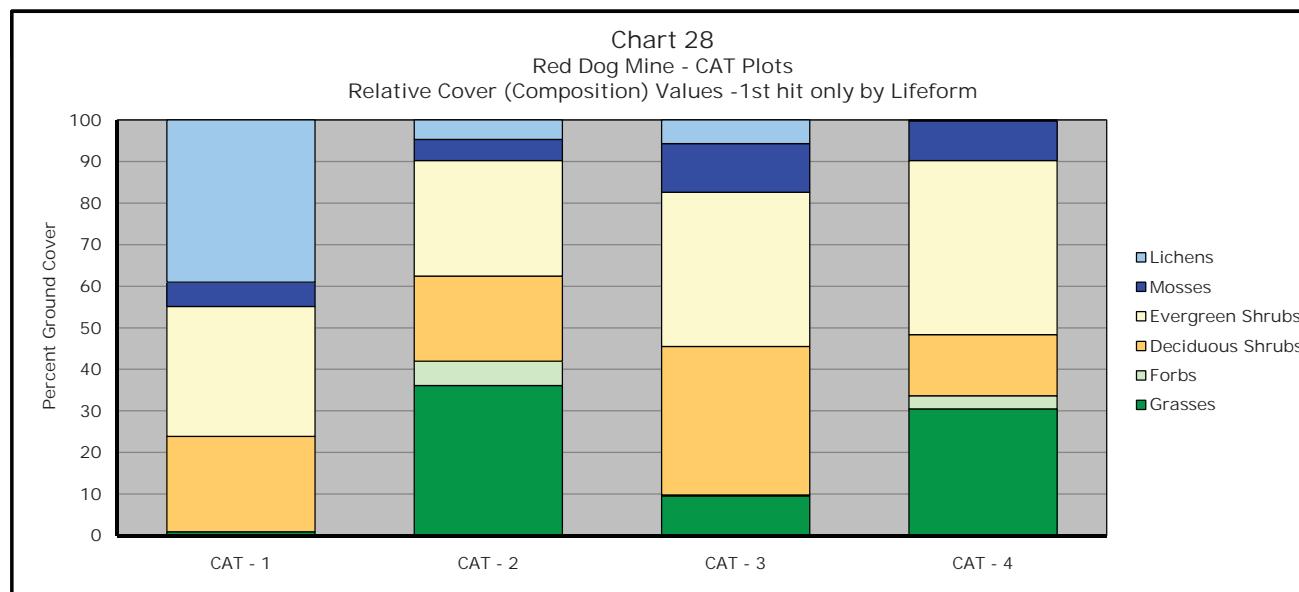
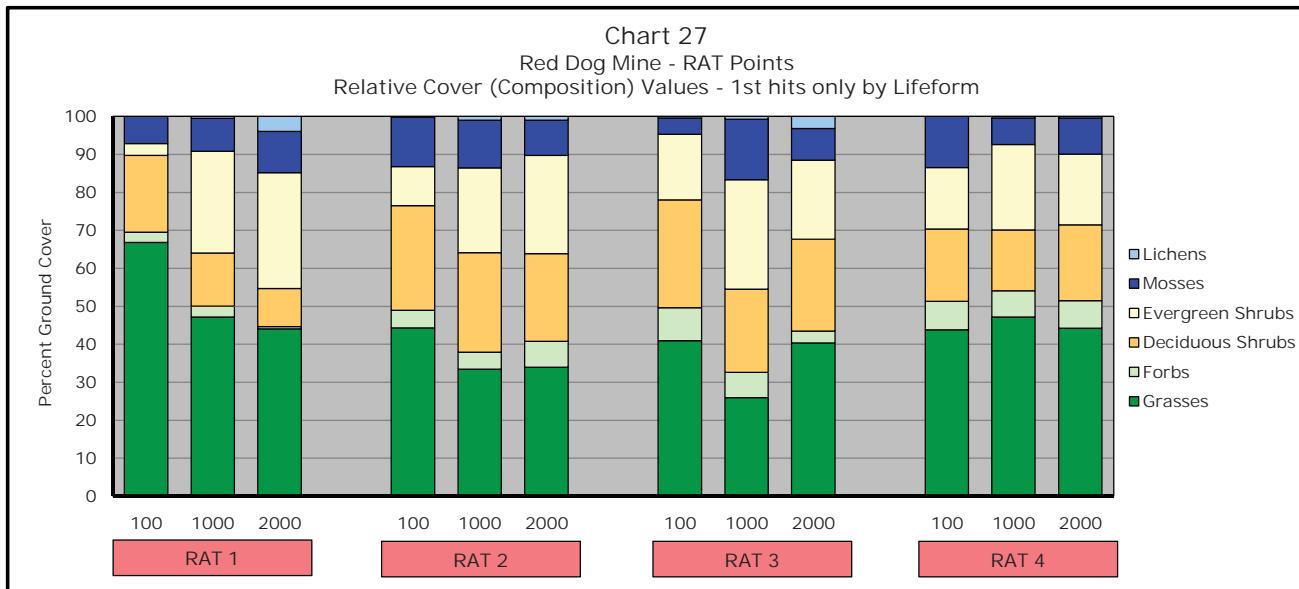


Table 18 Red Dog Mine - Vegetation Cover -- 2010

Species Observed - AT 000-200 Plots

Sample Area-->	AT 1 000	AT 2 000	AT 3 060	AT 4 060	AT 5 000	AT 6 000	AT 7 200	AT 8 000	AT 9 000
Grasses and Grass-likes									
<i>Arctagrostis latifolia</i>	Wideleaf Polargrass		X		X			X	
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint	X	X		X		X		
<i>Carex aquatilis</i> ssp. <i>aqu.</i>	Water Sedge				X				
<i>Carex bigelowii</i>	Bigelow's Sedge	X	X	X	X		X	X	
<i>Carex microchaeta</i>	Smallawned Sedge	X				X		X	
<i>Carex podocarpa</i>	Shortstalk Sedge								
<i>Carex scirpoidea</i>	Northern Singlespike Sedge				X				
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass	X							
<i>Festuca altaica</i>	Altai Fescue				X				
<i>Hierochloe alpina</i>	Alpine Sweetgrass							X	X
<i>Luzula confusa</i>	Northern Woodrush							X	
<i>Trisetum spicatum</i> ssp. <i>spi.</i>	Spike Trisetum								X
Forbs									
<i>Anemone narcissiflora</i>	Narcissus Anemone								X
<i>Antennaria friesiana</i> ssp. <i>alaskana</i>	Fries' Pussytoes							X	
<i>Artemisia arctica</i> ssp. <i>arc.</i>	Boreal Sagebrush							X	
<i>Equisetum arvense</i>	Field Horsetail					X			
<i>Lupinus arcticus</i>	Arctic Lupine						X	X	
<i>Lycopodium clavatum</i> ssp. <i>monostachyon</i>	One-cone Club Moss				X				
<i>Oxytropis nigrescens</i> ssp. <i>bryophila</i>	Blackish Oxytrop								X
<i>Petasites frigidus</i> var. <i>hyperboreus</i>	Arctic Sweet Coltsfoot	X	X	X	X				
<i>Rubus chamaemorus</i>	Cloudberry			X	X				
Deciduous Shrubs									
<i>Arctostaphylos alpina</i>	Alpine Bearberry	X	X	X	X	X	X	X	X
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch								
<i>Salix chamissonis</i>	Chamiso's Willow								
<i>Salix phlebophylla</i>	Skeletonleaf Willow		X	X	X	X	X	X	X
<i>Salix pulchra</i>	Tealeaf Willow								
<i>Spiraea beauverdiana</i>	Beauverd Spirea								
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	X	X	X	X	X	X	X	X
Evergreen Shrubs									
<i>Dryas octopetala</i> ssp. <i>oct.</i>	White Mountain-avens								X
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry	X	X	X	X				
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea			X	X		X	X	
<i>Loiseleuria procumbens</i>	Alpine Azalea					X			
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	X	X		X	X	X	X	X
Mosses									
<i>Drepanocladus</i> sp.	Drepanocladus Moss					X			
<i>Hylocomium splendens</i>	Splendid Feather Moss		X			X			
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss						X		X
<i>Polytrichum</i> sp.	Polytrichum Moss	X	X		X	X		X	X
<i>Sphagnum</i> sp.	Sphagnum Moss								
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	X				X		X	X
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen					X		X	
<i>Peltigera aphthosa</i>	Felt Lichen	X					X	X	
<i>Peltigera</i> sp.	Felt Lichen	X					X	X	X
<i>Stereocalon tomentosum</i>	Tomentose Snow Lichen				X			X	X
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	X			X			X	X
	Unknown Crustose Lichen				X			X	
	Unknown Rock Lichen	X					X		X
Total Number of Species Observed	15	11	7	11	20	9	12	19	19

Table 19 Red Dog Mine - Vegetation Cover -- 2010

Species Observed - AT 500 & 700 Plots

Sample Area—>	AT 1 500	AT 2 500	AT 3 500	AT 3 700	AT 4 500	AT 5 500	AT 6 500	AT 7 500	AT 8 500	AT 9 500
Grasses and Grass-likes										
<i>Arctagrostis latifolia</i>	Wideleaf Polargrass		X			X	X	X	X	
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint		X							
<i>Carex aquatilis</i> ssp. <i>aqu.</i>	Water Sedge									
<i>Carex bigelowii</i>	Bigelow's Sedge	X			X	X	X	X	X	
<i>Carex microchaeta</i>	Smallawned Sedge	X		X	X				X	X
<i>Carex podocarpa</i>	Shortstalk Sedge			X	X		X			X
<i>Carex scirpoidea</i>	Northern Singlespike Sedge					X				
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass	X					X			
<i>Festuca altaica</i>	Altai Fescue			X				X	X	
<i>Hierochloe alpina</i>	Alpine Sweetgrass			X						X
<i>Luzula confusa</i>	Northern Woodrush				X		X			
<i>Luzula multiflora</i> ssp. <i>mul.</i>	Common Woodrush									X
<i>Luzula wahlenbergii</i> ssp. <i>wah.</i>	Wahlenberg's Woodrush		X				X			
<i>Poa alpigena</i>	Kentucky Bluegrass									
Forbs										
<i>Aconitum delphinifolium</i>	Larkspurleaf Monkshood		X					X		
<i>Anemone narcissiflora</i>	Narcissus Anemone		X					X		
<i>Anemone parviflora</i>	Smallflowered Anemone							X		
<i>Arnica lessingii</i>	Nodding Arnica							X		
<i>Artemisia arctica</i> ssp. <i>arc.</i>	Boreal Sagebrush							X		
<i>Aster sibiricus</i>	Arctic Aster							X		
<i>Cerastium beeringianum</i> var. <i>bee.</i>	Bering Chickweed					X				
<i>Dodecatheon frigidum</i>	Western Arctic Shootingstar	X				X				
<i>Epilobium palustre</i>	Marsh Willowherb	X								
<i>Equisetum arvense</i>	Field Horsetail		X			X	X			
<i>Equisetum scirpoides</i>	Dwarf Scouringrush					X				
<i>Linnaea borealis</i> ssp. <i>bor.</i>	Twinflower								X	
<i>Lycopodium clavatum</i> ssp. <i>monostachyon</i>	One-cone Club Moss					X				
<i>Petasites frigidus</i> var. <i>hyperboreus</i>	Arctic Sweet Coltsfoot	X				X	X	X		
<i>Polemonium acutiflorum</i>	Tall Jacob's Ladder	X								
<i>Primula sibirica</i>	Siberian Primrose						X			
<i>Rubus arcticus</i> ssp. <i>arc.</i>	Arctic Blackberry		X							
<i>Rubus chamaemorus</i>	Cloudberry	X								
<i>Saussurea angustifolia</i>	Narrow-leaf Saw Wort								X	
<i>Saxifraga hieracifolia</i>	Stiffstem Saxifrage					X				
<i>Saxifraga punctata</i> ssp. <i>nelsoniana</i>	Heartleaf Saxifrage		X							
<i>Solidago multiradiata</i> var. <i>mul.</i>	Rocky Mountain Goldenrod						X			
<i>Stellaria laeta</i>	Chickweed	X								
<i>Valeriana capitata</i>	Valerian	X					X			
Deciduous Shrubs										
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	X		X	X	X	X	X	X	X
<i>Salix chamissonis</i>	Chamisso's Willow			X						
<i>Salix lanata</i> ssp. <i>richardsonii</i>	Richardson's Willow			X						
<i>Salix phlebophylla</i>	Skeletonleaf Willow		X	X			X			
<i>Salix pulchra</i>	Tealeaf Willow				X		X	X		X
<i>Salix reticulata</i>	Netleaf Willow	X				X				X
<i>Spiraea beauverdiana</i>	Beauverd Spirea			X	X			X	X	X
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry			X	X		X	X	X	X
Evergreen Shrubs										
<i>Andromeda polifolia</i>	Bog Rosemary							X		
<i>Cassiope tetragona</i> ssp. <i>tet.</i>	White Arctic Mtn. Heather				X					
<i>Dryas integrifolia</i> ssp. <i>integrifolia</i>	Entireleaf Mountain Avens					X				
<i>Dryas octopetala</i> ssp. <i>oct.</i>	White Mountain-avens			X						X
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry		X					X	X	X
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	X		X		X		X	X	X
<i>Loiseleuria procumbens</i>	Alpine Azalea								X	X
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	X		X		X		X	X	X
Mosses										
<i>Aulacomnium acuminatum</i>	Acutetip Aulacomnium Moss		X							
<i>Aulacomnium</i> sp.	Aulacomnium Moss		X							
<i>Hylocomium splendens</i>	Splendid Feather Moss					X	X			
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss				X	X				
<i>Polytrichum</i> sp.	Polytrichum Moss							X	X	X
<i>Sphagnum</i> sp.	Sphagnum Moss	X			X	X				
Lichens										
<i>Cladonia deformis</i>	Deformed Cup Lichen		X							X
<i>Cladonia</i> sp.	Cup Lichen									X
<i>Flavocetraria cucullata</i>	Flavocetraria Lichen	X								X
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen									X
<i>Peltigera aphthosa</i>	Felt Lichen	X				X	X			X
<i>Peltigera</i> sp.	Felt Lichen	X				X	X	X		X
<i>Stereocalyx tomentosum</i>	Tomentose Snow Lichen			X					X	X
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	X		X	X	X	X		X	X
	Unknown Crustose Lichen								X	X
	Unknown Rock Lichen									X
Total Number of Species Observed	13	19	13	5	15	23	29	16	19	25

Table 20 Red Dog Mine - Vegetation Cover -- 2010

Species Observed - AT 1000 Plots

Sample Area—>	AT 1 1000	AT 2 1000	AT 3 1000	AT 4 1000	AT 5 1000	AT 6 1000	AT 7 1000	AT 8 1000	AT 9 1000
Grasses and Grass-likes									
<i>Arctagrostis latifolia</i>	Wideleaf Polargrass		X		X			X	
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint		X						
<i>Carex aquatilis</i> ssp. <i>aqu.</i>	Water Sedge		X						
<i>Carex bigelowii</i>	Bigelow's Sedge	X	X	X		X	X	X	X
<i>Carex microchaeta</i>	Smallawned Sedge			X		X	X	X	X
<i>Carex podocarpa</i>	Shortstalk Sedge				X				
<i>Carex scirpoidea</i>	Northern Singlespike Sedge				X				
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass	X							
<i>Festuca altaica</i>	Altai Fescue		X	X	X		X	X	
<i>Festuca brachyphylla</i>	Alpine Fescue							X	
<i>Hierochloe alpina</i>	Alpine Sweetgrass							X	X
<i>Poa alpigena</i>	Kentucky Bluegrass			X					
<i>Poa arctica</i> ssp. <i>arc.</i>	Arctic Bluegrass				X				
Forbs									
<i>Aconitum delphinifolium</i>	Larkspurleaf Monkshood				X			X	
<i>Anemone narcissiflora</i>	Narcissus Anemone				X				
<i>Anemone parviflora</i>	Smallflowered Anemone								
<i>Arnica lessingii</i>	Nodding Arnica				X				
<i>Artemisia arctica</i> ssp. <i>arc.</i>	Boreal Sagebrush			X	X		X	X	X
<i>Aster sibiricus</i>	Arctic Aster				X				
<i>Cerastium arvense</i>	Bering Chickweed				X				
<i>Dodecatheon frigidum</i>	Western Arctic Shootingstar	X			X				
<i>Epilobium palustre</i>	Marsh Willowherb				X				
<i>Equisetum arvense</i>	Field Horsetail		X	X					
<i>Equisetum scirpoides</i>	Dwarf Scouringrush		X						
<i>Galium boreale</i>	Northern Bedstraw				X				
<i>Gentiana propinqua</i> ssp. <i>pro.</i>	Fourpart Dwarf Gentian				X				
<i>Hedysarum alpinum</i>	Alpine Sweetvetch				X				
<i>Lupinus arcticus</i>	Arctic Lupine				X		X	X	
<i>Lycopodium clavatum</i> ssp. <i>monostachyon</i>	One-cone Club Moss						X		
<i>Pedicularis labradorica</i>	Labrador Lousewort			X					
<i>Petasites frigidus</i> var. <i>hyperboreus</i>	Arctic Sweet Coltsfoot		X				X		X
<i>Primula sibirica</i>	Siberian Primrose		X						
<i>Rubus arcticus</i> ssp. <i>arc.</i>	Arctic Blackberry		X						
<i>Rubus chamaemorus</i>	Cloudberry	X							
<i>Saussurea angustifolia</i>	Narrow-leaf Saw Wort			X		X			
<i>Senecio lugens</i>	Small Blacktip Ragwort				X				
<i>Solidago multiradiata</i> var. <i>mul.</i>	Rocky Mountain Goldenrod				X				
<i>Thalictrum alpinum</i>	Alpine Meadow-Rue				X				
<i>Valeriana capitata</i>	Valerian			X		X			
<i>Zygadenus elegans</i>	Mountain Deathcamas				X				
Deciduous Shrubs									
<i>Arctostaphylos alpina</i>	Alpine Bearberry			X		X		X	X
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	X	X	X					
<i>Potentilla fruticosa</i>	Shrubby Cinquefoil				X		X	X	X
<i>Salix glauca</i> ssp. <i>acutifolia</i>	Grayleaf Willow		X						
<i>Salix lanata</i> ssp. <i>richardsonii</i>	Richardson's Willow								
<i>Salix myrtillifolia</i>	Blueberry Willow						X	X	X
<i>Salix phlebocephala</i>	Skeletonleaf Willow							X	
<i>Salix pulchra</i>	Tealeaf Willow	X	X	X			X	X	X
<i>Salix reticulata</i>	Netleaf Willow				X			X	X
<i>Spiraea beauverdiana</i>	Beauverd Spirea				X				
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	X		X	X		X	X	X
Evergreen Shrubs									
<i>Cassiope tetragona</i> ssp. <i>tet.</i>	White Arctic Mtn. Heather				X				X
<i>Dryas octopetala</i> ssp. <i>oct.</i>	White Mountain-avens			X					X
<i>Empetrum nigrum</i> ssp. <i>hermafroditum</i>	Black Crowberry	X	X	X					
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	X		X			X	X	X
<i>Loiseleuria procumbens</i>	Alpine Azalea				X				
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	X	X	X	X		X	X	X
Mosses									
<i>Aulacomnium acuminatum</i>	Acutetip Aulacomnium Moss		X						
<i>Aulacomnium</i> sp.	Aulacomnium Moss	X	X						
<i>Aulacomnium turgidum</i>	Turgid Aulacomnium Moss			X					
<i>Hylocomium splendens</i>	Splendid Feather Moss		X	X		X		X	X
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss		X			X		X	X
<i>Polytrichum</i> sp.	Polytrichum Moss				X	X			
<i>Sphagnum</i> sp.	Sphagnum Moss	X							
<i>Tomentypnum nitens</i>	Tomentypnum Moss		X						
Lichens									
<i>Cladonia deformis</i>	Deformed Cup Lichen	X			X			X	X
<i>Cladonia</i> sp.	Cup Lichen				X		X	X	X
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen				X		X	X	X
<i>Peltigera aphthosa</i>	Felt Lichen	X	X	X			X	X	X
<i>Peltigera</i> sp.	Felt Lichen		X	X			X	X	X
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen			X			X	X	X
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	X	X	X	X		X	X	X
	Unknown Crustose Lichen								
Total Number of Species Observed	13	23	27	10	29	15	20	26	21

Table 21 Red Dog Mine - Vegetation Cover -- 2010

Species Observed - AT 1500 Plots

Sample Area—>	AT 1 1500	AT 2 1500	AT 3 1500	AT 4 1500	AT 5 1500	AT 6 1500	AT 7 1500	AT 8 1500	AT 9 1500
Grasses and Grass-likes									
<i>Arctagrostis latifolia</i>	Wideleaf Polargrass								
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint	X	X	X		X	X		
<i>Carex bigelowii</i>	Bigelow's Sedge	X	X	X	X	X	X		
<i>Carex microchaeta</i>	Smallawned Sedge								
<i>Carex podocarpa</i>	Shortstalk Sedge		X	X	X	X	X	X	X
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass	X				X			
<i>Festuca altaica</i>	Altai Fescue			X	X	X	X		
<i>Hierochloe alpina</i>	Alpine Sweetgrass					X	X	X	X
<i>Luzula confusa</i>	Northern Woodrush								X
Forbs									
<i>Aconitum delphinifolium</i>	Larkspurleaf Monkshood			X					
<i>Anemone narcissiflora</i>	Narcissus Anemone		X						
<i>Antennaria friesiana</i> ssp. <i>alaskana</i>	Fries' Pussytoes		X						
<i>Arnica lessingii</i>	Nodding Arnica								X
<i>Artemisia arctica</i> ssp. <i>arc.</i>	Boreal Sagebrush			X					
<i>Epilobium latifolium</i>	Dwarf Fireweed			X					
<i>Equisetum arvense</i>	Field Horsetail	X							
<i>Lupinus arcticus</i>	Arctic Lupine			X	X	X		X	
<i>Minuartia arctica</i>	Arctic Stichwort								X
<i>Pedicularis kanei</i> ssp. <i>kan.</i>	Woolly Lousewort								
<i>Pedicularis labradorica</i>	Labrador Lousewort				X				
<i>Petasites frigidus</i> var. <i>hyperboreus</i>	Arctic Sweet Coltsfoot	X							
<i>Polemonium acutiflorum</i>	Tall Jacob's Ladder								
<i>Primula sibirica</i>	Siberian Primrose		X				X		
<i>Rubus arcticus</i> ssp. <i>arc.</i>	Arctic Blackberry		X						
<i>Rubus chamaemorus</i>	Cloudberry	X		X	X				
<i>Stellaria laeta</i>	Chickweed			X					
<i>Valeriana capitata</i>	Valerian		X						
Deciduous Shrubs									
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	X	X	X	X	X	X	X	X
<i>Potentilla fruticosa</i>	Shrubby Cinquefoil								
<i>Salix myrtillifolia</i>	Blueberry Willow								X
<i>Salix phlebophylla</i>	Skeletonleaf Willow								
<i>Salix pulchra</i>	Tealeaf Willow	X	X	X	X	X	X		
<i>Salix reticulata</i>	Netleaf Willow								
<i>Spiraea beauverdiana</i>	Beauverd Spirea	X		X					
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	X		X	X	X	X	X	X
Evergreen Shrubs									
<i>Andromeda polifolia</i>	Bog Rosemary	X						X	
<i>Cassiope tetragona</i> ssp. <i>tet.</i>	White Arctic Mtn. Heather							X	
<i>Dryas octopetala</i> ssp. <i>oct.</i>	White Mountain-avens							X	
<i>Empetrum nigrum</i> ssp. <i>hermafordinum</i>	Black Crowberry	X			X	X	X		X
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	X			X	X	X	X	X
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	X		X	X	X	X	X	X
Mosses									
<i>Aulacomnium acuminatum</i>	Acutetip Aulacomnium Moss			X					
<i>Aulacomnium</i> sp.	Aulacomnium Moss		X						
<i>Hylocomium splendens</i>	Splendid Feather Moss		X	X	X	X	X	X	X
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss			X					
<i>Polytrichum</i> sp.	Polytrichum Moss	X	X		X		X		
<i>Sphagnum</i> sp.	Sphagnum Moss							X	X
<i>Tomentypnum nitens</i>	Tomentypnum Moss		X						
Lichens									
<i>Cladonia deformis</i>	Deformed Cup Lichen			X					
<i>Cladonia</i> sp.	Cup Lichen	X	X	X				X	
<i>Flavocetraria cucullata</i>	Flavocetraria Lichen							X	
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen								X
<i>Peltigera aphthosa</i>	Felt Lichen			X		X			X
<i>Peltigera</i> sp.	Felt Lichen	X	X	X	X	X		X	X
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen							X	
<i>Thamnolia vermicularis</i>	Whiteworm Lichen			X		X		X	X
	Unknown Crustose Lichen	X		X	X	X		X	X
Total Number of Species Observed	18	17	20	21	14	21	16	21	23

Table 22 Red Dog Mine - Vegetation Cover -- 2010

Species Observed - AT 2500 Plots

Sample Area—>	AT 1 2500	AT 2 2500	AT 3 2500	AT 4 2500	AT 5 2500	AT 6 2500	AT 7 2500	AT 8 2500	AT 9 2500
Grasses and Grass-likes									
<i>Arctagrostis latifolia</i>	Wideleaf Polargrass	X		X	X		X	X	
<i>Carex aquatilis</i> ssp. <i>aqu.</i>	Water Sedge	X							X
<i>Carex bigelowii</i>	Bigelow's Sedge			X			X	X	
<i>Carex microchaeta</i>	Smallawned Sedge		X	X	X		X	X	X
<i>Carex podocarpa</i>	Shortstalk Sedge				X			X	X
<i>Carex scirpoidea</i>	Northern Singlespike Sedge								X
<i>Festuca altaica</i>	Altai Fescue	X					X	X	
<i>Festuca brachyphylla</i>	Alpine Fescue		X	X				X	
<i>Hierochloe alpina</i>	Alpine Sweetgrass		X		X			X	X
<i>Poa arctica</i> ssp. <i>arc.</i>	Arctic Bluegrass	X							
<i>Trisetum spicatum</i> ssp. <i>spi.</i>	Spike Trisetum							X	
Forbs									
<i>Anemone narcissiflora</i>	Narcissus Anemone							X	X
<i>Anemone parviflora</i>	Smallflowered Anemone				X			X	X
<i>Arnica lessingii</i>	Nodding Arnica								
<i>Artemisia arctica</i> ssp. <i>arc.</i>	Boreal Sagebrush		X	X	X		X	X	
<i>Boykinia richardsonii</i>	Richardson's Brookfoam			X					
<i>Epilobium latifolium</i>	Dwarf Fireweed			X					X
<i>Equisetum arvense</i>	Field Horsetail		X		X				
<i>Gentiana glauca</i>	Pale Gentian							X	X
<i>Lupinus arcticus</i>	Arctic Lupine		X			X			
<i>Oxytropis nigrescens</i> ssp. <i>bryophilia</i>	Blackish Oxytropes			X					
<i>Pedicularis labradorica</i>	Labrador Lousewort			X			X		
<i>Petasites frigidus</i> var. <i>hyperboreus</i>	Arctic Sweet Coltsfoot	X		X		X			X
<i>Polemonium acutiflorum</i>	Tall Jacob's Ladder								
<i>Polygonum bistorta</i> ssp. <i>plumosum</i>	Meadow Bistort							X	
<i>Primula sibirica</i>	Siberian Primrose			X				X	
<i>Rubus arcticus</i> ssp. <i>arc.</i>	Arctic Blackberry	X							
<i>Senecio lugens</i>	Small Blacktip Ragwort			X			X		
<i>Valeriana capitata</i>	Valerian			X			X		
Deciduous Shrubs									
<i>Arctostaphylos alpina</i>	Alpine Bearberry		X	X	X	X			
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	X	X	X	X	X		X	X
<i>Salix chamaissensis</i>	Chamisso's Willow		X						
<i>Salix glauca</i> ssp. <i>acutifolia</i>	Grayleaf Willow		X			X			
<i>Salix myrtillifolia</i>	Blueberry Willow							X	X
<i>Salix phlebophylla</i>	Skeletonleaf Willow								X
<i>Salix pulchra</i>	Tealeaf Willow	X		X			X	X	
<i>Salix reticulata</i>	Netleaf Willow			X			X		
<i>Spiraea beauverdiana</i>	Beauverd Spirea	X	X		X		X		
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry		X		X	X	X	X	X
Evergreen Shrubs									
<i>Cassiope tetragona</i> ssp. <i>tet.</i>	White Arctic Mtn. Heather							X	X
<i>Dryas integrifolia</i> ssp. <i>integrifolia</i>	Entireleaf Mountain Avens				X			X	X
<i>Dryas octopetala</i> ssp. <i>oct.</i>	White Mountain-avens								X
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry	X	X	X		X	X		X
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	X		X		X	X		X
<i>Loiseleuria procumbens</i>	Alpine Azalea		X						
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	X	X	X		X	X	X	X
Mosses									
<i>Drepanocladus</i> sp.	Drepanocladus Moss				X				
<i>Hylocomium splendens</i>	Splendid Feather Moss	X		X	X			X	X
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss			X			X		
<i>Polytrichum</i> sp.	Polytrichum Moss	X	X			X	X	X	X
<i>Rhytidium rugosum</i>	Rhytidium Moss			X					
<i>Sphagnum</i> sp.	Sphagnum Moss	X		X		X			
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	X	X	X		X	X	X	X
<i>Flavocetraria cucullata</i>	Flavocetraria Lichen			X					
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen				X		X	X	X
<i>Peltigera aphthosa</i>	Felt Lichen		X	X	X	X	X		X
<i>Peltigera</i> sp.	Felt Lichen	X		X	X	X	X	X	X
<i>Stereocalon tomentosum</i>	Tomentose Snow Lichen		X	X		X		X	
<i>Thamnolia vermicularis</i>	Whiteworm Lichen		X			X		X	X
	Unknown Crustose Lichen								
	Unknown Rock Lichen	X							
Total Number of Species Observed	16	18	22	19	18	19	25	26	25

Table 23 Red Dog Mine - Vegetation Cover -- 2010

Species Observed - AT 4000 Plots

Sample Area—>	AT 1 4000	AT 2 4000	AT 3 4000	AT 4 4000	AT 5 4000	AT 6 4000	AT 7 4000	AT 8 4000	AT 9 4000
Grasses and Grass-likes									
<i>Arctagrostis latifolia</i>	Wideleaf Polargrass			X		X	X	X	
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint		X				X	X	
<i>Carex atrofusca</i>	Darkbrown Sedge							X	
<i>Carex bigelowii</i>	Bigelow's Sedge	X	X	X	X	X	X		
<i>Carex microchaeta</i>	Smallawned Sedge			X	X	X	X		
<i>Carex podocarpa</i>	Shortstalk Sedge			X					
<i>Carex scirpoidea</i>	Northern Singlespike Sedge				X				
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass		X	X					X
<i>Festuca altaica</i>	Altai Fescue		X	X	X			X	
<i>Hierochloe alpina</i>	Alpine Sweetgrass	X	X			X			
<i>Luzula multiflora</i> ssp. <i>mul.</i>	Common Woodrush				X				
<i>Poa alpigena</i>	Kentucky Bluegrass							X	
Forbs									
<i>Aconitum delphinifolium</i>	Larkspurleaf Monkshood							X	
<i>Anemone parviflora</i>	Smallflowered Anemone							X	
<i>Arnica lessingii</i>	Nodding Arnica							X	
<i>Artemisia arctica</i> ssp. <i>arc.</i>	Boreal Sagebrush				X			X	
<i>Astragalus umbellatus</i>	Tundra Milkvetch								
<i>Epilobium latifolium</i>	Dwarf Fireweed					X		X	
<i>Equisetum arvense</i>	Field Horsetail			X				X	
<i>Geum glaciale</i>	Glacier Avens				X				
<i>Lupinus arcticus</i>	Arctic Lupine			X			X	X	
<i>Pedicularis labradorica</i>	Labrador Lousewort	X			X			X	
<i>Pedicularis</i> sp.	Lousewort			X					
<i>Petasites frigidus</i> var. <i>hyperboreus</i>	Arctic Sweet Coltsfoot			X				X	
<i>Polygonum acutiflorum</i>	Tall Jacob's Ladder			X					
<i>Polygonum bistorta</i> ssp. <i>plumosum</i>	Meadow Bistort				X				
<i>Polygonum viviparum</i>	Alpine Bistort							X	
<i>Primula sibirica</i>	Siberian Primrose							X	
<i>Rubus arcticus</i> ssp. <i>arc.</i>	Arctic Blackberry			X					
<i>Rubus chamaemorus</i>	Cloudberry			X					X
<i>Saussurea angustifolia</i>	Narrow-leaf Saw Wort				X				
<i>Saxifraga punctata</i> ssp. <i>nelsoniana</i>	Heartleaf Saxifrage							X	
<i>Senecio lugens</i>	Small Blacktip Ragwort				X				
<i>Tofieldia coccinea</i>	Northern Asphodel				X				
<i>Valeriana capitata</i>	Valerian							X	
Deciduous Shrubs									
<i>Arctostaphylos alpina</i>	Alpine Bearberry				X	X	X		
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	X	X	X					
<i>Salix chamissonis</i>	Chamisso's Willow							X	
<i>Salix glauca</i> ssp. <i>acutifolia</i>	Grayleaf Willow			X		X			
<i>Salix lanata</i> ssp. <i>richardsonii</i>	Richardson's Willow								
<i>Salix myrtillifolia</i>	Blueberry Willow							X	
<i>Salix pulchra</i>	Tealeaf Willow	X	X	X	X	X	X		
<i>Salix reticulata</i>	Netleaf Willow				X	X			
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	X	X	X	X	X	X		X
Evergreen Shrubs									
<i>Cassiope tetragona</i> ssp. <i>tet.</i>	White Arctic Mtn. Heather	X			X	X	X		
<i>Dryas integrifolia</i> ssp. <i>integrifolia</i>	Entireleaf Mountain Avens			X	X				
<i>Dryas octopetala</i> ssp. <i>oct.</i>	White Mountain-avens			X	X	X		X	
<i>Empetrum nigrum</i> ssp. <i>hermafordinum</i>	Black Crowberry		X		X	X	X		
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	X	X	X	X		X		
<i>Rhododendron lapponicum</i>	Lapland Rosebay						X		X
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	X	X	X	X	X	X		X
Mosses									
<i>Aulacomnium turgidum</i>	Turgid Aulacomnium Moss								X
<i>Drepanocladus</i> sp.	Drepanocladus Moss		X						
<i>Hylocomium splendens</i>	Splendid Feather Moss			X				X	
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss	X	X						
<i>Polytrichum</i> sp.	Polytrichum Moss								
<i>Sphagnum</i> sp.	Sphagnum Moss						X		X
<i>Tomentypnum nitens</i>	Tomentypnum Moss				X	X			
	Unknown Moss		X						
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	X	X	X	X	X	X		X
<i>Flavocetraria cucullata</i>	Flavocetraria Lichen	X	X	X					
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen	X							
<i>Peltigera aphthosa</i>	Felt Lichen	X	X	X	X	X			X
<i>Peltigera</i> sp.	Felt Lichen	X	X			X			X
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen	X							
<i>Thamnolia vermicularis</i>	Whiteworm Lichen				X				X
	Unknown Crustose Lichen	X							
Total Number of Species Observed	17	19	15	19	26	20	14	23	13

Table 24 Red Dog Mine - Vegetation Cover -- 2010

Species Observed - RAT Sample Points

Sample Area—>	RAT 1 100-1000- 2000	RAT 2 100-1000- 2000	RAT 3 100-1000- 2000	RAT 4 100-1000- 2000
Grasses and Grass-likes				
<i>Arctagrostis latifolia</i>	Wideleaf Polargrass		X	X
<i>Carex aquatilis</i> ssp. <i>aqu.</i>	Water Sedge	X	X	X
<i>Carex bigelowii</i>	Bigelow's Sedge	X	X	X
<i>Carex microchaeta</i>	Smallawned Sedge	X		
<i>Carex podocarpa</i>	Shortstalk Sedge	X		
<i>Carex scirpoidea</i>	Northern Singlespike Sedge	X		
<i>Eriophorum angustifolium</i> ssp. <i>subarcticum</i>	Tall Cottongrass	X	X	X
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass	X	X	X
<i>Festuca brachyphylla</i>	Alpine Fescue		X	
<i>Luzula multiflora</i> ssp. <i>mul.</i>	Common Woodrush	X		
Forbs				
<i>Pedicularis labradorica</i>	Labrador Lousewort			X
<i>Petasites frigidus</i> var. <i>hyperboreus</i>	Arctic Sweet Coltsfoot	X	X	X
<i>Rubus chamaemorus</i>	Cloudberry	X	X	X
Deciduous Shrubs				
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	X	X	X
<i>Salix pulchra</i>	Tealeaf Willow	X	X	X
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	X	X	X
Evergreen Shrubs				
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry	X	X	X
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	X	X	X
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	X	X	X
Mosses				
<i>Hylocomium splendens</i>	Splendid Feather Moss	X	X	X
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss		X	
<i>Polytrichum</i> sp.	Polytrichum Moss	X	X	X
<i>Sphagnum</i> sp.	Sphagnum Moss	X	X	
Lichens				
<i>Cladonia deformis</i>	Deformed Cup Lichen		X	
<i>Cladonia</i> sp.	Cup Lichen	X	X	X
<i>Dactylina arctica</i>	Arctic Dactylina Lichen		X	X
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen		X	
<i>Peltigera aphthosa</i>	Felt Lichen	X	X	X
<i>Peltigera</i> sp.	Felt Lichen	X	X	X
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen	X	X	
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	X	X	
	Unknown Crustose Lichen		X	X
	Unknown Rock Lichen	X		
Total Number of Species Observed	25	26	20	17

Table 25 Red Dog Mine - Vegetation Cover -- 2010
Species Observed - CAT Sample Plots

Sample Area—>	CAT - 1	CAT - 2	CAT - 3	CAT - 4
Grasses and Grass-likes				
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint		X	X
<i>Carex aquatilis</i> ssp. <i>aqu.</i>	Water Sedge			X
<i>Carex bigelowii</i>	Bigelow's Sedge	X	X	X
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass	X	X	
<i>Hierochloe alpina</i>	Alpine Sweetgrass			X
Forbs				
<i>Petasites frigidus</i> var. <i>hyperboreus</i>	Arctic Sweet Coltsfoot		X	X
<i>Rubus chamaemorus</i>	Cloudberry		X	X
<i>Saussurea angustifolia</i>	Narrow-leaf Saw Wort			X
Deciduous Shrubs				
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	X	X	X
<i>Salix phlebophylla</i>	Skeletonleaf Willow	X		
<i>Salix pulchra</i>	Tealeaf Willow			X
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	X	X	X
Evergreen Shrubs				
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry	X	X	X
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	X	X	X
<i>Loiseleuria procumbens</i>	Alpine Azalea	X		
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	X	X	X
Mosses				
<i>Aulacomnium</i> sp.	Aulacomnium Moss		X	
<i>Hylocomium splendens</i>	Splendid Feather Moss		X	
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss	X		X
<i>Polytrichum</i> sp.	Polytrichum Moss		X	
<i>Sphagnum</i> sp.	Sphagnum Moss			X
<i>Tomentypnum nitens</i>	Tomentypnum Moss	X		
Lichens				
<i>Cladonia</i> sp.	Cup Lichen	X	X	X
<i>Dactylina arctica</i>	Arctic Dactylina Lichen	X		
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen	X		
<i>Peltigera aphthosa</i>	Felt Lichen		X	
<i>Peltigera</i> sp.	Felt Lichen		X	
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen	X	X	X
<i>Thamnolia vermicularis</i>	Whiteworm Lichen			X
	Unknown Crustose Lichen	X	X	X
Total Number of Species Observed	15	18	16	16

Table 26 Red Dog Mine - Vegetation Cover -- 2010

AT1 - 000		Orientation of Transect #1 to #5: NW							
Raw Data		Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Carex aquatilis</i> ssp. <i>aqu.</i>	Water Sedge			5			1.00	1.19	20
<i>Carex bigelowii</i>	Bigelow's Sedge	3	7	2	9	1	4.40	5.23	100
<i>Carex microchaeta</i>	Smallawned Sedge	1					0.20	0.24	20
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass	10	7	7	9	4	7.40	8.79	100
Forbs									
<i>Rubus chamaemorus</i>	Cloudberry	5	2	5	11	12	7.00	8.31	100
Deciduous Shrubs									
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	27	19	14	13	17	18.00	21.38	100
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	3					0.60	0.71	20
Evergreen Shrubs									
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	14	22	31	26	27	24.00	28.50	100
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	7	10	8	8	15	9.60	11.40	100
Mosses									
<i>Sphagnum</i> sp.	Sphagnum Moss	10	9	8	10	8	9.00	10.69	100
Lichens									
<i>Cladonia</i> sp.	Cup Lichen			1		2	0.60	0.71	40
<i>Peltigera aphthosa</i>	Felt Lichen		1				0.20	0.24	20
<i>Peltigera</i> sp.	Felt Lichen		1				0.20	0.24	20
<i>Thamnolia vermicularis</i>	Whiteworm Lichen				1	1	0.40	0.48	40
	Unknown Crustose Lichen	4		4			1.60	1.90	40
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean		
Total Vegetation Cover		84	79	84	87	87		84.20	
Rock		0	0	0	0	0		0.00	
Litter		16	21	16	13	13		15.80	
Bare ground		0	0	0	0	0		0.00	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Sphagnum</i> sp.	Sphagnum Moss	23	15	28	19	26	22.20		
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	2	1	6		4	2.60		
<i>Peltigera aphthosa</i>	Felt Lichen			1		1	0.40		
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	4	1	2	6	1	2.80		
	Unknown Crustose Lichen	4		2	1		1.40		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean		
Total Moss Cover		33	24	36	29	34		31.20	
Total Lichen Cover		14	5	15	8	9		10.20	
Total Moss and Lichen Cover		47	29	51	37	43		41.40	
Sampling Adequacy Calculations									
Mean = 84.20								t = 1.533	n = 5
								Variance = 10.70	$n_{min} = 0.35$

Table 27 Red Dog Mine - Vegetation Cover -- 2010

AT1 - 500 Raw Data		Orientation of Transect #1 to #5: East Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Carex bigelowii</i>	Bigelow's Sedge	4	2	3	1	2	2.40	2.84	100
<i>Carex microchaeta</i>	Smallawned Sedge				1		0.20	0.24	20
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass	15	15	24	22	17	18.60	21.99	100
Forbs									
<i>Rubus chamaemorus</i>	Cloudberry	14	20	10	13	14	14.20	16.78	100
Deciduous Shrubs									
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	15	19	9	18	12	14.60	17.26	100
Evergreen Shrubs									
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	17	19	20	17	26	19.80	23.40	100
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	4	6	3	2	5	4.00	4.73	100
Mosses									
<i>Sphagnum</i> sp.	Sphagnum Moss	13	3	14	9	9	9.60	11.35	100
Lichens									
<i>Flavocetraria cucullata</i>	Flavocetraria Lichen	1		1		1	0.60	0.71	60
<i>Peltigera aphthosa</i>	Felt Lichen		1				0.20	0.24	20
	Unknown Crustose Lichen	1	1				0.40	0.47	40
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean		
Total Vegetation Cover		84	86	84	83	86		84.60	
Rock		0	0	0	0	0		0.00	
Litter		16	14	16	17	14		15.40	
Bare ground		0	0	0	0	0		0.00	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Sphagnum</i> sp.	Sphagnum Moss	21	30	21	34	26	26.40		
Lichens									
<i>Flavocetraria cucullata</i>	Flavocetraria Lichen	5	3	1	1	3	2.60		
<i>Peltigera</i> sp.	Felt Lichen		3		2		1.00		
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	1					0.20		
	Unknown Crustose Lichen		5	1	1		1.40		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean		
Total Moss Cover		34	33	35	43	35		36.00	
Total Lichen Cover		8	13	3	4	4		6.40	
Total Moss and Lichen Cover		42	46	38	47	39		42.40	
Sampling Adequacy Calculations									
Mean = 84.60								n = 5	
Variance = 1.80								$n_{min} = 0.06$	

Table 28 Red Dog Mine - Vegetation Cover -- 2010

AT1 - 1000 Raw Data		Orientation of Transect #1 to #5: East Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Carex bigelowii</i>	Bigelow's Sedge	1	5	4	1	6	3.40	3.95	100
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass	37	38	31	45	20	34.20	39.77	100
Forbs									
<i>Rubus chamaemorus</i>	Cloudberry	3	4	3	5	14	5.80	6.74	100
Deciduous Shrubs									
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	9	5	5	1	2	4.40	5.12	100
<i>Salix pulchra</i>	Tealeaf Willow	1					0.20	0.23	20
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	8	10	16	15	12	12.20	14.19	100
Evergreen Shrubs									
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry		4	1	4	2	2.20	2.56	80
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	9	6	7	7	5	6.80	7.91	100
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	7	6	5	3	10	6.20	7.21	100
Mosses									
<i>Sphagnum</i> sp.	Sphagnum Moss	13	6	14	4	12	9.80	11.40	100
Lichens									
<i>Peltigera</i> sp.	Felt Lichen		1	3			0.80	0.93	40
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean		
Total Vegetation Cover		88	85	86	88	83		86.00	
Rock		0	0	0	0	0		0.00	
Litter		12	15	14	12	17		14.00	
Bare ground		0	0	0	0	0		0.00	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Sphagnum</i> sp.	Sphagnum Moss	19	30	17	23	22	22.20		
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	1	1	1		2	1.00		
<i>Peltigera</i> sp.	Felt Lichen	9	3	3	3		3.60		
<i>Thamnolia vermicularis</i>	Whiteworm Lichen					1	0.20		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean		
Total Moss Cover		32	36	31	27	34		32.00	
Total Lichen Cover		10	5	4	6	3		5.60	
Total Moss and Lichen Cover		42	41	35	33	37		37.60	
Sampling Adequacy Calculations									
Mean = 86.00		$t = 1.533$				n = 5			
		Variance = 4.50					$n_{min} = 0.14$		

Table 29 Red Dog Mine - Vegetation Cover -- 2010

AT1 - 1500		Orientation of Transect #1 to #5: West							
Raw Data		Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No.—→	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint		1	4	3	11	3.80	4.46	80
<i>Carex bigelowii</i>	Bigelow's Sedge	10	2	10	6	13	8.20	9.62	100
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass		17	14	9	4	8.80	10.33	80
Forbs									
<i>Equisetum arvense</i>	Field Horsetail	6	1				1.40	1.64	40
<i>Petasites frigidus</i> / <i>hyperboreus</i>	Arctic Sweet Coltsfoot	4	3			1	1.60	1.88	60
<i>Rubus chamaemorus</i>	Cloudberry	1		1	3	2	1.40	1.64	80
Deciduous Shrubs									
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	9	16	13	14	17	13.80	16.20	100
<i>Salix pulchra</i>	Tealeaf Willow	5	11	16	21	4	11.40	13.38	100
<i>Spirea beauverdiana</i>	Beauverd Spirea	3	1			1	1.00	1.17	60
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	8	7	7	7	10	7.80	9.15	100
Evergreen Shrubs									
<i>Andromeda polifolia</i>	Bog Rosemary				1		0.20	0.23	20
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry	4	2	4	1		2.20	2.58	80
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	8	14	10	15	9	11.20	13.15	100
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	8	4	6	3	3	4.80	5.63	100
Mosses									
<i>Sphagnum</i> sp.	Sphagnum Moss	8	8	4	4	6	6.00	7.04	100
Lichens									
<i>Peltigera</i> sp.	Felt Lichen	1					0.20	0.23	20
	Unknown Crustose Lichen	2		1		4	1.40	1.64	60
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean		
Total Vegetation Cover		77	87	90	87	85	85.20		
Rock		0	0	0	0	0	0.00		
Litter		23	13	10	13	15	14.80		
Bare ground		0	0	0	0	0	0.00		
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Sphagnum</i> sp.	Sphagnum Moss	13	44	29	37	6	25.80		
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	1	1			2	0.80		
<i>Peltigera</i> sp.	Felt Lichen					1	0.20		
	Unknown Crustose Lichen	2				1	0.60		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean		
Total Moss Cover		21	52	33	41	12	31.80		
Total Lichen Cover		6	1	1	0	8	3.20		
Total Moss and Lichen Cover		27	53	34	41	20	35.00		
Sampling Adequacy Calculations									
Mean = 85.20		$t = 1.533$					$n = 5$		
		Variance = 24.20					$n_{min} = 0.78$		

Table 30 Red Dog Mine - Vegetation Cover -- 2010

AT1 - 2500		Orientation of Transect #1 to #5: East							
Raw Data		Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Arctagrostis latifolia</i>	Wideleaf Polargrass	18	16	18	9	21	16.40	21.41	100
<i>Carex aquatilis</i> ssp. <i>aqu.</i>	Water Sedge			1			0.20	0.26	20
<i>Poa arctica</i> ssp. <i>arc.</i>	Arctic Bluegrass	1	6	1			1.60	2.09	60
Forbs									
<i>Petasites frigidus</i> / <i>hyperboreus</i>	Arctic Sweet Coltsfoot	2	2	2	4		2.00	2.61	80
<i>Rubus arcticus</i> ssp. <i>arc.</i>	Arctic Blackberry	13	11	16	9	5	10.80	14.10	100
Deciduous Shrubs									
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	4	1	2	3		2.00	2.61	80
<i>Salix pulchra</i>	Tealeaf Willow	23	28	32	30	20	26.60	34.73	100
<i>Spirea beauverdiana</i>	Beauverd Spirea			1		2	0.60	0.78	40
Evergreen Shrubs									
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry				1		0.20	0.26	20
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea			2	3		1.00	1.31	40
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	1			1	2	0.80	1.04	60
Mosses									
<i>Hylocomium splendens</i>	Splendid Feather Moss	6	8	5	5	10	6.80	8.88	100
<i>Polytrichum</i> sp.	Polytrichum Moss	4		3			1.40	1.83	40
<i>Sphagnum</i> sp.	Sphagnum Moss	9		3	11	4	5.40	7.05	80
Lichens									
<i>Peltigera</i> sp.	Felt Lichen	2			1	1	0.80	1.04	60
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean		
Total Vegetation Cover		84	70	85	77	67		76.60	
Rock		0	0	0	0	0		0.00	
Litter		16	30	15	23	33		23.40	
Bare ground		0	0	0	0	0		0.00	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Hylocomium splendens</i>	Splendid Feather Moss	20	15	32	10	22	19.80		
<i>Polytrichum</i> sp.	Polytrichum Moss	10	25	8	7	6	11.20		
<i>Sphagnum</i> sp.	Sphagnum Moss	15		16	23	20	14.80		
Lichens									
<i>Cladonia</i> sp.	Cup Lichen		2			1	0.60		
<i>Peltigera</i> sp.	Felt Lichen	2	2	4	4	2	2.80		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean		
Total Moss Cover		64	48	67	56	62		59.40	
Total Lichen Cover		4	4	4	5	4		4.20	
Total Moss and Lichen Cover		68	52	71	61	66		63.60	
Sampling Adequacy Calculations									
Mean = 76.60		$t = 1.533$					$n = 5$		
		Variance = 65.30					$n_{min} = 2.62$		

Table 31 Red Dog Mine - Vegetation Cover -- 2010

AT1 - 4000		Orientation of Transect #1 to #5: East							
Raw Data		Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Carex microchaeta</i>	Smallawned Sedge	5	5	5	1	6	4.40	6.47	100
<i>Carex podocarpa</i>	Shortstalk Sedge	2		1			0.60	0.88	40
<i>Hierchloe alpina</i>	Alpine Sweetgrass		1	1	1		0.60	0.88	60
Forbs									
<i>Pedicularis labradorica</i>	Labrador Lousewort			1	1		0.40	0.59	40
Deciduous Shrubs									
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	26	30	26	18	31	26.20	38.53	100
<i>Salix pulchra</i>	Tealeaf Willow	1	1		4		1.20	1.76	60
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	17	2	6		4	5.80	8.53	80
Evergreen Shrubs									
<i>Cassiope tetragona</i> ssp. <i>tet.</i>	White Arctic Mtn. Heather				2		0.40	0.59	
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea		1		1		0.40	0.59	40
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	4	10	5	24	11	10.80	15.88	100
Mosses									
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss		4				0.80	1.18	20
<i>Polytrichum</i> sp.	Polytrichum Moss	3	4	5	5	6	4.60	6.76	100
Lichens									
<i>Cladonia</i> sp.	Cup Lichen		6	8	3	9	5.20	7.65	80
<i>Flavocetraria cucullata</i>	Flavocetraria Lichen				4		0.80	1.18	20
<i>Peltigera aphthosa</i>	Felt Lichen	2	11	1	5	4	4.60	6.76	100
<i>Peltigera</i> sp.	Felt Lichen	1	2	2			1.00	1.47	60
	Unknown Crustose Lichen					1	0.20	0.29	20
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean		
Total Vegetation Cover		61	77	61	67	74	68.00		
Rock		0	0	0	0	0	0.00		
Litter		39	23	39	33	25	31.80		
Bare ground		0	0	0	0	1	0.20		
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss		4		1		1.00		
<i>Polytrichum</i> sp.	Polytrichum Moss	8	2	2	2	6	4.00		
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	2	6	2	7	7	4.80		
<i>Flavocetraria cucullata</i>	Flavocetraria Lichen				2		0.40		
<i>Peltigera aphthosa</i>	Felt Lichen	1	7	1	3	1	2.60		
<i>Peltigera</i> sp.	Felt Lichen		1		2		0.60		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean		
Total Moss Cover		11	14	7	7	13	10.40		
Total Lichen Cover		6	33	14	27	21	20.20		
Total Moss and Lichen Cover		17	47	21	34	34	30.60		
Sampling Adequacy Calculations									
Mean = 68.00							$t = 1.533$	n = 5	
							Variance = 54.00	$n_{min} = 2.75$	

Table 32 Red Dog Mine - Vegetation Cover -- 2010

AT2 - 000		Orientation of Transect #1 to #5: West							
Raw Data		Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint	4	9	14	13	6	9.20	12.11	100
<i>Carex bigelowii</i>	Bigelow's Sedge	7	4	7	10	5	6.60	8.68	100
Forbs									
<i>Rubus chamaemorus</i>	Cloudberry	2	2	4			1.60	2.11	60
Deciduous Shrubs									
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	20	10	9	10	6	11.00	14.47	100
<i>Salix pulchra</i>	Tealeaf Willow	13	8	12	12	12	11.40	15.00	100
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	3	9	7	9		5.60	7.37	80
Evergreen Shrubs									
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry		1		1	1	0.60	0.79	60
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	22	22	16	14	27	20.20	26.58	100
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	5	10	5	4	18	8.40	11.05	100
Mosses									
<i>Hylocomium splendens</i>	Splendid Feather Moss		3	2	2		1.40	1.84	60
Lichens									
None							0.00	0.00	0
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean		
Total Vegetation Cover		74	75	75	79	77		76.00	
Rock		0	0	0	0	0		0.00	
Litter		26	25	25	19	23		23.60	
Bare ground		0	0	0	2	0		0.40	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Hylocomium splendens</i>	Splendid Feather Moss	6	7	7	8	2	6.00		
<i>Polytrichum</i> sp.	Polytrichum Moss				8		1.60		
Lichens									
None							0.00		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean		
Total Moss Cover		6	7	10	18	4		9.00	
Total Lichen Cover		0	0	0	0	0		0.00	
Total Moss and Lichen Cover		6	7	10	18	4		9.00	
Sampling Adequacy Calculations									
Mean = 76.00		$t = 1.533$					$n = 5$		
		Variance = 4.00					$n_{min} = 0.16$		

Table 33 Red Dog Mine - Vegetation Cover -- 2010

AT2 - 500 Raw Data		Orientation of Transect #1 to #5: East Percent Ground Cover Based on Point-Intercept Sampling										
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover	Relative Cover	Freq.			
Grasses and Grass-likes												
<i>Carex aquatilis</i> ssp. <i>aqu.</i>	Water Sedge				1		0.20	0.23	20			
<i>Luzula wahlenbergii</i> ssp. <i>wah.</i>	Wahlenberg's Woodrush	1	4	1	1		1.40	1.62	80			
Forbs												
<i>Aconitum delphinifolium</i>	Larkspurleaf Monkshood			2	2		0.80	0.92	40			
<i>Anemone narcissiflora</i>	Narcissus Anemone					1	0.20	0.23	20			
<i>Dodecatheon frigidum</i>	Western Arctic Shootingstar	1		3			0.80	0.92	40			
<i>Epilobium palustre</i>	Marsh Willowherb	3	1				0.80	0.92	40			
<i>Equisetum arvense</i>	Field Horsetail	39	29	31	34	10	28.60	33.03	100			
<i>Petasites frigidus / hyperboreus</i>	Arctic Sweet Coltsfoot	3	1	3	4	6	3.40	3.93	100			
<i>Polemonium acutiflorum</i>	Tall Jacob's Ladder	3	6	5	1		3.00	3.46	80			
<i>Rubus arcticus</i> ssp. <i>arc.</i>	Arctic Blackberry	1				2	0.60	0.69	40			
<i>Saxifraga punctata</i> ssp. <i>nelsoniana</i>	Heartleaf Saxifrage	1					0.20	0.23	20			
<i>Stellaria laeta</i>	Chickweed				1		0.20	0.23	20			
<i>Valeriana capitata</i>	Valerian				2		0.40	0.46	20			
Deciduous Shrubs												
<i>Salix pulchra</i>	Tealeaf Willow	35	30	24	32	26	29.40	33.95	100			
<i>Salix reticulata</i>	Netleaf Willow					1	0.20	0.23	20			
Evergreen Shrubs												
None							0.00	0.00	0			
Mosses												
<i>Aulacomnium acuminatum</i>	Acutetip Aulacomnium Moss	10	10	7	5	20	10.40	12.01	100			
<i>Hylocomium splendens</i>	Splendid Feather Moss	3	4	7	1	14	5.80	6.70	100			
Lichens												
<i>Peltigera</i> sp.	Felt Lichen			1			0.20	0.23	20			
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean					
Total Vegetation Cover		90	85	85	89	84	86.60					
Rock		0	0	0	0	0	0.00					
Litter		10	15	15	11	16	13.40					
Bare ground		0	0	0	0	0	0.00					
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)												
Mosses												
<i>Aulacomnium acuminatum</i>	Acutetip Aulacomnium Moss	13	32	8	26	21	20.00					
<i>Hylocomium splendens</i>	Splendid Feather Moss	10	21	7	14	6	11.60					
Lichens												
<i>Cladonia</i> sp.	Cup Lichen	1	1	1			0.60					
<i>Peltigera</i> sp.	Felt Lichen		4		4	5	2.60					
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean					
Total Moss Cover		36	67	29	46	61	47.80					
Total Lichen Cover		1	6	1	4	5	3.40					
Total Moss and Lichen Cover		37	73	30	50	66	51.20					
Sampling Adequacy Calculations												
Mean = 86.60				t = 1.533			n = 5					
				Variance = 7.30				n _{min} = 0.23				

Table 34 Red Dog Mine - Vegetation Cover -- 2010

AT2 - 1000		Orientation of Transect #1 to #5: East							
Raw Data		Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Carex aquatilis</i> ssp. <i>aqu.</i>	Water Sedge	15	25	11	22	25	19.60	28.49	100
<i>Carex bigelowii</i>	Bigelow's Sedge	13	2	10		4	5.80	8.43	80
<i>Festuca altaica</i>	Altai Fescue			1			0.20	0.29	20
Forbs									
<i>Dodecatheon frigidum</i>	Western Arctic Shootingstar				1		0.20	0.29	20
<i>Equisetum arvense</i>	Field Horsetail	3	2				1.00	1.45	40
<i>Equisetum scirpoides</i>	Dwarf Scouringrush				3		0.60	0.87	20
<i>Petasites frigidus</i> / <i>hyperboreus</i>	Arctic Sweet Coltsfoot		2	2			0.80	1.16	40
<i>Primula sibirica</i>	Siberian Primrose	2		1	1		0.80	1.16	60
<i>Rubus arcticus</i> ssp. <i>arc.</i>	Arctic Blackberry		2	1			0.60	0.87	40
Deciduous Shrubs									
<i>Arctostaphylos alpina</i>	Alpine Bearberry			1			0.20	0.29	20
<i>Salix lanata</i> ssp. <i>richardsonii</i>	Richardson's Willow	3	6	8			3.40	4.94	60
<i>Salix pulchra</i>	Tealeaf Willow	7	13	7	2	1	6.00	8.72	100
<i>Salix reticulata</i>	Netleaf Willow	13	10	18	17	23	16.20	23.55	100
Evergreen Shrubs									
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	1	1				0.40	0.58	40
Mosses									
<i>Aulacomnium acuminatum</i>	Acutetip Aulacomnium Moss				2		0.40	0.58	20
<i>Aulacomnium</i> sp.	Aulacomnium Moss	7					1.40	2.03	20
<i>Hylocomium splendens</i>	Splendid Feather Moss		10	2	7	6	5.00	7.27	80
<i>Polytrichum</i> sp.	Polytrichum Moss	3				3	1.20	1.74	40
<i>Tomentypnum nitens</i>	Tomentypnum Moss		1	7	5	5	3.60	5.23	80
Lichens									
<i>Peltigera aphthosa</i>	Felt Lichen	1		2			0.60	0.87	40
<i>Peltigera</i> sp.	Felt Lichen				2		0.40	0.58	20
<i>Thamnolia vermicularis</i>	Whiteworm Lichen				2		0.40	0.58	20
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean		
Total Vegetation Cover		66	67	67	70	74		68.80	
Rock		0	0	0	0	0		0.00	
Litter		34	33	33	30	26		31.20	
Bare ground		0	0	0	0	0		0.00	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Aulacomnium acuminatum</i>	Acutetip Aulacomnium Moss	8		8	2	10	5.60		
<i>Hylocomium splendens</i>	Splendid Feather Moss	8	7	18	14	11	11.60		
<i>Polytrichum</i> sp.	Polytrichum Moss	4					0.80		
<i>Tomentypnum nitens</i>	Tomentypnum Moss	12	2	22	10	14	12.00		
Lichens									
<i>Peltigera</i> sp.	Felt Lichen			1			0.20		
	Unknown Crustose Lichen	2			2		0.80		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean		
Total Moss Cover		42	20	57	40	49		41.60	
Total Lichen Cover		3	0	3	2	4		2.40	
Total Moss and Lichen Cover		45	20	60	42	53		44.00	
Sampling Adequacy Calculations									
Mean = 68.80					t = 1.533			n = 5	
					Variance = 10.70			n _{min} = 0.53	

Table 35 Red Dog Mine - Vegetation Cover -- 2010

AT2 - 1500 Raw Data		Orientation of Transect #1 to #5: North Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint	3	2	1	9		3.00	3.80	80
<i>Carex bigelowii</i>	Bigelow's Sedge	4	1		2	2	1.80	2.28	80
<i>Carex podocarpa</i>	Shortstalk Sedge			3			0.60	0.76	20
Forbs									
<i>Aconitum delphinifolium</i>	Larkspurleaf Monkshood			2			0.40	0.51	20
<i>Anemone narcissiflora</i>	Narcissus Anemone		1				0.20	0.25	20
<i>Polemonium acutiflorum</i>	Tall Jacob's Ladder	1	1		3		1.00	1.27	60
<i>Rubus arcticus</i> ssp. <i>arc.</i>	Arctic Blackberry	2	1	1	2	2	1.60	2.03	100
<i>Valeriana capitata</i>	Valerian		1				0.20	0.25	20
Deciduous Shrubs									
<i>Potentilla fruticosa</i>	Shrubby Cinquefoil		3	10			2.60	3.29	40
<i>Salix pulchra</i>	Tealeaf Willow	60	54	50	51	29	48.80	61.77	100
<i>Salix reticulata</i>	Netleaf Willow	3	3	2	4	3	3.00	3.80	100
Evergreen Shrubs									
None							0.00	0.00	0
Mosses									
<i>Aulacomnium acuminatum</i>	Acutetip Aulacomnium Moss	6	9	10	14	14	10.60	13.42	100
<i>Hylocomium splendens</i>	Splendid Feather Moss	2	4	2		4	2.40	3.04	80
<i>Polytrichum</i> sp.	Polytrichum Moss	1					0.20	0.25	20
<i>Tomentypnum nitens</i>	Tomentypnum Moss			6	6		2.40	3.04	40
Lichens									
<i>Peltigera</i> sp.	Felt Lichen		1				0.20	0.25	20
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean		
Total Vegetation Cover		82	76	80	89	68		79.00	
Rock		0	0	0	0	0		0.00	
Litter		18	24	20	11	32		21.00	
Bare ground		0	0	0	0	0		0.00	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Aulacomnium acuminatum</i>	Acutetip Aulacomnium Moss	31	21	26	18	36	26.40		
<i>Hylocomium splendens</i>	Splendid Feather Moss	12	13	16	5	15	12.20		
<i>Tomentypnum nitens</i>	Tomentypnum Moss	12	3	6	8	14	8.60		
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	1		1			0.40		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean		
Total Moss Cover		64	50	66	51	83		62.80	
Total Lichen Cover		1	0	2	0	0		0.60	
Total Moss and Lichen Cover		65	50	68	51	83		63.40	
Sampling Adequacy Calculations									
Mean = 79.00								t = 1.533	n = 5
								Variance = 60.00	n _{min} = 2.26

Table 36 Red Dog Mine - Vegetation Cover -- 2010

AT2 - 2500		Orientation of Transect #1 to #5: North							
Raw Data		Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No. —>	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Carex podocarpa</i>	Shortstalk Sedge	10	1	1	4	2	3.60	5.54	100
<i>Festuca altaica</i>	Altai Fescue	7	5	9	5	7	6.60	10.15	100
Forbs									
<i>Artemisia arctica</i> ssp. <i>arc.</i>	Boreal Sagebrush	8	6	7			4.20	6.46	60
<i>Gentiana glauca</i>	Pale Gentian		1		2		0.60	0.92	40
Deciduous Shrubs									
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch		1		2		0.60	0.92	40
<i>Salix chamissonis</i>	Chamisso's Willow	7		4			2.20	3.38	40
<i>Salix myrtillifolia</i>	Blueberry Willow	2	3		7		2.40	3.69	60
<i>Spirea beauverdiana</i>	Beauverd Spirea	4	7		6		3.40	5.23	60
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	3	1	11	2		3.60	5.54	100
Evergreen Shrubs									
<i>Cassiope tetragona</i> ssp. <i>tet.</i>	White Arctic Mtn. Heather	2	2	1	1		1.20	1.85	80
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry	28	16	7	6	3	12.00	18.46	100
<i>Loiseleuria procumbens</i>	Alpine Azalea			1	6		1.40	2.15	40
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	7	5	6	5	9	6.40	9.85	100
Mosses									
<i>Polytrichum</i> sp.	Polytrichum Moss		1	1			0.40	0.62	40
Lichens									
<i>Cladonia</i> sp.	Cup Lichen		3				0.60	0.92	20
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen	1	4	6	4		3.00	4.62	80
	Unknown Crustose Lichen	6	12	14	20	12	12.80	19.69	100
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean		
Total Vegetation Cover		68	64	59	71	63	65.00		
Rock		7	9	15	4	10	9.00		
Litter		19	19	20	24	25	21.40		
Bare ground		6	8	6	1	2	4.60		
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
None							0.00		
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	3	1		1		1.00		
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen	5	4	3	1		2.60		
	Unknown Crustose Lichen	3	8	18	6		7.00		
	Unknown Rock Lichen		1				0.20		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean		
Total Moss Cover		0	0	1	1	0	0.40		
Total Lichen Cover		13	26	26	47	24	27.20		
Total Moss and Lichen Cover		13	26	27	48	24	27.60		
Sampling Adequacy Calculations									
Mean = 65.00							$t = 1.533$		$n = 5$
									$n_{min} = 1.20$

Table 37 Red Dog Mine - Vegetation Cover -- 2010

AT2 - 4000		Orientation of Transect #1 to #5: South							
Raw Data		Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No.—→	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Carex podocarpa</i> Shortstalk Sedge									
<i>Festuca altaica</i> Altai Fescue									
<i>Hierchloe alpina</i> Alpine Sweetgrass									
Forbs									
None									
Deciduous Shrubs									
<i>Betula nana</i> ssp. <i>exilis</i> Dwarf Birch									
<i>Salix pulchra</i> Tealeaf Willow									
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i> Bog Blueberry									
Evergreen Shrubs									
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i> Black Crowberry									
<i>Ledum palustre</i> ssp. <i>decumbens</i> Marsh Labrador Tea									
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i> Narrow Mtn. Cranberry									
Mosses									
<i>Drepanocladus</i> sp. Drepanocladus Moss									
<i>Polytrichum</i> sp. Polytrichum Moss									
Unknown Moss									
Lichens									
<i>Cladonia</i> sp. Cup Lichen									
<i>Flavocetraria cucullata</i> Flavocetraria Lichen									
<i>Masonhalea richardsonii</i> Richardson's Masonhalea Lichen									
<i>Peltigera aphthosa</i> Felt Lichen									
<i>Peltigera</i> sp. Felt Lichen									
<i>Stereocaulon tomentosum</i> Tomentose Snow Lichen									
<i>Thamnolia vermicularis</i> Whiteworm Lichen									
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)									
Mean									
Total Vegetation Cover		80	88	76	90	74		81.60	
Rock		0	7	1	4	1		2.60	
Litter		20	5	23	6	25		15.80	
Bare ground		0	0	0	0	0		0.00	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Drepanocladus</i> sp. Drepanocladus Moss									
<i>Polytrichum</i> sp. Polytrichum Moss									
Lichens									
<i>Cladonia</i> sp. Cup Lichen									
<i>Masonhalea richardsonii</i> Richardson's Masonhalea Lichen									
<i>Peltigera aphthosa</i> Felt Lichen									
<i>Peltigera</i> sp. Felt Lichen									
<i>Stereocaulon tomentosum</i> Tomentose Snow Lichen									
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens									
Mean									
Total Moss Cover		33	11	20	12	10		17.20	
Total Lichen Cover		26	70	34	60	25		43.00	
Total Moss and Lichen Cover		59	81	54	72	35		60.20	
Sampling Adequacy Calculations									
Mean = 81.60									
t = 1.533									
Variance = 50.80									
n = 5									
n _{min} = 1.79									

Table 38 Red Dog Mine - Vegetation Cover -- 2010

AT3 - 060		Orientation of Transect #1 to #5: West							
Raw Data		Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No. —>	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Arctagrostis latifolia</i>	Wideleaf Polargrass					1	0.20	0.46	20
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint	17	8	14	15	16	14.00	31.96	100
<i>Carex bigelowii</i>	Bigelow's Sedge		4	13	7	13	7.40	16.89	80
Forbs									
None							0.00	0.00	0
Deciduous Shrubs									
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	7			3	1	2.20	5.02	60
<i>Salix pulchra</i>	Tealeaf Willow	3	5	4	12	2	5.20	11.87	100
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	4	8	1	8	6	5.40	12.33	100
Evergreen Shrubs									
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	11	10	16	6	4	9.40	21.46	100
Mosses									
None							0.00	0.00	0
Lichens									
None							0.00	0.00	0
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean		
Total Vegetation Cover	42	35	48	51	43		43.80		
Rock	0	0	0	0	0		0.00		
Litter	48	51	48	46	50		48.60		
Bare ground	10	14	4	3	7		7.60		
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
None							0.00		
Lichens									
None							0.00		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean		
Total Moss Cover	0	0	0	0	0		0.00		
Total Lichen Cover	0	0	0	0	0		0.00		
Total Moss and Lichen Cover	0	0	0	0	0		0.00		
Sampling Adequacy Calculations									
Mean = 43.80							$t = 1.533$	n = 5	
Variance = 37.70								$n_{min} = 4.62$	

Table 39 Red Dog Mine - Vegetation Cover -- 2010

AT3 - 500 Raw Data		Orientation of Transect #1 to #5: East Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Arctagrostis latifolia</i>	Wideleaf Polargrass	2	1	5			1.60	4.85	60
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint		1				0.20	0.61	20
<i>Carex podocarpa</i>	Shortstalk Sedge		2				0.40	1.21	20
<i>Festuca altaica</i>	Altai Fescue			4			0.80	2.42	20
<i>Hierchloe alpina</i>	Alpine Sweetgrass		1				0.20	0.61	20
Forbs									
None							0.00	0.00	0
Deciduous Shrubs									
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	20	23	19	13	5	16.00	48.48	100
<i>Salix pulchra</i>	Tealeaf Willow			1	1	6	1.60	4.85	60
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	2	2	8	11	22	9.00	27.27	100
Evergreen Shrubs									
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry	6					1.20	3.64	20
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea		2	2	1		1.00	3.03	60
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry		3				0.60	1.82	20
Mosses									
<i>Aulacomnium acuminatum</i>	Acutetip Aulacomnium Moss						0.00	0.00	0
Lichens									
<i>Thamnolia vermicularis</i>	Whiteworm Lichen		1				0.20	0.61	20
	Unknown Crustose Lichen		1				0.20	0.61	20
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean		
Total Vegetation Cover		30	31	34	31	39		33.00	
Rock		0	0	0	0	0		0.00	
Litter		60	60	57	56	59		58.40	
Bare ground		10	9	9	13	2		8.60	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
None							0.00		
Lichens									
<i>Thamnolia vermicularis</i>	Whiteworm Lichen		2	4			1.20		
	Unknown Crustose Lichen		1				0.20		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean		
Total Moss Cover		0	0	0	0	0		0.00	
Total Lichen Cover		0	5	4	0	0		1.80	
Total Moss and Lichen Cover		0	5	4	0	0		1.80	
Sampling Adequacy Calculations									
Mean = 33.00		$t = 1.533$					$n = 5$		
		Variance = 13.50					$n_{min} = 2.91$		

Table 40 Red Dog Mine - Vegetation Cover -- 2010

AT3 - 700		Orientation of Transect #1 to #5: SE							
Raw Data		Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Carex podocarpa</i>	Shortstalk Sedge	1	3	2	2	3	2.20	18.64	100
Forbs									
None							0.00	0.00	0
Deciduous Shrubs									
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch		1			1	0.40	3.39	40
<i>Salix chamissonis</i>	Chamisso's Willow		1	1			0.40	3.39	40
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	20	17		4	2	8.60	72.88	80
Evergreen Shrubs									
None							0.00	0.00	0
Mosses									
None							0.00	0.00	0
Lichens									
Unknown Crustose Lichen		1					0.20	1.69	20
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean		
Total Vegetation Cover		22	22	3	6	6		11.80	
Rock		0	3	2	2	2		1.80	
Litter		60	62	68	68	64		64.40	
Bare ground		18	13	27	24	28		22.00	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
None							0.00		
Lichens									
None							0.00		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean		
Total Moss Cover		0	0	0	0	0		0.00	
Total Lichen Cover		1	0	0	0	0		0.20	
Total Moss and Lichen Cover		1	0	0	0	0		0.20	
Sampling Adequacy Calculations									
Mean = 11.80		$t = 1.533$					$n = 5$		
		Variance = 88.20						$n_{min} = 148.90$	

Table 41 Red Dog Mine - Vegetation Cover -- 2010

AT3 - 1000 Raw Data		Orientation of Transect #1 to #5: West Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Arctagrostis latifolia</i>	Wideleaf Polargrass	4	4	8			3.20	4.02	60
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint				1		0.20	0.25	20
<i>Carex aquatilis</i> ssp. <i>aqu.</i>	Water Sedge	3					0.60	0.75	20
<i>Carex bigelowii</i>	Bigelow's Sedge		2				0.40	0.50	20
<i>Carex podocarpa</i>	Shortstalk Sedge	1	1	1			0.60	0.75	60
<i>Festuca altaica</i>	Altai Fescue	2		3			1.00	1.26	40
<i>Poa alpigena</i>	Kentucky Bluegrass			1			0.20	0.25	20
Forbs									
<i>Equisetum arvense</i>	Field Horsetail		1				0.20	0.25	20
<i>Pedicularis labradorica</i>	Labrador Lousewort			1			0.20	0.25	20
<i>Saussurea angustifolia</i>	Narrow-leaf Saw Wort				1		0.20	0.25	20
Deciduous Shrubs									
<i>Arctostaphylos alpina</i>	Alpine Bearberry			2			0.40	0.50	20
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	16	12	10	11	7	11.20	14.07	100
<i>Salix glauca</i> ssp. <i>acutifolia</i>	Grayleaf Willow	3	3		1	2	1.80	2.26	80
<i>Salix pulchra</i>	Tealeaf Willow	15	11	1	1		5.60	7.04	80
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	14	21	29	32	44	28.00	35.18	100
Evergreen Shrubs									
<i>Dryas octopetala</i> ssp. <i>oct.</i>	White Mountain-avens	2		1			0.60	0.75	40
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry	5	11	5	15	11	9.40	11.81	100
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea		1	9	1		2.20	2.76	60
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	6	7	3	3		3.80	4.77	80
Mosses									
<i>Aulacomnium turgidum</i>	Turgid Aulacomnium Moss	3	4		3		2.00	2.51	60
<i>Hylocomium splendens</i>	Splendid Feather Moss	8		1			1.80	2.26	40
Lichens									
<i>Cladonia</i> sp.	Cup Lichen			2	1		0.60	0.75	40
<i>Peltigera aphthosa</i>	Felt Lichen				1		0.20	0.25	20
<i>Peltigera</i> sp.	Felt Lichen	1	4	6	5		3.20	4.02	80
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen			9	1		2.00	2.51	40
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean		
Total Vegetation Cover		80	80	79	79	80		79.60	
Rock		0	0	0	0	0		0.00	
Litter		20	20	21	21	20		20.40	
Bare ground		0	0	0	0	0		0.00	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Aulacomnium turgidum</i>	Turgid Aulacomnium Moss	8	6		10		4.80		
<i>Hylocomium splendens</i>	Splendid Feather Moss	1	2	4	2	6	3.00		
Lichens									
<i>Cladonia</i> sp.	Cup Lichen			1	2		0.60		
<i>Peltigera aphthosa</i>	Felt Lichen			1			0.20		
<i>Peltigera</i> sp.	Felt Lichen	1	7	2	22	3	7.00		
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen			2			0.40		
Unknown Crustose Lichen					4		0.80		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean		
Total Moss Cover		20	12	5	2	19		11.60	
Total Lichen Cover		2	11	21	35	6		15.00	
Total Moss and Lichen Cover		22	23	26	37	25		26.60	
Sampling Adequacy Calculations									
Mean = 79.60							$t = 1.533$	n = 5	
								Variance = 0.30	$n_{min} = 0.01$

Table 42 Red Dog Mine - Vegetation Cover -- 2010

AT3 - 1500		Orientation of Transect #1 to #5: NE										
Raw Data		Percent Ground Cover Based on Point-Intercept Sampling										
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover	Relative Cover	Freq.			
Grasses and Grass-likes												
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint	2	8		4		2.80	3.26	60			
<i>Carex bigelowii</i>	Bigelow's Sedge			3			0.60	0.70	20			
<i>Carex podocarpa</i>	Shortstalk Sedge	2	1				0.60	0.70	40			
<i>Festuca altaica</i>	Altai Fescue	10	6	12	8	4	8.00	9.30	100			
Forbs												
<i>Artemisia arctica</i> ssp. <i>arc.</i>	Boreal Sagebrush			1			0.20	0.23	20			
<i>Epilobium latifolium</i>	Dwarf Fireweed		1				0.20	0.23	20			
<i>Lupinus arcticus</i>	Arctic Lupine	1	3	4			1.60	1.86	60			
<i>Rubus chamaemorus</i>	Cloudberry	1	1				0.40	0.47	40			
<i>Stellaria laeta</i>	Chickweed	1	2				0.60	0.70	40			
Deciduous Shrubs												
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	59	54	56	58	45	54.40	63.26	100			
<i>Salix pulchra</i>	Tealeaf Willow	5	5	3	10	24	9.40	10.93	100			
<i>Spirea beauverdiana</i>	Beauverd Spirea		1		2		0.60	0.70	40			
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	2	2		1	1	1.20	1.40	80			
Evergreen Shrubs												
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry		2	1	2	1	1.20	1.40	80			
Mosses												
<i>Hylocomium splendens</i>	Splendid Feather Moss	2	2	2	1	5	2.40	2.79	100			
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss			6			1.20	1.40	20			
Lichens												
<i>Peltigera</i> sp.	Felt Lichen	2			1		0.60	0.70	40			
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean					
Total Vegetation Cover		85	84	86	91	84	86.00					
Rock		0	0	0	0	0	0.00					
Litter		15	16	14	9	16	14.00					
Bare ground		0	0	0	0	0	0.00					
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)												
Mosses												
<i>Hylocomium splendens</i>	Splendid Feather Moss	3	14	10	10	6	8.60					
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss	2	5		4		2.20					
Lichens												
<i>Cladonia deformis</i>	Deformed Cup Lichen				1		0.20					
<i>Cladonia</i> sp.	Cup Lichen	2			6		1.60					
<i>Peltigera</i> sp.	Felt Lichen	1	1		2	4	1.60					
	Unknown Crustose Lichen			1			0.20					
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean					
Total Moss Cover		5	18	23	11	15	14.40					
Total Lichen Cover		5	2	0	9	5	4.20					
Total Moss and Lichen Cover		10	20	23	20	20	18.60					
Sampling Adequacy Calculations												
Mean = 86.00		$t = 1.533$					n = 5					
		Variance = 8.50					$n_{min} = 0.27$					

Table 43 Red Dog Mine - Vegetation Cover -- 2010

AT3 - 2500								
Raw Data								
Orientation of Transect #1 to #5: West								
1st Hits	Transect No. —>	1	2	3	4	5	Average Cover	Relative Cover
Grasses and Grass-likes							Average Cover	Relative Cover
<i>Arctagrostis latifolia</i>	Wideleaf Polargrass				1		0.20	0.22
<i>Carex podocarpa</i>	Shortstalk Sedge	1	1		1	2	1.00	1.12
<i>Festuca brachyphylla</i>	Alpine Fescue		1				0.20	0.22
<i>Hierchloë alpina</i>	Alpine Sweetgrass		1		2		0.60	0.67
Forbs							Average Cover	Relative Cover
<i>Artemisia arctica</i> ssp. <i>arc.</i>	Boreal Sagebrush			1		1	0.40	0.45
<i>Lupinus arcticus</i>	Arctic Lupine	5	3	12	3	8	6.20	6.94
Deciduous Shrubs							Average Cover	Relative Cover
<i>Arctostaphylos alpina</i>	Alpine Bearberry				8		1.60	1.79
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	25	28	41	38	27	31.80	35.57
<i>Salix glauca</i> ssp. <i>acutifolia</i>	Grayleaf Willow	5	1		2		1.60	1.79
<i>Salix pulchra</i>	Tealeaf Willow	2	5	6	1	1	3.00	3.36
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	12	16	7	17	4	11.20	12.53
Evergreen Shrubs							Average Cover	Relative Cover
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry			1	2		0.60	0.67
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	1	2	1	2	1	1.40	1.57
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	12	16	9	8	13	11.60	12.98
Mosses							Average Cover	Relative Cover
<i>Hylocomium splendens</i>	Splendid Feather Moss	6	6	1	5	8	5.20	5.82
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss					1	0.20	0.22
<i>Rhytidium rugosum</i>	Rhytidium Moss	7	12	7	11	11	9.60	10.74
Lichens							Average Cover	Relative Cover
<i>Cladonia</i> sp.	Cup Lichen	4		1	1	2	1.60	1.79
<i>Peltigera</i> sp.	Felt Lichen	2		1	1	2	1.20	1.34
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen			1			0.20	0.22
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean	
Total Vegetation Cover		82	93	88	94	90		89.40
Rock		0	0	0	0	0		0.00
Litter		18	7	12	6	10		10.60
Bare ground		0	0	0	0	0		0.00
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)								
Mosses								
<i>Hylocomium splendens</i>	Splendid Feather Moss	21	12	32	13	16	18.80	
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss				2	4	1.20	
<i>Rhytidium rugosum</i>	Rhytidium Moss	14	21	8	31	10	16.80	
Lichens								
<i>Cladonia</i> sp.	Cup Lichen	1		4			1.00	
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen			1			0.20	
<i>Peltigera aphthosa</i>	Felt Lichen	1	7	1		1	2.00	
<i>Peltigera</i> sp.	Felt Lichen	5	4	5	11		5.00	
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen			3			0.60	
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean	
Total Moss Cover		48	51	48	62	50		51.80
Total Lichen Cover		13	16	12	13	5		11.80
Total Moss and Lichen Cover		61	67	60	75	55		63.60
Sampling Adequacy Calculations								
Mean = 89.40					t = 1.533		n = 5	
					Variance = 22.80		n _{min} = 0.67	

Table 44 Red Dog Mine - Vegetation Cover -- 2010

AT3 - 4000 Raw Data		Orientation of Transect #1 to #5: NE Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Arctagrostis latifolia</i>	Wideleaf Polargrass	1	1		2		0.80	0.95	60
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint	5	2				1.40	1.67	40
<i>Carex bigelowii</i>	Bigelow's Sedge		1	2	2		1.00	1.19	60
Forbs									
<i>Polemonium acutiflorum</i>	Tall Jacob's Ladder	1					0.20	0.24	20
<i>Rubus arcticus</i> ssp. <i>arc.</i>	Arctic Blackberry					1	0.20	0.24	20
Deciduous Shrubs									
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	48	31	27	27	40	34.60	41.19	100
<i>Salix lanata</i> ssp. <i>richardsonii</i>	Richardson's Willow	1	13	17	1		6.40	7.62	80
<i>Salix pulchra</i>	Tealeaf Willow	9	7	18	16	19	13.80	16.43	100
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	1	8	9	14	15	9.40	11.19	100
Evergreen Shrubs									
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea		2				0.40	0.48	20
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	3		3	4	4	2.80	3.33	80
Mosses									
<i>Hylocomium splendens</i>	Splendid Feather Moss	19	13	7	16	7	12.40	14.76	100
Lichens									
<i>Cladonia</i> sp.	Cup Lichen				1		0.20	0.24	20
<i>Peltigera aphthosa</i>	Felt Lichen		1		1		0.40	0.48	40
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean		
Total Vegetation Cover		88	79	83	84	86		84.00	
Rock		0	0	0	0	0		0.00	
Litter		12	21	17	16	14		16.00	
Bare ground		0	0	0	0	0		0.00	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Hylocomium splendens</i>	Splendid Feather Moss	41	37	55	34	44	42.20		
Lichens									
<i>Cladonia</i> sp.	Cup Lichen				2		0.40		
<i>Flavocetraria cucullata</i>	Flavocetraria Lichen				3		0.60		
<i>Peltigera aphthosa</i>	Felt Lichen			1	1		0.40		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean		
Total Moss Cover		60	50	62	50	51		54.60	
Total Lichen Cover		0	1	1	6	2		2.00	
Total Moss and Lichen Cover		60	51	63	56	53		56.60	
Sampling Adequacy Calculations									
Mean = 84.00								t = 1.533	n = 5
								Variance = 11.50	n _{min} = 0.38

Table 45 Red Dog Mine - Vegetation Cover -- 2010

AT4 - 060 Raw Data		Orientation of Transect #1 to #5: West Percent Ground Cover Based on Point-Intercept Sampling										
1st Hits	Transect No. —>	1	2	3	4	5	Average Cover	Relative Cover	Freq.			
Grasses and Grass-likes												
<i>Carex bigelowii</i>	Bigelow's Sedge	23	26	32	28	27	27.20	35.60	100			
Forbs												
<i>Petasites frigidus / hyperboreus</i>	Arctic Sweet Coltsfoot				1		0.20	0.26	20			
<i>Rubus chamaemorus</i>	Cloudberry			1			0.20	0.26	20			
Deciduous Shrubs												
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	17	12	11	9	1	10.00	13.09	100			
<i>Salix pulchra</i>	Tealeaf Willow	10	5	6	3	10	6.80	8.90	100			
<i>Spirea beauverdiana</i>	Beauverd Spirea			1			0.20	0.26	20			
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	9	14	22	19	34	19.60	25.65	100			
Evergreen Shrubs												
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry	8		5	2		3.00	3.93	60			
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	9	13	5	6	2	7.00	9.16	100			
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	2	3		2	4	2.20	2.88	80			
Mosses												
None							0.00	0.00	0			
Lichens												
None							0.00	0.00	0			
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean					
Total Vegetation Cover		78	74	82	70	78	76.40					
Rock		0	0	0	0	0	0.00					
Litter		22	26	18	29	22	23.40					
Bare ground		0	0	0	1	0	0.20					
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)												
Mosses												
<i>Polytrichum</i> sp.	Polytrichum Moss			2			0.40					
Lichens												
None							0.00					
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean					
Total Moss Cover		0	0	2	0	0	0.40					
Total Lichen Cover		0	0	0	0	0	0.00					
Total Moss and Lichen Cover		0	0	2	0	0	0.40					
Sampling Adequacy Calculations												
Mean = 76.40		$t = 1.533$				n = 5						
		Variance = 20.80					$n_{min} = 0.84$					

Table 46 Red Dog Mine - Vegetation Cover -- 2010

AT4 - 500 Raw Data		Orientation of Transect #1 to #5: West Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Carex bigelowii</i>	Bigelow's Sedge	2					0.40	0.60	20
<i>Carex microchaeta</i>	Smallawned Sedge		2				0.40	0.60	20
<i>Carex podocarpa</i>	Shortstalk Sedge		2	6			1.60	2.42	40
<i>Luzula confusa</i>	Northern Woodrush				1		0.20	0.30	20
Forbs									
None							0.00	0.00	0
Deciduous Shrubs									
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	21	23	44	53	37	35.60	53.78	100
<i>Salix pulchra</i>	Tealeaf Willow	2	2				0.80	1.21	40
<i>Spiraea beauverdiana</i>	Beauverd Spirea			1			0.20	0.30	20
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	12	8		12		6.40	9.67	60
Evergreen Shrubs									
<i>Cassiope tetragona</i> ssp. <i>tet.</i>	White Arctic Mtn. Heather	3	5	6	4	3	4.20	6.34	100
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	6	1	4	4		3.00	4.53	80
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	4	7	10	7	19	9.40	14.20	100
Mosses									
<i>Polytrichum</i> sp.	Polytrichum Moss			2			0.40	0.60	20
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	1	1		1		0.60	0.91	60
	Unknown Crustose Lichen	13	2				3.00	4.53	40
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean		
Total Vegetation Cover		64	51	69	75	72		66.20	
Rock		0	0	0	0	0		0.00	
Litter		36	49	30	25	28		33.60	
Bare ground		0	0	1	0	0		0.20	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Polytrichum</i> sp.	Polytrichum Moss			3			0.60		
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	4	1	1		2	1.60		
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen			1		1	0.40		
	Unknown Crustose Lichen	1	1	1			0.60		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean		
Total Moss Cover		0	0	5	0	0		1.00	
Total Lichen Cover		19	5	3	1	3		6.20	
Total Moss and Lichen Cover		19	5	8	1	3		7.20	
Sampling Adequacy Calculations									
Mean = 66.20								n = 5	
Variance = 88.70								n _{min} = 4.76	

Table 47 Red Dog Mine - Vegetation Cover -- 2010

AT4 - 1000 Raw Data		Orientation of Transect #1 to #5: South Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Carex microchaeta</i>	Smallawned Sedge	15	11	17	25	20	17.60	41.71	100
<i>Festuca altaica</i>	Altai Fescue	4	1	13	11	32	12.20	28.91	100
Forbs									
<i>Artemisia arctica</i> ssp. <i>arc.</i>	Boreal Sagebrush				1		0.20	0.47	20
Deciduous Shrubs									
<i>Spirea beauverdiana</i>	Beauverd Spirea	3	6	10	8	11	7.60	18.01	100
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry				1		0.20	0.47	20
Evergreen Shrubs									
<i>Cassiope tetragona</i> ssp. <i>tet.</i>	White Arctic Mtn. Heather			1	2		0.60	1.42	40
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry	1	3	2			1.20	2.84	60
<i>Loiseleuria procumbens</i>	Alpine Azalea	2	6	3			2.20	5.21	60
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry				1		0.20	0.47	20
Mosses									
None							0.00	0.00	0
Lichens									
Unknown Crustose Lichen		1					0.20	0.47	20
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean		
Total Vegetation Cover	24	20	49	52	66		42.20		
Rock	9	28	6	3	6		10.40		
Litter	60	41	36	44	28		41.80		
Bare ground	7	11	9	1	0		5.60		
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
None							0.00		
Lichens									
None							0.00		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean		
Total Moss Cover	0	0	0	0	0		0.00		
Total Lichen Cover	0	1	0	0	0		0.20		
Total Moss and Lichen Cover	0	1	0	0	0		0.20		
Sampling Adequacy Calculations									
Mean = 42.20							$t = 1.533$	n = 5	
								$n_{min} = 50.58$	

Table 48 Red Dog Mine - Vegetation Cover -- 2010

AT4 - 1500 Raw Data		Orientation of Transect #1 to #5: South Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Carex bigelowii</i>	Bigelow's Sedge	3	7				2.00	2.40	40
<i>Carex podocarpa</i>	Shortstalk Sedge	1	3			1	1.00	1.20	60
<i>Festuca altaica</i>	Altai Fescue	10	1	4	6	4	5.00	6.01	100
Forbs									
<i>Artemisia arctica</i> ssp. <i>arc.</i>	Boreal Sagebrush		1				0.20	0.24	20
<i>Lupinus arcticus</i>	Arctic Lupine	2		1	1		0.80	0.96	60
<i>Pedicularis labradorica</i>	Labrador Lousewort		1	1			0.40	0.48	40
<i>Rubus chamaemorus</i>	Cloudberry			1			0.20	0.24	20
Deciduous Shrubs									
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	5			3		1.60	1.92	40
<i>Salix pulchra</i>	Tealeaf Willow	19	13	30	28	16	21.20	25.48	100
<i>Salix reticulata</i>	Netleaf Willow			1	2		0.60	0.72	40
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	23	19	19	12	15	17.60	21.15	100
Evergreen Shrubs									
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry	1		1	5	6	2.60	3.13	80
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	1	9	4	6	3	4.60	5.53	100
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry		6	2	4	1	2.60	3.13	80
Mosses									
<i>Hylocomium splendens</i>	Splendid Feather Moss	18	12	16	12	24	16.40	19.71	100
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	3	4		1	3	2.20	2.64	80
<i>Peltigera aphthosa</i>	Felt Lichen		2			3	1.00	1.20	40
<i>Peltigera</i> sp.	Felt Lichen		2	4	5	3	2.80	3.37	80
<i>Thamnolia vermicularis</i>	Whiteworm Lichen					1	0.20	0.24	20
	Unknown Crustose Lichen			1			0.20	0.24	20
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean		
Total Vegetation Cover		86	80	83	81	86		83.20	
Rock		0	0	0	0	0		0.00	
Litter		14	20	17	19	14		16.80	
Bare ground		0	0	0	0	0		0.00	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Hylocomium splendens</i>	Splendid Feather Moss	26	24	17	22	19	21.60		
<i>Polytrichum</i> sp.	Polytrichum Moss			3			0.60		
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	5	10	3	2	1	4.20		
<i>Peltigera aphthosa</i>	Felt Lichen		6		3		1.80		
<i>Peltigera</i> sp.	Felt Lichen	1	9	5	4	4	4.60		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean		
Total Moss Cover		44	36	33	37	43		38.60	
Total Lichen Cover		9	34	12	15	15		17.00	
Total Moss and Lichen Cover		53	70	45	52	58		55.60	
Sampling Adequacy Calculations									
Mean = 83.20		t = 1.533					n = 5		
		Variance = 7.70					n _{min} = 0.26		

Table 49 Red Dog Mine - Vegetation Cover -- 2010

AT4 - 2500		Orientation of Transect #1 to #5: West					
Raw Data		Percent Ground Cover Based on Point-Intercept Sampling					
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover
Grasses and Grass-likes							Relative Cover
<i>Arctagrostis latifolia</i>	Wideleaf Polargrass	2	4	2	1.60	1.94	60
<i>Carex bigelowii</i>	Bigelow's Sedge			2	0.40	0.48	20
<i>Carex podocarpa</i>	Shortstalk Sedge	2	4	2	1.60	1.94	60
Forbs							
<i>Anenome parviflora</i>	Smallflowered Anemone	3	6	2	1	2.80	3.39
<i>Boykinia richardsonii</i>	Richardson's Brookfoam	2				0.40	0.48
<i>Epilobium latifolium</i>	Dwarf Fireweed			1	0.20	0.24	20
<i>Equisetum arvense</i>	Field Horsetail		3	1	1	1.00	1.21
<i>Oxytropis nigrescens</i> ssp. <i>bryophilia</i>	Blackish Oxytropae	4	8	8	1	5.80	7.02
<i>Petasites frigidus</i> / <i>hyperboreus</i>	Arctic Sweet Coltsfoot			1	0.20	0.24	20
<i>Primula sibirica</i>	Siberian Primrose	2	4	1	1.40	1.69	60
<i>Senecio lugens</i>	Small Blacktip Ragwort	3			1	0.80	0.97
<i>Valeriana capitata</i>	Valerian		1			0.20	0.24
Deciduous Shrubs							
<i>Arctostaphylos alpina</i>	Alpine Bearberry		2			0.40	0.48
<i>Salix reticulata</i>	Netleaf Willow	28	6	16	15	14.80	17.92
Evergreen Shrubs							
<i>Dryas octopetala</i> ssp. <i>oct.</i>	White Mountain-avens	27	36	42	35	37.40	45.28
Mosses							
<i>Drepanocladus</i> sp.	Drepanocladus Moss	5	10	10	16	8	9.80
<i>Hylocomium splendens</i>	Splendid Feather Moss	7	2	2	6	3.40	4.12
Lichens							
<i>Peltigera aphthosa</i>	Felt Lichen		1			0.20	0.24
<i>Peltigera</i> sp.	Felt Lichen	1				0.20	0.24
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)						Mean	
Total Vegetation Cover		79	88	85	81	80	82.60
Rock		0	0	0	0	0	0.00
Litter		21	12	15	19	20	17.40
Bare ground		0	0	0	0	0	0.00
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)							
Mosses							
<i>Drepanocladus</i> sp.	Drepanocladus Moss	10	20	11	24	13	15.60
<i>Hylocomium splendens</i>	Splendid Feather Moss	3	11	3	16	1	6.80
Lichens							
<i>Peltigera aphthosa</i>	Felt Lichen		2			0.40	
<i>Peltigera</i> sp.	Felt Lichen	1				0.20	
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens						Mean	
Total Moss Cover		18	48	26	58	28	35.60
Total Lichen Cover		1	2	0	2	0	1.00
Total Moss and Lichen Cover		19	50	26	60	28	36.60
Sampling Adequacy Calculations							
Mean = 82.60				t = 1.533		n = 5	
				Variance = 14.30			n _{min} = 0.49

Table 50 Red Dog Mine - Vegetation Cover -- 2010

AT4 - 4000 Raw Data		Orientation of Transect #1 to #5: West Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Carex bigelowii</i>	Bigelow's Sedge	20	18	22	18	33	22.20	29.29	100
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass					3	0.60	0.79	20
<i>Festuca altaica</i>	Altai Fescue		1		1		0.40	0.53	40
Forbs									
<i>Equisetum arvense</i>	Field Horsetail	17	14	9	9	8	11.40	15.04	100
<i>Pedicularis</i> sp.	Lousewort		1				0.20	0.26	20
<i>Petasites frigidus</i> / <i>hyperboreus</i>	Arctic Sweet Coltsfoot		1				0.20	0.26	20
<i>Rubus chamaemorus</i>	Cloudberry			4			0.80	1.06	20
Deciduous Shrubs									
<i>Salix glauca</i> ssp. <i>acutifolia</i>	Grayleaf Willow	1	4	9	4	5	4.60	6.07	100
<i>Salix pulchra</i>	Tealeaf Willow	8	8	9	6	6	7.40	9.76	100
<i>Salix reticulata</i>	Netleaf Willow	2	5	9	4	3	4.60	6.07	100
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	4	4		1		1.80	2.37	60
Evergreen Shrubs									
<i>Cassiope tetragona</i> ssp. <i>tet.</i>	White Arctic Mtn. Heather	1	1	1		1	0.80	1.06	80
<i>Dryas octopetala</i> ssp. <i>oct.</i>	White Mountain-avens		1				0.20	0.26	20
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry		6	2	2		2.00	2.64	60
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	4	3	1	1	1	2.00	2.64	100
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	3	1	1	4	8	3.40	4.49	100
Mosses									
<i>Hylocomium splendens</i>	Splendid Feather Moss	11	7	15	21	11	13.00	17.15	100
Lichens									
<i>Cladonia</i> sp.	Cup Lichen		1				0.20	0.26	20
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean		
Total Vegetation Cover		74	77	79	73	76		75.80	
Rock		0	0	0	0	0		0.00	
Litter		26	23	21	27	24		24.20	
Bare ground		0	0	0	0	0		0.00	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Hylocomium splendens</i>	Splendid Feather Moss	27	40	32	51	44	38.80		
Lichens									
<i>Cladonia</i> sp.	Cup Lichen				2		0.40		
<i>Peltigera aphthosa</i>	Felt Lichen				1		0.20		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean		
Total Moss Cover		38	47	47	72	55		51.80	
Total Lichen Cover		1	0	0	1	2		0.80	
Total Moss and Lichen Cover		39	47	47	73	57		52.60	
Sampling Adequacy Calculations									
Mean = 75.80									
								t = 1.533	n = 5
									Variance = 5.70
									n _{min} = 0.23

Table 51 Red Dog Mine - Vegetation Cover -- 2010

AT5 - 000 Raw Data		Orientation of Transect #1 to #5: North Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint		2				0.40	0.58	20
<i>Carex bigelowii</i>	Bigelow's Sedge		2		2		0.80	1.16	40
<i>Carex podocarpa</i>	Shortstalk Sedge	2		1		7	2.00	2.91	60
<i>Carex scirpoidea</i>	Northern Singlespike Sedge		1				0.20	0.29	20
<i>Festuca altaica</i>	Altai Fescue		1			5	1.20	1.74	40
Forbs									
<i>Lycopodium clavatum</i> ssp. <i>monostachyon</i>	One-cone Club Moss	2					0.40	0.58	20
Deciduous Shrubs									
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	11	25	15	16	23	18.00	26.16	100
<i>Salix chamissonis</i>	Chamisso's Willow		1	1			0.40	0.58	40
<i>Salix pulchra</i>	Tealeaf Willow	1	1	5	4	5	3.20	4.65	100
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	2	7	13	7		5.80	8.43	80
Evergreen Shrubs									
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry	19	19	9	22	11	16.00	23.26	100
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	3	8	12	6	7	7.20	10.47	100
<i>Loiseleuria procumbens</i>	Alpine Azalea	3	5	4		2	2.80	4.07	80
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	4	2	6	2	2	3.20	4.65	100
Mosses									
<i>Polytrichum</i> sp.	Polytrichum Moss	6	4	2	4		3.20	4.65	80
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	1			1		0.40	0.58	40
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen	9	1	5	1	1	3.40	4.94	100
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	1					0.20	0.29	20
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean		
Total Vegetation Cover		56	74	71	69	74		68.80	
Rock		4	1	0	0	0		1.00	
Litter		40	25	26	30	26		29.40	
Bare ground		0	0	3	1	0		0.80	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Polytrichum</i> sp.	Polytrichum Moss	7	15	2	5		5.80		
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	1	3		1		1.00		
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen		2				0.40		
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	1					0.20		
Unknown Crustose Lichen					2		0.40		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean		
Total Moss Cover		0	13	19	4	9		9.00	
Total Lichen Cover		13	6	5	5	1		6.00	
Total Moss and Lichen Cover		13	19	24	9	10		15.00	
Sampling Adequacy Calculations									
Mean = 68.80		$t = 1.533$					n = 5		
		Variance = 55.70					$n_{min} = 2.77$		

Table 52 Red Dog Mine - Vegetation Cover -- 2010

AT5- 500 Raw Data		Orientation of Transect #1 to #5: South Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No.—→	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint			2			0.40	0.46	20
<i>Carex bigelowii</i>	Bigelow's Sedge	22	21	33	15	13	20.80	23.80	100
<i>Carex scirpoidea</i>	Northern Singlespike Sedge		8		8		3.20	3.66	40
<i>Poa alpigena</i>	Kentucky Bluegrass			2	3		1.00	1.14	40
Forbs									
<i>Ceratostium beeringianum</i> var. <i>bee.</i>	Bering Chickweed			2			0.40	0.46	20
<i>Dodecatheon frigidum</i>	Western Arctic Shootingstar		2		2		0.80	0.92	40
<i>Equisetum arvense</i>	Field Horsetail	1	5	5	10	10	6.20	7.09	100
<i>Equisetum scirpoides</i>	Dwarf Scouringrush	9		14	7		6.00	6.86	60
<i>Petasites frigidus</i> / <i>hyperboreus</i>	Arctic Sweet Coltsfoot	1	2		4	2	1.80	2.06	80
<i>Polemonium acutiflorum</i>	Tall Jacob's Ladder			2	2		0.80	0.92	40
<i>Saxifraga hieracifolia</i>	Stiffstem Saxifrage				1		0.20	0.23	20
Deciduous Shrubs									
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch		3	3	2	1	1.80	2.06	80
<i>Salix lanata</i> ssp. <i>richardsonii</i>	Richardson's Willow	3					0.60	0.69	20
<i>Salix phlebophylla</i>	Skeletonleaf Willow		2				0.40	0.46	20
<i>Salix pulchra</i>	Tealeaf Willow	6	3	2	5	2	3.60	4.12	100
<i>Salix reticulata</i>	Netleaf Willow	5	1	6	5	2	3.80	4.35	100
Evergreen Shrubs									
<i>Dryas integrifolia</i> ssp. <i>integrifolia</i>	Entireleaf Mountain Avens			2	5		1.40	1.60	40
Mosses									
<i>Hylocomium splendens</i>	Splendid Feather Moss	38	22	18	31	42	30.20	34.55	100
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss		3				0.60	0.69	20
<i>Sphagnum</i> sp.	Sphagnum Moss	4	2		3		1.80	2.06	60
Lichens									
<i>Peltigera aphthosa</i>	Felt Lichen	2	1				0.60	0.69	40
<i>Peltigera</i> sp.	Felt Lichen	1	2	2			1.00	1.14	60
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean		
Total Vegetation Cover		92	77	85	91	92		87.40	
Rock		0	0	0	0	0		0.00	
Litter		8	23	15	9	8		12.60	
Bare ground		0	0	0	0	0		0.00	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Hylocomium splendens</i>	Splendid Feather Moss	34	52	57	60	45	49.60		
<i>Sphagnum</i> sp.	Sphagnum Moss	2	2		1	2	1.40		
Lichens									
<i>Peltigera aphthosa</i>	Felt Lichen		3				0.60		
<i>Peltigera</i> sp.	Felt Lichen	2	1	1	1	1	1.20		
Unknown Crustose Lichen			2				0.40		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean		
Total Moss Cover		78	81	75	95	89		83.60	
Total Lichen Cover		5	9	3	1	1		3.80	
Total Moss and Lichen Cover		83	90	78	96	90		87.40	
Sampling Adequacy Calculations									
Mean = 87.40		$t = 1.533$					$n = 5$		
		Variance = 42.30					$n_{min} = 1.30$		

Table 53 Red Dog Mine - Vegetation Cover -- 2010

AT5 - 1000 Raw Data							Orientation of Transect #1 to #5: NW Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits		Transect No.—→					1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes														
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint			2		1						0.60	0.73	40
<i>Carex podocarpa</i>	Shortstalk Sedge	1	3		4	6						2.80	3.40	80
<i>Carex scirpoidea</i>	Northern Singlespike Sedge			2								0.40	0.49	20
<i>Festuca altaica</i>	Altai Fescue	13	8	15	9	16						12.20	14.81	100
<i>Poa arctica</i> ssp. <i>arc.</i>	Arctic Bluegrass	6	2	6		4						3.60	4.37	80
Forbs														
<i>Aconitum delphinifolium</i>	Larkspurleaf Monkshood	1										0.20	0.24	20
<i>Anenome parviflora</i>	Smallflowered Anemone	1	1	1	1							0.80	0.97	80
<i>Arnica lessingii</i> <i>lessingii</i>	Nodding Arnica			1								0.20	0.24	20
<i>Artemisia arctica</i> ssp. <i>arc.</i>	Boreal Sagebrush	1		2		2						1.00	1.21	60
<i>Aster sibiricus</i>	Arctic Aster	3	1	1		1						1.20	1.46	80
<i>Cerastrium beeringianum</i> var. <i>bee.</i>	Bering Chickweed	1		1								0.40	0.49	40
<i>Dodecatheon frigidum</i>	Western Arctic Shootingstar				1							0.20	0.24	20
<i>Epilobium palustre</i>	Marsh Willowherb	1										0.20	0.24	20
<i>Galium boreale</i>	Northern Bedstraw	2	2	2	2	1						1.80	2.18	100
<i>Gentiana propinqua</i> ssp. <i>propinqua</i>	Fourpart Dwarf Gentian				1							0.20	0.24	20
<i>Hedysarum alpinum</i>	Alpine Sweetvetch	10	8	4	10	7						7.80	9.47	100
<i>Lupinus arcticus</i>	Arctic Lupine	1	1			1						0.60	0.73	60
<i>Rubus arcticus</i> ssp. <i>arc.</i>	Arctic Blackberry			2								0.40	0.49	20
<i>Saussurea angustifolia</i>	Narrow-leaf Saw Wort	1	9		2							2.40	2.91	60
<i>Senecio lugens</i>	Small Blacktip Ragwort	11			13	4						5.60	6.80	60
<i>Solidago multiradiata</i> var. <i>mul.</i>	Rocky Mountain Goldenrod	4	5	7	6							4.40	5.34	80
<i>Thalictrum alpinum</i>	Alpine Meadow-Rue	4			2	1						1.40	1.70	60
<i>Valeriana capitata</i>	Valerian	1										0.20	0.24	20
<i>Zygadenus elegans</i>	Mountain Deathcamas	3	6	1	4	2						3.20	3.88	100
Deciduous Shrubs														
<i>Potentilla fruticosa</i>	Shrubby Cinquefoil	3			1							0.80	0.97	40
<i>Salix reticulata</i>	Netleaf Willow	28	20	27	33	37						29.00	35.19	100
Evergreen Shrubs														
<i>Dryas octopetala</i> ssp. <i>oct.</i>	White Mountain-avens	1										0.20	0.24	20
Mosses														
<i>Hylocomium splendens</i>	Splendid Feather Moss				2	1						0.60	0.73	40
Lichens														
None												0.00	0.00	0
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean							
Total Vegetation Cover							80	78	78	90	86		82.40	
Rock							0	0	0	0	0		0.00	
Litter							20	22	22	10	14		17.60	
Bare ground							0	0	0	0	0		0.00	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)														
Mosses														
<i>Hylocomium splendens</i>	Splendid Feather Moss	2	8	1	5	1						3.40		
<i>Polytrichum</i> sp.	Polytrichum Moss	1										0.20		
Lichens														
None												0.00		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean							
Total Moss Cover							3	8	1	7	2		4.20	
Total Lichen Cover							0	0	0	0	0		0.00	
Total Moss and Lichen Cover							3	8	1	7	2		4.20	
Sampling Adequacy Calculations														
Mean = 82.40							t = 1.533					n = 5		
							Variance = 28.80					n _{min} = 1.00		

Table 54 Red Dog Mine - Vegetation Cover -- 2010

AT5 - 1500 Raw Data		Orientation of Transect #1 to #5: North Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Carex podocarpa</i>	Shortstalk Sedge	4	2	1	1		1.60	1.81	80
<i>Festuca altaica</i>	Altai Fescue	2	2		2		1.20	1.36	60
Forbs									
<i>Lupinus arcticus</i>	Arctic Lupine	2	1	1	3		1.40	1.59	80
<i>Primula sibirica</i>	Siberian Primrose		1				0.20	0.23	20
Deciduous Shrubs									
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	61	58	54	52	53	55.60	63.04	100
<i>Salix pulchra</i>	Tealeaf Willow	2	3	1	2	6	2.80	3.17	100
<i>Salix reticulata</i>	Netleaf Willow		1				0.20	0.23	20
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	18	12	21	19	11	16.20	18.37	100
Evergreen Shrubs									
<i>Dryas octopetala</i> ssp. <i>oct.</i>	White Mountain-avens	2	2	4	3		2.20	2.49	80
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry		1				0.20	0.23	20
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	1			1		0.40	0.45	40
Mosses									
<i>Hylocomium splendens</i>	Splendid Feather Moss	5	5	9	6	2	5.40	6.12	100
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	1			1		0.40	0.45	40
<i>Peltigera</i> sp.	Felt Lichen		2				0.40	0.45	20
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean		
Total Vegetation Cover		93	86	94	85	83		88.20	
Rock		0	0	0	0	0		0.00	
Litter		7	14	6	15	17		11.80	
Bare ground		0	0	0	0	0		0.00	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Hylocomium splendens</i>	Splendid Feather Moss	16	21	21	55	12	25.00		
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	3	4	2	3	1	2.60		
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen				1		0.20		
<i>Peltigera aphthosa</i>	Felt Lichen	1			1		0.40		
<i>Peltigera</i> sp.	Felt Lichen	1	3	3	2		1.80		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean		
Total Moss Cover		21	26	30	61	14		30.40	
Total Lichen Cover		3	7	7	8	4		5.80	
Total Moss and Lichen Cover		24	33	37	69	18		36.20	
Sampling Adequacy Calculations									
Mean = 88.20		$t = 1.533$					$n = 5$		
		Variance = 24.70					$n_{min} = 0.75$		

Table 55 Red Dog Mine - Vegetation Cover -- 2010

AT5 - 2500 Raw Data		Orientation of Transect #1 to #5: North Percent Ground Cover Based on Point-Intercept Sampling										
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover	Relative Cover	Freq.			
Grasses and Grass-likes												
<i>Carex podocarpa</i>	Shortstalk Sedge				1		0.20	0.24	20			
<i>Hierchloe alpina</i>	Alpine Sweetgrass		1				0.20	0.24	20			
Forbs												
<i>Aconitum delphinifolium</i>	Larkspurleaf Monkshood						0.00	0.00	0			
Deciduous Shrubs												
<i>Arctostaphylos alpina</i>	Alpine Bearberry	2	1				0.60	0.71	20			
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	69	49	75	76	24	58.60	68.94	100			
<i>Salix glauca</i> ssp. <i>acutifolia</i>	Grayleaf Willow				4		0.80	0.94	20			
<i>Spiraea beauverdiana</i>	Beauverd Spirea		1				0.20	0.24	20			
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry				1		0.20	0.24	20			
Evergreen Shrubs												
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry				8		1.60	1.88	20			
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	6	17	4	4	24	11.00	12.94	100			
Mosses												
<i>Polytrichum</i> sp.	Polytrichum Moss		4		4		1.60	1.88	40			
<i>Rhytidium rugosum</i>	Rhytidium Moss	4		1	1	4	2.00	2.35	80			
Lichens												
<i>Cladonia</i> sp.	Cup Lichen	6	4	3	3	4	4.00	4.71	100			
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen		2		2		0.80	0.94	40			
<i>Peltigera aphthosa</i>	Felt Lichen				1		0.20	0.24	20			
<i>Peltigera</i> sp.	Felt Lichen				1	5	1.20	1.41	40			
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen	3		1			0.80	0.94	40			
	Unknown Crustose Lichen	5					1.00	1.18	20			
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean					
Total Vegetation Cover		87	87	84	91	76	85.00					
Rock		0	3	0	0	2	1.00					
Litter		13	10	16	9	22	14.00					
Bare ground		0	0	0	0	0	0.00					
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)												
Mosses												
<i>Polytrichum</i> sp.	Polytrichum Moss				5		1.00					
<i>Rhytidium rugosum</i>	Rhytidium Moss	3		4		3	2.00					
Lichens												
<i>Cladonia</i> sp.	Cup Lichen	14	15	15	20	9	14.60					
<i>Peltigera</i> sp.	Felt Lichen	3	2	3	1		1.80					
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen	6		10	2		3.60					
	Unknown Crustose Lichen	11		3			2.80					
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean					
Total Moss Cover		7	4	5	10	7	6.60					
Total Lichen Cover		20	49	21	42	22	30.80					
Total Moss and Lichen Cover		27	53	26	52	29	37.40					
Sampling Adequacy Calculations												
Mean = 85.00		$t = 1.533$					$n = 5$					
		Variance = 31.50					$n_{min} = 1.02$					

Table 56 Red Dog Mine - Vegetation Cover -- 2010

AT5 - 4000 Raw Data		Orientation of Transect #1 to #5: South Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Carex bigelowii</i>	Bigelow's Sedge		1		2		0.60	0.81	40
<i>Carex microchaeta</i>	Smallawned Sedge	11	12	6	3	13	9.00	12.16	100
<i>Carex podocarpa</i>	Shortstalk Sedge		1	1	3		1.00	1.35	60
<i>Carex scirpoidea</i>	Northern Singlespike Sedge				4	5	1.80	2.43	40
<i>Festuca altaica</i>	Altai Fescue					1	0.80	1.08	40
Forbs									
<i>Astragalus umbellatus</i>	Tundra Milkvetch	1	6	3	4	3	3.40	4.59	100
<i>Geum glaciale</i>	Glacier Avens			2	1	1	0.80	1.08	60
<i>Pedicularis labradorica</i>	Labrador Lousewort	2	1		4	1	1.60	2.16	80
<i>Polygonum bistorta</i> ssp. <i>plumosum</i>	Meadow Bistort		1		2	1	0.80	1.08	60
<i>Saussurea angustifolia</i>	Narrow-leaf Saw Wort				1		0.20	0.27	20
<i>Senecio lugens</i>	Small Blacktip Ragwort					1	0.20	0.27	20
<i>Tofieldia coccinea</i>	Northern Asphodel					1	0.20	0.27	20
Deciduous Shrubs									
<i>Arctostaphylos alpina</i>	Alpine Bearberry	2	3				1.00	1.35	20
<i>Salix reticulata</i>	Netleaf Willow	8	7	9	9	13	9.20	12.43	100
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	7	1	2	3		2.60	3.51	80
Evergreen Shrubs									
<i>Cassiope tetragona</i> ssp. <i>tet.</i>	White Arctic Mtn. Heather	1	3	5	9	6	4.80	6.49	100
<i>Dryas integrifolia</i> ssp. <i>integritifolia</i>	Entireleaf Mountain Avens	7	22	33	22	17	20.20	27.30	100
<i>Dryas octopetala</i> ssp. <i>oct.</i>	White Mountain-avens		2		2		0.80	1.08	40
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry					1	0.20	0.27	20
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	2	4				1.20	1.62	40
Mosses									
<i>Hylocomium splendens</i>	Splendid Feather Moss	11	4	12	8	3	7.60	10.27	100
<i>Tomentypnum nitens</i>	Tomentypnum Moss	12	4	4	2	6	5.60	7.57	100
Lichens									
<i>Cladonia</i> sp.	Cup Lichen			1			0.20	0.27	20
<i>Thamnolia vermicularis</i>	Whiteworm Lichen					1	0.20	0.27	20
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean		
Total Vegetation Cover	67	72	79	80	72		74.00		
Rock	0	0	0	0	0		0.00		
Litter	33	27	21	20	28		25.80		
Bare ground	0	1	0	0	0		0.20		
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Hylocomium splendens</i>	Splendid Feather Moss	2	16	2	14	1	7.00		
<i>Tomentypnum nitens</i>	Tomentypnum Moss		4	3	21	6	6.80		
Lichens									
<i>Cladonia</i> sp.	Cup Lichen		2		2		0.80		
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen				1		0.20		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean		
Total Moss Cover	25	28	21	45	16		27.00		
Total Lichen Cover	0	2	1	0	4		1.40		
Total Moss and Lichen Cover	25	30	22	45	20		28.40		
Sampling Adequacy Calculations									
Mean = 74.00							$t = 1.533$		$n = 5$
									$n_{min} = 1.27$
Variance = 29.50									

Table 57 Red Dog Mine - Vegetation Cover -- 2010

AT6 - 000		Orientation of Transect #1 to #5: South							
Raw Data		Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No. —>	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Carex aquatilis</i> ssp. <i>aqu.</i>	Water Sedge	12	12	13	2	20	11.80	17.77	100
Forbs									
<i>Equisetum arvense</i>	Field Horsetail			1	3	1	1.00	1.51	60
<i>Petasites frigidus</i> / <i>hyperboreus</i>	Arctic Sweet Coltsfoot	5	4	2	4	3	3.60	5.42	100
<i>Rubus chamaemorus</i>	Cloudberry	1	1	2	6	3	2.60	3.92	100
Deciduous Shrubs									
<i>Salix pulchra</i>	Tealeaf Willow	44	40	43	36	39	40.40	60.84	100
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry			1			0.20	0.30	20
Evergreen Shrubs									
None							0.00	0.00	0
Mosses									
<i>Hylocomium splendens</i>	Splendid Feather Moss	6	10	5	8	4	6.60	9.94	100
<i>Polytrichum</i> sp.	Polytrichum Moss			1			0.20	0.30	20
Lichens									
None							0.00	0.00	0
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean		
Total Vegetation Cover		68	67	68	59	70		66.40	
Rock		0	0	0	0	0		0.00	
Litter		32	33	32	41	30		33.60	
Bare ground		0	0	0	0	0		0.00	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Drepanocladus</i> sp.	Drepanocladus Moss			4			0.80		
<i>Hylocomium splendens</i>	Splendid Feather Moss	7	14	2	15		7.60		
<i>Polytrichum</i> sp.	Polytrichum Moss	7		5		7	3.80		
Lichens									
None							0.00		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean		
Total Moss Cover		20	24	17	23	11		19.00	
Total Lichen Cover		0	0	0	0	0		0.00	
Total Moss and Lichen Cover		20	24	17	23	11		19.00	
Sampling Adequacy Calculations									
Mean = 66.40			t = 1.533				n = 5		
			Variance = 18.30					n _{min} = 0.98	

Table 58 Red Dog Mine - Vegetation Cover -- 2010

AT6 - 500		Orientation of Transect #1 to #5: East							
Raw Data		Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No. —>	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint	9	2	6	2	1	4.00	5.05	100
<i>Carex bigelowii</i>	Bigelow's Sedge	6	8	5	4	7	6.00	7.58	100
<i>Carex podocarpa</i>	Shortstalk Sedge	1			11	2	2.80	3.54	60
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass		1				0.20	0.25	20
<i>Festuca altaica</i>	Altai Fescue	17	15	21	9	12	14.80	18.69	100
<i>Luzula confusa</i>	Northern Woodrush					1	0.20	0.25	20
Forbs									
<i>Aconitum delphinifolium</i>	Larkspurleaf Monkshood	1	2	2	4		1.80	2.27	80
<i>Anemone narcissiflora</i>	Narcissus Anemone		3	2			1.00	1.26	40
<i>Anenome parviflora</i>	Smallflowered Anemone		1	1	2		0.80	1.01	60
<i>Arnica lessingii</i> lessingii	Nodding Arnica			4			0.80	1.01	20
<i>Artemisia arctica</i> ssp. <i>arc.</i>	Boreal Sagebrush	4	5	7	7	4	5.40	6.82	100
<i>Aster sibiricus</i>	Arctic Aster					2	0.40	0.51	20
<i>Equisetum arvense</i>	Field Horsetail			1	4	1	1.20	1.52	60
<i>Petasites frigidus</i> / <i>hyperboreus</i>	Arctic Sweet Coltsfoot				1	1	0.40	0.51	40
<i>Primula sibirica</i>	Siberian Primrose	7	5	1	4		3.40	4.29	80
<i>Solidago multiradiata</i> var. <i>mul.</i>	Rocky Mountain Goldenrod	2		5		6	2.60	3.28	60
<i>Valeriana capitata</i>	Valerian					1	0.20	0.25	20
Deciduous Shrubs									
<i>Salix chamaissos</i>	Chamiso's Willow	2	5	5	10	15	7.40	9.34	100
<i>Salix pulchra</i>	Tealeaf Willow	5		1		4	2.00	2.53	60
<i>Spirea beauverdiana</i>	Beauverd Spirea					1	0.20	0.25	20
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	12	20	8	6	6	10.40	13.13	100
Evergreen Shrubs									
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry	4	3	2	2		2.20	2.78	80
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry		1	2	1	1	1.00	1.26	80
Mosses									
<i>Hylocomium splendens</i>	Splendid Feather Moss	12	6	6	10	4	7.60	9.60	100
Lichens									
<i>Peltigera</i> sp.	Felt Lichen	1	1	1		3	1.20	1.52	80
	Unknown Crustose Lichen		4	2			1.20	1.52	40
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean		
Total Vegetation Cover		83	79	76	85	73		79.20	
Rock		0	0	0	0	0		0.00	
Litter		17	20	24	15	27		20.60	
Bare ground		0	1	0	0	0		0.20	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Hylocomium splendens</i>	Splendid Feather Moss	23	36	11	38	12	24.00		
Lichens									
<i>Cladonia</i> sp.	Cup Lichen		2		1		0.60		
<i>Peltigera aphthosa</i>	Felt Lichen	1	5				1.20		
<i>Peltigera</i> sp.	Felt Lichen				1	1	0.40		
<i>Thamnolia vermicularis</i>	Whiteworm Lichen					1	0.20		
	Unknown Crustose Lichen		3				0.60		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean		
Total Moss Cover		35	42	17	48	16		31.60	
Total Lichen Cover		2	15	3	2	5		5.40	
Total Moss and Lichen Cover		37	57	20	50	21		37.00	
Sampling Adequacy Calculations									
Mean = 79.20					t = 1.533		n = 5		
					Variance = 24.20			n _{min} = 0.91	

Table 59 Red Dog Mine - Vegetation Cover -- 2010

AT6 - 1000		Orientation of Transect #1 to #5: East							
Raw Data		Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Carex microchaeta</i>	Smallawned Sedge	1	1	1		2	1.00	1.50	80
Forbs									
None							0.00	0.00	0
Deciduous Shrubs									
<i>Arctostaphylos alpina</i>	Alpine Bearberry		1	4	4		1.80	2.69	20
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	24	15	10	15	18	16.40	24.55	100
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	4	5	6	4	8	5.40	8.08	100
Evergreen Shrubs									
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	4	3	1	4		2.40	3.59	80
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	8	19	17	15	15	14.80	22.16	100
Mosses									
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss		2		2		0.80	1.20	40
<i>Polytrichum</i> sp.	Polytrichum Moss	4	6	1			2.20	3.29	60
Lichens									
<i>Cladonia</i> sp.	Cup Lichen		16	3	9	1	5.80	8.68	80
<i>Peltigera aphthosa</i>	Felt Lichen				1		0.20	0.30	20
<i>Peltigera</i> sp.	Felt Lichen	1			2		0.60	0.90	40
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	6	2	5	2	4	3.80	5.69	100
	Unknown Crustose Lichen	13	5	19	6	15	11.60	17.37	100
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean		
Total Vegetation Cover		65	75	67	64	63	66.80		
Rock		2	0	2	0	10	2.80		
Litter		25	20	18	29	26	23.60		
Bare ground		8	5	13	7	1	6.80		
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Polytrichum</i> sp.	Polytrichum Moss		1	2	2		1.00		
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	1	6	5	14	3	5.80		
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen		1				0.20		
<i>Peltigera aphthosa</i>	Felt Lichen	1			1		0.40		
<i>Peltigera</i> sp.	Felt Lichen				1		0.20		
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	1	1		3	1	1.20		
	Unknown Crustose Lichen	2		1		3	1.20		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean		
Total Moss Cover		4	8	2	4	2	4.00		
Total Lichen Cover		24	32	34	38	27	31.00		
Total Moss and Lichen Cover		28	40	36	42	29	35.00		
Sampling Adequacy Calculations									
Mean = 66.80		$t = 1.533$					$n = 5$		
		Variance = 23.20					$n_{min} = 1.22$		

Table 60 Red Dog Mine - Vegetation Cover -- 2010

AT6 - 1500 Raw Data		Orientation of Transect #1 to #5: South Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint	1					0.20	0.24	20
<i>Carex bigelowii</i>	Bigelow's Sedge	1	3		1		1.00	1.19	60
<i>Carex microchaeta</i>	Smallawned Sedge	3	3	5	12	4	5.40	6.41	100
<i>Carex podocarpa</i>	Shortstalk Sedge					1	0.20	0.24	20
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass				2		0.40	0.48	20
<i>Festuca altaica</i>	Altai Fescue	1		2	1		0.80	0.95	60
Forbs									
<i>Anemone narcissiflora</i>	Narcissus Anemone					1	0.20	0.24	20
Deciduous Shrubs									
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	36	29	29	25	34	30.60	36.34	100
<i>Salix pulchra</i>	Tealeaf Willow	2	3				1.00	1.19	40
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	11	22	4	25	26	17.60	20.90	100
Evergreen Shrubs									
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry	1		8	2	3	2.80	3.33	80
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea		4		2		1.20	1.43	40
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	7	4	10	7	3	6.20	7.36	100
Mosses									
<i>Aulacomnium</i> sp.	Aulacomnium Moss	11	6	7	3	8	7.00	8.31	100
<i>Hylocomium splendens</i>	Splendid Feather Moss	8	2	4	10	2	5.20	6.18	100
<i>Polytrichum</i> sp.	Polytrichum Moss					2	0.40	0.48	20
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	3		3	1	2	1.80	2.14	80
<i>Peltigera</i> sp.	Felt Lichen			4			0.80	0.95	20
<i>Thamnolia vermicularis</i>	Whiteworm Lichen			1			0.20	0.24	20
	Unknown Crustose Lichen				5	1	1.20	1.43	40
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)								Mean	
Total Vegetation Cover		85	76	84	89	87		84.20	
	Rock	0	0	0	0	0		0.00	
	Litter	15	24	16	11	13		15.80	
	Bare ground	0	0	0	0	0		0.00	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Aulacomnium</i> sp.	Aulacomnium Moss	9	15	3	12	11	10.00		
<i>Hylocomium splendens</i>	Splendid Feather Moss	9	10	1	6	17	8.60		
<i>Polytrichum</i> sp.	Polytrichum Moss					7	1.40		
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	7	8	3	3	11	6.40		
<i>Peltigera aphthosa</i>	Felt Lichen		1				0.20		
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	1		2			0.60		
	Unknown Crustose Lichen				1		0.20		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens								Mean	
Total Moss Cover		37	33	15	31	47		32.60	
Total Lichen Cover		11	9	19	4	14		11.40	
Total Moss and Lichen Cover		48	42	34	35	61		44.00	
Sampling Adequacy Calculations									
Mean = 84.20								$t = 1.533$	
								$n = 5$	
								$\text{Variance} = 24.70$	$n_{\min} = 0.82$

Table 61 Red Dog Mine - Vegetation Cover -- 2010

AT6 - 2500		Orientation of Transect #1 to #5: SE										
Raw Data		Percent Ground Cover Based on Point-Intercept Sampling										
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover	Relative Cover	Freq.			
Grasses and Grass-likes												
<i>Arctagrostis latifolia</i>	Wideleaf Polargrass			3		0.60	0.73	20				
<i>Carex bigelowii</i>	Bigelow's Sedge	1				0.20	0.24	20				
<i>Carex microchaeta</i>	Smallawned Sedge	3		2		1.00	1.21	40				
<i>Festuca altaica</i>	Altai Fescue			3		0.60	0.73	20				
Forbs												
<i>Artemisia arctica</i> ssp. <i>arc.</i>	Boreal Sagebrush			1		0.20	0.24	20				
<i>Lupinus arcticus</i>	Arctic Lupine	10	12	10	13	9	10.80	13.08	100			
<i>Pedicularis labradorica</i>	Labrador Lousewort				1		0.20	0.24	20			
<i>Petasites frigidus</i> / <i>hyperboreus</i>	Arctic Sweet Coltsfoot	1			1		0.40	0.48	40			
Deciduous Shrubs												
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	41	18	23	17	16	23.00	27.85	100			
<i>Salix pulchra</i>	Tealeaf Willow	4	10	8	9		6.20	7.51	80			
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	12	9	8	3		6.40	7.75	80			
Evergreen Shrubs												
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry				1		0.20	0.24	20			
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea			2	2		0.80	0.97	40			
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	9	7	2	7	1	5.20	6.30	100			
Mosses												
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss	16	15	14	16	22	16.60	20.10	100			
<i>Polytrichum</i> sp.	Polytrichum Moss	4	5	15	7	10	8.20	9.93	100			
Lichens												
<i>Flavocetraria cucullata</i>	Flavocetraria Lichen	1	2		1	2	1.20	1.45	80			
<i>Peltigera aphthosa</i>	Felt Lichen	2					0.40	0.48	20			
<i>Peltigera</i> sp.	Felt Lichen			2			0.40	0.48	20			
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean					
Total Vegetation Cover		83	80	85	85	80	82.60					
Rock		0	0	0	0	0	0.00					
Litter		17	20	15	15	20	17.40					
Bare ground		0	0	0	0	0	0.00					
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)												
Mosses												
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss	10	31	13	37	17	21.60					
<i>Polytrichum</i> sp.	Polytrichum Moss	2	13	14	15	5	9.80					
Lichens												
<i>Flavocetraria cucullata</i>	Flavocetraria Lichen	3	2	3	2	1	2.20					
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean					
Total Moss Cover		32	64	56	75	54	56.20					
Total Lichen Cover		6	4	5	3	3	4.20					
Total Moss and Lichen Cover		38	68	61	78	57	60.40					
Sampling Adequacy Calculations												
Mean = 82.60		$t = 1.533$				$n = 5$						
Variance = 6.30						$n_{min} = 0.22$						

Table 62 Red Dog Mine - Vegetation Cover -- 2010

AT6 - 4000		Orientation of Transect #1 to #5: West							
Raw Data		Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No. —>	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Arctagrostis latifolia</i>	Wideleaf Polargrass	2	1				0.60	0.75	40
<i>Carex bigelowii</i>	Bigelow's Sedge			1			0.20	0.25	20
<i>Carex microchaeta</i>	Smallawned Sedge	2					0.40	0.50	20
<i>Hierchloe alpina</i>	Alpine Sweetgrass		1				0.20	0.25	20
Forbs									
<i>Epilobium latifolium</i>	Dwarf Fireweed	1		1			0.40	0.50	40
Deciduous Shrubs									
<i>Arctostaphylos alpina</i>	Alpine Bearberry	15	8	5	13	11	10.40	13.03	40
<i>Salix glauca</i> ssp. <i>acutifolia</i>	Grayleaf Willow	1		2	2		1.00	1.25	60
<i>Salix pulchra</i>	Tealeaf Willow	1			1		0.40	0.50	40
<i>Salix reticulata</i>	Netleaf Willow	3	1			3	1.40	1.75	60
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	38	35	37	40	39	37.80	47.37	100
Evergreen Shrubs									
<i>Cassiope tetragona</i> ssp. <i>tet.</i>	White Arctic Mtn. Heather	4					0.80	1.00	20
<i>Dryas octopetala</i> ssp. <i>oct.</i>	White Mountain-avens	10	8	14	3	8	8.60	10.78	100
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry		2	2	1		1.00	1.25	60
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	1	7	10	6	1	5.00	6.27	100
Mosses									
<i>Tomentypnum nitens</i>	Tomentypnum Moss	1	5	1	2	3	2.40	3.01	100
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	4	17	8	5	4	7.60	9.52	100
<i>Flavocetraria cucullata</i>	Flavocetraria Lichen		2		2		0.80	1.00	40
<i>Peltigera aphthosa</i>	Felt Lichen				2		0.40	0.50	20
<i>Peltigera</i> sp.	Felt Lichen				1	1	0.40	0.50	40
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean		
Total Vegetation Cover		83	84	78	79	75		79.80	
Rock		0	0	2	0	0		0.40	
Litter		17	16	20	20	24		19.40	
Bare ground		0	0	0	1	1		0.40	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Tomentypnum nitens</i>	Tomentypnum Moss	2	2	7	2	5	3.60		
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	3	20	4	18	11	11.20		
<i>Flavocetraria cucullata</i>	Flavocetraria Lichen		11		7		3.60		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean		
Total Moss Cover		3	7	8	4	8		6.00	
Total Lichen Cover		7	50	12	35	16		24.00	
Total Moss and Lichen Cover		10	57	20	39	24		30.00	
Sampling Adequacy Calculations									
Mean = 79.80								$t = 1.533$	$n = 5$
Variance = 13.70									$n_{min} = 0.51$

Table 63 Red Dog Mine - Vegetation Cover -- 2010

AT7 - 200		Orientation of Transect #1 to #5: SE							
Raw Data		Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No.—>	1 2 3 4 5					Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Carex bigelowii</i>	Bigelow's Sedge	2	6	6	5	6	5.00	6.61	100
Forbs									
<i>Lupinus arcticus</i>	Arctic Lupine	5	6	2	10	5	5.60	7.41	100
Deciduous Shrubs									
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	24	14	16	16	15	17.00	22.49	100
<i>Salix pulchra</i>	Tealeaf Willow	9	12	15	4		8.00	10.58	80
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	36	21	13	6	16	18.40	24.34	100
Evergreen Shrubs									
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	5		1	3	2	2.20	2.91	80
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	7	5	3	2	4	4.20	5.56	100
Mosses									
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss	4	5	3	11	15	7.60	10.05	100
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	6	2	3	4	2	3.40	4.50	100
<i>Peltigera aphthosa</i>	Felt Lichen	4	3	1	1	2	2.20	2.91	100
<i>Peltigera</i> sp.	Felt Lichen	1	1		1	2	1.00	1.32	80
	Unknown Rock Lichen					5	1.00	1.32	20
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)								Mean	
Total Vegetation Cover		94	72	60	74	78		75.60	
Rock		0	0	0	0	0		0.00	
Litter		6	28	40	25	22		24.20	
Bare ground		0	0	0	1	0		0.20	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss	5		9	13	5.40			
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	13	9	7	5	8	8.40		
<i>Peltigera aphthosa</i>	Felt Lichen	4		2	6		2.40		
<i>Peltigera</i> sp.	Felt Lichen	4	1				1.00		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens								Mean	
Total Moss Cover		9	5	3	20	28		13.00	
Total Lichen Cover		32	16	13	17	19		19.40	
Total Moss and Lichen Cover		41	21	16	37	47		32.40	
Sampling Adequacy Calculations									
Mean = 75.60		$t = 1.533$				n = 5			
		Variance = 150.80					$n_{min} = 6.20$		

Table 64 Red Dog Mine - Vegetation Cover -- 2010

AT7 - 500 Raw Data		Orientation of Transect #1 to #5: East Percent Ground Cover Based on Point-Intercept Sampling										
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover	Relative Cover	Freq.			
Grasses and Grass-likes												
<i>Arctagrostis latifolia</i>	Wideleaf Polargrass	2	1				0.60	0.78	40			
<i>Carex bigelowii</i>	Bigelow's Sedge	4	3	3	3	9	4.40	5.71	100			
Forbs												
<i>Petasites frigidus / hyperboreus</i>	Arctic Sweet Coltsfoot	3	2	4	2		2.20	2.86	80			
<i>Saussurea angustifolia</i>	Narrow-leaf Saw Wort	2					0.40	0.52	20			
Deciduous Shrubs												
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	23	22	33	24	16	23.60	30.65	100			
<i>Salix pulchra</i>	Tealeaf Willow	5	6	6	4	6	5.40	7.01	100			
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	13	9	7	9	6	8.80	11.43	100			
Evergreen Shrubs												
<i>Andromeda polifolia</i>	Bog Rosemary		2				0.40	0.52	20			
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry	10	9	11	2	12	8.80	11.43	100			
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	5	7	3	11	10	7.20	9.35	100			
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	11	8	6	6	7	7.60	9.87	100			
Mosses												
<i>Hylocomium splendens</i>	Splendid Feather Moss	3	4	8	10	6	6.20	8.05	100			
Lichens												
<i>Cladonia</i> sp.	Cup Lichen	1		1			0.40	0.52	40			
<i>Peltigera</i> sp.	Felt Lichen		2		3		1.00	1.30	40			
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean					
Total Vegetation Cover		82	72	81	76	74	77.00					
Rock		0	0	0	0	0	0.00					
Litter		18	28	19	24	26	23.00					
Bare ground		0	0	0	0	0	0.00					
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)												
Mosses												
<i>Aulacomnium</i> sp.	Aulacomnium Moss		1		3		0.80					
<i>Hylocomium splendens</i>	Splendid Feather Moss	3	13	26	21	18	16.20					
<i>Polytrichum</i> sp.	Polytrichum Moss	4					0.80					
Lichens												
<i>Cladonia</i> sp.	Cup Lichen	2	3	3		1	1.80					
<i>Peltigera</i> sp.	Felt Lichen		5		15		4.00					
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean					
Total Moss Cover		10	18	34	31	27	24.00					
Total Lichen Cover		3	10	4	18	1	7.20					
Total Moss and Lichen Cover		13	28	38	49	28	31.20					
Sampling Adequacy Calculations												
Mean = 77.00		$t = 1.533$				$n = 5$						
Variance = 19.00						$n_{min} = 0.75$						

Table 65 Red Dog Mine - Vegetation Cover -- 2010

AT7 - 1000 Raw Data		Orientation of Transect #1 to #5: East Percent Ground Cover Based on Point-Intercept Sampling										
1st Hits	Transect No. —>	1	2	3	4	5	Average Cover	Relative Cover	Freq.			
Grasses and Grass-likes												
<i>Carex microchaeta</i>	Smallawned Sedge	2	5	9	3	1	4.00	4.62	100			
<i>Festuca altaica</i>	Altai Fescue	3	3	4	3	7	4.00	4.62	100			
Forbs												
<i>Artemisia arctica</i> ssp. <i>arc.</i>	Boreal Sagebrush					1	0.20	0.23	20			
<i>Lupinus arcticus</i>	Arctic Lupine	9	7	13	6	8	8.60	9.93	100			
<i>Lycopodium clavatum</i> ssp. <i>monostachyon</i>	One-cone Club Moss				1		0.20	0.23	20			
<i>Petasites frigidus</i> / <i>hyperboreus</i>	Arctic Sweet Coltsfoot			2		1	0.60	0.69	40			
Deciduous Shrubs												
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	11	7	5	10	8	8.20	9.47	100			
<i>Salix myrtillifolia</i>	Blueberry Willow	1					0.20	0.23	20			
<i>Salix pulchra</i>	Tealeaf Willow	18	4	1	4	8	7.00	8.08	100			
<i>Salix reticulata</i>	Netleaf Willow					1	0.20	0.23	20			
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	10	24	29	30	34	25.40	29.33	100			
Evergreen Shrubs												
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry			1			0.20	0.23	20			
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	11	7	8	7	3	7.20	8.31	100			
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	6	12	8	17	10	10.60	12.24	100			
Mosses												
<i>Hylocomium splendens</i>	Splendid Feather Moss	7	5	8	3	5	5.60	6.47	100			
Lichens												
<i>Cladonia</i> sp.	Cup Lichen		4	6		1	2.20	2.54	60			
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen				2		0.40	0.46	20			
<i>Peltigera</i> sp.	Felt Lichen		1		3	3	1.40	1.62	60			
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen	2					0.40	0.46	20			
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean					
Total Vegetation Cover	80	82	92	89	90		86.60					
Rock	0	0	0	0	0		0.00					
Litter	20	18	8	11	10		13.40					
Bare ground	0	0	0	0	0		0.00					
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)												
Mosses												
<i>Hylocomium splendens</i>	Splendid Feather Moss	13	19	9	15	10	13.20					
Lichens												
<i>Cladonia</i> sp.	Cup Lichen	1	18	3	10	7	7.80					
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen				8		1.60					
<i>Peltigera aphthosa</i>	Felt Lichen		3		2		1.00					
<i>Peltigera</i> sp.	Felt Lichen			1	3	1	1.00					
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean					
Total Moss Cover	20	24	17	18	15		18.80					
Total Lichen Cover	3	26	10	28	12		15.80					
Total Moss and Lichen Cover	23	50	27	46	27		34.60					
Sampling Adequacy Calculations												
Mean = 86.60				t = 1.533			n = 5					
				Variance = 27.80			n _{min} = 0.87					

Table 66 Red Dog Mine - Vegetation Cover -- 2010

AT7 - 1500 Raw Data		Orientation of Transect #1 to #5: North Percent Ground Cover Based on Point-Intercept Sampling										
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover	Relative Cover	Freq.			
Grasses and Grass-likes												
<i>Arctagrostis latifolia</i>	Wideleaf Polargrass		2	1			0.60	0.73	40			
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint		1		1		0.40	0.48	40			
<i>Carex bigelowii</i>	Bigelow's Sedge				1		0.20	0.24	20			
<i>Carex microchaeta</i>	Smallawned Sedge	5	3	3	7	22	8.00	9.69	100			
<i>Festuca altaica</i>	Altai Fescue	1	1	4	1	1	1.60	1.94	100			
<i>Hierchloe alpina</i>	Alpine Sweetgrass	1	3	3		1	1.60	1.94	80			
Forbs												
<i>Lupinus arcticus</i>	Arctic Lupine		2			1	0.60	0.73	40			
Deciduous Shrubs												
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	18	9	4	16	13	12.00	14.53	100			
<i>Salix pulchra</i>	Tealeaf Willow	13	6	15	9	7	10.00	12.11	100			
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	29	34	21	32	14	26.00	31.48	100			
Evergreen Shrubs												
<i>Andromeda polifolia</i>	Bog Rosemary				1		0.20	0.24	20			
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry	2	9	9	2	2	4.80	5.81	100			
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	3	1	2	2	5	2.60	3.15	100			
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	2	4	3	4	6	3.80	4.60	100			
Mosses												
<i>Hylocomium splendens</i>	Splendid Feather Moss	7	10	13	7	14	10.20	12.35	100			
Lichens												
None							0.00	0.00	0			
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean					
Total Vegetation Cover		81	83	79	84	86	82.60					
Rock		0	0	0	0	0	0.00					
Litter		19	17	21	16	14	17.40					
Bare ground		0	0	0	0	0	0.00					
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)												
Mosses												
<i>Hylocomium splendens</i>	Splendid Feather Moss	16	38	12	42	23	26.20					
Lichens												
<i>Cladonia</i> sp.	Cup Lichen			1	1		0.40					
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean					
Total Moss Cover		23	48	25	49	37	36.40					
Total Lichen Cover		0	0	0	1	1	0.40					
Total Moss and Lichen Cover		23	48	25	50	38	36.80					
Sampling Adequacy Calculations												
Mean = 82.60		$t = 1.533$				$n = 5$						
Variance = 7.30						$n_{min} = 0.25$						

Table 67 Red Dog Mine - Vegetation Cover -- 2010

AT7 - 2500 Raw Data										
					Orientation of Transect #1 to #5: South Percent Ground Cover Based on Point-Intercept Sampling					
1st Hits	Transect No. —>	1	2	3	4	5	Average Cover	Relative Cover		
Grasses and Grass-likes										
<i>Arctagrostis latifolia</i>	Wideleaf Polargrass		8		13		4.20	6.48		
<i>Carex bigelowii</i>	Bigelow's Sedge	1		2		2	1.00	1.54		
<i>Carex microchaeta</i>	Smallawned Sedge	7	6	2	9	6	6.00	9.26		
<i>Festuca altaica</i>	Altai Fescue	2		6		6	2.80	4.32		
Forbs										
<i>Arnica lessingii lessingii</i>	Nodding Arnica	1		1			0.40	0.62		
<i>Artemisia arctica</i> ssp. <i>arc.</i>	Boreal Sagebrush	4	4	3	2	5	3.60	5.56		
<i>Gentiana glauca</i>	Pale Gentian	1					0.20	0.31		
<i>Polygonum bistorta</i> ssp. <i>plumosum</i>	Meadow Bistort			1			0.20	0.31		
<i>Senecio lugens</i>	Small Blacktip Ragwort			1			0.20	0.31		
<i>Valeriana capitata</i>	Valerian	1				1	0.40	0.62		
Deciduous Shrubs										
<i>Salix charmionis</i>	Chamisso's Willow	7	5	7	5	1	5.00	7.72		
<i>Salix myrtillifolia</i>	Blueberry Willow	7	4	5	3	3	4.40	6.79		
<i>Salix pulchra</i>	Tealeaf Willow		2	3			1.00	1.54		
<i>Spirea beauverdiana</i>	Beauverd Spirea	1	4	2	2	3	2.40	3.70		
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	1		1			0.40	0.62		
Evergreen Shrubs										
<i>Cassiope tetragona</i> ssp. <i>tet.</i>	White Arctic Mtn. Heather	5	6	3	6	3	4.60	7.10		
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry				2	2	0.80	1.23		
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	7		7	6	11	6.20	9.57		
Mosses										
<i>Polytrichum</i> sp.	Polytrichum Moss	18	10	10	4	13	11.00	16.98		
Lichens										
<i>Cladonia</i> sp.	Cup Lichen	3	1	5	2	2	2.60	4.01		
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen					1	0.20	0.31		
<i>Peltigera</i> sp.	Felt Lichen	6	1	5	5		3.40	5.25		
	Unknown Crustose Lichen		5	1	7	6	3.80	5.86		
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean			
Total Vegetation Cover							64.80			
Rock							0.20			
Litter							32.00			
Bare ground							3.00			
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)										
Mosses										
<i>Polytrichum</i> sp.	Polytrichum Moss	9	11	18	15	11	12.80			
Lichens										
<i>Cladonia</i> sp.	Cup Lichen	7		6	1		2.80			
<i>Peltigera aphthosa</i>	Felt Lichen		1		1		0.40			
<i>Peltigera</i> sp.	Felt Lichen	2				4	1.20			
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen	2		2			0.80			
	Unknown Crustose Lichen			2	1	2	1.00			
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean			
Total Moss Cover							23.80			
Total Lichen Cover							16.20			
Total Moss and Lichen Cover							40.00			
Sampling Adequacy Calculations										
Mean = 64.80		$t = 1.533$				$n = 5$				
		Variance = 15.20				$n_{min} = 0.85$				

Table 68 Red Dog Mine - Vegetation Cover -- 2010

AT7 - 4000		Orientation of Transect #1 to #5: SE							
Raw Data		Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint	4	8	10	3	14	7.80	8.74	100
<i>Carex bigelowii</i>	Bigelow's Sedge	9	4	7	3	1	4.80	5.38	100
<i>Carex microchaeta</i>	Smallawned Sedge					1	0.20	0.22	20
Forbs									
<i>Lupinus arcticus</i>	Arctic Lupine			3			0.60	0.67	20
Deciduous Shrubs									
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	30	9	18	6	24	17.40	19.51	100
<i>Salix pulchra</i>	Tealeaf Willow		4	3	6	5	3.60	4.04	80
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	27	31	25	31	21	27.00	30.27	100
Evergreen Shrubs									
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry	2	3	1	11	6	4.60	5.16	100
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	6	9	9	7		6.20	6.95	80
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	4	6	2	4	3	3.80	4.26	100
Mosses									
<i>Hylocomium splendens</i>	Splendid Feather Moss	6	11	13	11	12	10.60	11.88	100
<i>Sphagnum</i> sp.	Sphagnum Moss	2			5	6	2.60	2.91	60
Lichens									
None							0.00	0.00	0
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean		
Total Vegetation Cover		90	85	91	88	92	89.20		
Rock		0	0	0	0	0	0.00		
Litter		10	15	9	12	8	10.80		
Bare ground		0	0	0	0	0	0.00		
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Hylocomium splendens</i>	Splendid Feather Moss	26	44	35	35	25	33.00		
<i>Sphagnum</i> sp.	Sphagnum Moss	12	5		10	10	7.40		
Lichens									
<i>Cladonia</i> sp.	Cup Lichen		3	3	3		1.80		
<i>Flavocetraria cucullata</i>	Flavocetraria Lichen			1	1		0.40		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean		
Total Moss Cover		46	60	48	61	53	53.60		
Total Lichen Cover		0	3	4	4	0	2.20		
Total Moss and Lichen Cover		46	63	52	65	53	55.80		
Sampling Adequacy Calculations									
Mean = 89.20							t = 1.533		n = 5
							Variance = 7.70		n _{min} = 0.23

Table 69 Red Dog Mine - Vegetation Cover -- 2010

AT8 - 000 Raw Data		Orientation of Transect #1 to #5: South Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint		7	4			2.20	2.98	40
<i>Carex bigelowii</i>	Bigelow's Sedge			2			0.40	0.54	20
<i>Carex microchaeta</i>	Smallawned Sedge	2	1	2	1		1.20	1.63	80
<i>Hierchloe alpina</i>	Alpine Sweetgrass	3	1				0.80	1.08	40
<i>Luzula confusa</i>	Northern Woodrush				2		0.40	0.54	20
Forbs									
<i>Lupinus arcticus</i>	Arctic Lupine	2	3	2	2		1.80	2.44	80
Deciduous Shrubs									
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	38	15	22	31	32	27.60	37.40	100
<i>Salix pulchra</i>	Tealeaf Willow	5	3	13	7	3	6.20	8.40	100
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	2	18	1	4		5.00	6.78	80
Evergreen Shrubs									
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	1	3	2	8	2	3.20	4.34	100
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	17	22	20	11	21	18.20	24.66	100
Mosses									
<i>Polytrichum</i> sp.	Polytrichum Moss	4	2		3		1.80	2.44	60
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	1		1	6		1.60	2.17	60
<i>Peltigera aphthosa</i>	Felt Lichen				1		0.20	0.27	20
<i>Peltigera</i> sp.	Felt Lichen		1	2			0.60	0.81	40
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen	7		2	1		2.00	2.71	60
<i>Thamnolia vermicularis</i>	Whiteworm Lichen		1		1		0.40	0.54	40
	Unknown Crustose Lichen			1			0.20	0.27	20
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean		
Total Vegetation Cover		75	78	70	73	73		73.80	
Rock		0	0	0	1	0		0.20	
Litter		25	22	29	26	27		25.80	
Bare ground		0	0	1	0	0		0.20	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Polytrichum</i> sp.	Polytrichum Moss	7	7		3		3.40		
Lichens									
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen		1				0.20		
<i>Peltigera</i> sp.	Felt Lichen			2			0.40		
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen		2		3		1.00		
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	1			4	3	1.60		
	Unknown Crustose Lichen			2		2	0.80		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean		
Total Moss Cover		11	9	0	6	0		5.20	
Total Lichen Cover		2	15	5	12	11		9.00	
Total Moss and Lichen Cover		13	24	5	18	11		14.20	
Sampling Adequacy Calculations									
Mean = 73.80					t = 1.533		n = 5		
					Variance = 8.70			n _{min} = 0.38	

Table 70 Red Dog Mine - Vegetation Cover -- 2010

AT8 - 500		Orientation of Transect #1 to #5: North							
Raw Data		Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint	2	2		10		2.80	3.83	60
<i>Carex bigelowii</i>	Bigelow's Sedge	3		3	11	10	5.40	7.38	80
<i>Carex microchaeta</i>	Smallawned Sedge	3	8	3	2	3	3.80	5.19	100
<i>Festuca altaica</i>	Altai Fescue	21	27	26	10	15	19.80	27.05	100
Forbs									
<i>Artemisia arctica</i> ssp. <i>arc.</i>	Boreal Sagebrush				1		0.20	0.27	20
<i>Linnaea borealis</i> ssp. <i>bor.</i>	Twinflower				3		0.60	0.82	20
<i>Lycopodium clavatum</i> ssp. <i>monostachyon</i>	One-cone Club Moss			7		1	1.60	2.19	40
Deciduous Shrubs									
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	9			2		2.20	3.01	40
<i>Spirea beauverdiana</i>	Beauverd Spirea	5	1		4	5	3.00	4.10	80
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	10	12	13	3	3	8.20	11.20	100
Evergreen Shrubs									
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry				1		0.20	0.27	20
<i>Loiseleuria procumbens</i>	Alpine Azalea			10	15	11	7.20	9.84	60
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	10	7	8	4	7	7.20	9.84	100
Mosses									
<i>Polytrichum</i> sp.	Polytrichum Moss	2					0.40	0.55	20
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	8		12	3	4	5.40	7.38	80
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen	1	7		11	6	5.00	6.83	80
	Unknown Rock Lichen				1		0.20	0.27	20
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean		
Total Vegetation Cover		74	64	82	77	69		73.20	
	Rock	0	0	0	0	1		0.20	
	Litter	26	36	18	20	30		26.00	
	Bare ground	0	0	0	3	0		0.60	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Polytrichum</i> sp.	Polytrichum Moss	7		1			1.60		
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	8	2	7		4	4.20		
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen		9		3		2.40		
<i>Thamnolia vermicularis</i>	Whiteworm Lichen				1		0.20		
	Unknown Crustose Lichen	2		2			0.80		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean		
Total Moss Cover		2	7	0	1	0		2.00	
Total Lichen Cover		17	20	19	21	14		18.20	
Total Moss and Lichen Cover		19	27	19	22	14		20.20	
Sampling Adequacy Calculations									
Mean = 73.20							t = 1.533		n = 5
							Variance = 48.70		n _{min} = 2.14

Table 71 Red Dog Mine - Vegetation Cover -- 2010

AT8 - 1000 Raw Data		Orientation of Transect #1 to #5: East Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint			1	1		0.40	0.47	40
<i>Carex bigelowii</i>	Bigelow's Sedge	1		1			0.40	0.47	40
<i>Carex microchaeta</i>	Smallawned Sedge			2			0.40	0.47	20
<i>Carex podocarpa</i>	Shortstalk Sedge		1		2		0.60	0.71	40
<i>Festuca altaica</i>	Altai Fescue	1		1			0.40	0.47	40
<i>Festuca brachyphylla</i>	Alpine Fescue	2	1		1		0.80	0.95	60
<i>Hierchloe alpina</i>	Alpine Sweetgrass		1		1		0.40	0.47	40
Forbs									
<i>Anemone narcissiflora</i>	Narcissus Anemone			1			0.20	0.24	20
<i>Artemisia arctica</i> ssp. <i>arc.</i>	Boreal Sagebrush				1		0.20	0.24	20
<i>Lupinus arcticus</i>	Arctic Lupine	3	4	6	9	11	6.60	7.82	100
Deciduous Shrubs									
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	31	40	35	27	17	30.00	35.55	100
<i>Salix myrtillifolia</i>	Blueberry Willow				8		1.60	1.90	20
<i>Salix phlebophylla</i>	Skeletonleaf Willow		2		2		0.80	0.95	40
<i>Salix pulchra</i>	Tealeaf Willow	4	9	10	7	1	6.20	7.35	100
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	15	2	3	7	4	6.20	7.35	100
Evergreen Shrubs									
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea		1		1		0.40	0.47	40
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	8	5	7	15	11	9.20	10.90	100
Mosses									
<i>Hylocomium splendens</i>	Splendid Feather Moss	10	4	2	6	10	6.40	7.58	100
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss			1			0.20	0.24	20
<i>Polytrichum</i> sp.	Polytrichum Moss	11	6	11	4	5	7.40	8.77	100
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	2	1	2		5	2.00	2.37	80
<i>Peltigera aphthosa</i>	Felt Lichen				2		0.40	0.47	20
<i>Peltigera</i> sp.	Felt Lichen	4		1	1	1	1.40	1.66	80
<i>Thamnolia vermicularis</i>	Whiteworm Lichen				1		0.20	0.24	20
	Unknown Crustose Lichen	1	1		4	2	1.60	1.90	80
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean		
Total Vegetation Cover	91	79	80	89	83		84.40		
Rock	0	0	0	0	0		0.00		
Litter	9	21	19	11	17		15.40		
Bare ground	0	0	1	0	0		0.20		
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Hylocomium splendens</i>	Splendid Feather Moss	18	13	7	17		11.00		
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss	1		2			0.60		
<i>Polytrichum</i> sp.	Polytrichum Moss	10	30	7	16	8	14.20		
Lichens									
<i>Cladonia deformis</i>	Deformed Cup Lichen		10		9		3.80		
<i>Cladonia</i> sp.	Cup Lichen	2		3		5	2.00		
<i>Peltigera aphthosa</i>	Felt Lichen		3		3		1.20		
<i>Peltigera</i> sp.	Felt Lichen	1	3	3	3	1	2.20		
<i>Thamnolia vermicularis</i>	Whiteworm Lichen				1		0.20		
	Unknown Crustose Lichen	1			2		0.60		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean		
Total Moss Cover	50	53	27	46	23		39.80		
Total Lichen Cover	11	18	9	23	17		15.60		
Total Moss and Lichen Cover	61	71	36	69	40		55.40		
Sampling Adequacy Calculations									
Mean = 84.40					t = 1.533		n = 5		
					Variance = 28.80		n _{min} = 0.95		

Table 72 Red Dog Mine - Vegetation Cover -- 2010

AT8 - 1500								
Raw Data								
Percent Ground Cover Based on Point-Intercept Sampling								
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover	Relative Cover
Grasses and Grass-likes								Freq.
<i>Carex microchaeta</i>	Smallawned Sedge	5	2	2	1	3	2.60	3.30
<i>Hierchloe alpina</i>	Alpine Sweetgrass	2			1		0.60	0.76
Forbs								
<i>Anemone narcissiflora</i>	Narcissus Anemone				1		0.20	0.25
<i>Antennaria friesiana</i> ssp. <i>alaskana</i>	Fries' Pussytoes		1				0.20	0.25
<i>Lupinus arcticus</i>	Arctic Lupine	5	3	3	7	1	3.80	4.82
Deciduous Shrubs								
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	1		3	4	6	2.80	3.55
<i>Salix phlebophylla</i>	Skeletonleaf Willow	1	10	6	5	4	5.20	6.60
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	18	31	13	24	18	20.80	26.40
Evergreen Shrubs								
<i>Cassiope tetragona</i> ssp. <i>tet.</i>	White Arctic Mtn. Heather			1	1		0.40	0.51
<i>Dryas octopetala</i> ssp. <i>oct.</i>	White Mountain-avens			2			0.40	0.51
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	2			2	1	1.00	1.27
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	13	17	22	5	17	14.80	18.78
Mosses								
<i>Hylocomium splendens</i>	Splendid Feather Moss				1		0.20	0.25
<i>Polytrichum</i> sp.	Polytrichum Moss	9	1	16	5	7	7.60	9.64
Lichens								
<i>Cladonia</i> sp.	Cup Lichen	2	9	8	11	5	7.00	8.88
<i>Flavocetraria cucullata</i>	Flavocetraria Lichen		5		7		2.40	3.05
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen				1		0.20	0.25
<i>Peltigera</i> sp.	Felt Lichen	2		1			0.60	0.76
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen			1			0.20	0.25
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	7	1	2			2.00	2.54
	Unknown Crustose Lichen	11			12		5.80	7.36
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean	
Total Vegetation Cover							78.80	
Rock							6.60	
Litter							13.80	
Bare ground							0.80	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)								
Mosses								
<i>Hylocomium splendens</i>	Splendid Feather Moss				1		0.20	
<i>Polytrichum</i> sp.	Polytrichum Moss	4	1	3	6	2	3.20	
Lichens								
<i>Cladonia</i> sp.	Cup Lichen	21	3	12	1		7.40	
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen	1					0.20	
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	2	2				0.80	
	Unknown Crustose Lichen	11		20	1		6.40	
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean	
Total Moss Cover							11.20	
Total Lichen Cover							33.00	
Total Moss and Lichen Cover							44.20	
Sampling Adequacy Calculations								
Mean = 78.80							$t = 1.533$	$n = 5$
							Variance = 18.70	$n_{min} = 0.71$

Table 73 Red Dog Mine - Vegetation Cover -- 2010

AT8 - 2500 Raw Data									
		Orientation of Transect #1 to #5: East Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No. —>	1	2	3	4	5	Average Cover Relative Cover Freq.		
Grasses and Grass-likes									
<i>Carex microchaeta</i>	Smallawned Sedge	1	3	1	7	2.40	2.86	80	
<i>Carex podocarpa</i>	Shortstalk Sedge	1	3			0.80	0.95	40	
<i>Festuca altaica</i>	Altai Fescue	13	11	8	5	10	9.40	11.19	100
<i>Hierchloe alpina</i>	Alpine Sweetgrass			1	1		0.40	0.48	40
<i>Trisetum spicatum</i> ssp. <i>spi.</i>	Spike Trisetum		4				0.80	0.95	20
Forbs									
<i>Anemone narcissiflora</i>	Narcissus Anemone	1		1	1	0.60	0.71	60	
<i>Anenome parviflora</i>	Smallflowered Anemone	2				0.40	0.48	20	
<i>Arnica lessingii lessingii</i>	Nodding Arnica	1		1		0.40	0.48	40	
<i>Artemisia arctica</i> ssp. <i>arc.</i>	Boreal Sagebrush	1				0.20	0.24	20	
<i>Gentiana glauca</i>	Pale Gentian	1				0.20	0.24	20	
<i>Pedicularis labradorica</i>	Labrador Lousewort	1		1		0.40	0.48	40	
<i>Primula sibirica</i>	Siberian Primrose	2	2	1		1.00	1.19	60	
Deciduous Shrubs									
<i>Salix chamaissos</i>	Chamisso's Willow	3	4	8	7	12	6.80	8.10	100
<i>Salix myrtillifolia</i>	Blueberry Willow	2		4	4		2.00	2.38	60
<i>Salix pulchra</i>	Tealeaf Willow					2	0.40	0.48	20
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	1					0.20	0.24	20
Evergreen Shrubs									
<i>Cassiope tetragona</i> ssp. <i>tet.</i>	White Arctic Mtn. Heather	3	5	8	10	17	8.60	10.24	100
<i>Dryas octopetala</i> ssp. <i>oct.</i>	White Mountain-avens	35	27	35	25	19	28.20	33.57	100
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry				1		0.20	0.24	20
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	4	5	3	1	2	3.00	3.57	100
Mosses									
<i>Hylocomium splendens</i>	Splendid Feather Moss	13	12	9	14	10	11.60	13.81	100
<i>Polytrichum</i> sp.	Polytrichum Moss		2	1			0.60	0.71	40
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	4	1		1		1.20	1.43	60
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen		1				0.20	0.24	20
<i>Peltigera</i> sp.	Felt Lichen	3		1			0.80	0.95	40
	Unknown Crustose Lichen	4	3	7	2		3.20	3.81	80
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)								Mean	
Total Vegetation Cover								84.00	
Rock								0.40	
Litter								15.60	
Bare ground								0.00	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Hylocomium splendens</i>	Splendid Feather Moss	9	17	16	34	14	18.00		
<i>Polytrichum</i> sp.	Polytrichum Moss		2		1		0.60		
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	4	5	2			2.20		
<i>Peltigera</i> sp.	Felt Lichen		1				0.20		
	Unknown Crustose Lichen			2			0.40		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens								Mean	
Total Moss Cover								30.80	
Total Lichen Cover								8.20	
Total Moss and Lichen Cover								39.00	
Sampling Adequacy Calculations									
Mean = 84.00								$t = 1.533$	
								$n = 5$	
								$n_{min} = 0.22$	

Table 74 Red Dog Mine - Vegetation Cover -- 2010

AT8 - 4000 Raw Data		Orientation of Transect #1 to #5: South Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No. —→	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Arctagrostis latifolia</i>	Wideleaf Polargrass	5	4	3	2		2.80	3.23	80
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint	4	2	1	7		2.80	3.23	80
<i>Carex atrofusca</i>	Darkbrown Sedge	15	4	12	12	14	11.40	13.16	100
<i>Festuca altaica</i>	Altai Fescue	6	12	9	12	10	9.80	11.32	100
<i>Poa alpigena</i>	Kentucky Bluegrass					1	0.20	0.23	20
Forbs									
<i>Aconitum delphinifolium</i>	Larkspurleaf Monkshood			1			0.20	0.23	20
<i>Anenome parviflora</i>	Smallflowered Anemone	4	12	8	12	3	7.80	9.01	100
<i>Arnica lessingii lessingii</i>	Nodding Arnica	1	4	5			2.00	2.31	60
<i>Artemisia arctica</i> ssp. <i>arc.</i>	Boreal Sagebrush	7	2	4	9	3	5.00	5.77	100
<i>Epilobium latifolium</i>	Dwarf Fireweed	2					0.40	0.46	20
<i>Equisetum arvense</i>	Field Horsetail	7	3	1			2.20	2.54	60
<i>Lupinus arcticus</i>	Arctic Lupine	1	2	3	15	16	7.40	8.55	100
<i>Pedicularis labradorica</i>	Labrador Lousewort			2			0.40	0.46	20
<i>Petasites frigidus / hyperboreus</i>	Arctic Sweet Coltsfoot		4	3	1	5	2.60	3.00	80
<i>Polygonum viviparum</i>	Alpine Bistort			1			0.20	0.23	20
<i>Primula sibirica</i>	Siberian Primrose	2	10	8	8	6	6.80	7.85	100
<i>Saxifraga punctata</i> ssp. <i>nelsoniana</i>	Heartleaf Saxifrage			1			0.20	0.23	20
<i>Valeriana capitata</i>	Valerian			1			0.20	0.23	20
Deciduous Shrubs									
<i>Salix chamissonis</i>	Chamisso's Willow	13	19	24	6	3	13.00	15.01	100
<i>Salix myrtillifolia</i>	Blueberry Willow	10	2	6		7	5.00	5.77	80
Evergreen Shrubs									
<i>Dryas octopetala</i> ssp. <i>oct.</i>	White Mountain-avens				3		0.60	0.69	20
Mosses									
<i>Hylocomium splendens</i>	Splendid Feather Moss	4	4	6	4	8	5.20	6.00	100
Lichens									
<i>Peltigera</i> sp.	Felt Lichen			2			0.40	0.46	20
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean		
Total Vegetation Cover		81	87	87	91	87		86.60	
Rock		0	0	0	0	0		0.00	
Litter		19	13	13	9	13		13.40	
Bare ground		0	0	0	0	0		0.00	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Hylocomium splendens</i>	Splendid Feather Moss	5	28	19	46	15	22.60		
Lichens									
<i>Peltigera</i> sp.	Felt Lichen		4		1	1	1.20		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean		
Total Moss Cover		9	32	25	50	23		27.80	
Total Lichen Cover		0	4	0	3	1		1.60	
Total Moss and Lichen Cover		9	36	25	53	24		29.40	
Sampling Adequacy Calculations									
Mean = 86.60				t = 1.533			n = 5		
Variance = 12.80							n _{min} = 0.40		

Table 75 Red Dog Mine - Vegetation Cover -- 2010

AT9 - 000								
Raw Data		Orientation of Transect #1 to #5: South Percent Ground Cover Based on Point-Intercept Sampling						
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover	Relative Cover
Grasses and Grass-likes								
<i>Hierchloe alpina</i>	Alpine Sweetgrass	2	1	1		2	1.20	1.47
<i>Trisetum spicatum</i> ssp. <i>spi.</i>	Spike Trisetum				2		0.40	0.49
Forbs								
<i>Anemone narcissiflora</i>	Narcissus Anemone				1		0.20	0.25
<i>Antennaria friesiana</i> ssp. <i>alaskana</i>	Fries' Pussytoes	2		3			1.00	1.23
<i>Artemisia arctica</i> ssp. <i>arc.</i>	Boreal Sagebrush		2	1			0.60	0.74
<i>Oxytropis nigrescens</i> ssp. <i>bryophilia</i>	Blackish Oxytropis				1		0.20	0.25
Deciduous Shrubs								
<i>Arctostaphylos alpina</i>	Alpine Bearberry	17	10	13	14	13	13.40	16.42
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	39	35	28	42	42	37.20	45.59
<i>Salix phlebophylla</i>	Skeletonleaf Willow					1	0.20	0.25
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	1	5				1.20	1.47
Evergreen Shrubs								
<i>Dryas octopetala</i> ssp. <i>oct.</i>	White Mountain-avens		2		1		0.60	0.74
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	13	20	31	17	17	19.60	24.02
Mosses								
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss				1		0.20	0.25
<i>Polytrichum</i> sp.	Polytrichum Moss	5	1	2	1	2	2.20	2.70
Lichens								
<i>Cladonia</i> sp.	Cup Lichen				3		0.60	0.74
<i>Peltigera</i> sp.	Felt Lichen				1		0.20	0.25
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen		1				0.20	0.25
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	3		3	1	1	1.60	1.96
	Unknown Crustose Lichen	1	1		2		0.80	0.98
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean	
Total Vegetation Cover	83	78	82	88	77		81.60	
Rock	2	0	1	0	6		1.80	
Litter	15	19	16	12	14		15.20	
Bare ground	0	3	1	0	3		1.40	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)								
Mosses								
<i>Polytrichum</i> sp.	Polytrichum Moss	2	5		3	2.00		
Lichens								
<i>Cladonia</i> sp.	Cup Lichen		3		6	1	2.00	
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen		2				0.40	
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	2	7	5	2	4	4.00	
	Unknown Crustose Lichen		7		6	1	2.80	
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean	
Total Moss Cover	7	6	2	2	5		4.40	
Total Lichen Cover	6	21	8	21	7		12.60	
Total Moss and Lichen Cover	13	27	10	23	12		17.00	
Sampling Adequacy Calculations								
Mean = 81.60							$t = 1.533$	$n = 5$
Variance = 19.30								$n_{min} = 0.68$

Table 76 Red Dog Mine - Vegetation Cover -- 2010

AT9 - 500									
Raw Data		Orientation of Transect #1 to #5: North Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No. —>	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Carex microchaeta</i>	Smallawned Sedge	2	4	1	1		1.60	1.77	80
<i>Carex podocarpa</i>	Shortstalk Sedge	1					0.20	0.22	20
<i>Festuca altaica</i>	Altai Fescue	11	7	3	2	2	5.00	5.53	100
<i>Hierchloe alpina</i>	Alpine Sweetgrass			3		2	1.00	1.11	40
<i>Luzula multiflora</i> ssp. <i>mul.</i>	Common Woodrush			1			0.20	0.22	20
Forbs									
<i>Anemone narcissiflora</i>	Narcissus Anemone			1			0.20	0.22	20
Deciduous Shrubs									
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch				2		0.40	0.44	20
<i>Salix phlebophylla</i>	Skeletonleaf Willow			3			0.60	0.66	20
<i>Salix pulchra</i>	Tealeaf Willow	2					0.40	0.44	20
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	5	9	3	3	10	6.00	6.64	100
Evergreen Shrubs									
<i>Cassiope tetragona</i> ssp. <i>tet.</i>	White Arctic Mtn. Heather	4			3		1.40	1.55	40
<i>Dryas octopetala</i> ssp. <i>oct.</i>	White Mountain-avens	23	27	37	23	26	27.20	30.09	100
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry	1		3	2		1.20	1.33	60
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	1			2		0.60	0.66	40
<i>Loiseleuria procumbens</i>	Alpine Azalea	13	7		1		4.20	4.65	60
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	4	3	3	6	7	4.60	5.09	100
Mosses									
<i>Polytrichum</i> sp.	Polytrichum Moss			4	1		1.00	1.11	40
Lichens									
<i>Cladonia deformis</i>	Deformed Cup Lichen			1			0.20	0.22	20
<i>Cladonia</i> sp.	Cup Lichen	9		12			4.20	4.65	40
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen	1					0.20	0.22	20
<i>Peltigera aphthosa</i>	Felt Lichen	3		2			1.00	1.11	40
<i>Peltigera</i> sp.	Felt Lichen	1		4	1		1.20	1.33	60
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen	23	24	13	24	18	20.40	22.57	100
<i>Thamnolia vermicularis</i>	Whiteworm Lichen				1		0.20	0.22	20
	Unknown Crustose Lichen	1		15	5	15	7.20	7.96	80
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)								Mean	
Total Vegetation Cover	95	92	81	92	92			90.40	
Rock	0	0	0	0	2			0.40	
Litter	5	8	19	8	6			9.20	
Bare ground	0	0	0	0	0			0.00	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
None							0.00		
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	4		8			2.40		
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen	2		1			0.60		
<i>Peltigera aphthosa</i>	Felt Lichen	1					0.20		
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen	9	18	3	10	2	8.40		
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	1			1		0.40		
	Unknown Crustose Lichen	2		2	2		1.20		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens								Mean	
Total Moss Cover	0	0	0	4	1			1.00	
Total Lichen Cover	40	58	34	67	40			47.80	
Total Moss and Lichen Cover	40	58	34	71	41			48.80	
Sampling Adequacy Calculations									
Mean = 90.40								$t = 1.533$	$n = 5$
								Variance = 29.30	$n_{min} = 0.84$

Table 77 Red Dog Mine - Vegetation Cover -- 2010

AT9 - 1000 Raw Data		Orientation of Transect #1 to #5: West Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Carex bigelowii</i>	Bigelow's Sedge	2		1			0.60	0.65	40
<i>Hierchloe alpina</i>	Alpine Sweetgrass	3		2	1		1.20	1.30	60
<i>Poa alpigena</i>	Kentucky Bluegrass	3		1	2		1.20	1.30	60
Forbs									
<i>Arnica lessingii lessingii</i>	Nodding Arnica			2			0.40	0.43	20
<i>Pedicularis labradorica</i>	Labrador Lousewort				1		0.20	0.22	20
<i>Saussurea angustifolia</i>	Narrow-leaf Saw Wort		1				0.20	0.22	20
Deciduous Shrubs									
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	19	20	31	18	15	20.60	22.29	100
<i>Salix myrtillifolia</i>	Blueberry Willow	2					0.40	0.43	20
<i>Salix pulchra</i>	Tealeaf Willow	12	21	10	6	12	12.20	13.20	100
<i>Salix reticulata</i>	Netleaf Willow				1		0.20	0.22	20
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	20	18	16	33	28	23.00	24.89	100
Evergreen Shrubs									
<i>Cassiope tetragona</i> ssp. <i>tet.</i>	White Arctic Mtn. Heather		2				0.40	0.43	20
<i>Dryas octopetala</i> ssp. <i>oct.</i>	White Mountain-avens	3	6	16	18	14	11.40	12.34	100
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	8	2	3	1		2.80	3.03	80
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	5	2	4	4	1	3.20	3.46	100
Mosses									
<i>Hylocomium splendens</i>	Splendid Feather Moss	19	11	9	5	15	11.80	12.77	100
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	1	1	2		2	1.20	1.30	80
<i>Peltigera aphthosa</i>	Felt Lichen				1		0.20	0.22	20
<i>Peltigera</i> sp.	Felt Lichen	3					0.60	0.65	20
<i>Thamnolia vermicularis</i>	Whiteworm Lichen			1	1		0.40	0.43	40
	Unknown Crustose Lichen					1	0.20	0.22	20
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean		
Total Vegetation Cover		95	89	93	94	91		92.40	
Rock		0	0	0	0	0		0.00	
Litter		5	11	7	6	9		7.60	
Bare ground		0	0	0	0	0		0.00	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Hylocomium splendens</i>	Splendid Feather Moss	26	50	27	61	31	39.00		
Lichens									
<i>Cladonia</i> sp.	Cup Lichen		1	3	1	2	1.40		
<i>Peltigera</i> sp.	Felt Lichen	1	1				0.40		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean		
Total Moss Cover		45	61	36	66	46		50.80	
Total Lichen Cover		5	3	6	1	7		4.40	
Total Moss and Lichen Cover		50	64	42	67	53		55.20	
Sampling Adequacy Calculations									
Mean = 92.40		$t = 1.533$				n = 5			
		Variance = 5.80					$n_{min} = 0.16$		

Table 78 Red Dog Mine - Vegetation Cover -- 2010

AT9 - 1500 Raw Data									
Orientation of Transect #1 to #5: North Percent Ground Cover Based on Point-Intercept Sampling									
1st Hits	Transect No. —→	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Carex microchaeta</i>	Smallawned Sedge	12	10	9			6.20	7.29	60
<i>Carex podocarpa</i>	Shortstalk Sedge		13	6			3.80	4.47	40
<i>Hierchloe alpina</i>	Alpine Sweetgrass	7	4	8	2	2	4.60	5.41	100
<i>Luzula confusa</i>	Northern Woodrush				1		0.20	0.24	20
Forbs									
<i>Anemone narcissiflora</i>	Narcissus Anemone		2	1			0.60	0.71	40
<i>Arnica lessingii lessingii</i>	Nodding Arnica				2		0.40	0.47	20
<i>Minuartia arctica</i>	Arctic Stichwort	1	1	2			0.80	0.94	60
<i>Pedicularis kanei</i> ssp. kan.	Woolly Lousewort				1		0.20	0.24	20
Deciduous Shrubs									
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	27	21	14	20	12	18.80	22.12	100
<i>Salix myrtillifolia</i>	Blueberry Willow	2		12	1	2	3.40	4.00	80
<i>Salix phlebophylla</i>	Skeletonleaf Willow		5		1		1.20	1.41	40
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	6	12	7	5	37	13.40	15.76	100
Evergreen Shrubs									
<i>Cassiope tetragona</i> ssp. <i>tet.</i>	White Arctic Mtn. Heather		1	5	3	4	2.60	3.06	80
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry		2	2			0.80	0.94	40
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	3	3	3	4	2	3.00	3.53	100
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	3	6	4		3	3.20	3.76	80
Mosses									
<i>Hylocomium splendens</i>	Splendid Feather Moss	5	9	10	19	15	11.60	13.65	100
<i>Polytrichum</i> sp.	Polytrichum Moss	2	6	3	8	6	5.00	5.88	100
Lichens									
<i>Cladonia</i> sp.	Cup Lichen		3	1	1	1	1.20	1.41	80
<i>Peltigera</i> sp.	Felt Lichen		1	1		4	1.20	1.41	60
<i>Thamnolia vermicularis</i>	Whiteworm Lichen					1	0.20	0.24	20
	Unknown Crustose Lichen	11	1	1			2.60	3.06	60
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)								Mean	
Total Vegetation Cover		79	90	82	76	98		85.00	
Rock		0	0	1	0	0		0.20	
Litter		21	10	17	24	2		14.80	
Bare ground		0	0	0	0	0		0.00	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Hylocomium splendens</i>	Splendid Feather Moss	10	13	18	30	24	19.00		
<i>Polytrichum</i> sp.	Polytrichum Moss	7	10	6	18	14	11.00		
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	5	10	3	2	1	4.20		
<i>Peltigera aphthosa</i>	Felt Lichen	4	2				1.20		
<i>Peltigera</i> sp.	Felt Lichen		5		2	2	1.80		
	Unknown Crustose Lichen	8	7	3	1		3.80		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens								Mean	
Total Moss Cover		24	38	37	75	59		46.60	
Total Lichen Cover		28	29	9	6	9		16.20	
Total Moss and Lichen Cover		52	67	46	81	68		62.80	
Sampling Adequacy Calculations									
Mean = 85.00		$t = 1.533$					$n = 5$		
		Variance = 80.00					$n_{min} = 2.60$		

Table 79 Red Dog Mine - Vegetation Cover -- 2010

AT9 - 2500										
Raw Data										
Orientation of Transect #1 to #5: South										
1st Hits	Transect No. —>	1	2	3	4	5	Average Cover	Relative Cover		
Grasses and Grass-likes							Freq.			
<i>Arctagrostis latifolia</i>	Wideleaf Polargrass	1			2	0.60	0.68	40		
<i>Carex microchaeta</i>	Smallawned Sedge		3		2	1.00	1.14	40		
<i>Carex podocarpa</i>	Shortstalk Sedge			1		0.20	0.23	20		
<i>Carex scirpoidea</i>	Northern Singlespike Sedge			1		0.20	0.23	20		
<i>Hierchloe alpina</i>	Alpine Sweetgrass	1		1		0.40	0.46	40		
Forbs										
<i>Anemone narcissiflora</i>	Narcissus Anemone			1		0.20	0.23	20		
<i>Boykinia richardsonii</i>	Richardson's Brookfoam	1	1	2		0.60	0.68	40		
<i>Polemonium acutiflorum</i>	Tall Jacob's Ladder	1				0.20	0.23	20		
Deciduous Shrubs										
<i>Salix phlebophylla</i>	Skeletonleaf Willow	6		1		1.40	1.60	40		
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	16	18	29	34	18	23.00	26.26		
Evergreen Shrubs										
<i>Cassiope tetragona</i> ssp. <i>tet.</i>	White Arctic Mtn. Heather	10	5	9	5	3	6.40	7.31		
<i>Dryas octopetala</i> ssp. <i>oct.</i>	White Mountain-avens	36	25	9	13	31	22.80	26.03		
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry		5				1.00	1.14		
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea		2	2			0.80	0.91		
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	9	9	10	12	9	9.80	11.19		
Mosses										
<i>Hylocomium splendens</i>	Splendid Feather Moss	1	5	10	5	9	6.00	6.85		
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss			3			0.60	0.68		
<i>Polytrichum</i> sp.	Polytrichum Moss	4	4	4	7		3.80	4.34		
Lichens										
<i>Cladonia</i> sp.	Cup Lichen	6	4	6	2	4	4.40	5.02		
<i>Flavocetraria cucullata</i>	Flavocetraria Lichen		1		1		0.40	0.46		
<i>Peltigera aphthosa</i>	Felt Lichen		1		1		0.40	0.46		
<i>Peltigera</i> sp.	Felt Lichen	3	1	2	2	1	1.80	2.05		
<i>Thamnolia vermicularis</i>	Whiteworm Lichen			1			0.20	0.23		
	Unknown Crustose Lichen	3		2		2	1.40	1.60		
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean			
Total Vegetation Cover	86	88	89	87	88		87.60			
Rock	1	4	1	1	0		1.40			
Litter	11	5	10	11	12		9.80			
Bare ground	2	3	0	1	0		1.20			
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)										
Mosses										
<i>Hylocomium splendens</i>	Splendid Feather Moss	7	2	8	10	4	6.20			
<i>Polytrichum</i> sp.	Polytrichum Moss	2	15	3	22	4	9.20			
Lichens										
<i>Cladonia</i> sp.	Cup Lichen	2	7	6	9	7	6.20			
<i>Peltigera</i> sp.	Felt Lichen	1	1	2	2		1.20			
<i>Thamnolia vermicularis</i>	Whiteworm Lichen			2			0.40			
	Unknown Crustose Lichen		4				0.80			
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean			
Total Moss Cover	10	26	25	44	24		25.80			
Total Lichen Cover	15	19	21	17	14		17.20			
Total Moss and Lichen Cover	25	45	46	61	38		43.00			
Sampling Adequacy Calculations										
Mean = 87.60	$t = 1.533$				n = 5					
	Variance = 1.30					n _{min} = 0.04				

Table 80 Red Dog Mine - Vegetation Cover -- 2010

AT9 - 4000		Orientation of Transect #1 to #5: South										
Raw Data		Percent Ground Cover Based on Point-Intercept Sampling										
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover	Relative Cover	Freq.			
Grasses and Grass-likes												
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass	7	13	23	26	30	19.80	23.02	100			
Forbs												
<i>Rubus chamaemorus</i>	Cloudberry	29	19	23	20	14	21.00	24.42	100			
Deciduous Shrubs												
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	4	13	6	10	7	8.00	9.30	100			
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry				2	5	1.40	1.63	40			
Evergreen Shrubs												
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	29	21	20	17	22	21.80	25.35	100			
<i>Rhododendron lapponicum</i>	Lapland Rosebay				1		0.20	0.23	20			
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	9	7	1	2	4	4.60	5.35	100			
Mosses												
<i>Aulacomnium turgidum</i>	Turgid Aulacomnium Moss	5		8		2	3.00	3.49	60			
<i>Sphagnum</i> sp.	Sphagnum Moss	3	9		3	3	3.60	4.19	80			
Lichens												
<i>Cladonia</i> sp.	Cup Lichen	1					0.20	0.23	20			
<i>Peltigera aphthosa</i>	Felt Lichen		3		1		0.80	0.93	40			
<i>Peltigera</i> sp.	Felt Lichen	2	1		2	3	1.60	1.86	80			
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean					
Total Vegetation Cover		89	86	81	84	90	86.00					
Rock		0	0	0	0	0	0.00					
Litter		11	14	19	16	10	14.00					
Bare ground		0	0	0	0	0	0.00					
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)												
Mosses												
<i>Aulacomnium turgidum</i>	Turgid Aulacomnium Moss	8		12		4	4.80					
<i>Sphagnum</i> sp.	Sphagnum Moss	10	41		24	2	15.40					
Lichens												
<i>Cladonia</i> sp.	Cup Lichen	4	5	2	1		2.40					
<i>Peltigera aphthosa</i>	Felt Lichen		2				0.40					
<i>Peltigera</i> sp.	Felt Lichen	2	2	1	2	1	1.60					
<i>Thamnolia vermicularis</i>	Whiteworm Lichen	1					0.20					
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean					
Total Moss Cover		26	50	20	27	11	26.80					
Total Lichen Cover		10	13	3	6	4	7.20					
Total Moss and Lichen Cover		36	63	23	33	15	34.00					
Sampling Adequacy Calculations												
Mean = 86.00		$t = 1.533$					$n = 5$					
		Variance = 13.50					$n_{min} = 0.43$					

Table 81 Red Dog Mine - Vegetation Cover -- 2010

RAT1 - 100 Raw Data											Percent Ground Cover Based on Point-Intercept Sampling			
1st Hits	Transect No. —→	1	2	3	4	5	6	7	8	9	10	Average Cover	Relative Cover	Freq.
	Orientation —→	North					South							
Grasses and Grass-likes														
<i>Carex aquatilis</i> ssp. aqu.	Water Sedge			2	12							1.40	1.86	20
<i>Carex bigelowii</i>	Bigelow's Sedge	1	6	1	7	5	10	5				3.50	4.64	70
<i>Carex microchaeta</i>	Smallawned Sedge			1								0.10	0.13	10
<i>Carex podocarpa</i>	Shortstalk Sedge	3										0.30	0.40	10
<i>Eriophorum angustifolium</i> ssp. <i>subarcticum</i>	Tall Cottongrass	5										0.50	0.66	10
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass	46	35	52	53	36	35	42	56	48	42	44.50	59.02	100
<i>Luzula multiflora</i> ssp. <i>mul.</i>	Common Woodrush					1						0.10	0.13	10
Forbs														
<i>Rubus chamaemorus</i>	Cloudberry	2	4	2	1		2	1	2	5	1	2.00	2.65	90
Deciduous Shrubs														
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	7	1	2	3	7	2	3	2	6	1	3.40	4.51	100
<i>Salix pulchra</i>	Tealeaf Willow						1					0.10	0.13	10
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	12	12	7	12	8	25	18	14	1	9	11.80	15.65	100
Evergreen Shrubs														
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry		1	2								0.30	0.40	20
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	1	1			2	1	2	3	5		1.50	1.99	70
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	1					2	1		1		0.50	0.66	40
Mosses														
<i>Polytrichum</i> sp.	Polytrichum Moss	7			2							0.90	1.19	20
<i>Sphagnum</i> sp.	Sphagnum Moss	3	2	6	1		8	4	4	5	12	4.50	5.97	90
Lichens														
None												0.00	0.00	0
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)											Mean			
Total Vegetation Cover	80	70	72	73	75	80	80	80	73	71		75.40		
Rock	0	0	0	0	0	0	0	0	0	0		0.00		
Litter	20	30	28	24	25	20	20	19	27	29		24.20		
Bare ground	0	0	0	3	0	0	0	1	0	0		0.40		
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)														
Mosses														
<i>Polytrichum</i> sp.	Polytrichum Moss	8	2									1.00		
<i>Sphagnum</i> sp.	Sphagnum Moss	20	13	8	11	7	25	28	14	22	9	15.70		
Lichens														
<i>Peltigera aphthosa</i>	Felt Lichen	2										0.20		
	Unknown Rock Lichen											0.10		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens											Mean			
Total Moss Cover	38	17	14	12	9	33	32	18	27	21		22.10		
Total Lichen Cover	2	0	0	0	0	0	0	1	0	0		0.30		
Total Moss and Lichen Cover	40	17	14	12	9	33	32	19	27	21		22.40		
Sampling Adequacy Calculations														
Mean = 75.40		$t = 1.383$		Variance = 17.38							$n = 10$		$n_{min} = 0.58$	

Table 82 Red Dog Mine - Vegetation Cover -- 2010

RAT1 - 1000												
Raw Data												
Percent Ground Cover Based on Point-Intercept Sampling												
1st Hits	<i>Transect No.</i> —>					1	2	3	4	5	6	7
	<i>Orientation</i> —>					North			South			Average Cover
Grasses and Grass-likes												
<i>Carex aquatilis</i> ssp. <i>aqu.</i>	Water Sedge	2								3		0.50
<i>Carex bigelowii</i>	Bigelow's Sedge	2	4	2	1	2	1	1	1			1.40
<i>Carex microchaeta</i>	Smallawned Sedge			2	2							0.40
<i>Eriophorum angustifolium</i> ssp. <i>subarcticum</i>	Tall Cottongrass				3							0.30
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass	34	24	27	34	29	40	30	42	38	51	34.90
Forbs												
<i>Rubus chamaemorus</i>	Cloudberry	4		1	1	3	4	6	1	3	2.30	2.89
Deciduous Shrubs												
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	14	4	7	7	9	4	6	2	5	4	6.20
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	1	2	13	4	2	1	11	3	2	10	4.90
Evergreen Shrubs												
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry				1							0.10
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	20	17	13	10	12	14	14	14	8	10	13.20
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	5	10	2	6	8	12	8	7	16	6	8.00
Mosses												
<i>Hylocomium splendens</i>	Splendid Feather Moss	6	4	4	7	1	6	17	4	8	3	6.00
<i>Polytrichum</i> sp.	Polytrichum Moss				1			5	1	2		0.90
Lichens												
<i>Cladonia</i> sp.	Cup Lichen							1	1	2		0.40
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)											Mean	
Total Vegetation Cover	86	67	67	74	68	82	90	85	84	92		79.50
Rock	0	0	0	0	0	0	0	0	0	0		0.00
Litter	14	33	32	26	31	18	10	15	16	8		20.30
Bare ground	0	0	1	0	1	0	0	0	0	0		0.20
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)												
Mosses												
<i>Hylocomium splendens</i>	Splendid Feather Moss	25	23	9	13	9	9	17	8	12	8	13.30
<i>Polytrichum</i> sp.	Polytrichum Moss	5	4	2	2		3		1	3		2.00
Lichens												
<i>Cladonia</i> sp.	Cup Lichen	1		2		1	2	2	3	7		1.80
<i>Peltigera</i> sp.	Felt Lichen	2	4								1	0.70
<i>Thamnolia vermicularis</i>	Whiteworm Lichen										1	0.10
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens											Mean	
Total Moss Cover	31	32	17	23	12	15	37	17	22	16		22.20
Total Lichen Cover	2	5	0	2	0	1	2	3	4	11		3.00
Total Moss and Lichen Cover	33	37	17	25	12	16	39	20	26	27		25.20
Sampling Adequacy Calculations												
Mean = 79.50	$t = 1.383$			Variance = 93.39			$n = 10$			$n_{\min} = 2.83$		

Table 83 Red Dog Mine - Vegetation Cover -- 2010

RAT1 - 2000																
Raw Data																
1st Hits	Transect No. —>	Percent Ground Cover Based on Point-Intercept Sampling										Average Cover	Relative Cover	Freq.		
		Orientation —>					North									
							South									
Grasses and Grass-likes																
<i>Carex aquatilis</i> ssp. aqu.	Water Sedge			2	1							0.30	0.37	20		
<i>Carex bigelowii</i>	Bigelow's Sedge	1	1	2	3	5	2	2	6	7		2.90	3.58	90		
<i>Carex podocarpa</i>	Shortstalk Sedge			1								0.10	0.12	10		
<i>Carex scirpoidea</i>	Northern Singlespike Sedge				1							0.10	0.12	10		
<i>Eriophorum angustifolium</i> ssp. <i>subarcticum</i>	Tall Cottongrass		2									0.20	0.25	10		
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass	42	32	31	27	27	30	37	28	39	28	32.10	39.63	100		
Forbs																
<i>Petasites frigidus</i> var. <i>hyperboreus</i>	Arctic Sweet Coltsfoot				1							0.10	0.12	10		
<i>Rubus chamaemorus</i>	Cloudberry	1		1			1		1			0.40	0.49	40		
Deciduous Shrubs																
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	3	11	10	5	7	2	6	5	7	9	6.50	8.02	100		
<i>Salix pulchra</i>	Tealeaf Willow			1	1					2		0.40	0.49	30		
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	1	1				4	4		2		1.20	1.48	50		
Evergreen Shrubs																
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry								1			0.10	0.12	10		
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	18	23	18	17	15	22	20	21	3	8	16.50	20.37	100		
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	11	3	10	16	6	5	12	10	5	3	8.10	10.00	100		
Mosses																
<i>Hylocomium splendens</i>	Splendid Feather Moss	3	1	7	5	6	4	1	8	5	5	4.50	5.56	100		
<i>Polytrichum</i> sp.	Polytrichum Moss	4	6	3	1	2	7	6	7	4	3	4.30	5.31	100		
Lichens																
<i>Cladonia</i> sp.	Cup Lichen		1				1	2	5	5		1.40	1.73	50		
<i>Peltigera aphthosa</i>	Felt Lichen			1	1		1			1		0.40	0.49	40		
<i>Peltigera</i> sp.	Felt Lichen	1	1		4							0.60	0.74	30		
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen	1	1				1		4	1		0.80	0.99	50		
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)													Mean			
Total Vegetation Cover		85	83	84	83	72	76	86	87	79	75		81.00			
Rock		0	0	0	0	0	0	0	0	0	0		0.00			
Litter		15	17	14	17	28	24	14	13	21	25		18.80			
Bare ground		0	0	2	0	0	0	0	0	0	0		0.20			
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)																
Mosses																
<i>Hylocomium splendens</i>	Splendid Feather Moss	7	3	15	14	8	11	6	4	2	7	7.70				
<i>Polytrichum</i> sp.	Polytrichum Moss	14	12	7	2	12	1	14	15	1	2	8.00				
Lichens																
<i>Cladonia</i> sp.	Cup Lichen		4	1	3	5	2	5	2	1	7	3.00				
<i>Peltigera aphthosa</i>	Felt Lichen			2			1			2		0.50				
<i>Peltigera</i> sp.	Felt Lichen	3	7	8	4							2.20				
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen						1			1		0.20				
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens													Mean			
Total Moss Cover		28	22	32	22	28	23	27	34	12	17		24.50			
Total Lichen Cover		2	10	9	18	9	6	6	4	11	16		9.10			
Total Moss and Lichen Cover		30	32	41	40	37	29	33	38	23	33		33.60			
Sampling Adequacy Calculations																
Mean = 81.00		$t = 1.383$				Variance = 26.67				n = 10	$n_{min} = 0.78$					

Table 84 Red Dog Mine - Vegetation Cover -- 2010

RAT2 - 100 Raw Data																					
Percent Ground Cover Based on Point-Intercept Sampling																					
1st Hits	Transect No. —>	1	2	3	4	5	6	7	8	9	10	Average Cover	Relative Cover	Freq.							
	Orientation —>	North						South													
Grasses and Grass-likes																					
<i>Arctagrostis latifolia</i>	Wideleaf Polargrass							4	1	2											
<i>Carex aquatilis</i> ssp. <i>aqu.</i>	Water Sedge							1	1												
<i>Carex bigelowii</i>	Bigelow's Sedge	15	20	18	12	9	7	22	14	25	18	16.00	19.98	100							
<i>Eriophorum angustifolium</i> ssp. <i>subarcticum</i>	Tall Cottongrass							3	1												
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass	12	13	17	21	16	34	14	18	10	26	18.10	22.60	100							
<i>Festuca brachyphylla</i>	Alpine Fescue							1				0.10	0.12	10							
Forbs																					
<i>Petasites frigidus</i> var. <i>hyperboreus</i>	Arctic Sweet Coltsfoot							1	1												
<i>Rubus chamaemorus</i>	Cloudberry	1	1	3	10							3.50	4.37	90							
Deciduous Shrubs																					
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	11	8	5	14	12	9	3	11	11	11	9.50	11.86	100							
<i>Salix pulchra</i>	Tealeaf Willow	3	1			2	4	3	7	10	1	3.10	3.87	80							
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	16	11	16	12	8	10	7	6	8	1	9.50	11.86	100							
Evergreen Shrubs																					
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry	1	1	1	3	5	3	1	3	1	1	2.00	2.50	100							
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	2	7	6	3	8	1	5	4	1	3	4.00	4.99	100							
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	5	1	2	2	2	2	5	4			2.20	2.75	80							
Mosses																					
<i>Hylocomium splendens</i>	Splendid Feather Moss	9	8	2	6	7	6	13	8	16	11	8.60	10.74	100							
<i>Polytrichum</i> sp.	Polytrichum Moss							8	2												
<i>Sphagnum</i> sp.	Sphagnum Moss																				
Lichens																					
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen							1				0.10	0.12	10							
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)																					
Mean																					
Total Vegetation Cover	70	76	78	81	86	80	80	84	86	80											
Rock	0	0	0	0	0	0	0	0	0	0											
Litter	29	24	22	19	14	20	20	16	14	20											
Bare ground	1	0	0	0	0	0	0	0	0	0											
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)																					
Mosses																					
<i>Hylocomium splendens</i>	Splendid Feather Moss	5	12	18	12	13	13	17	15	25	16	14.60									
<i>Polytrichum</i> sp.	Polytrichum Moss	28	18	11	8	20							8.50								
Lichens																					
<i>Cladonia</i> sp.	Cup Lichen							1	3				0.40								
<i>Dactylina arctica</i>	Arctic Dactylina Lichen													0.10							
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen							1				0.20									
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens																					
Mean																					
Total Moss Cover	42	38	39	28	44	19	30	25	44	27											
Total Lichen Cover	1	0	0	0	1	5	0	1	0	0											
Total Moss and Lichen Cover	43	38	39	28	45	24	30	26	44	27											
Sampling Adequacy Calculations																					
Mean = 80.10	$t = 1.383$						Variance = 23.21						n = 10	$n_{min} = 0.69$							

Table 85 Red Dog Mine - Vegetation Cover -- 2010

RAT2 - 1000														
Raw Data														
Percent Ground Cover Based on Point-Intercept Sampling														
1st Hits	Transect No. —>		1	2	3	4	5	6	7	8	9	10		
	Orientation —>		North					South						
Grasses and Grass-likes														
<i>Carex bigelowii</i>	Bigelow's Sedge		15	6	15	17	13	10	4	5	11	13		
<i>Eriophorum angustifolium</i> ssp. <i>subarcticum</i>	Tall Cottongrass		2											
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass		16	16	15	9	5	19	19	26	21	22		
Forbs														
<i>Rubus chamaemorus</i>	Cloudberry		1	6	2	4	7	5	5	2	4	1		
Deciduous Shrubs														
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch		8	8	10	6	2	9	7	11	13	6		
<i>Salix pulchra</i>	Tealeaf Willow		1											
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry		20	11	15	26	22	9	12	7	8	7		
Evergreen Shrubs														
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry		3	1	5	1		1	2	1		1.40		
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea		8	9	8	7	3	16	19	7	12	18		
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry		6	10	7	5	4	10	7	8	5	3		
Mosses														
<i>Pleurozium schreberi</i>	Treber's Big Red Stem Moss		2									0.20		
<i>Polytrichum</i> sp.	Polytrichum Moss		1									0.40		
<i>Sphagnum</i> sp.	Sphagnum Moss		7	14	8	10	22	5	10	10	4	9		
Lichens														
<i>Cladonia</i> sp.	Cup Lichen				2			2	2	2		0.80		
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)														
Mean														
Total Vegetation Cover			87	84	85	87	78	84	85	81	83	79		
Rock			0	0	0	0	0	0	0	0	0	0		
Litter			13	16	15	13	22	16	15	19	17	21		
Bare ground			0	0	0	0	0	0	0	0	0	0		
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)														
Mosses														
<i>Polytrichum</i> sp.	Polytrichum Moss		9	4						2		1.50		
<i>Sphagnum</i> sp.	Sphagnum Moss		21	33	38	47	57	34	30	33	25	23		
Lichens														
<i>Cladonia</i> sp.	Cup Lichen				1	1		3	2	3		1.00		
<i>Peltigera</i> sp.	Felt Lichen		1									0.10		
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen		2									0.20		
<i>Thamnolia vermicularis</i>	Whiteworm Lichen		1		2							0.30		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens														
Mean														
Total Moss Cover			40	51	46	57	79	39	40	44	33	32		
Total Lichen Cover			4	0	1	5	0	0	5	4	5	0		
Total Moss and Lichen Cover			44	51	47	62	79	39	45	48	38	32		
Sampling Adequacy Calculations														
Mean = 83.30	$t = 1.383$		Variance = 9.57		$n = 10$		$n_{min} = 0.26$							

Table 86 Red Dog Mine - Vegetation Cover -- 2010

RAT2 - 2000														
Raw Data														
Percent Ground Cover Based on Point-Intercept Sampling														
1st Hits	Transect No. —>		1	2	3	4	5	6	7	8	9	10		
	Orientation —>		North					South						
Grasses and Grass-likes														
<i>Arctagrostis latifolia</i>	Wideleaf Polagrass		2					0.20						
<i>Carex bigelowii</i>	Bigelow's Sedge		4	2	2	11	5	3	4	2	15	9		
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass		12	13	24	12	13	29	31	43	20	26		
Forbs														
<i>Petasites frigidus</i> var. <i>hyperboreus</i>	Arctic Sweet Coltsfoot		1	2	5	0.80					0.96	30		
<i>Rubus chamaemorus</i>	Cloudberry		1	2	4	11	3	8	3	5	12	4.90	5.90	
Deciduous Shrubs														
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch		14	12	9	11	10	9	5	6	14	6		
<i>Salix pulchra</i>	Tealeaf Willow		3	5	3	9.60					11.55	100		
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry		12	2	8	7	16	2	6	8	5	15		
Evergreen Shrubs														
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry		4	2	1	1.50					1.81	80		
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea		15	16	16	16	24	5	13	6	6	12.10	14.56	
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry		9	9	7	13	7	14	10	4	7.90		9.51	
Mosses														
<i>Hylocomium splendens</i>	Splendid Feather Moss		3					0.30						
<i>Polytrichum</i> sp.	Polytrichum Moss		7	12	8	8	3	8	13	3	6	6		
Lichens														
<i>Cladonia</i> sp.	Cup Lichen		1					0.20						
<i>Peltigera aphthosa</i>	Felt Lichen		0.10					0.12						
<i>Peltigera</i> sp.	Felt Lichen		0.10					0.12						
<i>Thamnolia vermicularis</i>	Whiteworm Lichen		0.10					0.12						
	Unknown Crustose Lichen		0.30					0.36						
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)														
Total Vegetation Cover	82	81	91	89	87	81	87	78	79	76	83.10			
Rock	0	0	0	0	0	0	0	0	0	0	0.00			
Litter	18	19	9	11	13	19	13	22	21	24	16.90			
Bare ground	0	0	0	0	0	0	0	0	0	0	0.00			
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)														
Mosses														
<i>Polytrichum</i> sp.	Polytrichum Moss		27	35	23	29	22	31	27	15	24	16		
Lichens														
<i>Cladonia</i> sp.	Cup Lichen		3	2	0.90					0.24		20		
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen		0.10					0.10						
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen		0.10					0.10						
<i>Thamnolia vermicularis</i>	Whiteworm Lichen		0.10					0.10						
	Unknown Crustose Lichen		0.10					0.10						
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens														
Total Moss Cover	34	47	31	37	28	39	40	18	30	22	32.60			
Total Lichen Cover	0	5	8	1	0	3	2	0	0	2	2.10			
Total Moss and Lichen Cover	34	52	39	38	28	42	42	18	30	24	34.70			
Sampling Adequacy Calculations														
Mean = 83.10	t = 1.383		Variance = 25.66					n = 10						
	$n_{min} = 0.71$													

Table 87 Red Dog Mine - Vegetation Cover -- 2010

RAT3 - 100 Raw Data														
Percent Ground Cover Based on Point-Intercept Sampling														
1st Hits	Transect No. —>	1	2	3	4	5	6	7	8	9	10	Average Cover	Relative Cover	Freq.
Orientation —>														
Grasses and Grass-likes														
<i>Arctagrostis latifolia</i>	Wideleaf Polargrass						3	1				0.40	0.52	20
<i>Carex aquatilis</i> ssp. <i>aqu.</i>	Water Sedge	7	1	1		6	5	4	4	20		4.80	6.20	80
<i>Carex bigelowii</i>	Bigelow's Sedge		1	6	1		3	3	2		3	1.90	2.45	70
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass	29	15	28	32	27	25	26	20	31	13	24.60	31.78	100
Forbs														
<i>Rubus chamaemorus</i>	Cloudberry	14	9	9	2	2	3	7	5	7	9	6.70	8.66	100
Deciduous Shrubs														
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	13	18	5	13	13	6	6	12	13	9	10.80	13.95	100
<i>Salix pulchra</i>	Tealeaf Willow					1						0.10	0.13	10
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	1	7	6	7	12	11	9	19	20	19	11.10	14.34	100
Evergreen Shrubs														
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry						1		1			0.20	0.26	20
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	6	21	8	10	11	11	11	7	3	3	9.10	11.76	100
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry		1	9	6	4	3	9	4	3	2	4.10	5.30	90
Mosses														
<i>Polytrichum</i> sp.	Polytrichum Moss	4	2	1	1	1			2	1		1.20	1.55	70
<i>Sphagnum</i> sp.	Sphagnum Moss			5	4	2	1	4	3	2		2.10	2.71	70
Lichens														
<i>Cladonia</i> sp.	Cup Lichen								2			0.20	0.26	10
	Unknown Crustose Lichen					1						0.10	0.13	10
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)													Mean	
Total Vegetation Cover		74	75	78	77	79	72	76	81	84	78		77.40	
	Rock	0	0	0	0	0	0	0	0	0	0		0.00	
	Litter	26	25	22	23	21	28	24	19	16	22		22.60	
	Bare ground	0	0	0	0	0	0	0	0	0	0		0.00	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)														
Mosses														
<i>Polytrichum</i> sp.	Polytrichum Moss	3	2	2	1		3	13	15	8		4.70		
<i>Sphagnum</i> sp.	Sphagnum Moss	7	14	19	9	20	10	17	2	1	9	10.80		
Lichens														
<i>Cladonia</i> sp.	Cup Lichen					1						0.10		
<i>Peltigera</i> sp.	Felt Lichen				1							0.10		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens													Mean	
Total Moss Cover		14	18	27	15	23	11	24	20	19	17		18.80	
Total Lichen Cover		0	0	0	2	1	0	0	2	0	0		0.50	
Total Moss and Lichen Cover		14	18	27	17	24	11	24	22	19	17		19.30	
Sampling Adequacy Calculations														
Mean = 77.40		t = 1.383		Variance = 12.04			n = 10		n _{min} = 0.38					

Table 88 Red Dog Mine - Vegetation Cover -- 2010

RAT3 - 1000															
Raw Data															
Percent Ground Cover Based on Point-Intercept Sampling															
1st Hits	Transect No. —>		1	2	3	4	5	6	7	8	9	10			
	Orientation —>		North				South				Average Cover	Relative Cover	Freq.		
Grasses and Grass-likes															
<i>Carex aquatilis</i> ssp. aqu.	Water Sedge		1								0.10	0.13	10		
<i>Carex bigelowii</i>	Bigelow's Sedge		2	2	1			1		6		1.20	1.54	50	
<i>Eriophorum vaginatum</i> ssp. vag.	Tussock Cottongrass		16	20	16	21	21	26	30	18	14	8	19.00	24.33	100
Forbs															
<i>Rubus chamaemorus</i>	Cloudberry		1	6	8	2	5	5	8	6	8	3	5.20	6.66	100
Deciduous Shrubs															
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch		12	6	4	14	6	10	13	6	8	6	8.50	10.88	100
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry		11	7	13	6	12	10	8	6	2	11	8.60	11.01	100
Evergreen Shrubs															
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry		2	5	5	1		3		5		2.10	2.69	60	
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea		19	15	15	7	25	10	6	18	21	11	14.70	18.82	100
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry		8	9	5	6	10	2	4	5	2	6	5.70	7.30	100
Mosses															
<i>Hylocomium splendens</i>	Splendid Feather Moss		4	3	4	2		8	4	19	8	17	6.90	8.83	90
<i>Polytrichum</i> sp.	Polytrichum Moss		10	7	7	20	8			1	2		5.50	7.04	70
Lichens															
<i>Cladonia</i> sp.	Cup Lichen											0.10	0.13	10	
<i>Peltigera aphthosa</i>	Felt Lichen			1								0.10	0.13	10	
	Unknown Crustose Lichen		2		2							0.40	0.51	20	
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)												Mean			
Total Vegetation Cover	86	80	80	82	87	71	77	80	65	73		78.10			
Rock	0	0	0	0	0	0	0	0	0	0		0.00			
Litter	14	20	20	18	13	29	23	20	35	27		21.90			
Bare ground	0	0	0	0	0	0	0	0	0	0		0.00			
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)															
Mosses															
<i>Hylocomium splendens</i>	Splendid Feather Moss		19	13	15	8	2	6	16	15	11	37	14.20		
<i>Polytrichum</i> sp.	Polytrichum Moss		25	32	16	40	23	6	2	1	5	2	15.20		
Lichens															
<i>Cladonia</i> sp.	Cup Lichen		1		2		2		2			0.70			
	Unknown Crustose Lichen		3		3							0.60			
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens												Mean			
Total Moss Cover	58	55	42	70	33	20	22	36	26	56		41.80			
Total Lichen Cover	6	0	4	2	2	2	0	1	2	0		1.90			
Total Moss and Lichen Cover	64	55	46	72	35	22	22	37	28	56		43.70			
Sampling Adequacy Calculations															
Mean = 78.10	t = 1.383				Variance = 46.32				n = 10	$n_{min} = 1.45$					

Table 89 Red Dog Mine - Vegetation Cover -- 2010

RAT3 - 2000 Raw Data														
Percent Ground Cover Based on Point-Intercept Sampling														
1st Hits	Transect No. —→	1	2	3	4	5	6	7	8	9	10	Average Cover	Relative Cover	Freq.
	Orientation —→	North					South							
Grasses and Grass-likes														
<i>Carex aquatilis</i> ssp. <i>aqu.</i>	Water Sedge	1		1	9		2		1			1.40	1.83	50
<i>Carex bigelowii</i>	Bigelow's Sedge	3	2	1	3	5		5	2	10		3.10	4.06	80
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass	33	24	29	21	32	37	16	30	17	24	26.30	34.47	100
Forbs														
<i>Rubus chamaemorus</i>	Cloudberry	5	8		1	4	2	4				2.40	3.15	60
Deciduous Shrubs														
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	5	11	7	10	3	2	4	6	4	8	6.00	7.86	100
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	19	8	24	22	11	8	8	6	4	14	12.40	16.25	100
Evergreen Shrubs														
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry	2		3	1	4	8	1	1	3		2.30	3.01	80
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	8	11	2	12	5	9	10	13	6	7	8.30	10.88	100
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	2	12	8	5	2	3	3	10	7	1	5.30	6.95	100
Mosses														
<i>Hylocomium splendens</i>	Splendid Feather Moss	2	6	5	5	3	6	5	1	16	2	5.10	6.68	100
<i>Polytrichum</i> sp.	Polytrichum Moss	6		1	2		1	2		1		1.30	1.70	60
Lichens														
<i>Cladonia deformis</i>	Deformed Cup Lichen									1		0.10	0.13	10
<i>Cladonia</i> sp.	Cup Lichen	1		1			1					0.30	0.39	30
	Unknown Crustose Lichen	3	1	1			3	5	7			2.00	2.62	60
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)											Mean			
Total Vegetation Cover		85	84	83	83	77	71	62	80	70	68		76.30	
Rock		0	0	0	0	0	0	0	0	0	0		0.00	
Litter		15	16	17	17	23	29	38	20	30	32		23.70	
Bare ground		0	0	0	0	0	0	0	0	0	0		0.00	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)														
Mosses														
<i>Hylocomium splendens</i>	Splendid Feather Moss	10	13	11	17	13	3	7	13	15	8	11.00		
<i>Polytrichum</i> sp.	Polytrichum Moss	8	5	5	2	3	2	6	5	11	6	5.30		
Lichens														
<i>Cladonia</i> sp.	Cup Lichen						2	1				0.30		
	Unknown Crustose Lichen	1	5	2			1		2			1.10		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens											Mean			
Total Moss Cover		26	24	22	26	19	11	19	21	42	17		22.70	
Total Lichen Cover		0	1	4	6	4	0	2	6	5	10		3.80	
Total Moss and Lichen Cover		26	25	26	32	23	11	21	27	47	27		26.50	
Sampling Adequacy Calculations														
Mean = 76.30		$t = 1.383$		Variance = 64.46			n = 10		$n_{min} = 2.12$					

Table 90 Red Dog Mine - Vegetation Cover -- 2010

RAT4 - 100																		
Raw Data																		
Percent Ground Cover Based on Point-Intercept Sampling																		
1st Hits	Transect No.—>					1	2	3	4	5	6	7	8	9	10	Average Cover	Relative Cover	Freq.
	Orientation —>					North					South							
Grasses and Grass-likes																		
<i>Carex aquatilis</i> ssp. <i>aqu.</i>	Water Sedge					6	6	13	9	14	4					5.20	7.51	60
<i>Carex bigelowii</i>	Bigelow's Sedge					3	2				2	3				1.10	1.59	50
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass					21	22	2	13	26	29	33	41	34	19	24.00	34.68	100
Forbs																		
<i>Pedicularis labradorica</i>	Labrador Lousewort										1					0.10	0.14	10
<i>Petasites frigidus</i> var. <i>hyperboreus</i>	Arctic Sweet Coltsfoot					1					2	1	3	6		1.30	1.88	50
<i>Rubus chamaemorus</i>	Cloudberry					2	3			1	4	4	9	10	5	3.80	5.49	80
Deciduous Shrubs																		
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch					7	14	7	15	15	17	9	2	12	15	11.30	16.33	100
<i>Salix pulchra</i>	Tealeaf Willow					1					4					0.50	0.72	20
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry					1	1	7			2		3			1.40	2.02	50
Evergreen Shrubs																		
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry										1					0.10	0.14	10
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea					11	5	7	12	7	7	10	9	9	14	9.10	13.15	100
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry					2	3	5	1	1	5	1	2			2.00	2.89	80
Mosses																		
<i>Hylocomium splendens</i>	Splendid Feather Moss					12	14	15	13	4	5	10	4	5	9	0.20	0.29	20
<i>Polytrichum</i> sp.	Polytrichum Moss															9.10	13.15	100
Lichens																		
None																0.00	0.00	0
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)												Mean						
Total Vegetation Cover	66	70	51	70	68	73	74	72	77	71						69.20		
Rock	0	0	0	0	0	0	0	0	0	0						0.00		
Litter	34	30	49	30	32	27	26	28	23	29						30.80		
Bare ground	0	0	0	0	0	0	0	0	0	0						0.00		
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)																		
Mosses																		
<i>Hylocomium splendens</i>	Splendid Feather Moss					20	39	36	44	20	3	1				0.40		
<i>Polytrichum</i> sp.	Polytrichum Moss										12	15	14	12	15	22.70		
Lichens																		
<i>Cladonia</i> sp.	Cup Lichen										1					0.10		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens												Mean						
Total Moss Cover	32	53	52	57	24	20	25	19	17	25						32.40		
Total Lichen Cover	0	0	0	0	0	0	0	1	0	0						0.10		
Total Moss and Lichen Cover	32	53	52	57	24	20	25	20	17	25						32.50		
Sampling Adequacy Calculations																		
Mean = 69.20	<i>t</i> = 1.383					Variance = 50.40					n = 10					<i>n</i> _{min} = 2.01		

Table 91 Red Dog Mine - Vegetation Cover -- 2010

RAT4 - 1000														
Raw Data														
Percent Ground Cover Based on Point-Intercept Sampling														
1st Hits	Transect No. —>		1	2	3	4	5	6	7	8	9	10		
	Orientation —>		North					South						
Grasses and Grass-likes														
<i>Carex aquatilis</i> ssp. aqu.	Water Sedge	9	16	12	8	13	1	3	1	1	6.40	8.28	90	
<i>Carex bigelowii</i>	Bigelow's Sedge						2				0.20	0.26	10	
<i>Eriophorum vaginatum</i> ssp. vag.	Tussock Cottongrass	36	13	33	22	30	33	32	28	36	36	29.90	38.68	100
Forbs														
<i>Rubus chamaemorus</i>	Cloudberry	4	1				6	12	18	7	5	5.30	6.86	70
Deciduous Shrubs														
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	5	4	12	6	5	5	1	2	1	4	4.50	5.82	100
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	7	13	6	7	8	8	9	3	8	10	7.90	10.22	100
Evergreen Shrubs														
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry	1	3					2				0.60	0.78	30
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	11	10	15	21	16	13	10	15	8	14	13.30	17.21	100
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	3	4	3	6	3	4	6	1	4	1	3.50	4.53	100
Mosses														
<i>Hylocomium splendens</i>	Splendid Feather Moss	4	9	5	10	1	5	4	2	12	2	5.40	6.99	100
Lichens														
Unknown Crustose Lichen		2				1				0.30	0.39	20		
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)														
Total Vegetation Cover		80	75	86	80	76	78	77	72	76	73	77.30		
Rock		0	0	0	0	0	0	0	0	0	0	0.00		
Litter		20	25	14	20	24	22	23	28	24	27	22.70		
Bare ground		0	0	0	0	0	0	0	0	0	0	0.00		
2nd Hits (on moss and lichens below live vascular plants and aerial litter)														
Mosses														
<i>Hylocomium splendens</i>	Splendid Feather Moss	14	26	16	26	20	10	16	13	21	2	16.40		
Lichens														
<i>Cladonia</i> sp.	Cup Lichen						1				0.10			
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens														
Total Moss Cover		18	35	21	36	21	15	20	15	33	4	21.80		
Total Lichen Cover		0	2	0	0	0	1	1	0	0	0	0.40		
Total Moss and Lichen Cover		18	37	21	36	21	16	21	15	33	4	22.20		
Sampling Adequacy Calculations														
Mean = 77.30		$t = 1.383$		Variance = 16.23		$n = 10$		$n_{min} = 0.52$						

Table 92 Red Dog Mine - Vegetation Cover -- 2010

RAT4 - 2000											
Raw Data											
Percent Ground Cover Based on Point-Intercept Sampling											
1st Hits	Transect No.—>		1	2	3	4	5	6	7	8	9
	Orientation —>		North		South		Average Cover	Relative Cover	Freq.		
Grasses and Grass-likes											
<i>Carex aquatilis</i> ssp. aqu.	Water Sedge		17	27	16		5	2		6.70	8.98
<i>Carex bigelowii</i>	Bigelow's Sedge				2					0.20	0.27
<i>Eriophorum angustifolium</i> ssp. <i>subarcticum</i>	Tall Cottongrass		10							1.00	1.34
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass	22	38	14	1	17	41	42	36	26	14
										25.10	33.65
Forbs											
<i>Rubus chamaemorus</i>	Cloudberry	15	3	1			6	8	7	9	5
Deciduous Shrubs											
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	5	3	5	2	5	4	5	4	1	7
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	7	11	16	23	7	6	5	10	12	11
										10.80	14.48
Evergreen Shrubs											
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry	4	2		1	2		1		2	
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	16	6	11	4	4	7	7	8	12	11
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	4	5	5	1	3	2	1	2	5	13
										4.10	5.50
Mosses											
<i>Polytrichum</i> sp.	Polytrichum Moss	11	7	5	7	6	11	6	4	5	9
										7.10	9.52
Lichens											
<i>Cladonia</i> sp.	Cup Lichen						1		1	1	
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)										Mean	
Total Vegetation Cover		84	75	74	76	62	78	74	77	73	73
Rock		0	0	0	0	0	0	0	0	0	0
Litter		16	25	26	24	38	22	26	23	27	27
Bare ground		0	0	0	0	0	0	0	0	0	0
2nd Hits (on moss and lichens below live vascular plants and aerial litter)											
Mosses											
<i>Polytrichum</i> sp.	Polytrichum Moss	35	26	23	22	37	8	8	15	7	12
										19.30	
Lichens											
<i>Cladonia</i> sp.	Cup Lichen	1		1			1	1	1	2	0.70
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens										Mean	
Total Moss Cover		46	33	28	29	43	19	14	19	12	21
Total Lichen Cover		1	0	0	1	0	2	1	0	2	3
Total Moss and Lichen Cover		47	33	28	30	43	21	15	19	14	24
Sampling Adequacy Calculations											
Mean = 74.60		$t = 1.383$		Variance = 30.27		$n = 10$		$n_{min} = 1.04$			

Table 93 Red Dog Mine - Vegetation Cover -- 2010

CAT-1 (Lichen / Shrub Community)		Orientation of Transect #1 to #5: NW Percent Ground Cover Based on Point-Intercept Sampling						
Raw Data								
1st Hits	Transect No.—→	1	2	3	4	5	Average Cover	Relative Cover
Grasses and Grass-likes								Freq.
<i>Hierchloe alpina</i>	Alpine Sweetgrass	1	1	1	1	1	0.80	0.93
Forbs								
None							0.00	0.00
Deciduous Shrubs								
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	13	12	16	18	9	13.60	15.89
<i>Salix phlebophylla</i>	Skeletonleaf Willow			4			0.80	0.93
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	6	5	7	8		5.20	6.07
Evergreen Shrubs								
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry		1		2		0.60	0.70
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	1	2	3	1		1.40	1.64
<i>Loiseleuria procumbens</i>	Alpine Azalea			4	3		1.40	1.64
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	11	23	33	26	24	23.40	27.34
Mosses								
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss	2	1		1		0.80	0.93
<i>Tomentypnum nitens</i>	Tomentypnum Moss		14		7		4.20	4.91
Lichens								
<i>Cladonia</i> sp.	Cup Lichen	42	27	15	13	30	25.40	29.67
<i>Dactylina arctica</i>	Arctic Dactylina Lichen		1	2			0.60	0.70
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen	2			1		0.60	0.70
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen			3			0.60	0.70
	Unknown Crustose Lichen	11		6	14		6.20	7.24
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean	
Total Vegetation Cover		87	85	90	81	85	85.60	
Rock		5	3	1	2	5	3.20	
Litter		8	12	9	17	10	11.20	
Bare ground		0	0	0	0	0	0.00	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)								
Mosses								
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss		1				0.20	
Lichens								
<i>Cladonia</i> sp.	Cup Lichen	20	11	35	9	20	19.00	
<i>Masonhalea richardsonii</i>	Richardson's Masonhalea Lichen				1		0.20	
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen	2	4	3			1.80	
	Unknown Crustose Lichen	4		12	6		4.40	
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean	
Total Moss Cover		2	16	0	8	0	5.20	
Total Lichen Cover		79	41	77	25	72	58.80	
Total Moss and Lichen Cover		81	57	77	33	72	64.00	
Sampling Adequacy Calculations								
Mean = 85.60		$t = 1.533$					n = 5	
		Variance = 10.80					$n_{min} = 0.35$	

Table 94 Red Dog Mine - Vegetation Cover -- 2010

CAT-2 (Cottongrass Tussock Community)		Orientation of Transect #1 to #5: South							
Raw Data		Percent Ground Cover Based on Point-Intercept Sampling							
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover	Relative Cover	Freq.
Grasses and Grass-likes									
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint	1					0.20	0.23	20
<i>Carex bigelowii</i>	Bigelow's Sedge	3	3	2	7		3.00	3.50	80
<i>Eriophorum vaginatum</i> ssp. <i>vag.</i>	Tussock Cottongrass	28	23	32	27	29	27.80	32.40	100
Forbs									
<i>Petasites frigidus</i> / <i>hyperboreus</i>	Arctic Sweet Coltsfoot	4	1	2	2		1.80	2.10	80
<i>Rubus chamaemorus</i>	Cloudberry	2	3	2	3	6	3.20	3.73	100
Deciduous Shrubs									
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	20	12	12	4	13	12.20	14.22	100
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	3	8	4	12		5.40	6.29	80
Evergreen Shrubs									
<i>Empetrum nigrum</i> ssp. <i>hermaphorditum</i>	Black Crowberry	3	6	1			2.00	2.33	60
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	5	10	9	10	20	10.80	12.59	100
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	16	15	6	10	8	11.00	12.82	100
Mosses									
<i>Aulacomnium</i> sp.	Aulacomnium Moss	8	2				2.00	2.33	40
<i>Hylocomium splendens</i>	Splendid Feather Moss		4	6			2.00	2.33	40
<i>Polytrichum</i> sp.	Polytrichum Moss			2			0.40	0.47	20
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	2	2	1			1.00	1.17	60
<i>Peltigera aphthosa</i>	Felt Lichen	1	3	1			1.00	1.17	60
<i>Peltigera</i> sp.	Felt Lichen	2		2	1		1.00	1.17	60
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen		3				0.60	0.70	20
	Unknown Crustose Lichen		1	1			0.40	0.47	40
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean		
Total Vegetation Cover		91	83	85	84	86		85.80	
	Rock	0	0	0	0	0		0.00	
	Litter	9	17	15	16	14		14.20	
	Bare ground	0	0	0	0	0		0.00	
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)									
Mosses									
<i>Aulacomnium</i> sp.	Aulacomnium Moss	12	12	12			7.20		
<i>Hylocomium splendens</i>	Splendid Feather Moss		24	15			7.80		
<i>Polytrichum</i> sp.	Polytrichum Moss			2			0.40		
Lichens									
<i>Cladonia</i> sp.	Cup Lichen	5	2	3	7	2	3.80		
<i>Peltigera aphthosa</i>	Felt Lichen	4	1	2	5	4	3.20		
<i>Peltigera</i> sp.	Felt Lichen	4		1			1.00		
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean		
Total Moss Cover		20	28	14	25	12		19.80	
Total Lichen Cover		11	11	13	18	7		12.00	
Total Moss and Lichen Cover		31	39	27	43	19		31.80	
Sampling Adequacy Calculations									
Mean = 85.80					t = 1.533		n = 5		
					Variance = 9.70			n _{min} = 0.31	

Table 95 Red Dog Mine - Vegetation Cover -- 2010

CAT-3 (Upland Shrub / Moss Community)		Orientation of Transect #1 to #5: South						
Raw Data		Percent Ground Cover Based on Point-Intercept Sampling						
1st Hits	Transect No.—>	1	2	3	4	5	Average Cover	Relative Cover
Grasses and Grass-likes							Freq.	
<i>Calamagrostis canadensis</i> ssp. <i>can.</i>	Bluejoint	1				1	0.40	0.48
<i>Carex bigelowii</i>	Bigelow's Sedge	8	9	7	7	7	7.60	9.05
Forbs								
<i>Saussurea angustifolia</i>	Narrow-leaf Saw Wort		1				0.20	0.24
Deciduous Shrubs								
<i>Betula nana</i> ssp. <i>exilis</i>	Dwarf Birch	15	9	9	6	8	9.40	11.19
<i>Salix pulchra</i>	Tealeaf Willow				3	1	0.80	0.95
<i>Vaccinium uliginosum</i> ssp. <i>alpinum</i>	Bog Blueberry	24	14	18	23	20	19.80	23.57
Evergreen Shrubs								
<i>Empetrum nigrum</i> ssp. <i>hermaphroditum</i>	Black Crowberry	5	5	10	5	6	6.20	7.38
<i>Ledum palustre</i> ssp. <i>decumbens</i>	Marsh Labrador Tea	12	16	14	18	18	15.60	18.57
<i>Vaccinium vitis-idaea</i> ssp. <i>minus</i>	Narrow Mtn. Cranberry	7	11	11	8	10	9.40	11.19
Mosses								
<i>Hylocomium splendens</i>	Splendid Feather Moss		6		8		2.80	3.33
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss	7	4	10	3	11	7.00	8.33
Lichens								
<i>Cladonia</i> sp.	Cup Lichen	1	6	2	1		2.00	2.38
<i>Peltigera aphthosa</i>	Felt Lichen	1			4	3	1.60	1.90
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen			2			0.40	0.48
	Unknown Crustose Lichen	2		1	1		0.80	0.95
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)							Mean	
Total Vegetation Cover		83	83	82	87	85		84.00
Rock		0	0	0	0	0		0.00
Litter		17	17	18	13	15		16.00
Bare ground		0	0	0	0	0		0.00
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)								
Mosses								
<i>Hylocomium splendens</i>	Splendid Feather Moss		19		22		8.20	
<i>Pleurozium schreberi</i>	Shreber's Big Red Stem Moss	22	6	37	6	33	20.80	
Lichens								
<i>Cladonia</i> sp.	Cup Lichen	8	25	11	10	1	11.00	
<i>Peltigera aphthosa</i>	Felt Lichen	11	1		3	3	3.60	
<i>Stereocaulon tomentosum</i>	Tomentose Snow Lichen			2			0.40	
<i>Thamnolia vermicularis</i>	Whiteworm Lichen				2		0.40	
	Unknown Crustose Lichen	3	2		2		1.40	
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens							Mean	
Total Moss Cover		29	35	47	39	44		38.80
Total Lichen Cover		26	38	14	23	7		21.60
Total Moss and Lichen Cover		55	73	61	62	51		60.40
Sampling Adequacy Calculations								
Mean = 84.00		t = 1.533					n = 5	
Variance = 4.00								$n_{min} = 0.13$

Table 96 Red Dog Mine - Vegetation Cover -- 2010

CAT-4 (Coastal Tussock Community)

Raw Data

Percent Ground Cover Based on Point-Intercept Sampling

1st Hits	Transect No. —>	1	2	3	4	5	6	7	8	9	10	Average Cover	Relative Cover	Freq.		
	Orientation —>	North					South									
Grasses and Grass-likes																
<i>Carex aquatilis</i> ssp. aqu.	Water Sedge											0.40	0.50	20		
<i>Carex bigelowii</i>	Bigelow's Sedge	11	8	3	6	16	2	4	8	7		6.50	8.06	90		
<i>Eriophorum vaginatum</i> ssp. vag.	Tussock Cottongrass	6	15	27	20	19	31	11	7	25	16	17.70	21.96	100		
Forbs																
<i>Petasites frigidus</i> var. hyperboreus	Arctic Sweet Coltsfoot			1		1	1					0.30	0.37	30		
<i>Rubus chamaemorus</i>	Cloudberry	3	4		1	1	3	2	2	2	3	2.10	2.61	90		
<i>Saussurea angustifolia</i>	Narrow-leaf Saw Wort						1					0.10	0.12	10		
Deciduous Shrubs																
<i>Betula nana</i> ssp. exilis	Dwarf Birch	16	13	12	20	4	3	10	11	11	9	10.90	13.52	100		
<i>Salix pulchra</i>	Tealeaf Willow	1				2			1	3		0.70	0.87	40		
<i>Vaccinium uliginosum</i> ssp. alpinum	Bog Blueberry						1	2				0.30	0.37	20		
Evergreen Shrubs																
<i>Empetrum nigrum</i> ssp. hermaphorditum	Black Crowberry						3					0.30	0.37	10		
<i>Ledum palustre</i> ssp. decumbens	Marsh Labrador Tea	28	26	31	22	23	27	34	23	15	20	24.90	30.89	100		
<i>Vaccinium vitis-idaea</i> ssp. minus	Narrow Mtn. Cranberry	7	10	5	2	7	13	8	5	6	22	8.50	10.55	100		
Mosses																
<i>Hylocomium splendens</i>	Splendid Feather Moss	2	2	1	2	3	3	3	1			1.70	2.11	80		
<i>Sphagnum</i> sp.	Sphagnum Moss	4	3	3	5	6	2	8	15	8	6	6.00	7.44	100		
Lichens																
<i>Cladonia</i> sp.	Cup Lichen	1					1					0.20	0.25	20		
This Mean is the average of all 1st hits (including Vascular, Mosses, & Lichens)												Mean				
Total Vegetation Cover		78	82	83	78	83	85	83	74	79	81		80.60			
Rock		0	0	0	0	0	0	0	0	0	0		0.00			
Litter		22	18	17	22	17	15	17	26	21	19		19.40			
Bare ground		0	0	0	0	0	0	0	0	0	0		0.00			
2nd Hits (only on moss and lichens below live vascular plants and aerial litter)																
Mosses																
<i>Hylocomium splendens</i>	Splendid Feather Moss	26	18	25	14	16	10	6	6	8		12.90				
<i>Sphagnum</i> sp.	Sphagnum Moss	21	19	12	25	21	15	34	38	22	19	22.60				
Lichens																
<i>Cladonia</i> sp.	Cup Lichen	1	1		2	1	1					0.60				
<i>Peltigera</i> sp.	Felt Lichen			1								0.10				
This Mean is the average of all 1st & 2nd hits on Mosses & Lichens												Mean				
Total Moss Cover		53	42	41	46	46	30	51	54	36	33		43.20			
Total Lichen Cover		1	2	0	3	1	1	0	1	0	0		0.90			
Total Moss and Lichen Cover		54	44	41	49	47	31	51	55	36	33		44.10			
Sampling Adequacy Calculations																
Mean = ###		$t = 1.383$					Variance = 10.93					n = 10	$n_{min} = 0.32$			



Photo 2 - Red Dog Mine - AT1 - 000 SE Corner - 2010



Photo 4 - Red Dog Mine - AT1 - 000 NW Corner - 2010



Photo 1 - Red Dog Mine - AT1 - 000 NE Corner - 2010



Photo 3 - Red Dog Mine - AT1 - 000 SW Corner - 2010



Photo 6 - Red Dog Mine - AT1 - 500 SE Corner - 2010



Photo 8 - Red Dog Mine - AT1 - 500 NW Corner - 2010



Photo 5 - Red Dog Mine - AT1 - 500 NE Corner - 2010



Photo 7 - Red Dog Mine - AT1 - 500 SW Corner - 2010



Photo 10 - Red Dog Mine - AT1 - 1000 SE Corner - 2010

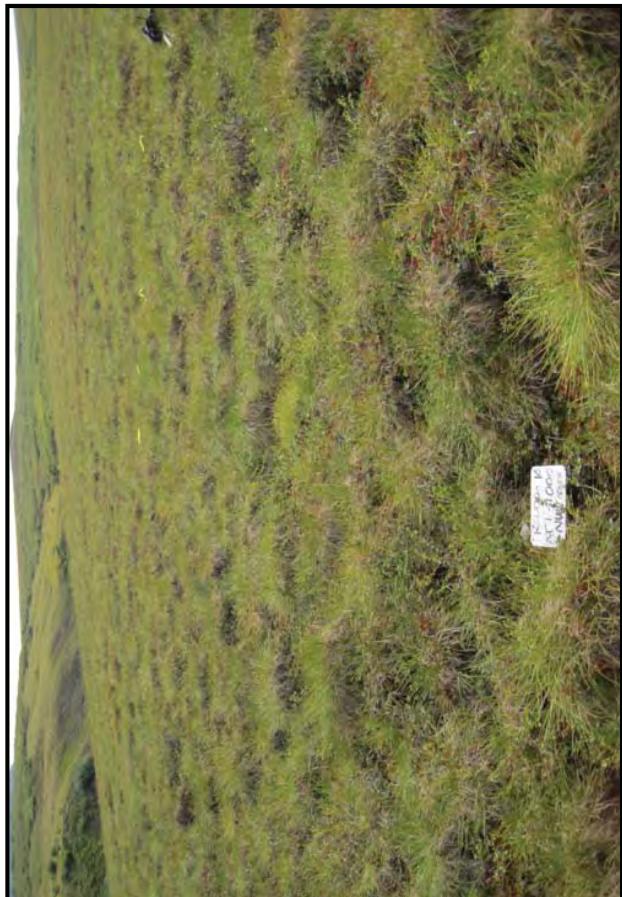


Photo 12 - Red Dog Mine - AT1 - 1000 NW Corner - 2010



Photo 9 - Red Dog Mine - AT1 - 1000 NE Corner - 2010



Photo 11 - Red Dog Mine - AT1 - 1000 SW Corner - 2010



Photo 14 - Red Dog Mine - AT1 - 1500 SE Corner - 2010



Photo 16 - Red Dog Mine - AT1 - 1500 NW Corner - 2010



Photo 13 - Red Dog Mine - AT1 - 1500 NE Corner - 2010



Photo 15 - Red Dog Mine - AT1 - 1500 SW Corner - 2010



Photo 18 - Red Dog Mine - AT1 - 2500 SE Corner - 2010



Photo 20 - Red Dog Mine - AT1 - 2500 NW Corner - 2010



Photo 17 - Red Dog Mine - AT1 - 2500 NE Corner - 2010



Photo 19 - Red Dog Mine - AT1 - 2500 SW Corner - 2010



Photo 22 - Red Dog Mine - AT1 - 4000 SE Corner - 2010



Photo 24 - Red Dog Mine - AT1 - 4000 NW Corner - 2010

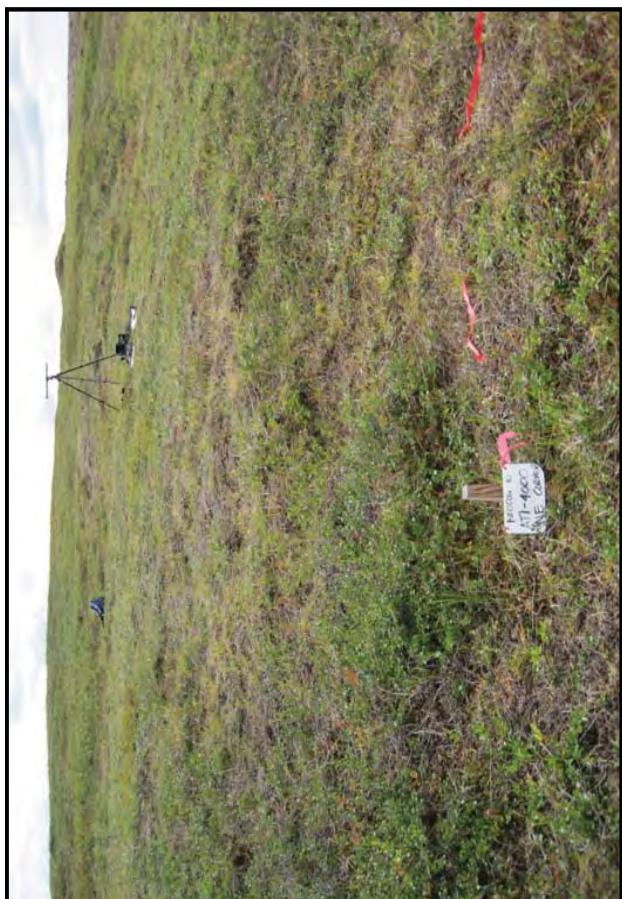


Photo 21 - Red Dog Mine - AT1 - 4000 NE Corner - 2010



Photo 23 - Red Dog Mine - AT1 - 4000 SW Corner - 2010



Photo 26 - Red Dog Mine - AT2 - 000 SE Corner - 2010



Photo 28 - Red Dog Mine - AT2 - 000 NW Corner - 2010

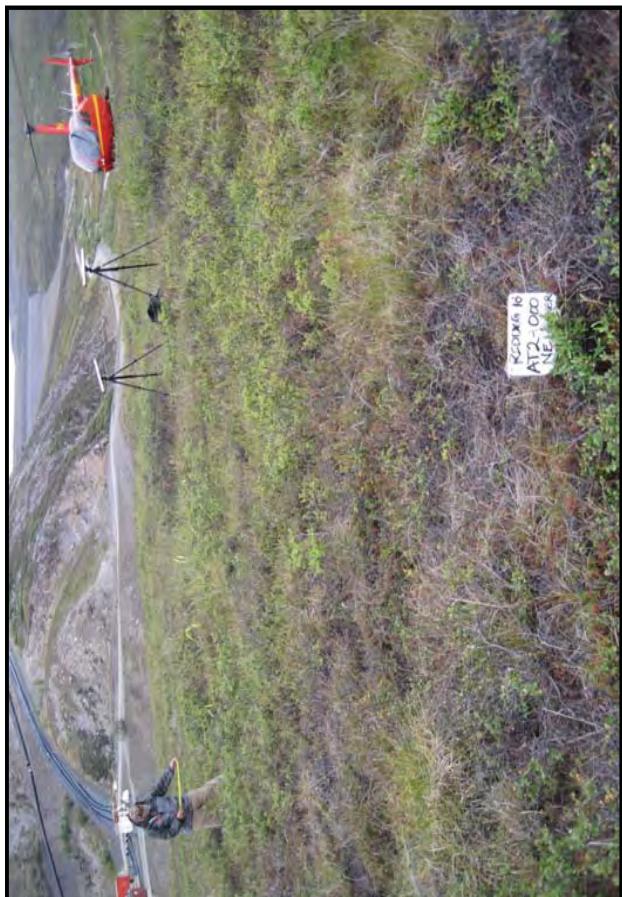


Photo 25 - Red Dog Mine - AT2 - 000 NE Corner - 2010



Photo 27 - Red Dog Mine - AT2 - 000 SW Corner - 2010

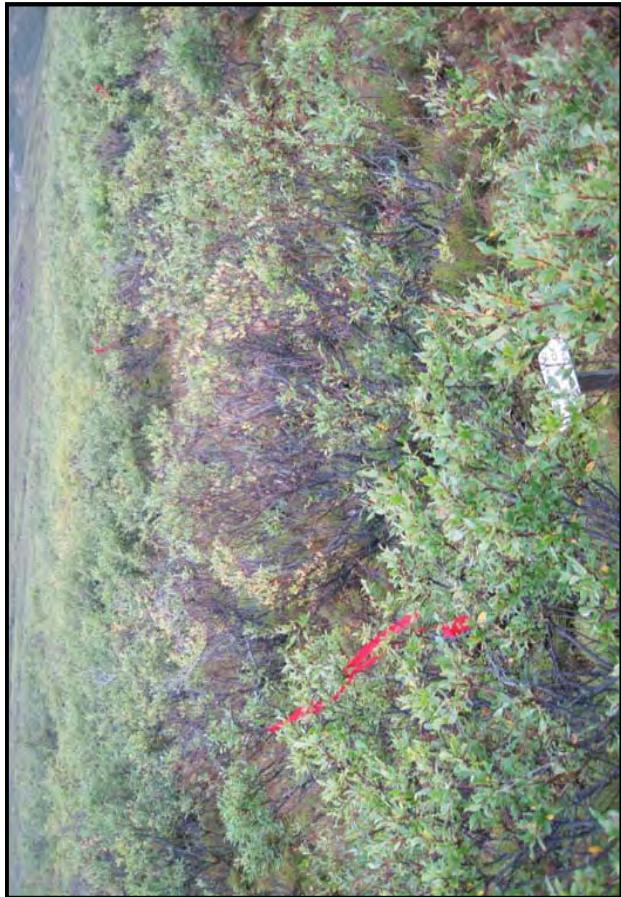


Photo 30 - Red Dog Mine - AT2 - 500 SE Corner - 2010

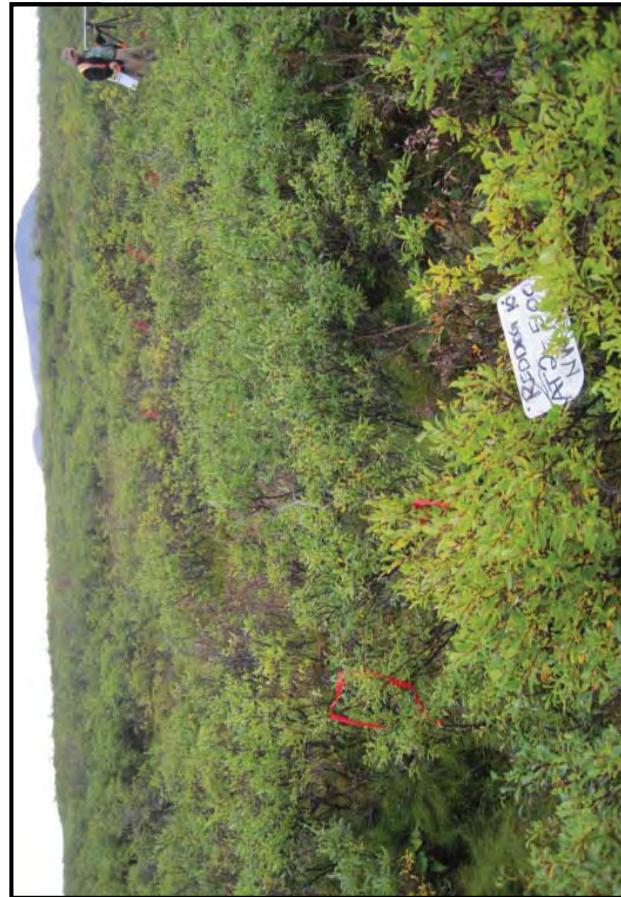


Photo 32 - Red Dog Mine - AT2 - 500 NW Corner - 2010

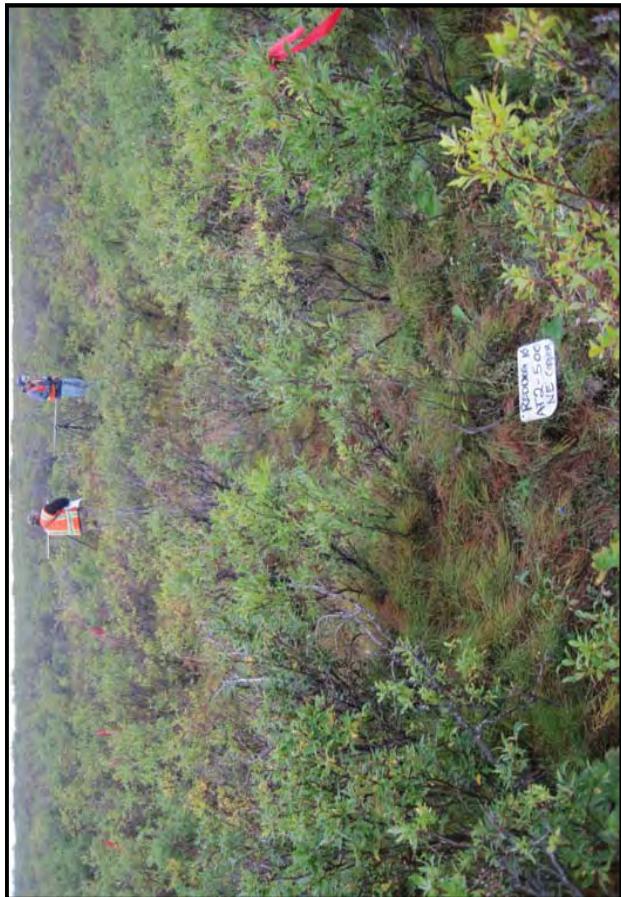


Photo 29 - Red Dog Mine - AT2 - 500 NE Corner - 2010

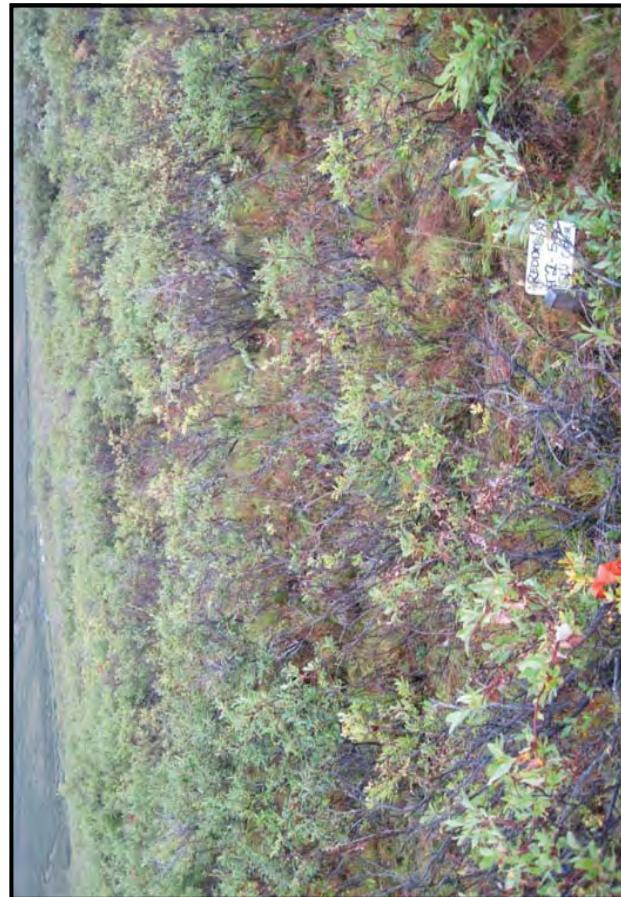


Photo 31 - Red Dog Mine - AT2 - 500 SW Corner - 2010



Photo 34 - Red Dog Mine - AT2 - 1000 SE Corner - 2010



Photo 36 - Red Dog Mine - AT2 - 1000 NW Corner - 2010

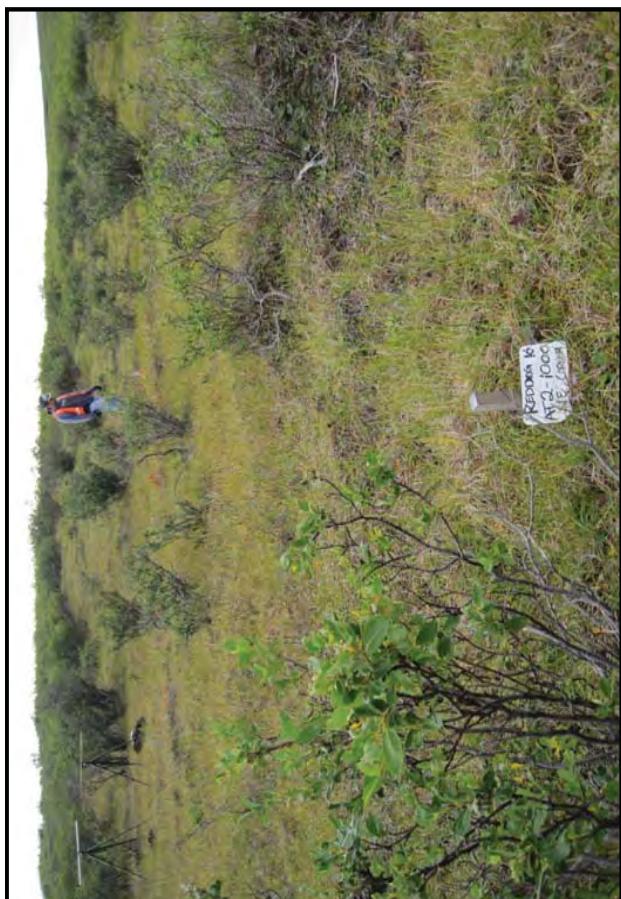


Photo 33 - Red Dog Mine - AT2 - 1000 NE Corner - 2010



Photo 35 - Red Dog Mine - AT2 - 1000 SW Corner - 2010



Photo 38 - Red Dog Mine - AT2 - 1500 SE Corner - 2010

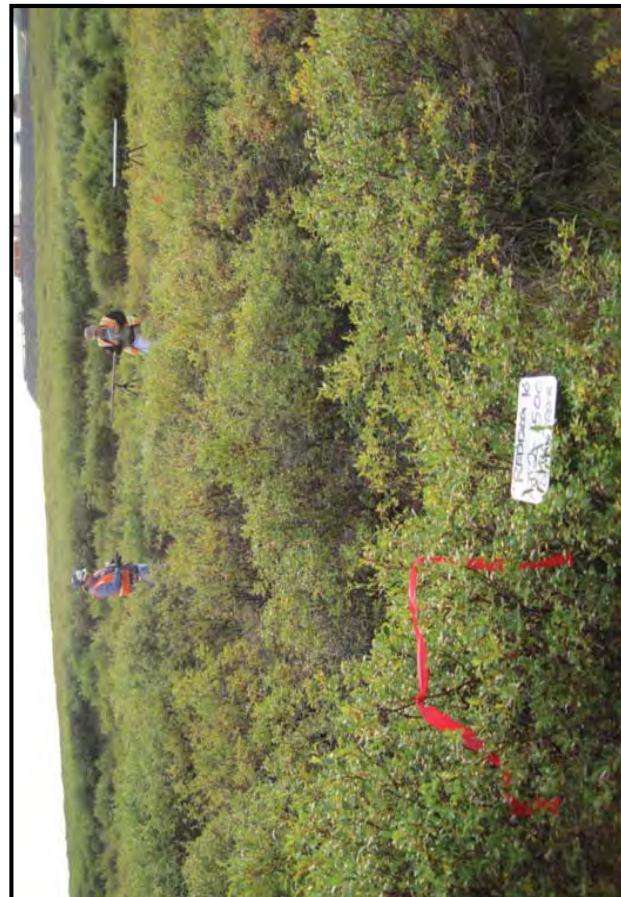


Photo 40 - Red Dog Mine - AT2 - 1500 NW Corner - 2010

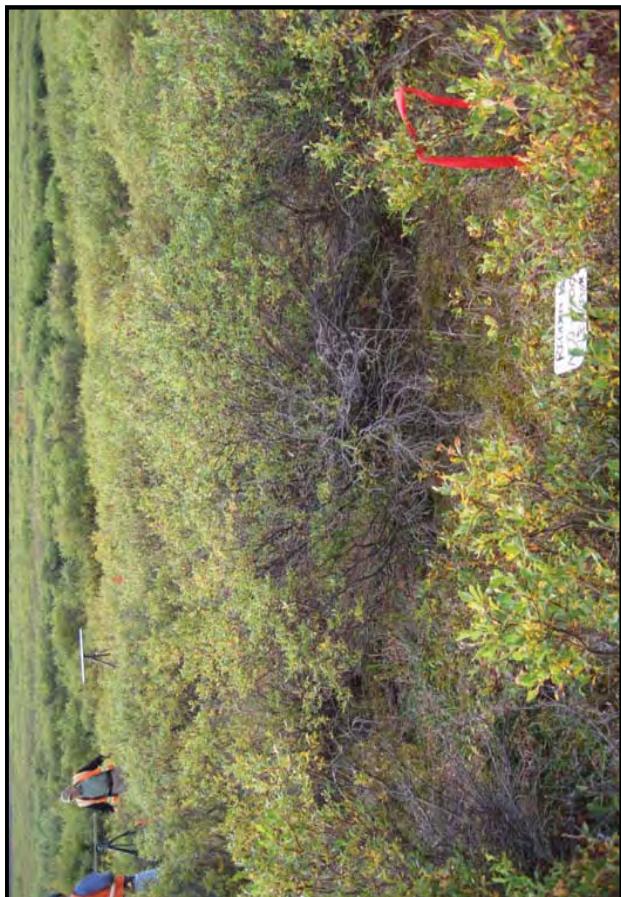


Photo 37 - Red Dog Mine - AT2 - 1500 NE Corner - 2010

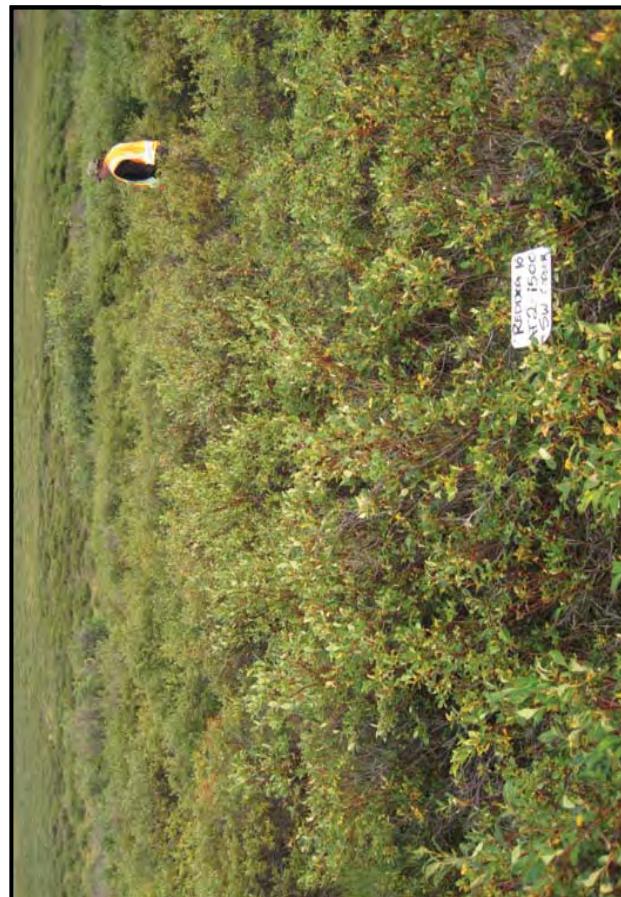


Photo 39 - Red Dog Mine - AT2 - 1500 SW Corner - 2010

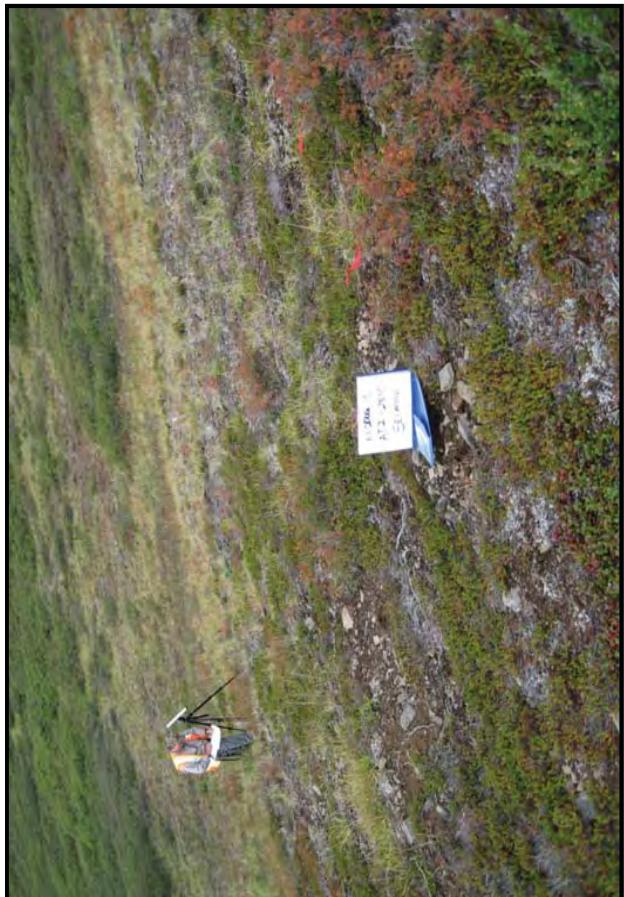


Photo 42 - Red Dog Mine - AT2 - 2500 SE Corner - 2010



Photo 44 - Red Dog Mine - AT2 - 2500 NW Corner - 2010



Photo 41 - Red Dog Mine - AT2 - 2500 NE Corner - 2010



Photo 43 - Red Dog Mine - AT2 - 2500 SW Corner - 2010



Photo 46 - Red Dog Mine - AT2 - 4000 E Corner - 2010

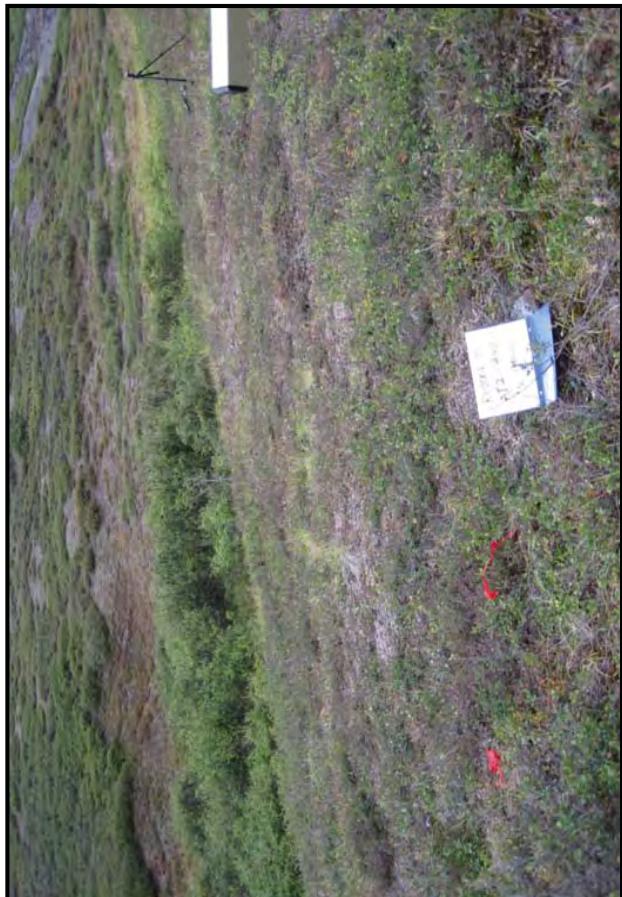


Photo 48 - Red Dog Mine - AT2 - 4000 W Corner - 2010



Photo 45 - Red Dog Mine - AT2 - 4000 N Corner - 2010

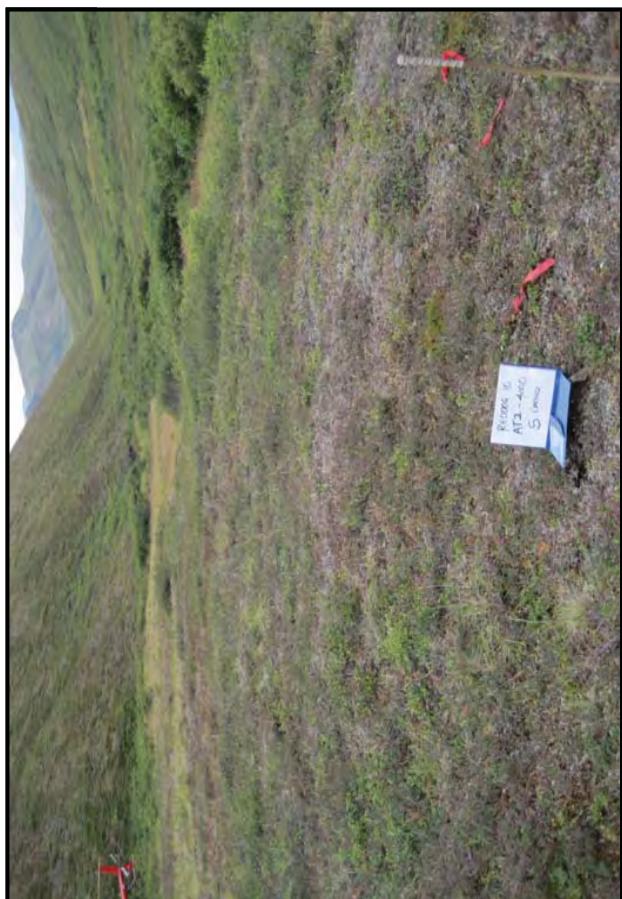


Photo 47 - Red Dog Mine - AT2 - 4000 S Corner - 2010



Photo 50 - Red Dog Mine - AT3 - 060 SE Corner - 2010



Photo 52 - Red Dog Mine - AT3 - 060 NW Corner - 2010



Photo 49 - Red Dog Mine - AT3 - 060 NE Corner - 2010



Photo 51 - Red Dog Mine - AT3 - 060 SW Corner - 2010

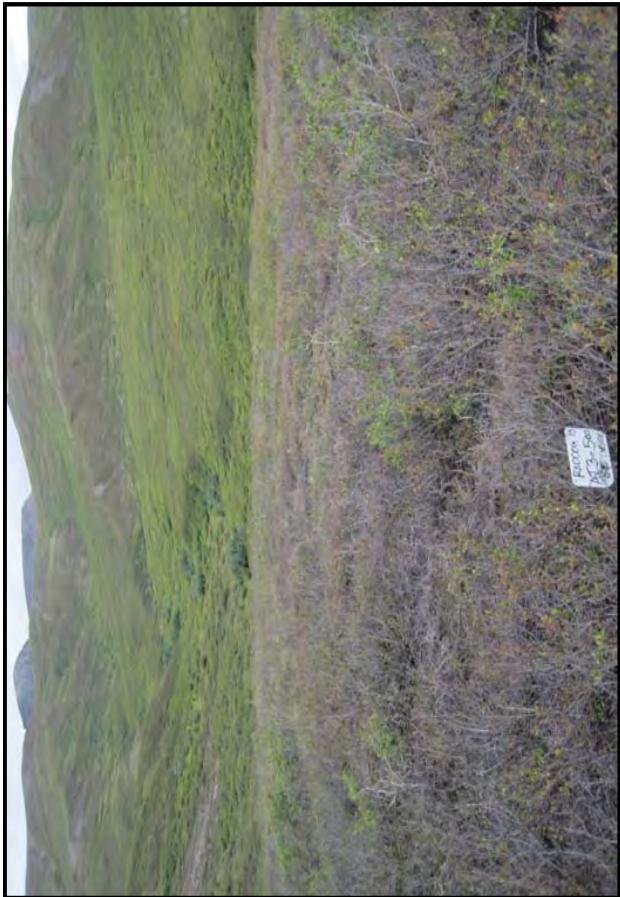


Photo 54 - Red Dog Mine - AT3 - 500 SE Corner - 2010



Photo 56 - Red Dog Mine - AT3 - 500 NW Corner - 2010



Photo 53 - Red Dog Mine - AT3 - 500 NE Corner - 2010



Photo 55 - Red Dog Mine - AT3 - 500 SW Corner - 2010



Photo 58 - Red Dog Mine - AT3 - 700 SE Corner - 2010



Photo 60 - Red Dog Mine - AT3 - 700 NW Corner - 2010

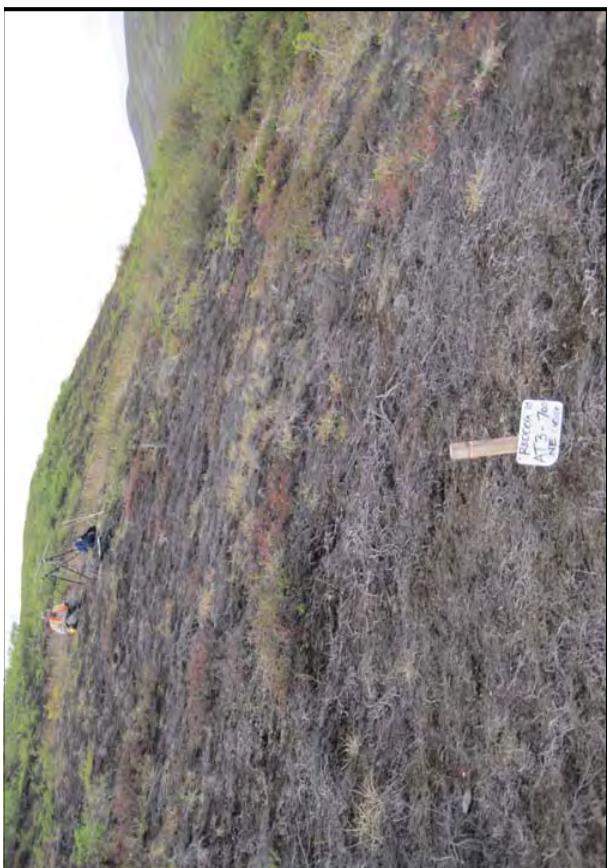


Photo 57 - Red Dog Mine - AT3 - 700 NE Corner - 2010



Photo 59 - Red Dog Mine - AT3 - 700 SW Corner - 2010



Photo 62 - Red Dog Mine - AT3 - 1000 SE Corner - 2010

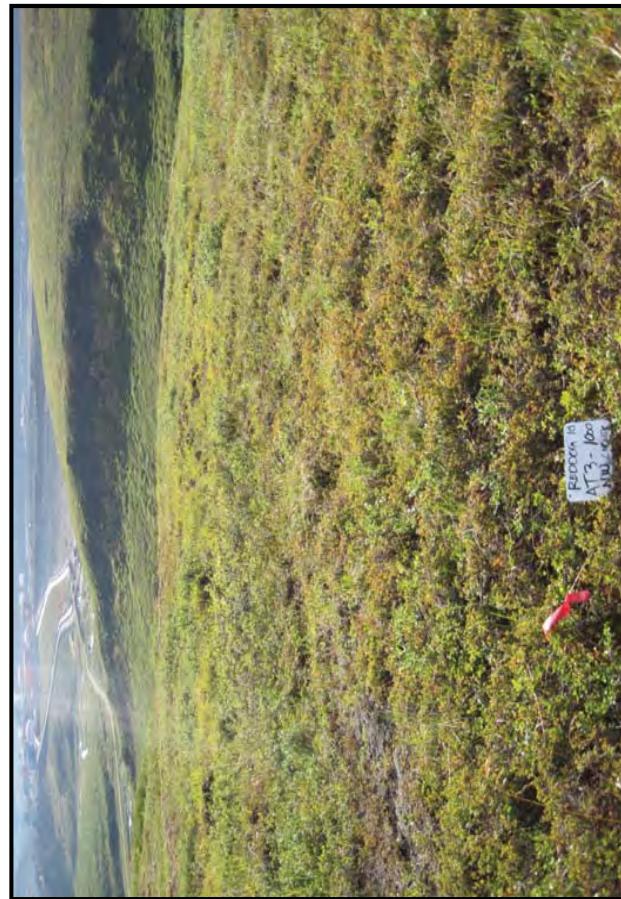


Photo 64 - Red Dog Mine - AT3 - 1000 NW Corner - 2010



Photo 61 - Red Dog Mine - AT3 - 1000 NE Corner - 2010



Photo 63 - Red Dog Mine - AT3 - 1000 SW Corner - 2010



Photo 66 - Red Dog Mine - AT3 - 1500 SE Corner - 2010



Photo 68 - Red Dog Mine - AT3 - 1500 NW Corner - 2010



Photo 65 - Red Dog Mine - AT3 - 1500 NE Corner - 2010



Photo 67 - Red Dog Mine - AT3 - 1500 SW Corner - 2010

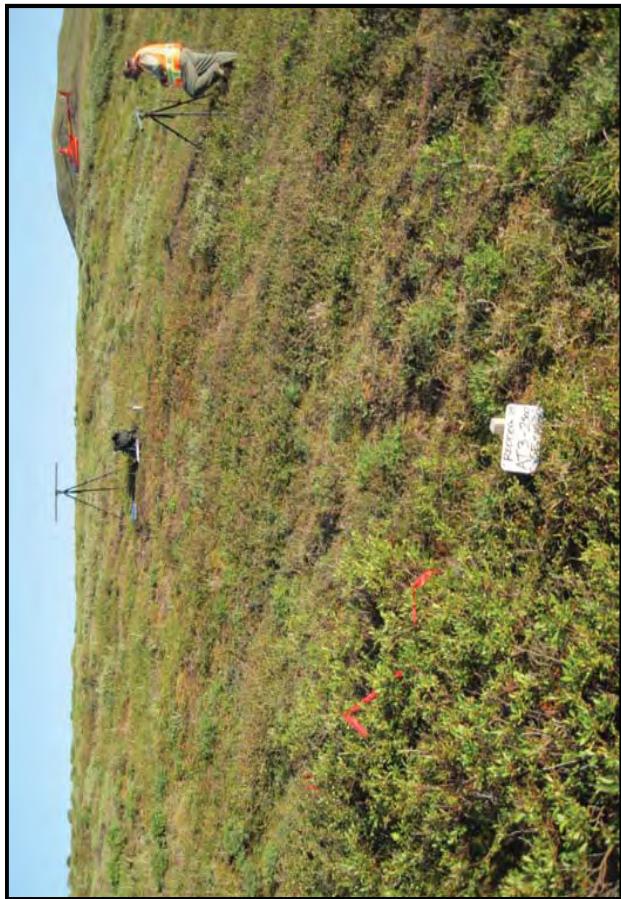


Photo 70 - Red Dog Mine - AT3 - 2500 SE Corner - 2010

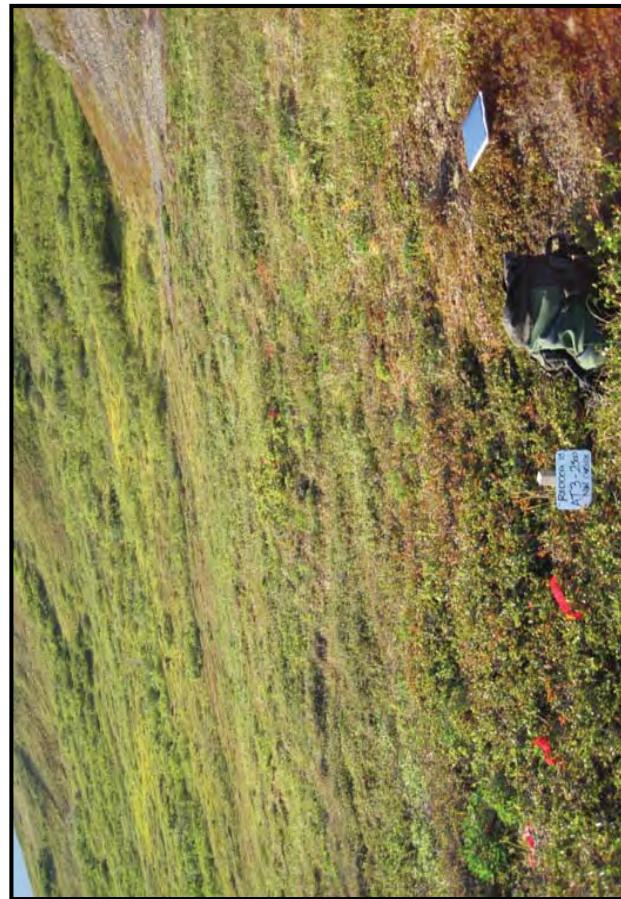


Photo 72 - Red Dog Mine - AT3 - 2500 NW Corner - 2010



Photo 69 - Red Dog Mine - AT3 - 2500 NE Corner - 2010

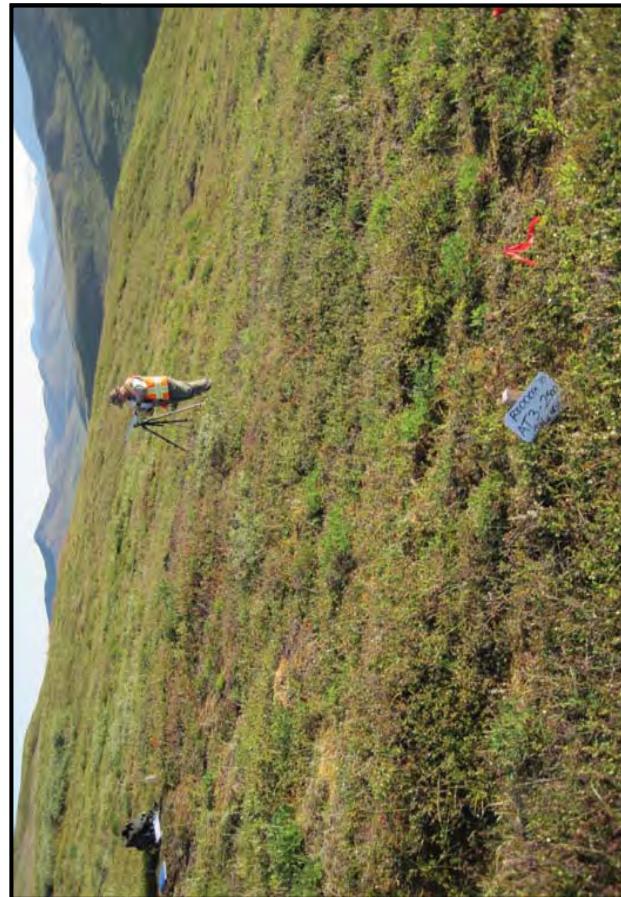


Photo 71 - Red Dog Mine - AT3 - 2500 SW Corner - 2010



Photo 74 - Red Dog Mine - AT3 - 4000 SE Corner - 2010

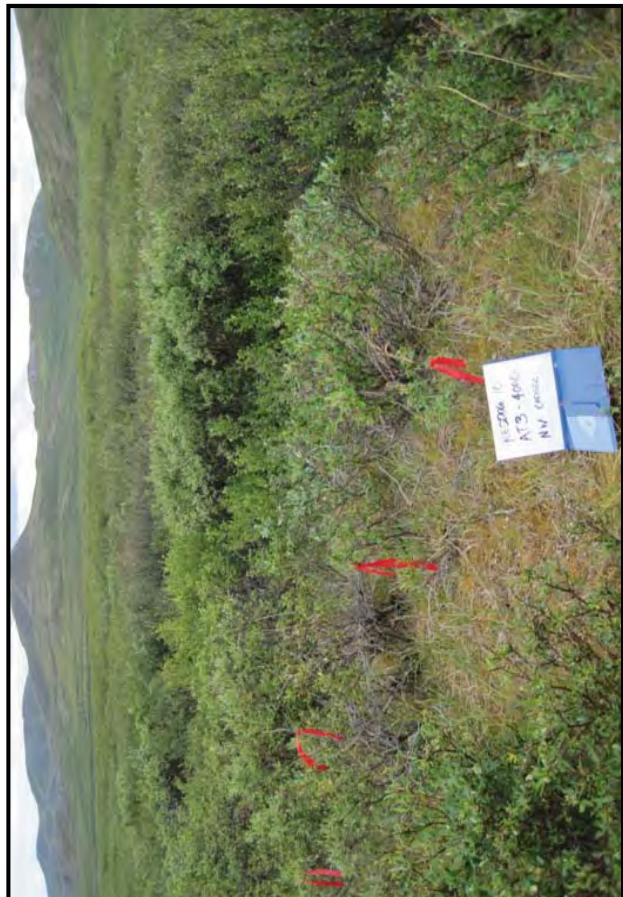


Photo 76 - Red Dog Mine - AT3 - 4000 NW Corner - 2010



Photo 73 - Red Dog Mine - AT3 - 4000 NE Corner - 2010

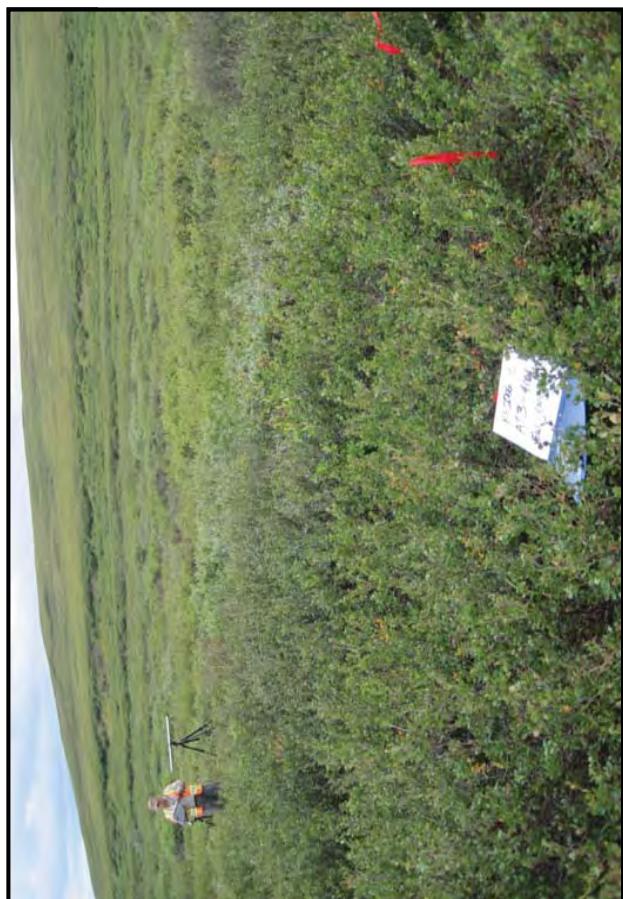


Photo 75 - Red Dog Mine - AT3 - 4000 SW Corner - 2010



Photo 78 - Red Dog Mine - AT4 - 060 SE Corner - 2010



Photo 80 - Red Dog Mine - AT4 - 060 NW Corner - 2010



Photo 77 - Red Dog Mine - AT4 - 060 NE Corner - 2010



Photo 79 - Red Dog Mine - AT4 - 060 SW Corner - 2010

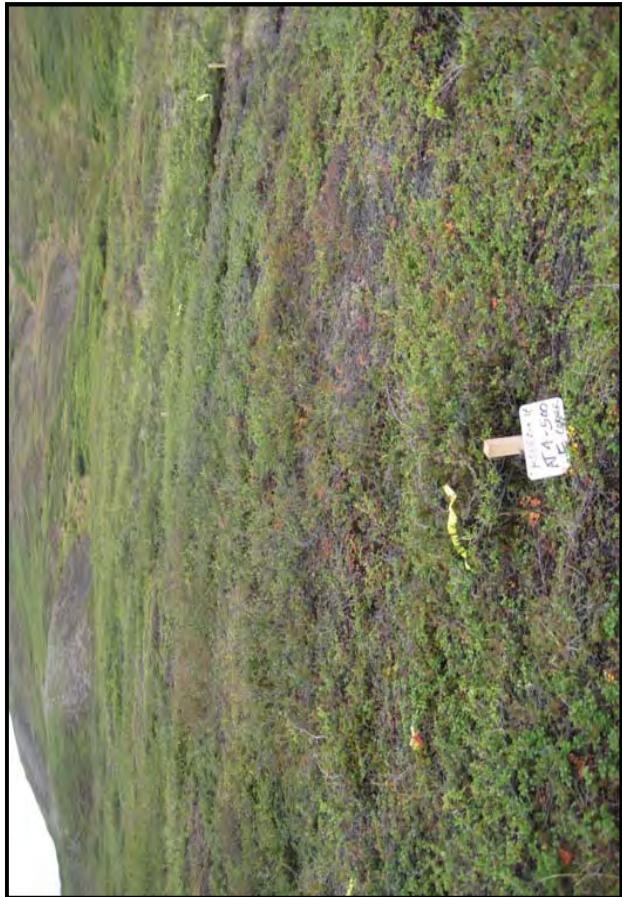


Photo 82 - Red Dog Mine - AT4 - 500 E Corner - 2010



Photo 84 - Red Dog Mine - AT4 - 500 W Corner - 2010



Photo 81 - Red Dog Mine - AT4 - 500 N Corner - 2010



Photo 83 - Red Dog Mine - AT4 - 500 S Corner - 2010



Photo 86 - Red Dog Mine - AT4 - 1000 SE Corner - 2010



Photo 88 - Red Dog Mine - AT4 - 1000 NW Corner - 2010

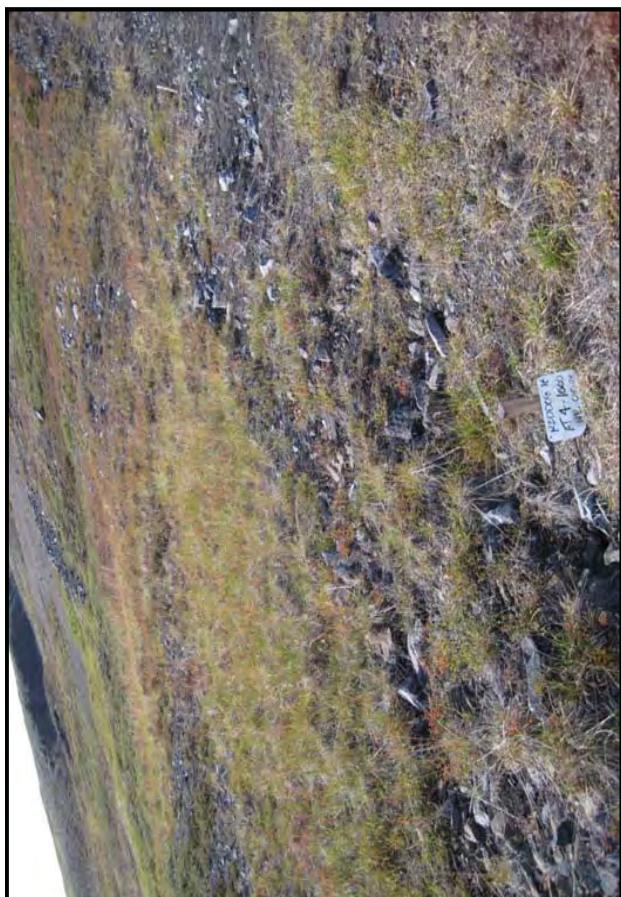


Photo 85 - Red Dog Mine - AT4 - 1000 NE Corner - 2010



Photo 87 - Red Dog Mine - AT4 - 1000 SW Corner - 2010



Photo 90 - Red Dog Mine - AT4 - 1500 SE Corner - 2010

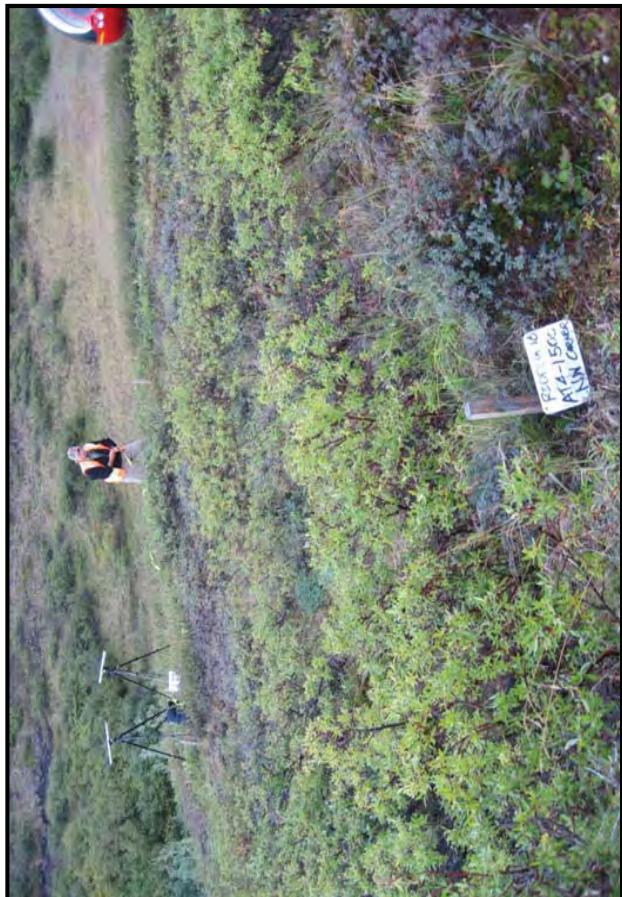


Photo 92 - Red Dog Mine - AT4 - 1500 NW Corner - 2010



Photo 89 - Red Dog Mine - AT4 - 1500 NE Corner - 2010

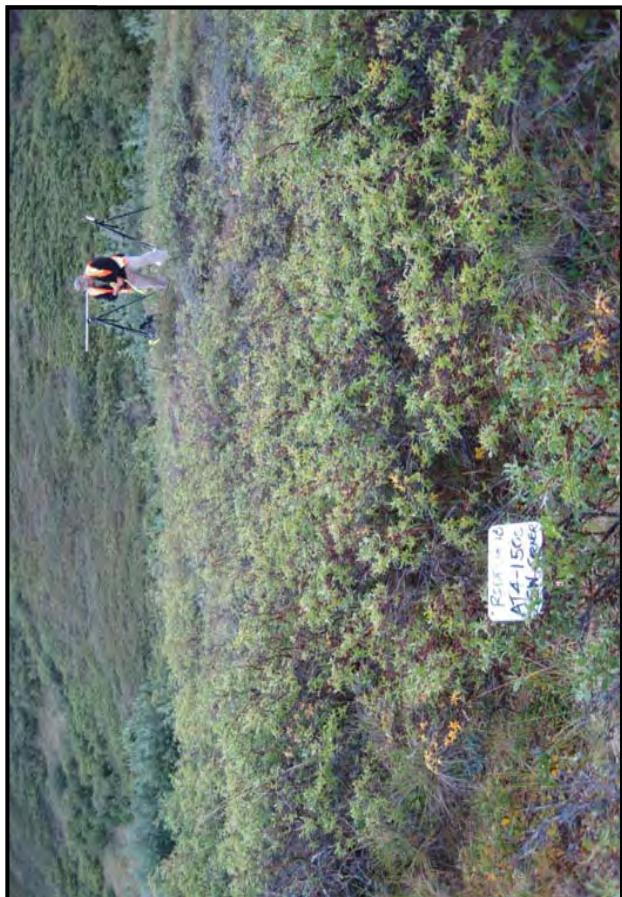


Photo 91 - Red Dog Mine - AT4 - 1500 SW Corner - 2010



Photo 94 - Red Dog Mine - AT4 - 2500 SE Corner - 2010



Photo 96 - Red Dog Mine - AT4 - 2500 NW Corner - 2010



Photo 93 - Red Dog Mine - AT4 - 2500 NE Corner - 2010



Photo 95 - Red Dog Mine - AT4 - 2500 SW Corner - 2010



Photo 98 - Red Dog Mine - AT4 - 4000 SE Corner - 2010

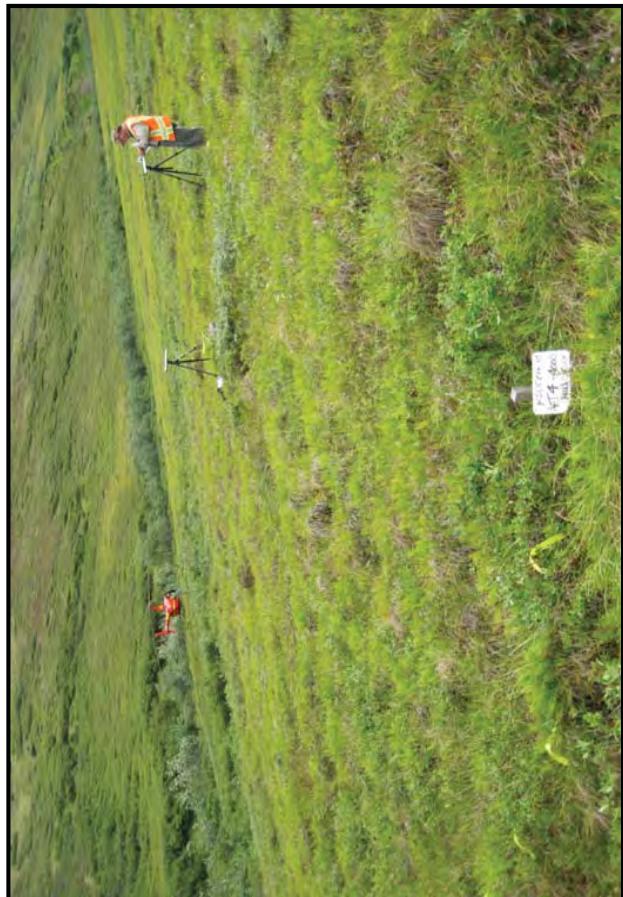


Photo 100 - Red Dog Mine - AT4 - 4000 NW Corner - 2010



Photo 97 - Red Dog Mine - AT4 - 4000 NE Corner - 2010



Photo 99 - Red Dog Mine - AT4 - 4000 SW Corner - 2010



Photo 102 - Red Dog Mine - AT5 - 000 SE Corner - 2010



Photo 104 - Red Dog Mine - AT5 - 000 NW Corner - 2010



Photo 101 - Red Dog Mine - AT5 - 000 NE Corner - 2010



Photo 103 - Red Dog Mine - AT5 - 000 SW Corner - 2010



Photo 106 - Red Dog Mine - AT 5-500 SE Corner - 2010



Photo 108 - Red Dog Mine - AT 5-500 NW Corner - 2010



Photo 105 - Red Dog Mine - AT 5-500 NE Corner - 2010



Photo 107 - Red Dog Mine - AT 5-500 SW Corner - 2010



Photo 110 - Red Dog Mine - AT5 - 1000 SE Corner - 2010



Photo 112 - Red Dog Mine - AT5 - 1000 NW Corner - 2010



Photo 109 - Red Dog Mine - AT5 - 1000 NE Corner - 2010



Photo 111 - Red Dog Mine - AT5 - 1000 SW Corner - 2010



Photo 114 - Red Dog Mine - AT5 - 1500 SE Corner - 2010



Photo 116 - Red Dog Mine - AT5 - 1500 NW Corner - 2010



Photo 113 - Red Dog Mine - AT5 - 1500 NE Corner - 2010



Photo 115 - Red Dog Mine - AT5 - 1500 SW Corner - 2010



Photo 118 - Red Dog Mine - AT5 - 2500 SE Corner - 2010



Photo 120 - Red Dog Mine - AT5 - 2500 NW Corner - 2010



Photo 117 - Red Dog Mine - AT5 - 2500 NE Corner - 2010

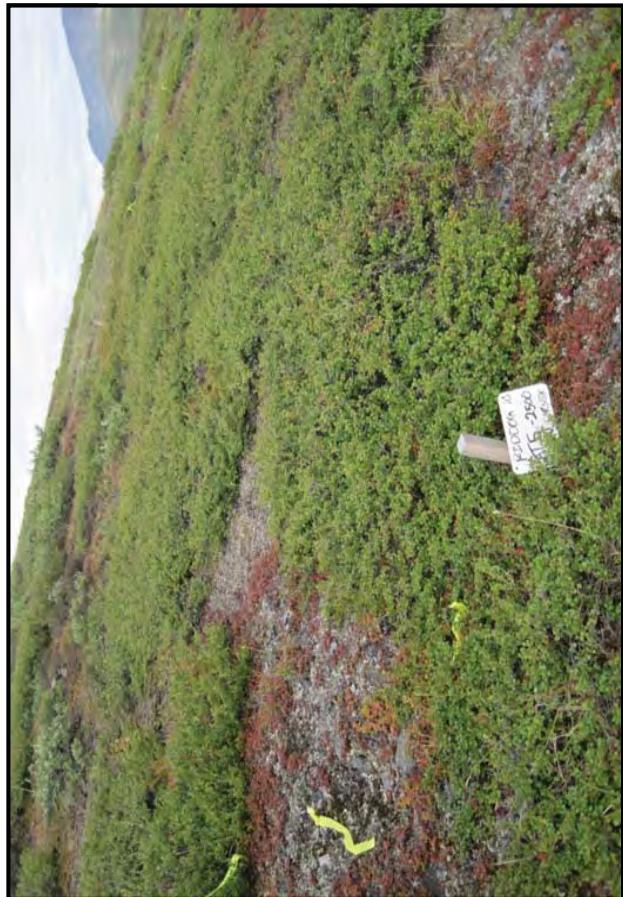


Photo 119 - Red Dog Mine - AT5 - 2500 SW Corner - 2010



Photo 122 - Red Dog Mine - AT5 - 4000 SE Corner - 2010



Photo 124 - Red Dog Mine - AT5 - 4000 NW Corner - 2010



Photo 121 - Red Dog Mine - AT5 - 4000 NE Corner - 2010



Photo 123 - Red Dog Mine - AT5 - 4000 SW Corner - 2010



Photo 126 - Red Dog Mine - AT6 - 000 E Corner - 2010

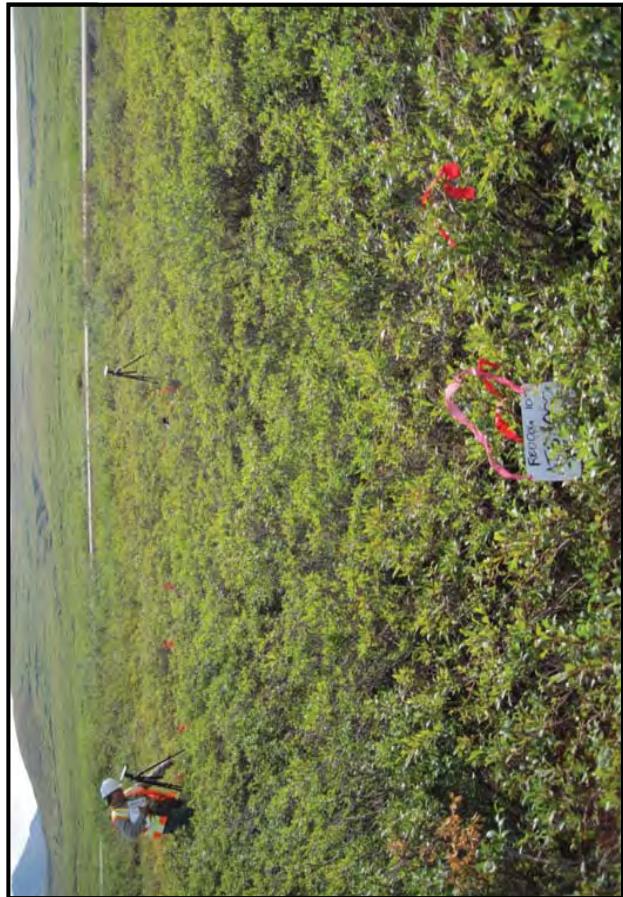


Photo 128 - Red Dog Mine - AT6 - 000 W Corner - 2010



Photo 125 - Red Dog Mine - AT6 - 000 N Corner - 2010

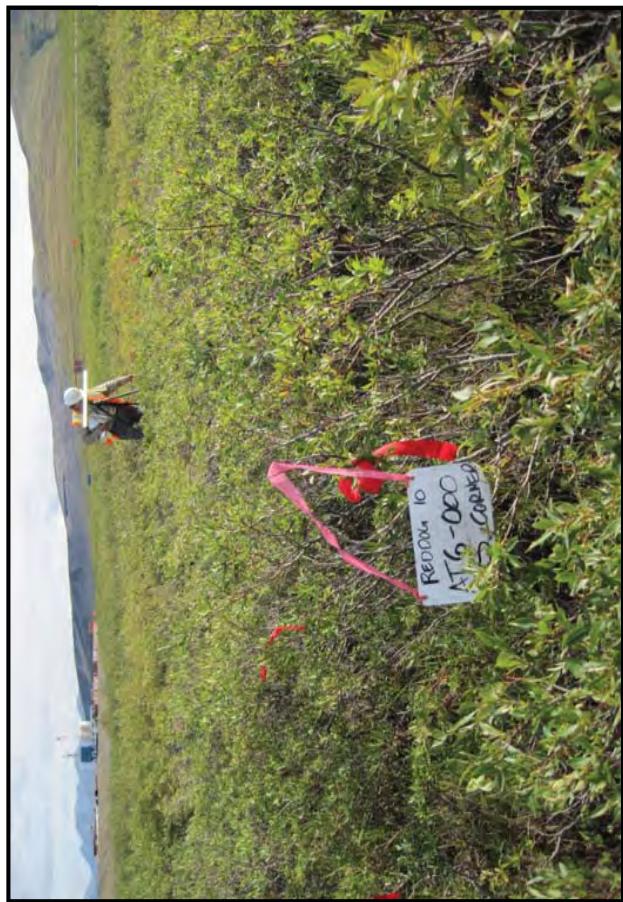


Photo 127 - Red Dog Mine - AT6 - 000 S Corner - 2010



Photo 130 - Red Dog Mine - AT6 - 500 SE Corner - 2010



Photo 132 - Red Dog Mine - AT6 - 500 NW Corner - 2010



Photo 129 - Red Dog Mine - AT6 - 500 NE Corner - 2010



Photo 131 - Red Dog Mine - AT6 - 500 SW Corner - 2010



Photo 134 - Red Dog Mine - AT6 - 1000 SE Corner - 2010



Photo 136 - Red Dog Mine - AT6 - 1000 NW Corner - 2010

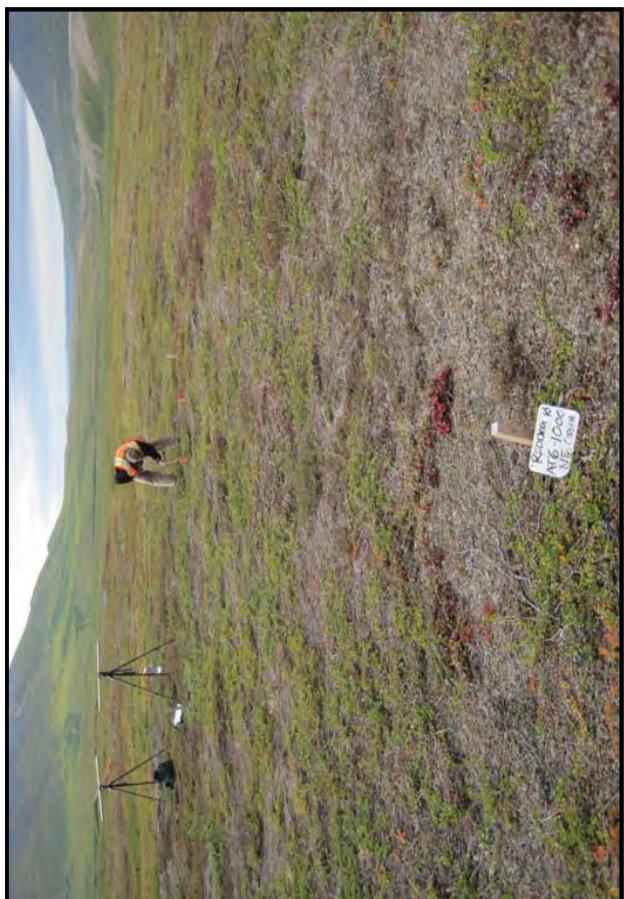


Photo 133 - Red Dog Mine - AT6 - 1000 NE Corner - 2010



Photo 135 - Red Dog Mine - AT6 - 1000 SW Corner - 2010



Photo 138 - Red Dog Mine - AT6 - 1500 SE Corner - 2010

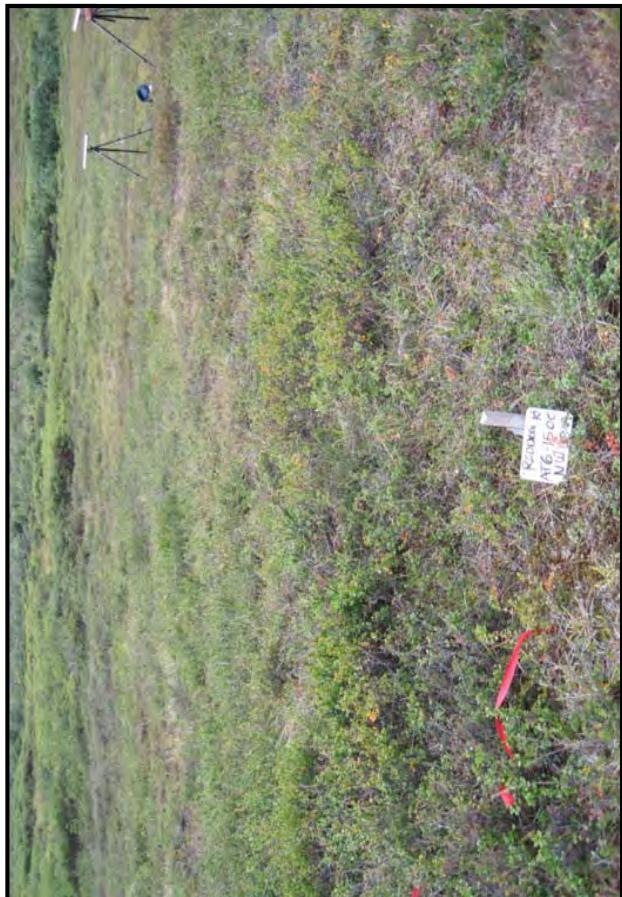


Photo 140 - Red Dog Mine - AT6 - 1500 NW Corner - 2010

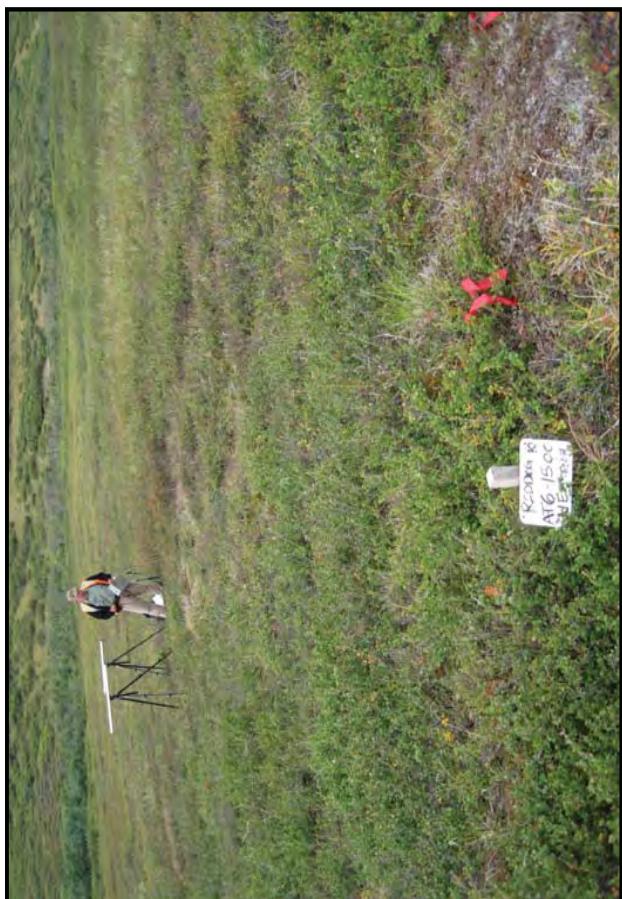


Photo 137 - Red Dog Mine - AT6 - 1500 NE Corner - 2010



Photo 139 - Red Dog Mine - AT6 - 1500 SW Corner - 2010



Photo 142 - Red Dog Mine - AT6 - 2500 SE Corner - 2010



Photo 144 - Red Dog Mine - AT6 - 2500 NW Corner - 2010



Photo 141 - Red Dog Mine - AT6 - 2500 NE Corner - 2010



Photo 143 - Red Dog Mine - AT6 - 2500 SW Corner - 2010



Photo 146 - Red Dog Mine - AT6 - 4000 SE Corner - 2010



Photo 148 - Red Dog Mine - AT6 - 4000 NW Corner - 2010



Photo 145 - Red Dog Mine - AT6 - 4000 NE Corner - 2010

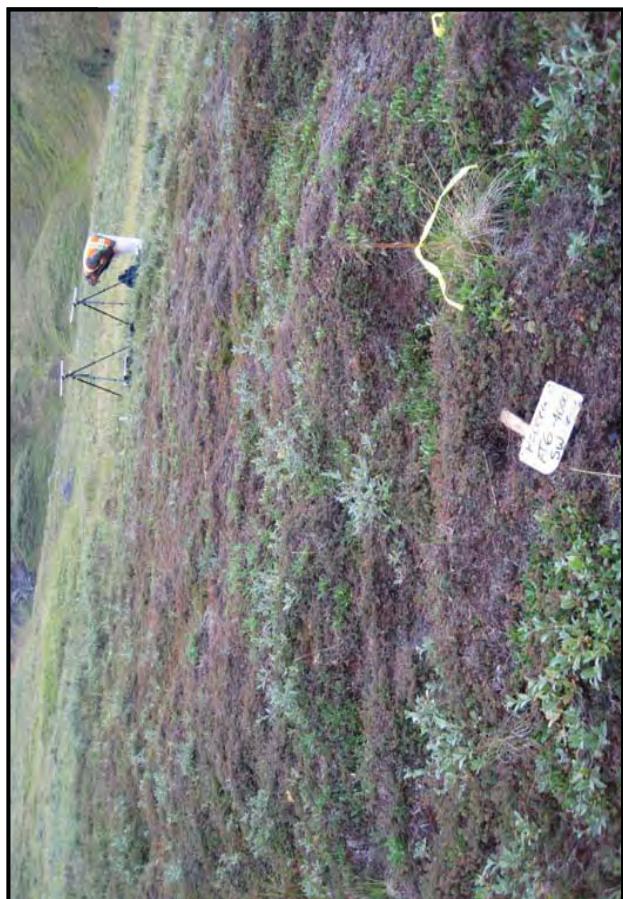


Photo 147 - Red Dog Mine - AT6 - 4000 SW Corner - 2010



Photo 150 - Red Dog Mine - AT7 - 200 E Corner - 2010



Photo 152 - Red Dog Mine - AT7 - 200 W Corner - 2010



Photo 149 - Red Dog Mine - AT7 - 200 N Corner - 2010



Photo 151 - Red Dog Mine - AT7 - 200 S Corner - 2010



Photo 154 - Red Dog Mine - AT7 - 500 E Corner - 2010



Photo 156 - Red Dog Mine - AT7 - 500 W Corner - 2010

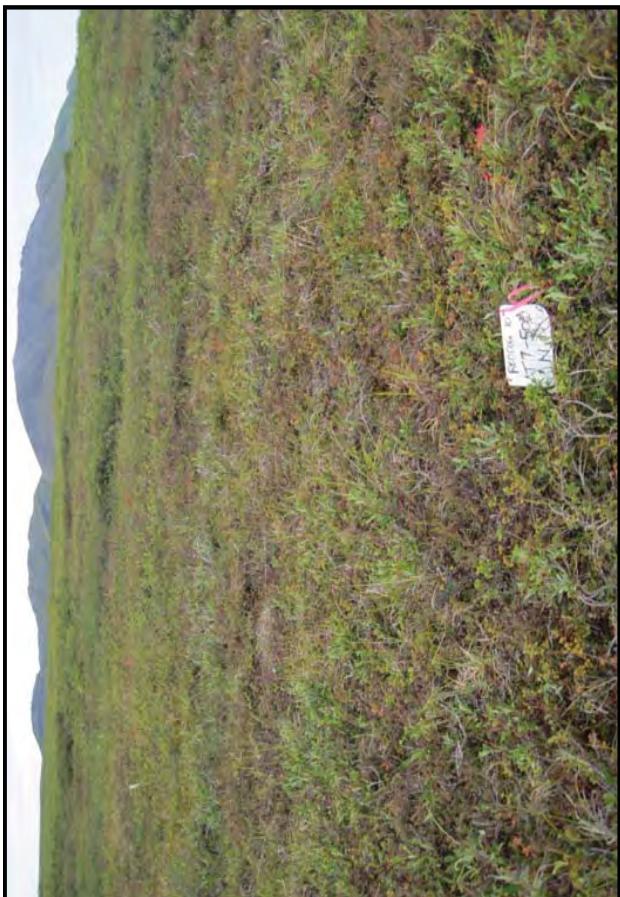


Photo 153 - Red Dog Mine - AT7 - 500 N Corner - 2010



Photo 155 - Red Dog Mine - AT7 - 500 S Corner - 2010



Photo 158 - Red Dog Mine - AT7 - 1000 SE Corner - 2010



Photo 160 - Red Dog Mine - AT7 - 1000 NW Corner - 2010



Photo 157 - Red Dog Mine - AT7 - 1000 NE Corner - 2010

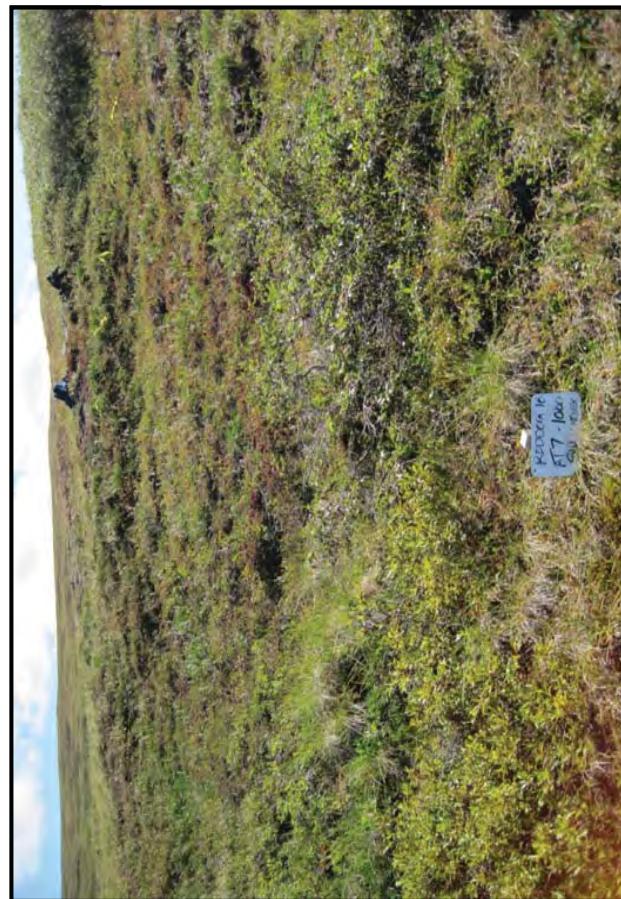


Photo 159 - Red Dog Mine - AT7 - 1000 SW Corner - 2010



Photo 162 - Red Dog Mine - AT7 - 1500 SE Corner - 2010

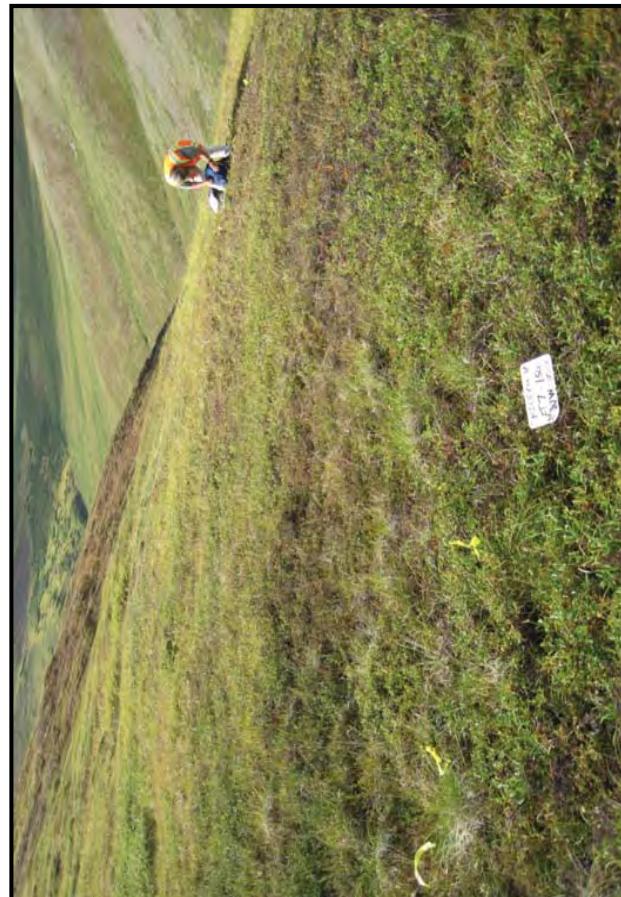


Photo 164 - Red Dog Mine - AT7 - 1500 NW Corner - 2010



Photo 161 - Red Dog Mine - AT7 - 1500 NE Corner - 2010



Photo 163 - Red Dog Mine - AT7 - 1500 SW Corner - 2010



Photo 166 - Red Dog Mine - AT7 - 2500 SE Corner - 2010



Photo 168 - Red Dog Mine - AT7 - 2500 NW Corner - 2010



Photo 165 - Red Dog Mine - AT7 - 2500 NE Corner - 2010

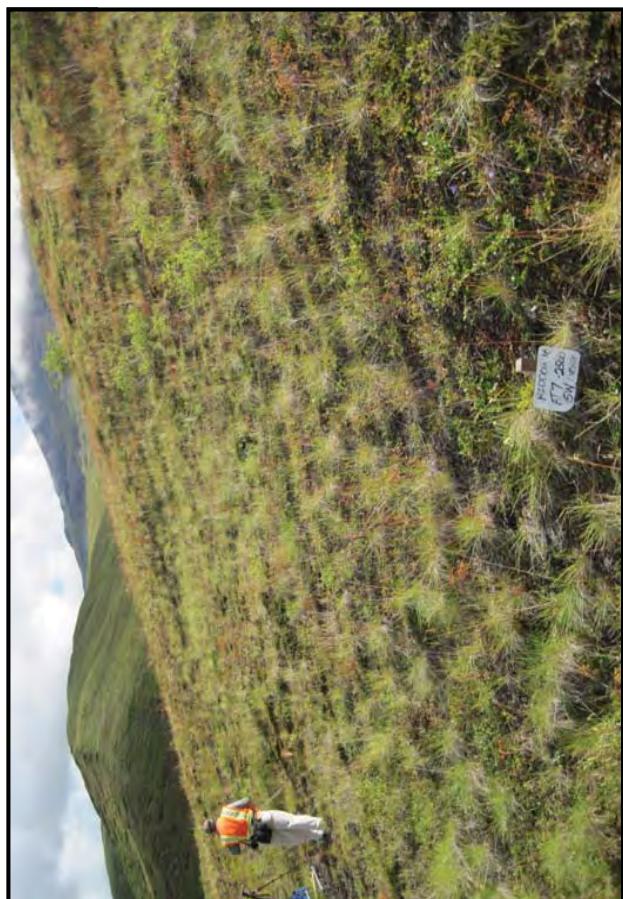


Photo 167 - Red Dog Mine - AT7 - 2500 SW Corner - 2010



Photo 170 - Red Dog Mine - AT7 - 4000 SE Corner - 2010



Photo 172 - Red Dog Mine - AT7 - 4000 NW Corner - 2010



Photo 169 - Red Dog Mine - AT7 - 4000 NE Corner - 2010



Photo 171 - Red Dog Mine - AT7 - 4000 SW Corner - 2010



Photo 174 - Red Dog Mine - AT8 - 000 SE Corner - 2010



Photo 176 - Red Dog Mine - AT8 - 000 NW Corner - 2010

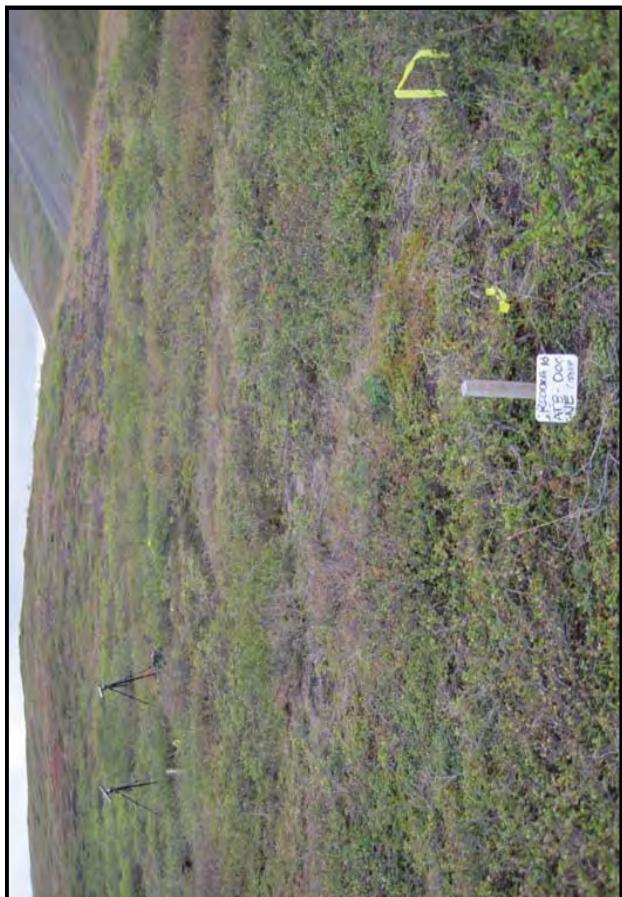


Photo 173 - Red Dog Mine - AT8 - 000 NE Corner - 2010

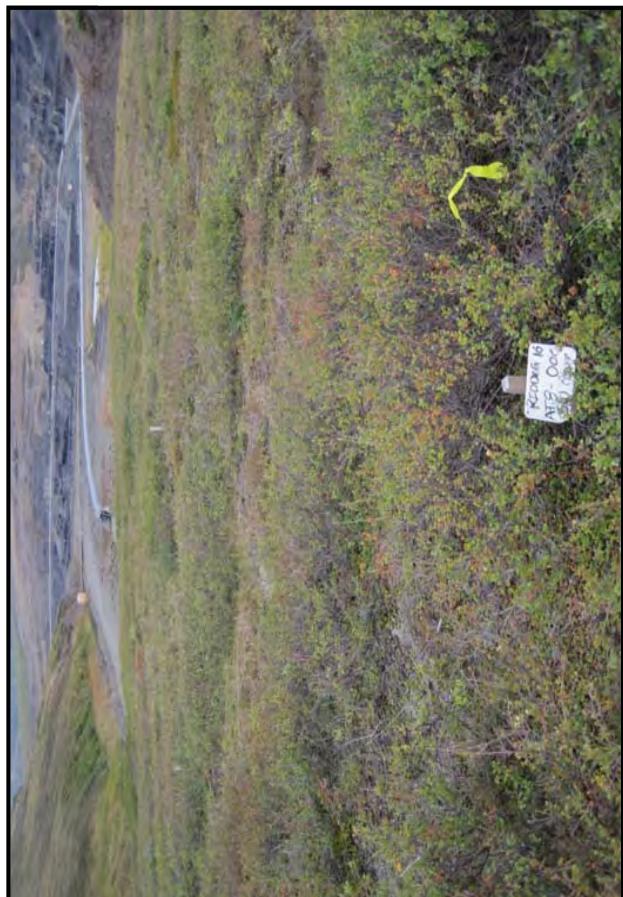


Photo 175 - Red Dog Mine - AT8 - 000 SW Corner - 2010

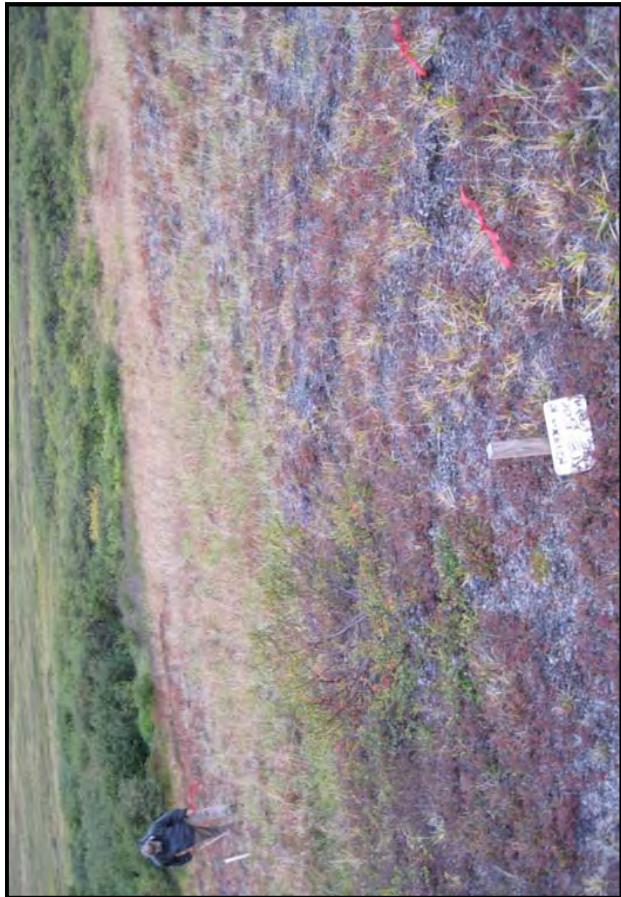


Photo 178 - Red Dog Mine - AT8 - 500 SE Corner - 2010



Photo 180 - Red Dog Mine - AT8 - 500 NW Corner - 2010



Photo 177 - Red Dog Mine - AT8 - 500 NE Corner - 2010



Photo 179 - Red Dog Mine - AT8 - 500 SW Corner - 2010



Photo 181 - Red Dog Mine - AT8 - 1000 NE Corner - 2010



Photo 182 - Red Dog Mine - AT8 - 1000 SE Corner - 2010

Photo 184 - Red Dog Mine - AT8 - 1000 NW Corner - 2010



Photo 181 - Red Dog Mine - AT8 - 1000 NE Corner - 2010



Photo 183 - Red Dog Mine - AT8 - 1000 SW Corner - 2010



Photo 186 - Red Dog Mine - AT8 - 1500 SE Corner - 2010



Photo 188 - Red Dog Mine - AT8 - 1500 NW Corner - 2010



Photo 185 - Red Dog Mine - AT8 - 1500 NE Corner - 2010



Photo 187 - Red Dog Mine - AT8 - 1500 SW Corner - 2010



Photo 190 - Red Dog Mine - AT8 - 2500 SE Corner - 2010



Photo 192 - Red Dog Mine - AT8 - 2500 NW Corner - 2010



Photo 189 - Red Dog Mine - AT8 - 2500 NE Corner - 2010

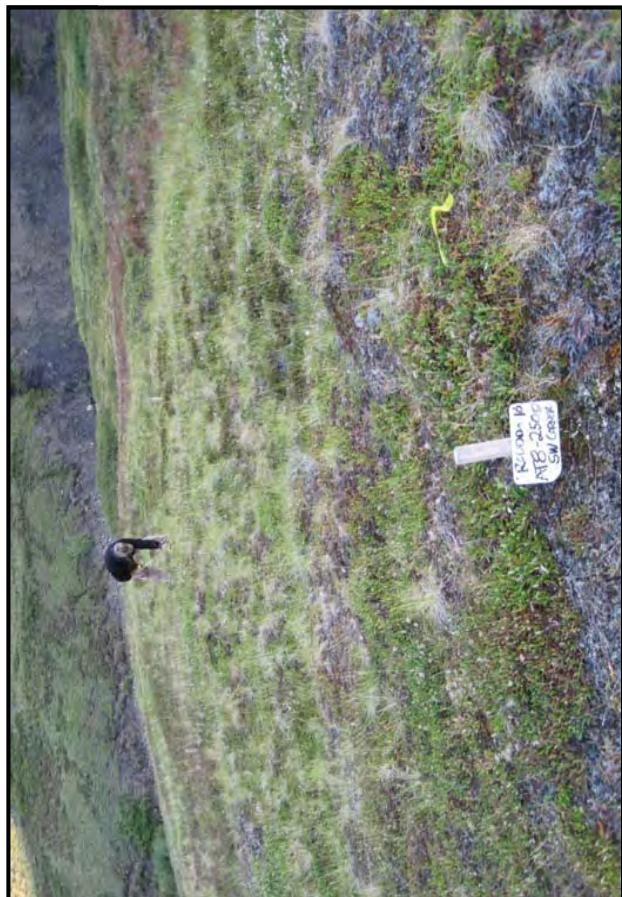


Photo 191 - Red Dog Mine - AT8 - 2500 SW Corner - 2010



Photo 194 - Red Dog Mine - ATB - 4000 SE Corner - 2010



Photo 196 - Red Dog Mine - ATB - 4000 NW Corner - 2010



Photo 193 - Red Dog Mine - ATB - 4000 NE Corner - 2010



Photo 195 - Red Dog Mine - ATB - 4000 SW Corner - 2010



Photo 198 - Red Dog Mine - AT9 - 000 SE Corner - 2010

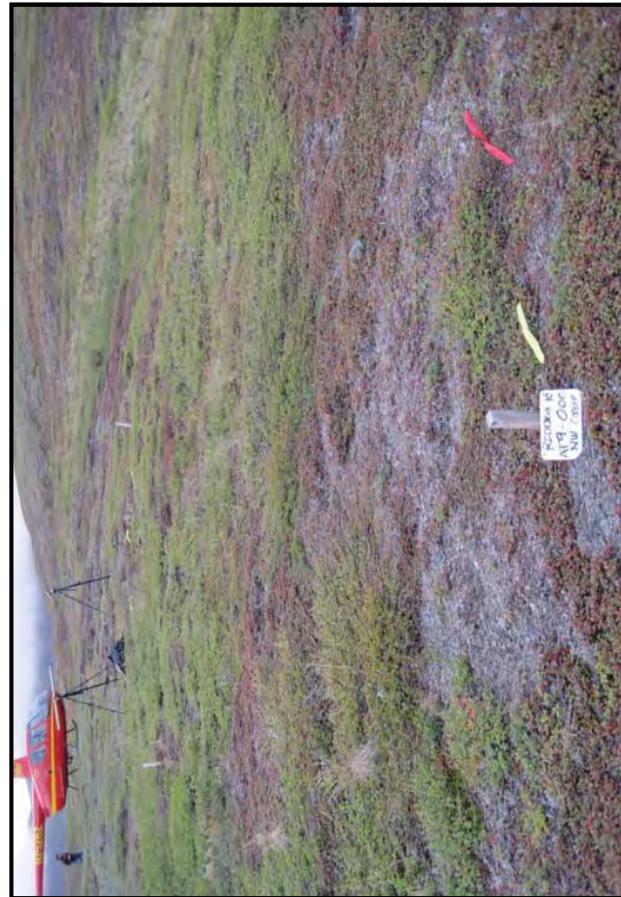


Photo 200 - Red Dog Mine - AT9 - 000 NW Corner - 2010

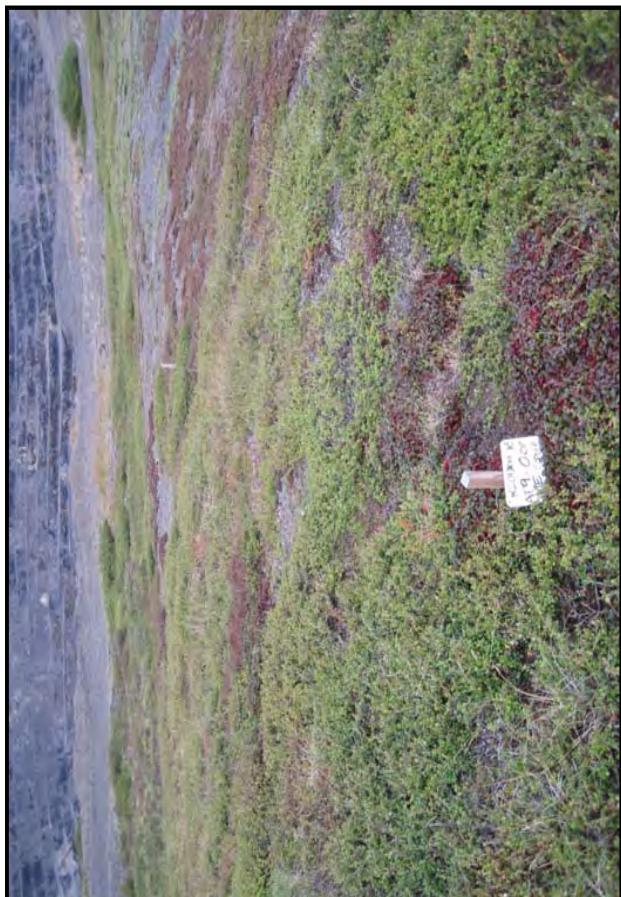


Photo 197 - Red Dog Mine - AT9 - 000 NE Corner - 2010

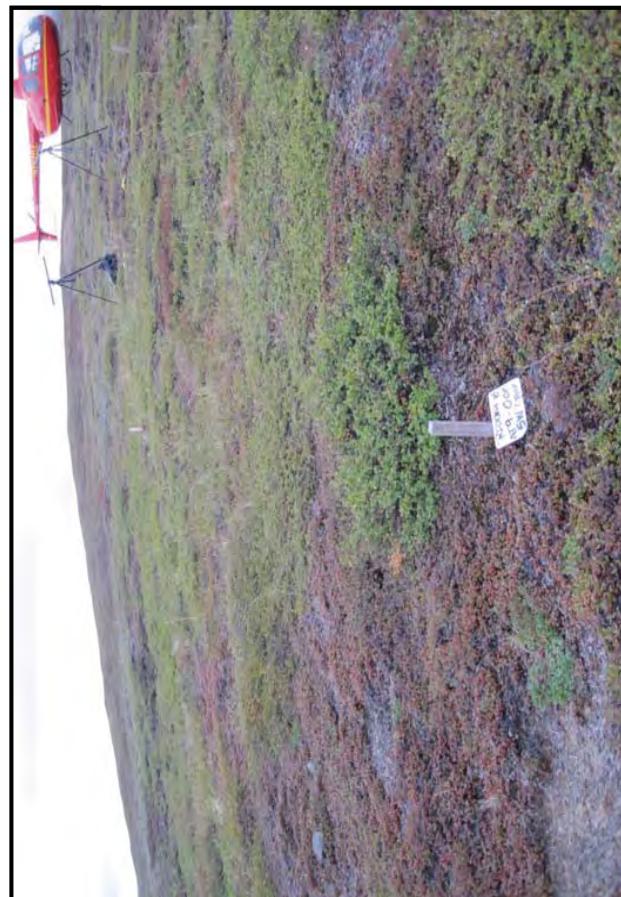


Photo 199 - Red Dog Mine - AT9 - 000 SW Corner - 2010

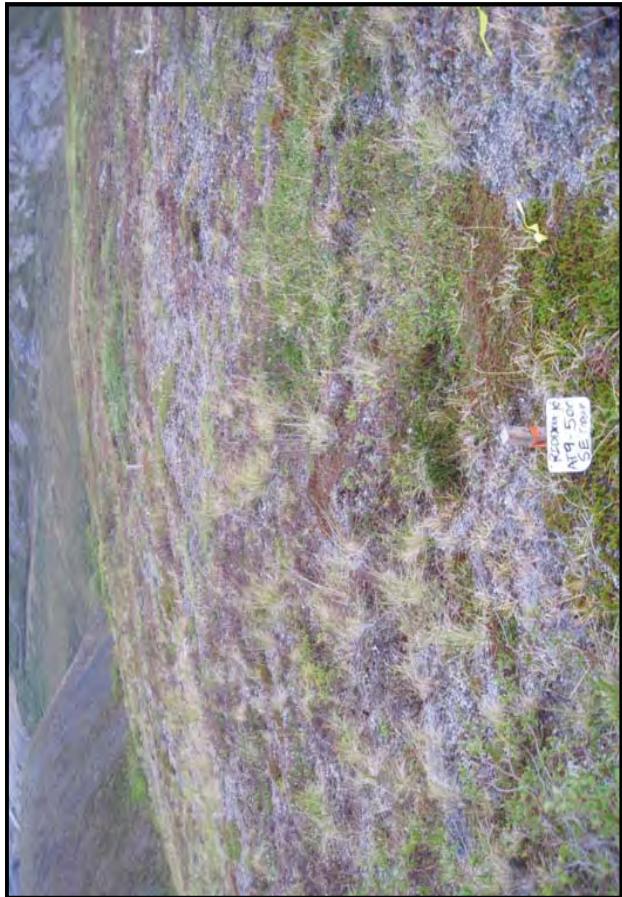


Photo 202 - Red Dog Mine - AT9 - 500 SE Corner - 2010

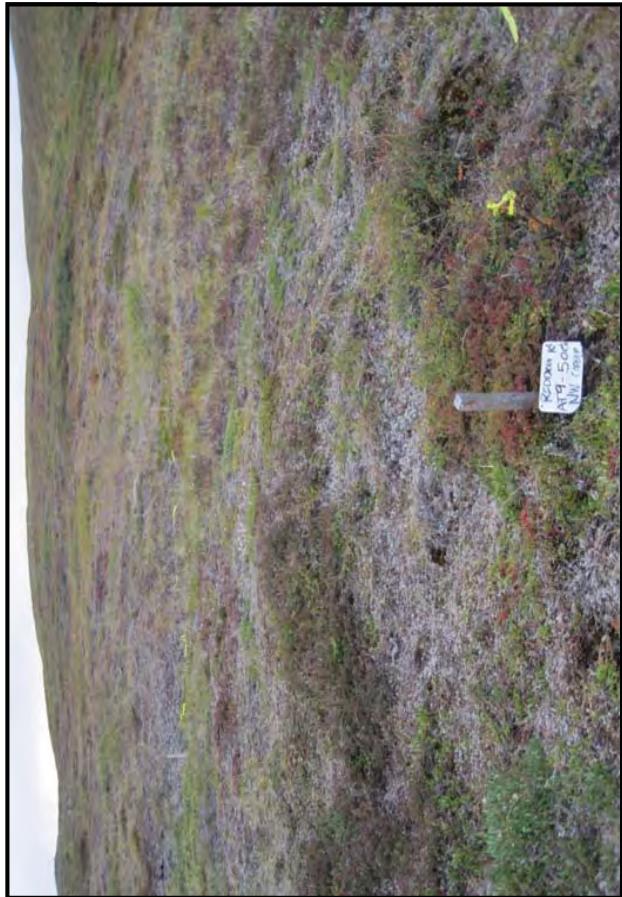


Photo 204 - Red Dog Mine - AT9 - 500 NW Corner - 2010

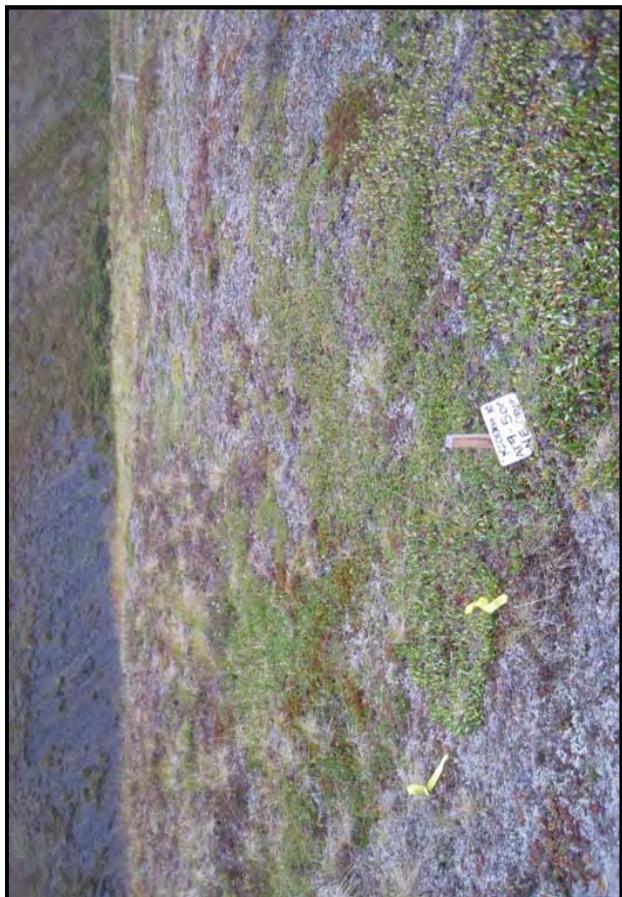


Photo 201 - Red Dog Mine - AT9 - 500 NE Corner - 2010



Photo 203 - Red Dog Mine - AT9 - 500 SW Corner - 2010



Photo 206 - Red Dog Mine - AT9 - 1000 SE Corner - 2010



Photo 208 - Red Dog Mine - AT9 - 1000 NW Corner - 2010

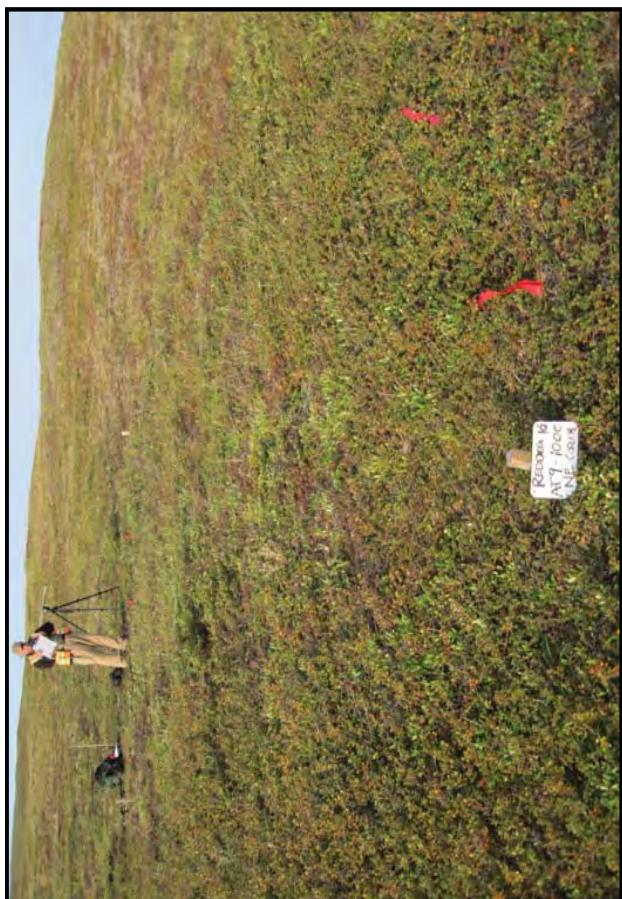


Photo 205 - Red Dog Mine - AT9 - 1000 NE Corner - 2010

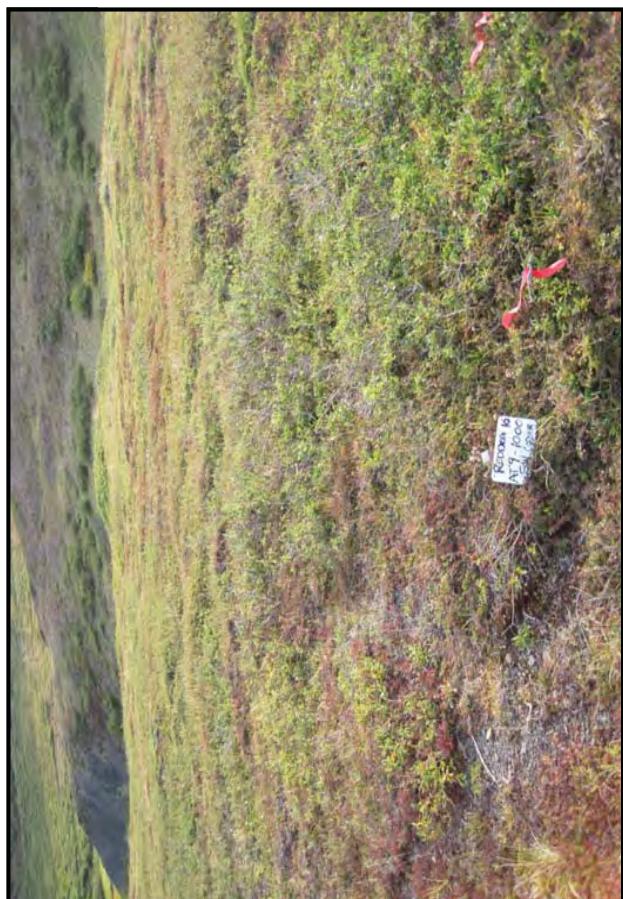


Photo 207 - Red Dog Mine - AT9 - 1000 SW Corner - 2010



Photo 210 - Red Dog Mine - AT9 - 1500 SE Corner - 2010



Photo 212 - Red Dog Mine - AT9 - 1500 NW Corner - 2010



Photo 209 - Red Dog Mine - AT9 - 1500 NE Corner - 2010



Photo 211 - Red Dog Mine - AT9 - 1500 SW Corner - 2010



Photo 214 - Red Dog Mine - AT9 - 2500 SE Corner - 2010

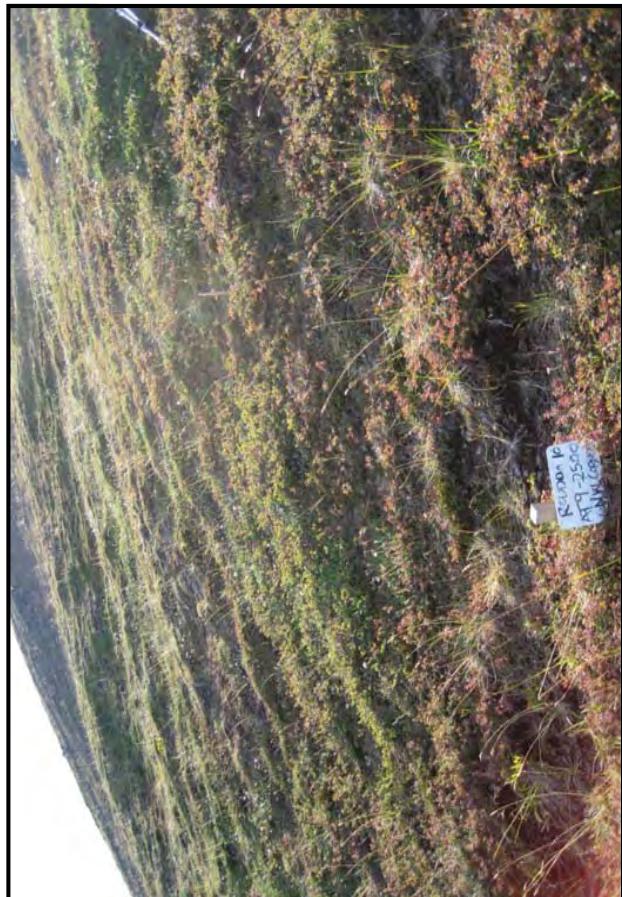


Photo 216 - Red Dog Mine - AT9 - 2500 NW Corner - 2010

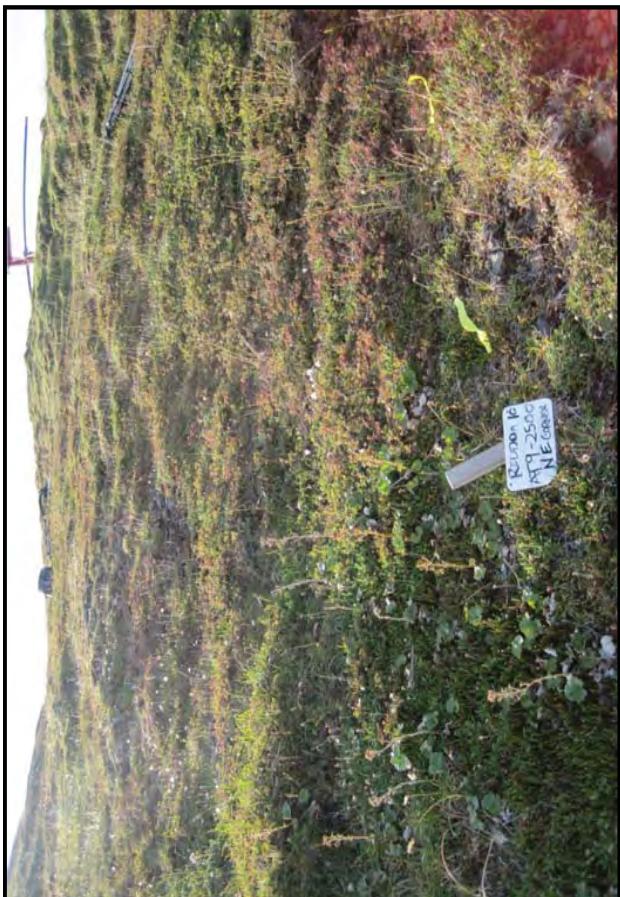


Photo 213 - Red Dog Mine - AT9 - 2500 NE Corner - 2010

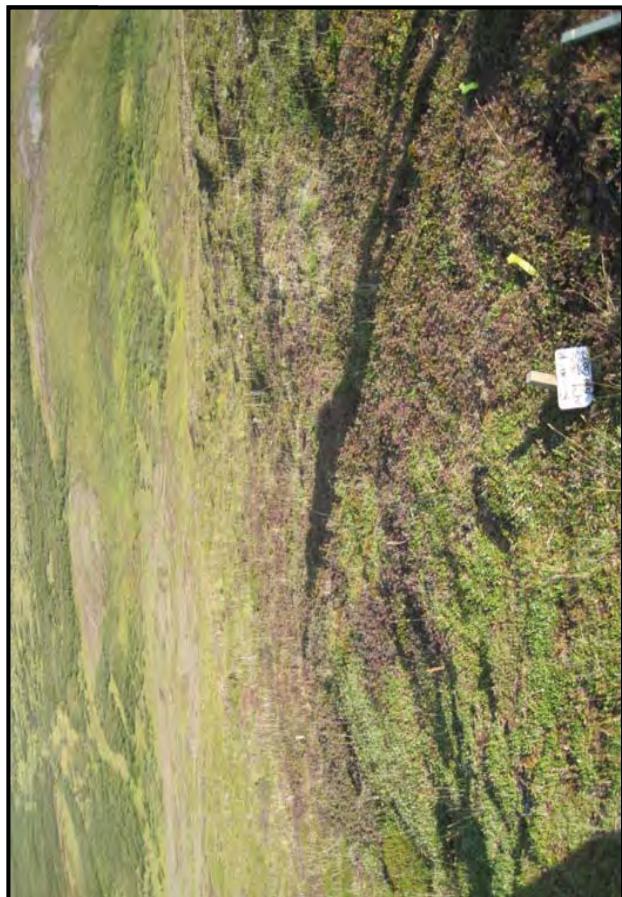


Photo 215 - Red Dog Mine - AT9 - 2500 SW Corner - 2010



Photo 218 - Red Dog Mine - AT9 - 4000 SE Corner - 2010



Photo 220 - Red Dog Mine - AT9 - 4000 NW Corner - 2010



Photo 217 - Red Dog Mine - AT9 - 4000 NE Corner - 2010



Photo 219 - Red Dog Mine - AT9 - 4000 SW Corner - 2010



Photo 222 - Red Dog Mine - RAT1 - 100 S - 2010



Photo 224 - Red Dog Mine - RAT1 - 1000 S - 2010



Photo 221 - Red Dog Mine - RAT1 - 100 N - 2010



Photo 223 - Red Dog Mine - RAT1 - 1000 N - 2010



Photo 226 - Red Dog Mine - RAT1 - 2000 S - 2010



Photo 228 - Red Dog Mine - RAT2 - 100 S - 2010



Photo 225 - Red Dog Mine - RAT1 - 2000 N - 2010



Photo 227 - Red Dog Mine - RAT2 - 100 N - 2010



Photo 230 - Red Dog Mine - RAT2 - 1000 S - 2010



Photo 232 - Red Dog Mine - RAT2 - 2000 S - 2010



Photo 229 - Red Dog Mine - RAT2 - 1000 N - 2010



Photo 231 - Red Dog Mine - RAT2 - 2000 N - 2010



Photo 234 - Red Dog Mine - RAT3 - 100 S - 2010



Photo 236 - Red Dog Mine - RAT3 - 1000 S - 2010

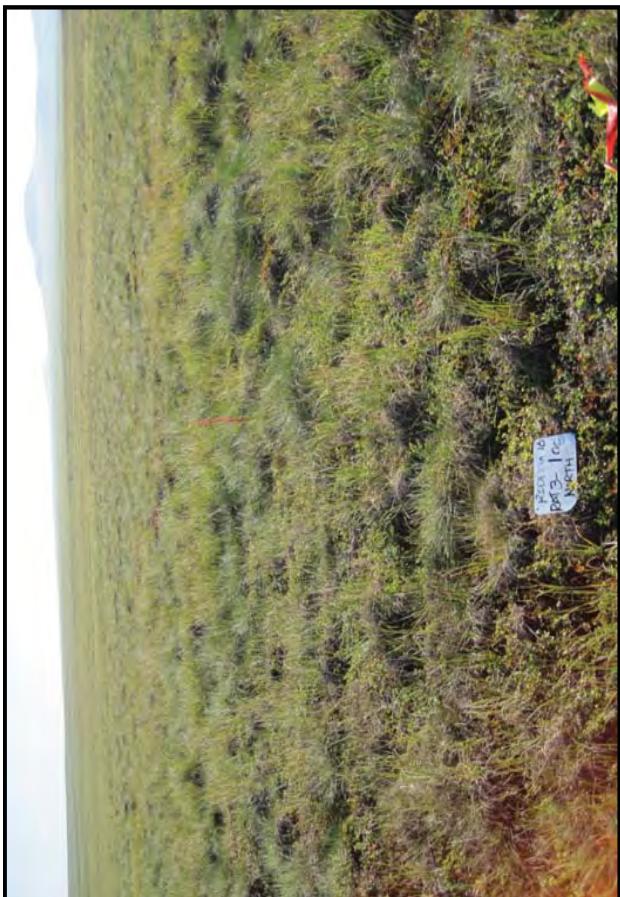


Photo 233 - Red Dog Mine - RAT3 - 100 N - 2010



Photo 235 - Red Dog Mine - RAT3 - 1000 N - 2010



Photo 238 - Red Dog Mine - RAT3 - 2000 S - 2010



Photo 240 - Red Dog Mine - RAT4 - 100 S - 2010



Photo 237 - Red Dog Mine - RAT3 - 2000 N - 2010



Photo 239 - Red Dog Mine - RAT4 - 100 N - 2010



Photo 242 - Red Dog Mine - RA14 - 1000 S - 2010



Photo 244 - Red Dog Mine - RA14 - 2000 S - 2010



Photo 241 - Red Dog Mine - RA14 - 1000 N - 2010



Photo 243 - Red Dog Mine - RA14 - 2000 N - 2010



Photo 246 - Red Dog Mine - CAT 1 SE Corner - 2010



Photo 248 - Red Dog Mine - CAT 1 NW Corner - 2010

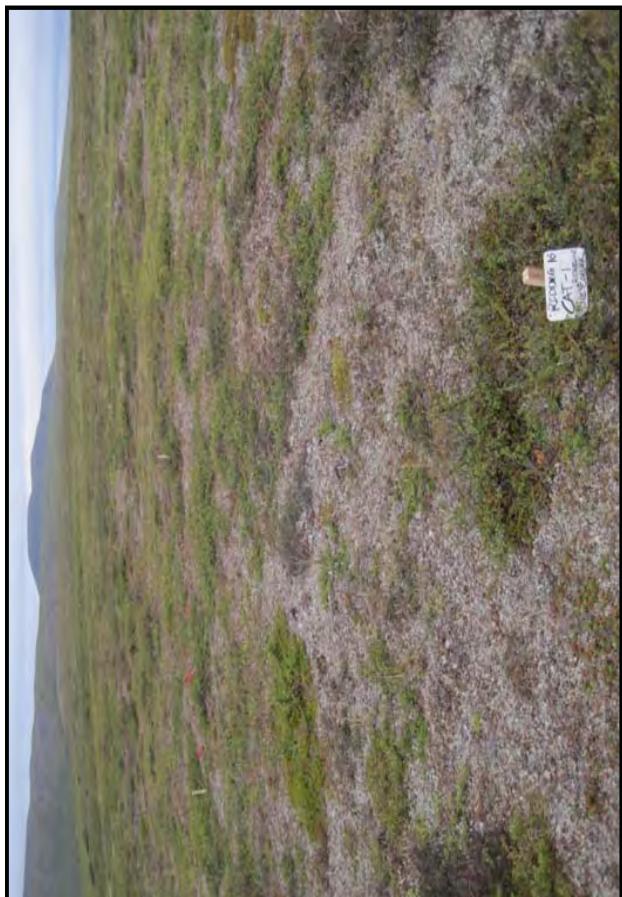


Photo 245 - Red Dog Mine - CAT 1 NE Corner - 2010



Photo 247 - Red Dog Mine - CAT 1 SW Corner - 2010



Photo 250 - Red Dog Mine - CAT 2 SE Corner - 2010



Photo 252 - Red Dog Mine - CAT 2 NW Corner - 2010



Photo 249 - Red Dog Mine - CAT 2 NE Corner - 2010



Photo 251 - Red Dog Mine - CAT 2 SW Corner - 2010



Photo 254 - Red Dog Mine - CAT 3 SE Corner - 2010



Photo 256 - Red Dog Mine - CAT 3 NW Corner - 2010



Photo 253 - Red Dog Mine - CAT 3 NE Corner - 2010



Photo 255 - Red Dog Mine - CAT 3 SW Corner - 2010



Photo 258 - Red Dog Mine - CAT 4 S - 2010



Photo 257 - Red Dog Mine - CAT 4 N - 2010