APPENDIX 7

BMU STATUS SUMMARIES

BMU 4

BMU 5

BMU6

STATUS ***SUMMARY***

BMU 4 - BULL

ACREAGES

BAA	Management Situation	Acres	Square Miles
7-4-01	1	8596	13.4
	3	4174	6.5
	Total	12770	19.9
7-4-02	1	6460	10.1
	3	2328	3.6
	Total	8788	13.7
7-4-03	1	12136	19.0
	3	1882	2.9
	Total	14018	21.9
7-4-04	1	3976	6.2
	3	1940	3.0
	Total	5916	9.2
7-4-05	1	10474	16.4
	3	2037	3.2
	Total	12511	19.6
7-4-06	1	7126	11.1
	3	4825	7.5
	Total	11951	18.6
7-4-07	1	10220	16.0
	3	5103	8.0
	Total	15323	24.0

TOTAL AREA SITUATION 1	58988	92.2
TOTAL AREA SITUATION 3	22289	34.8
TOTAL AREA BMU 4	81277	127.0

Acre determination method:
MS1 lands = Total BMU GIS acres minus MS3 acres (GIS)

HABITAT EFFECTIVENESS

Year	ROAD INFLUENCE ACRES	SQUARE MILES	HE %
1993	6347	9.9	64.8
1997	6400	10.0	64.7

Methodology:

Habitat Effectiveness (HE) = Total BMU (sq.mi.) minus (Situation 3 sq.mi. + Road Influence sq.mi.)

$127.0 - (34.8 + 9.9) = 82.3$

82.3 sq.mi. divided by 127.0 sq. mi. = 64.8% ME

CHANGES IN EFFECTIVE HABITAT
(starting at 82.2 **sq.** mi. - 1997)

ACTIVITY	1998	1999	2000	2001	2002	2003	2035
Berray Mtn Sub Div. A	-1800		+1800				
Berray Mtn Sub Div B			-2500		+2500		
Gvmt. Road Salv	+40						
Asarco RC Mine *			-119				+119
Close 2.9 mi. Rd 150 **			+640				
TOTAL ACRES	-1760		-179		+2500		+119
SQUARE MILES	-2.8		-0.3		+3.9		+0.2
SITUATION 1	79.4	79.4	79.1	79.1	83.0	83.0	83.2

** =Closed for ASARCO Rock Creek Mine Alternative **5**

Methodology:

Total Acres divided by 640 = square miles

Situation 1 = Previous year Situation 1 plus (or minus) current year situation 1 change in sq.miles.
ie.: 1998 = *82.2 - 2.8* = 79.4

BMU HE % = Current years Situation 1 divided by *127.0*
ie. 1998 = 79.4 / 127.0= *62.5%*

ROAD DENSITIES
(Situation 1 habitat only)

BAA 7-4-01

Area = 13.4 sq.mi.

Road No.	OPEN ROAD MILES						
	1996	1997	1998	1999	2000	2001	2002
409	0.4	0.4	0.4	0.4	0.4	0.4	0.4
2292	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Seasonal 2294	0.5	0.5	0.5	0.5	0.5	0.5	0.5
TOTAL OPEN	1.1 (1.6)	1.1 (1.6)	1.1 (1.6)	1.1 (1.6)	1.1 (1.6)	1.1 (1.6)	1.1 (1.6)
ORD mi./mi2	0.08 (0.12)	0.08 (0.12)	0.08 (0.12)	0.08 (0.12)	0.08 (0.12)	0.08 (0.12)	0.08 (0.12)

Numbers in parentheses are when seasonal roads open

BAA 7-4-02

Area = 10.1 sq.mi.

Road No.	OPEN ROAD MILES						
	1996	1997	1998	1999	2000	2001	2002
1118	1.9	1.9	1.9	1.9	1.9	1.9	1.9
1118A	0.8	0.8	0.8	0.8	0.8	0.8	0.8
14611	0.5	0.5	0.5	0.5	0.5	0.5	0.5
TOTAL OPEN	3.2	3.2	3.2	3.2	3.2	3.2	3.2
ORD mi./mi2	0.32	0.32	0.32	0.32	0.32	0.32	0.32

BAA 7-4-03

Area = 19.0.mi.

Road No.	OPEN ROAD MILES						
	1996	1997	1998	1999	2000	2001	2002
410	5.8	5.8	5.8	5.8	5.8	5.8	5.8
2272	6.2	6.2	6.2	6.2	6.2	6.2	6.2
14607A *	0.0	0.0	0.5	0.5	0.5	0.5	0.5
TOTAL OPEN	12.0	12.0	12.5	12.5	12.5	12.5	12.5
ORD mi./mi2	0.63	0.63	0.66	0.66	0.66	0.66	0.66

* = Berray Mtn timber sale

BAA 7-4-04

Area = 6.2 sq.mi.

Road No.	OPEN ROAD MILES						
	1996	1997	1998	1999	2000	2001	2002
All road in MS3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL OPEN	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ORD mi./mi2	0.0	0.0	0.0	0.0	0.0	0.0	0.0

7-4-05

Area = 16.4 sq.mi.

Road No.	OPEN ROAD MILES						
	1996	1997	1998	1999	2000	2001	2002
All road in MS3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL OPEN	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ORD mi./mi2	0.0	0.0	0.0	0.0	0.0	0.0	0.0

7-4-06

Area = 11.1 sq.mi.

Road No.	OPEN ROAD MILES						
	1996	1997	1998	1999	2000	2001	2002
All road in MS3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL OPEN	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ORD mi./mi2	0.0	0.0	0.0	0.0	0.0	0.0	0.0

BAA 7-4-07

Area = 16.0 sq.mi.

Road No.	OPEN ROAD MILES						
	1998	1999	2000	2001	2002	2003	2035
150 *	9.4	9.4	7.4	7.4	7.4	7.4	7.4
NS3	0.5	0.5	0.5	0.5	0.5	0.5	0.5
TOTAL OPEN	9.9	9.9	7.4	7.4	7.4	7.4	7.4
ORD mi./mi2	0.62	0.62	0.59	0.59	0.59	0.59	0.59

* Close 2.0 miles of 150 road for ASARCO Rock Creek Mine

ACTIVITIES COVERED IN TABLES

Berray Mountain timber sale
ASARCO Rock Creek Mine: Reduction in HE% starts in 2000
Government Road Salvage: Reduction in HE% in 1996, uses FDRs 150H and 14646
ASARCO Rock Creek Mine (all new roads in MS-3 lands in BMU 4: BAA 7-4-07)

BMU 4

Area = 92.2 sq.mi.

Road No.	OPEN ROAD MILES						
	1998	1999	2000	2001	2002	2003	2035
7-4-1	1.6	1.6	1.6	1.6	1.6	1.6	1.6
7-4-2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
7-4-3	12.5	12.5	12.5	12.5	12.5	12.5	12.5
7-4-4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7-4-5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7-4-6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7-4-7	9.9	9.9	7.4	7.4	7.4	7.4	9.9
TOTAL OPEN	27.2	27.2	24.7	24.7	24.7	24.7	27.2
ORD mi./mi2	0.30	0.30	0.27	0.27	0.27	0.27	0.30

DISPLACEMENT AREA SCHEDULING 1997

BAA	STATUS	DISPLACEMENT AREA	PURPOSE
7-4-1	Inactive		
7-4-2	Displacement		
7-4-3	Active	7-2-3	Berray Mtn TS
7-4-4	Active	7-4-2	Berray Mtn TS
7-4-5	Inactive		
7-4-6	Displacement		
7-4-7	Active	7-4-6	Government Rd Salv

DISPLACEMENT AREA SCHEDULING 1998

BAA	STATUS	DISPLACEMENT AREA	PURPOSE
7-4-1	Inactive		
7-4-2	Displacement		
7-4-3	Active	7-2-3	Berray Mtn TS
7-4-4	Active	7-4-2	Berray Mtn TS
7-4-5	Inactive		
7-4-6	Displacement		
7-4-7	Inactive		

DISPLACEMENT AREA SCHEDULING 1999

BAA	STATUS	DISPLACEMENT AREA	PURPOSE
7-4-1	Inactive		
7-4-2	Displacement		
7-4-3	Active	7-2-3	Berray Mtn TS
7-4-4	Active	7-4-2	Berray Mtn TS
7-4-5	Inactive		
7-4-6	Displacement		
7-4-7	Inactive		

DISPLACEMENT AREA SCHEDULING 2000

BAA	STATUS	DISPLACEMENT AREA	PURPOSE
7-4-1	Inactive		
7-4-2	Displacement		
7-4-3	Active	7-2-3	Berray Mtn TS
7-4-4	Active	7-4-2	Berray Mtn TS
7-4-5	Inactive		
7-4-6	Displacement		
7-4-7	Active	7-4-5 & 7-4-6	ASARCO Rock Cr. Mine

DISPLACEMENT AREA SCHEDULING 2001

BAA	STATUS	DISPLACEMENT AREA	PURPOSE
7-4-1	Inactive		
7-4-2	Displacement		
7-4-3	Active	7-2-3	Berray Mtn TS
7-4-4	Active	7-4-2	Berray Mtn TS
7-4-5	Inactive		
7-4-6	Displacement		
7-4-7	Active	7-4-5 & 7-4-6	ASARCO Rock Cr. Mine

DISPLACEMENT AREA SCHEDULING 2002

BAA	STATUS	DISPLACEMENT AREA	PURPOSE
7-4-1	Inactive		
7-4-2	Displacement		
7-4-3	Active	7-2-3	Berray Mtn TS
7-4-4	Active	7-4-2	Berray Mtn TS
7-4-5	Displacement		
7-4-6	Displacement		
7-4-7	Active	7-4-5 & 7-4-6	ASARCO Rock Cr. Mine

DISPLACEMENT AREA SCHEDULING 2003-2035

BAA	STATUS	DISPLACEMENT AREA	PURPOSE
7-4-1	Inactive		
7-4-2	Displacement		
7-4-3	Inactive		
7-4-4	Inactive		
7-4-5	Inactive		
7-4-6	Displacement		
7-4-7	Active	7-4-5 & 7-4-6	ASARCO Rock Cr. Mine

STATUS SUMMARY

BMU 5 - St.Paul

ACREAGES

BAA	Management Situation	Acres	Square Miles
7-5-01	1	10132	14.58
	3	636	2.24
	Total	10768	16.83
7-5-02	1	12012	18.77
	3	528	.83
	Total	12540	19.59
7-5-03	1	14359	22.4
	3	0	0.0
	Total	14359	22.44
5-5-04	1	5436	8.5
	3	0	0.0
	Total	5437	8.5
5-5-05	1	13639	21.31
	3	444	.69
	Total	14083	22.0
5-5-06	1	13025	20.35
	3	0	0.0
	Total	13025	20.35

TOTAL AREA SITUATION 1	67801	105.9
TOTAL AREA SITUATION 3	2409	3.8
TOTAL AREA BMU 5	70210	109.7

Acre detenninarion methods:
MSI lands = Total BMU GIS acres minus MS3 GIS acres

HABITAT EFFECTIVENESS

SITUATION 1 ROAD INFLUENCE *

YEAR	ROAD INFLUENCE ACRES	SQUARE MILES
1997	15138	23.7
1998	15459	24.2
1999	16907	26.4
2000	17163	26.6

* Results from GRIZTOOLS

HABITAT EFFECTIVENESS

BMU	HE %
BMU 5	74.9

Methodology:

Baseline effectiveness with no loss of habitat effectiveness other than from roads and MS-3 lands.

Habitat Effectiveness (HE) = Total BMU (sq.mi.) minus (Situation 3 sq.mi. + Road Influence sq.mi.)

109.7 - (3.8+23.7) = 82.2

82.2 sq.mi. divided by 109.7 sq. mi. = 74.9% HE in 1997

CAUSE OF CHANGE IN EFFECTIVE HABITAT

ACTIVITY	1998	1999	2000	2001	2002	2003	2035
LOST GIRL TS (D7)	X						
ASARCO RC MINE *1 (D7)			-348				
Noranda *2 (D5)		-5397					
Close FDR 4784 *3 (D5)		X					
TOTAL ACRES		-5397	-348				+348
SQUARE MILES		-8.4	-0.5				+0.5

*1 = ASARCO Rock Creek Mine (Alt 5)
*2 Construction phase start **up** Noranda Montanore Mine
*3 Upper Bear Cr road closure (Noranda start **up** mitigation 809 ac , 2 5 mi)
D5 = Libby Ranger District
D7 = Cabinet Ranger District
x = The change in acres of effective habitat from road closures or openings are included in GRIZTQOLS model results (which are included in the Table below) If acres shown for a project. they are in addition to any acres gained or lost as a result of opening or closing a road

CHANGES IN EFFECTIVE HABITAT
(starting at 82.2 square miles - 1997)

ACTIVITY	1998	1999	2000	2001	2002	2003	2035
SQUARE MILES	-0.5	-10.6	-0.7	0	0	0	+0.5
SITUATION 1 sq.miles	81.7	71.1	70.4	70.4	70.4	70.4	70.9
BMU HE %	74.5	64.8	64.1	64.1	64.1	64.1	64.6

Methodology:
Total Acres divided by 640 = square miles
Situation 1 = Previous year Situation 1 [(plus or minus square miles of projects) plus (road **iz** change)]
ie.: 1999= 81.7 - [(8.4) + (2.2)] = 71.1
BMU HE % = Current years Situation 1 divided by 109.7
ie. 1999 = 71.1/ 109.7= 64.8%

ROAD DENSITIES
(Situation 1 habitat only)

BAA 7-5-01

Area = 14.58 sq.mi. (GIS based) (Open Road Miles are GIS based)

Road No.	OPEN ROAD MILES						
	1998	1999	2000	2001	2002	2003	2004
407	4.57	4.57	4.57	4.57	4.57	4.57	4.57
410	3.73	3.73	3.73	3.73	3.73	3.73	3.73
2278	0.3	0.3	0.3	0.3	0.3	0.3	0.3
407A	.14	.14	.14	.14	.14	.14	.14
2278A	.12	.12	.12	.12	.12	.12	.12
TOTAL OPEN	8.86	8.86	8.86	8.86	8.86	8.86	8.86
ORD mi./mi2	0.61	0.61	0.61	0.61	0.61	0.61	0.61

BAA 7-5-02

Area = 18.77 sq.mi.

Road No.	OPEN ROAD MILES						
	1998	1999	2000	2001	2002	2003	2004
150	7.86	7.86	6.96 *3	6.96	6.96	6.96	6.96
2741	6.68	6.68	6.68	6.68	6.68	6.68	6.68
2285	0.37	0.37	0.37	0.37	0.37	0.37	0.37
2741X	.18	.18	0 *1	0	0	0	0
2741A	.51	.51	0 *1	0	0		
150A	.5	.5	.5	.5	.5	.5	.5
Asarco	0	0	0.3 *2	0.3	0.3	0.3	0.3
TOTAL OPEN	16.1	16.1	14.81	14.81	14.81	14.81	14.81
ORD mi./mi2	0.86	0.86	0.79	0.79	0.79	0.79	0.79

*1 = ASARCO Rock Creek Mine closure of 0 51 mi for 2741A, and 0 18 mi FDR 2741X for start-up in 2000 (Alt 5)
*2 = New roads constructed (0 1 mi.), and closed roads opened (0.2 mi.) for ASARCO (Alt 5)
*3 = ASARCO Alt. 5 closes 0 9 miles of FDR 150

BAA 7-5-03

Area = 22.4.mi.

Road No.	OPEN ROAD MILES						
	1998	1999	2000	2001	2002	2003	2004
CMW							
TOTAL OPEN	*0.0*	0.0	0.0	*0.0*	0.0	0.0	0.0

ORD mi./mi2	*0.0*	0. 0	0.*0*	0. 0	0.0	0.0	0. 0

BAA 5-5-04

Area = 8.5 sq.mi.

Road No.	OPEN ROAD MILES						
	1998	1999	2000	2001	2002	2003	2004
CMW							0.0
TOTAL OPEN	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ORD mi./mi2	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CMW = Cabinet Mountain Wilderness (No roads)

5-5-05

Area = 21.31 sq.mi.

Road No.	OPEN ROAD MILES						
	1996	1997	1998	1999	2000	2001	2002
231	6.69	6.69	6.69	6.69	6.69	6.69	6.69
278	0.22	0.22	0.22	0.22	0.22	0.22	0.22
2316	1.12	1.12	1.12	1.12	1.12	1.12	1.12
4776	1.03	1.03	1.03	1.03	1.03	1.03	1.03
4776A	1.55	1.55	1.55	1.55	1.55	1.55	1.55
4778	5.79	5.79	5.79	5.79	5.79	5.79	5.79
4778B *1	.7	**0**	0	0	0	0	0
4778C *1	3.19	**1.79**	1.79	1.79	1.79	1.79	1.79
4779	0.98	0.98	0.98	0.98	0.98	0.98	0.98
5314	.07	.07	.07	.07	.07	.07	.07
4780	0.97	0.97	0.97	0.97	0.97	0.97	0.97
4781 *2	1.4	1.4	**3.4**	3.4	3.4	3.4	3.4
4720	.06	.06	.06	.06	.06	.06	.06
4773	.57	.57	.57	.57	.57	.57	.57
5327	.09	.09	.09	.09	.09	.09	.09
14458	.30	.30	.30	.30	.30	.30	.30
UV8693	.36	.36	.36	.36	.36	.36	.36
TOTAL OPEN	25.1	23.0	25.0	25.0	25.0	25.0	25.0
ORD mi./mi2	1.18	1.08	1.17	1.17	1.17	1.17	1.17

*1: Midas roads to be closed in 1997 - .7miles of 4778B and 1.4miles of 4778C (Little Cherry Pit Project)
*2: Ramsey creek road 4781 - 2.0 miles of road to be opened (Noranda start up in 1998)

5-5-06

Area = 20.35 sq.mi.

Road No.	OPEN ROAD MILES						
	1996	1997	1998	1999	2000	2001	2002
278	6.49	6.49	6.49	6.49	6.49	6.49	6.49
6199	.78	.78	.78	.78	.78	.78	.78
6212	4.94	4.94	4.94	4.94	4.94	4.94	4.94
4784 *1	3.61	3.61	3.61	1.11	1.11	1.11	1.11
4785	.1	.1	.1	.1	.1	.1	.1
UV8693	.13	.13	.13	.13	.13	.13	.13
2317	.81	.81	.81	.81	.81	.81	.81
4781	.11	.11	.11	.11	.11	.11	.11
5187	.2	.2	.2	.2	.2	.2	.2
TOTAL OPEN	17.15	17.15	17.15	14.65	14.65	14.65	14.65
ORD mi./mi2	0.84	0.84	0.84	0.72	0.72	0.72	0.72

*1: Upper Bear Creek road (2.5 mi. to be closed in 1999 at Noranda start up)

ACTIVITIES COVERED IN TABLES for D-5

Precommercial thinning
Noranda Mine (assumes 1999 start-up date)
Little Cherry Pit Project

BMU 5 Open Road Density (ORD)

Area = 105.95 sq. miles (Situation 1 habitat only)

BAA.	OPEN ROAD MILES						
	1996	1997	1998	1999	2000	2001	2002
7-5-01	13.06	13.06	8.86	8.86	8.86	8.86	8.86
7-5-02	15.59	15.59	16.1	16.1	14.81	14.81	14.81
7-5-03	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5-5-04	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5-5-05	25.1	23.0	25.0	25.0	25.0	25.0	25.0
5-5-06	17.15	17.15	17.15	14.65	14.65	14.65	14.65
TOTAL OPEN	70.9	68.8	67.11	64.6	63.3	63.3	63.6
ORD mi./mi2	0.67	0.65	0.63	0.59	0.58	0.58	0.58

DISPLACEMENT AREA SCHEDULING 1997

BAA	STATUS	DISPLACEMENT AREA	PURPOSE
7-5-1	Active	7-5-3, 5-5-4	Lost Girl
7-5-2	Inactive		
7-5-3	Displacement		
5-5-4	Displacement		
5-5-5	Inactive		
5-5-6	Active	5-2-7	Little Cherry Pit

AREA SCHEDULING 1998

BAA	STATUS	DISPLACEMENT AREA	PURPOSE
7-5-1	Inactive		
7-5-2	Active	7-5-3	Cedar Gulch TS
7-5-3	Displacement		
5-5-4	Inactive		
5-5-5	Inactive		
5-5-6	Inactive		

DISPLACEMENT AREA SCHEDULING 1999

BAA	STATUS	DISPLACEMENT AREA	PURPOSE
7-5-1	Inactive		
7-5-2	Inactive		
7-5-3	Inactive		
5-5-4	Inactive		
5-5-5	Active	5-5-6 (Cable Mtn.)	Noranda Montanore Mine
5-5-6	Displacement		

DISPLACEMENT AREA SCHEDULING 2000

BAA	STATUS	DISPLACEMENT AREA	PURPOSE
7-5-1	Inactive		
7-5-2	Active	7-5-3 *	Asarco Rock Cr. Mine
7-5-3	Displacement		
5-5-4	Displacement		
5-5-5	Active	5-5-4, 5-5-6 (Cable Mtn.)	Noranda Montanore Mine
5-5-6	Displacement		

* Ventilation adit present but activity underground with low noise levels suface activity on in 1 year (about year 5?)

DISPLACEMENT AREA SCHEDULING 2001

BAA	STATUS	DISPLACEMENT AREA	PURPOSE
7-5-1	Inactive		
7-5-2	Active	7-5-3 *	Asarco Rock Cr. Mine
7-5-3	Displacement		
5-5-4	Displacement		
5-5-5	Active	5-5-4, 5-5-6 (Cable Mtn.)	Noranda Montanore Mine
5-5-6	Displacement		

* Ventilation adit present but activity underground with low noise levels

DISPLACEMENT AREA SCHEDULING 2002-2035

BAA	STATUS	DISPLACEMENT AREA	PURPOSE
7-5-1	Inactive		
7-5-2	Active	7-5-3 *	Asarco Rock Cr. Mine
7-5-3	Displacement		
5-5-4	Displacement		
5-5-5	Active	5-5-4, 5-5-6 (Cable Mtn.)	Noranda Montanore Mine
5-5-6	Displacement		

* Ventilation adit present but activity underground with low noise levels

STATUS SUMMARY

BMU 6 - Wanless

ACREAGES

BAA	Management Situation	Acres	Square Miles
7-6-01	1	14174	22.1
	3	2959	4.6
	Total	17133	26.8
7-6-02	1	4065	6.4
	3	3497	5.5
	Total	7562	11.8
7-6-03	1	6581	10.3
	3	0	0.0
	Total	6581	10.3
5-6-04	1	5668	8.9
	3	0	0.0
	Total	5668	8.9
5-6-05	1	9446	14.8
	3	108	0.2
	Total	9554	14.9
5-6-06	1	12308	19.2
	3	121	0.2
	Total	12429	19.4
5-6-07	1	5222	8.2
	3	0	0.0
	Total	5222	8.2

TOTAL AREA SITUATION 1	57464	89.8
TOTAL AREA SITUATION 3	6685	10.4
TOTAL AREA BMU 6	64149	100.2

Acre determination methods:
MS1 lands = Total BMU GIS acres (5/4/98) minus MS3 GIS acres (514198)

HABITAT EFFECTIVENESS (1997)

ROAD INFLUENCE

BAA	ROAD INFLUENCE ACRES	SQUARE MILES
7-6-1	3457	5.4
7-6-2	2	0.0
7-6-3	0	0.0
5-6-4	51	0.1
5-6-5	3152	4.9
5-6-6	5412	8.5
5-6-7	1907	3.0
Total	13981	21.8

Methodology:

Habitat Effectiveness = Total BMU (sq.mi.) minus (Situation 3 sq.mi. + Road Influence sq.mi.)
100.2 - (10.4 + 21.8) = 68.0
68.0 sq.mi. divided by 100.2 sq. mi. = 67.9% HE

CHANGES IN EFFECTIVE HABITAT D-7

ACTIVITY	1998	1999	2000				
Cedar Gulch TS	-265		+265				
ASARCO RC MINE *1			-135				
Close FDR 2285 *2			+376				
TOTAL ACRES	-91		+506				
SQUARE MILES	-0.1		0.79				

*1 = ASARCO Rock Creek Mine (Alt 5)
*2 = Tied to ASARCO Rock Creek Mine mitigation (close 1 61 miles FDR 2285 after Cedar Gulch TS completed)

CHANGES IN EFFECTIVE HABITAT D-5

ACTIVITY	1998	1999	2000				
Corral Salv. TS	+1500						
Skranak Access		-1084					
Harpole Access		-1141					
Bear Lakes Access			-733				
PCTC Sec. 3 TS *1		+634					
PCTC Sec 21 TS *4	-1229	+1229					
Noranda PL *2			-1153				
Close FDR 6746		+103					
PCTC Sec.5 TS *3							
Close FDR 5323 & 5323A *5		+224					
TOTAL ACRES	271	-35	-1886				
SQUARE MILES	0.4	-.06	-2.95				

*1 PCTC (Plum Creek timber company) roading and harvest - W Fisher 3 TS
*2 Powerline construction tied to Noranda Mine start-up date
*3 PCTC roading and harvest W Fisher 5 TS
*4 PCTC roading and harvest West Fisher 21 TS
*5 Mitigarion for Harpole access

CHANGES IN EFFECTIVE HABITAT: BMU TOTAL
(starting at 67.9 square miles - 1997)

ACTIVITY	1998	1999	2000				
SQUARE MILES	+0.3	-.06	-2.16				
SITUATION 1	68.2	68.1	65.9				
BMU HE %	68.1	68.0	66.0				

Methodology:
Total Acres divided by 640 = square miles
Situation 1 = Previous year Situation 1 plus or minus current year situation 1
ie.: 1998 = 67.9 + 0.3 = 68.2
BMU HE % =Current years Situation 1 divided by 100.2
ie. 1998= 68.2/ 100.2 = 68.1%

ROAD DENSITIES
(Situation 1 habitat only)

BAA 7-6-01

Area = 22.1 sq.mi.

Road No.	OPEN ROAD MILES						
150	2.96	2.96	2.96				
150M	0.25	0.25	0.25				
2285	6.80	6.80	5.23				
2285L*1	0.29	0.29	0.00				
1022	2.38	2.38	2.38				
2287	0.11	0.11	0.11				
2277 *1	0.36	0.36	0.00				
2723 *1	0.20	0.20	0.00				
2282	0.92	0.92	0.92				
WI_07	1.90	1.90	1.90				
New rd *1	0.74	0.74	0.00				
TOTAL OPEN	16.91	16.91	13.75				
ORD mi./mi2	0.77	0.77	0.62				

*1 - Cedar Gulch **TS**

BAA 7-6-02

Area = 6.4 sq.mi.

Road No.	OPEN ROAD MILES						
All road in MS-3							
TOTAL OPEN	0.0	0.0	0.0				
ORD mi./mi2	0.0	0. 0	0. 0				

BAA 7-6-03

Area = 10.3 sq.mi.

Road No.	OPEN ROAD MILES						
All road in MS-3							
TOTAL OPEN	0.0	0.0	0.0				
ORD mi./mi2	0.0	0.0	0.0				

BAA 5-6-04

Area = 8.9 sq.mi.

Road No.	OPEN ROAD MILES						
Peterson Access	0.0	0.0	0.44				
TOTAL OPEN	0.0	0.0	0.44				
ORD mi./mi2	0.0	0.0	0.05				

5-6-05

Area = 14.8 sq.mi.

Road No.	OPEN ROAD MILES						
231	2.32	2.32	2.32				
6748	1.18	4.04	4.04				
2314 *1	5.39	0.00					
2315	0.02	0.02	0.02				
99808 *1	0.28	0.00	0.00				
99810 *1	0.05	0.00	0.00				
Peterson	0.00	0.00	1.20				
TOTAL OPEN	9.24	6.38	7.58				
ORD mi./mi2	0.62	0.43	0.51				

*1 - open for PCTC sec 21 TS

5-6-06

Area = 19.2 sq.mi.

Road No.	OPEN ROAD MILES						
231	5.91	5.91	5.91				
2332	3.10	3.10	3.10				
4724	0.05	0.05	0.05				
4780	0.18	0.18	0.18				
5200 *1	1.02	0.00	0.00				
6745	1.51	1.51	1.51				
5320 *3	0.22	0.00	0.00				
5323 *3	1.18	0.00	0.00				
5323A *3	0.22	0.00	0.00				
5324	1.27	1.27	1.27				
6746C *2	2.56	2.56	2.56				
6746 *4	4.17	4.94	4.94				
6748	0.17	0.17	0.17				
1054	0.06	0.06	0.06				
5327	0.74	0.74	0.74				
99758 *2	1.53	1.53	1.53				
99758A *2	0.43	0.43	0.43				
99825	0.13	0.13	0.13				
99845 *1	0.97	0.00	0.00				
99844 *1	3.05	0.00	0.00				
99844A *1	0.32	0.00	0.00				
99844B *1	0.27	0.00	0.00				
TOTAL OPEN	29.06	22.58	22.58				
ORD mi./mi2	1.51	1.18	1.18				

*1 - open for PCTC sec 3 TS
*2 - open for PCTC sec 5 TS
*3 - Rds 5320, 5323, 5323A closed for Skranak/Harpole access mitigation
*4 - .96 mile of rd 6746 closed for Skranak access mitigation; 1.73 miles opened for Harpoie access: net .77 mile opened

5-6-07

Area = 8.2 sq.mi.

Road No.	OPEN ROAD MILES						
	[illegible]						
385	1.21	1.21	1.21				
4724	5.43	5.43	5.43				
4725	0.00	0.00	4.18				
4780	0.00	0.00	0.00				
5195	0.16	0.16	0.16				
8751	0.10	0.10	0.10				
8752	0.05	0.05	0.05				
• Nor pwrl	0.00	0.00	0.73				
TOTAL OPEN	6.95	6.95	11.86				
ORD mi./mi2	0.85	0.85	1.45				

ACTIVITIES COVERED IN TABLES for D-5

Corral Salvage timber sale (USFS) - 1997-98
BAA 5-6-6 road closures
Plum Creek timber company road construction & timber harvest : *1997-2000*
Noranda powerline construction : *2000*
Skranak mining operations - 1999- ?
Harpole mining operations - 1999 - ?
Peterson Access - *2000* -?

Percent grizzly bear core habitat in BMU 6

	Core > 4 mi²	Core < 4 mi²
1998	41%	10%
1999	~~40%~~ 40.4	~~12%~~ 10.1
2000	~~39%~~ 40.8	~~11%~~ 9.8

WJ 7-30-98

APPENDIX 8

GLOSSARY

BAA: Bear Analysis Area: a sub-unit of a BMU used to analyze ORD. Also used to determine adequate "in kind" displacement habitat.

BMU: Bear Management Unit: land area containing sufficient quantity and quality of all seasonal habitat components to support a female grizzly. Used to analyze %HE.

ORD: Open road density: miles of open road per 640 acres in Management Situation 1 lands.

%WE: Percent Habitat Effectiveness: Percent of the BMU area free from human disturbance (greater than 1/4 mile from open roads, or greater than 1 mile from helicopter flight path). Formula:

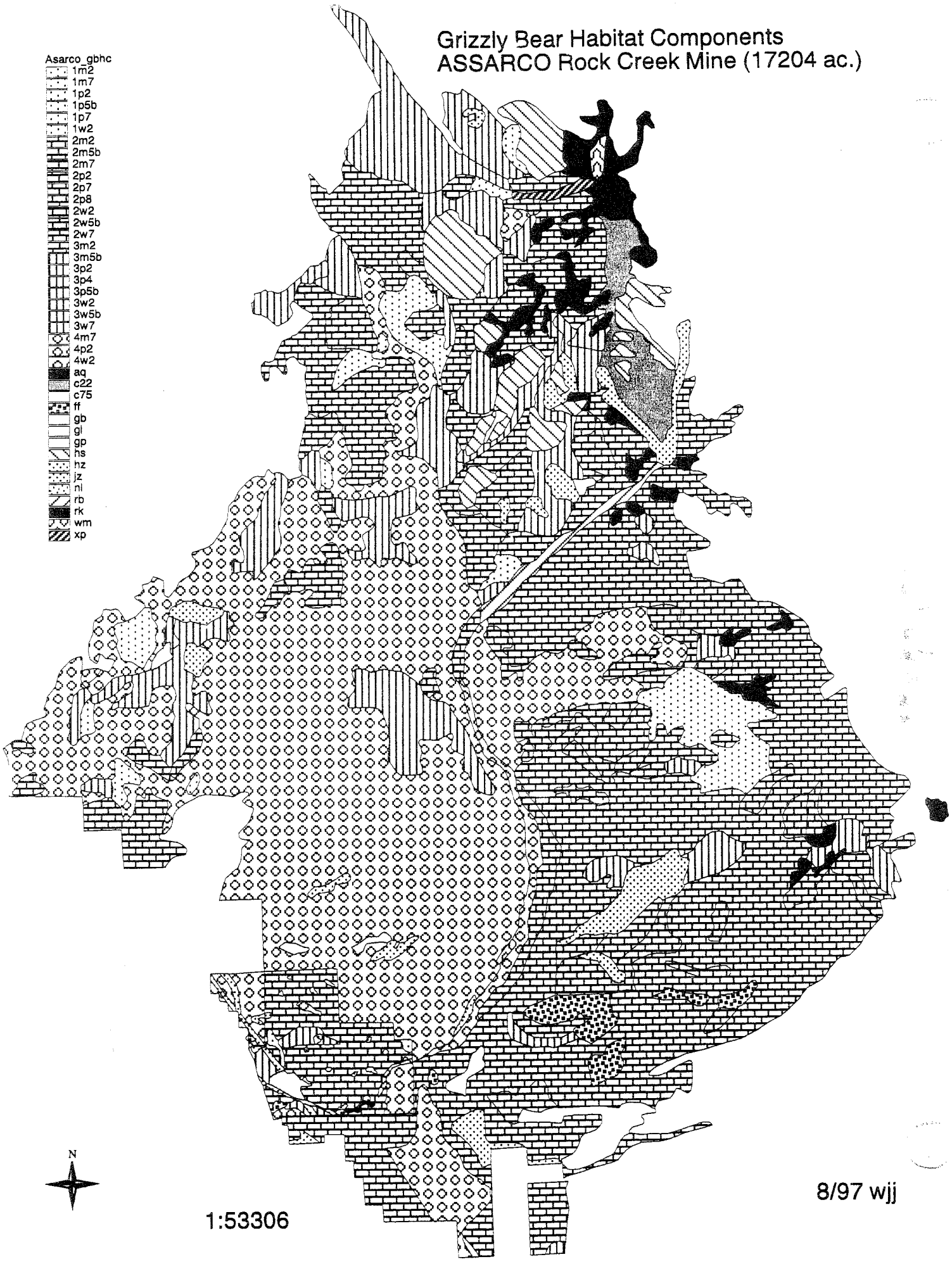
$$\frac{\text{Total BMU Ac. - (MS3 Ac. + MSI Influence Zone Ac)}}{\text{Total BMU Acres}} = \%HE$$

MS1 Management Situation One: lands where grizzly habitat maintenance and improvement, and grizzly-human conflict minimization will receive the highest management priority (pg. 3 Interagency Grizzly Bear Guidelines, 1986).

MS3 Management Situation Three: lands where grizzly bear presence and factors contributing to their presence will be actively discouraged (pg. 4 Interagency Grizzly Bear Guidelines, 1986).

CORE: Grizzly bear habitat that contains: no motorized use of roads and trails during the non-denning period; no non-motorized high intensity use roads or trails; and habitat is a minimum of 0.3 miles from any open road or motorized trail (pg. 4 Interagency Grizzly Bear Guidelines, 1986).

SECURITY HABITAT (Hillis 1991): timbered stands greater than 250 acres in size, that provide at least hiding cover, and that are greater than 0.5 miles from an open road.


Grizzly Bear Habitat Components
ASSARCO Rock Creek Mine (17204 ac.)
Asarco_gbhc
1m2
1m7
1p2
1p5b
1p7
1w2
2m2
2m5b
2m7
2p2
2p7
2p8
2w2
2w5b
2w7
3m2
3m5b
3p2
3p4
3p5b
3w2
3w5b
3w7
4m7
4p2
4w2
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APPENDIX 10
ASARCQROCKCREEKMINE:
GRIZZLY BEAR MOVEMENT CORRIDOR CONSTRICTION ANALYSIS

There is a concern that the operations of two large scale mines (ASARCO Rock creek and Noranda's Montanore mines) at the same time may narrow the north to south grizzly bear movement corridor in the Cabinet Mountains. The concern is not that all movement through the area would stop, but that movements would be inhibited by encountering humans. **A** second part of the concern then becomes the potential for increased mortality risk due to more frequent bear/human encounters (see report titled "ASARCO Rock Creek Project: Grizzly Bear Mortality Risk Assessment"). Figure A shows the big picture of the corridor and displays the distances (air miles) between several points of concern. This analysis looks at the landscape scale for movement corridors, not the site specific level (ie. minimum 600 feet of cover between openings). In an undisturbed environment, lower levels of cover are not a problem, however, the assumption is that human disturbance is present and will increase substantially (from low to high level as defined in USDI 1988), especially along the trail between Rock Creek meadows and Rock Lake (see report titled "ASARCO Rock Creek Project: Grizzly Bear Analysis - Corridor Constriction: Recreation Use Levels"). This results in the need for secure cover to allow bear movement north and south along the Cabinet Mountains.

As proposed the greatest distance between activity points is seven miles (between Asarco's Rock creek mill site and Noranda's plant site: point B to G). Activity would influence habitat within one-half mile of each site, thus reducing the distance to six miles.

Indirect effects from the proposed project include an increase in the number of people using the Rock creek trail (see attached analysis of increased recreational activity). To access the trail, forest visitors would drive Forest roads 150 and 150A. The trailhead (Point C) is at the end of road 150A. The distance from point C to G is six miles. The use on the trail is expected to reach a high level (as defined in USDI 1988 pg 28). This high use level is projected to extend to the Rock Lake area (point H), based on huckleberry picking opportunity, fishing opportunity, and difficulty of trail beyond that point. The distance between points H and G is 3.7 miles. Between points H and F the distance is only 3.6 miles.

Cumulative effects from "foreseeable future actions" are possible due to the proposed Harpole private property access and potential associated activity (point E). The distance between points E and G is 3.5 miles and 2.8 miles between E and F (Noranda's Libby creek adit). Should the Harpole project proceed, then the high activity points are H and E, with a distance of 1.4 miles (not reflecting any influence zone from activities at those points). **A** minimum influence zone (ibid, pg. 12) would extend to the crest of the Cabinet Mountains from point E and 0.25 miles from point H, resulting in about 1.0 mile of undisturbed corridor on the Rock Creek side of the Cabinet mountains. About 3/4 (0.75 miles) of this west side undisturbed corridor provides open forest cover. The east side corridor would be between points E and F (2.8 miles without influence zones). **A** minimum 1/4 mile influence zone would extend from point E and a 1/2 mile zone from point F, leaving 2 miles of undisturbed habitat on the east side of the Cabinet for the bears to move through in the north/south directions. Approximately 2/3 (1.3 miles) of the undisturbed east side corridor provides dense forest cover. The east side area would have a road open to access the Harpole property at point E which would further reduce bear security in this movement area.

To be an effective corridor the area must provide adequate cover for the bear to move undetected. Open areas (timber harvest, rock, meadows, water, low shrubs) do not provide secure movement habitat unless the opening is within 600 feet of cover. Areas of over steepened ground (ie. cliffs) serve as barriers to movement as well. Figure B shows the portion of the north to south movement corridor that is encircled by the proposed projects. This area contains 12,238 acres. Travel habitat conditions within this area are shown in Figures C and D, and summarized in Table I. Almost 112 (44.8%) of the area contains habitat components that do not provide movement cover. An additional 5.4% of the area provides limited cover (alder). The distribution pattern of the remaining habitat shows the best movement cover is in the vicinity of proposed activities and associated indirect activities (trail use). The increased activity level may displace grizzly bears, resulting in use of less desirable movement habitat, exposing them to humans. Bears that do not displace may encounter a greater mortality risk due to higher probability of human encounters. The overall result is a narrowing of the effective movement corridor.

Table I: Travel habitat conditions within impacted portion of North/South Corridor.

Habitat Component	Acres	% of Area
Water	80	0.7
Scree	4887	39.9
Alder	664	5.4
Sedge/grass	87	0.7
Low shrubs	433	3.5
Forest	6087	49.8

% = Acres/12,238

In addition, there are two other known access proposals, and associated human activities. south of the Harpole property but still within the corridor of concern. They are the Skranak and Bear Lakes private property access proposals. The Skranak and Harpole properties access proposals have gone through formal consultation with the USFWS (Biological Opinion issued 4/13/98), while the Bear Lakes access project is scheduled for analysis in late 1998 or early 1999. The spatial arrangement of these two projects, along with the Noranda, ASARCO, and Harpole sites, is a concern because they could contribute toward further fragmentation of the Cabinet Mountain grizzly bear habitat. However, as indicated in the report on recreation use, fracture zones (linear area of human activity that bisects grizzly bear habitat), similiar to the ones that would be created by the Skranak, Harpole and Bear Lakes access routes, are being crossed by grizzly bears. This does not mean that bears are not impacted, as they are likely to modify movement patterns in order to move around the high use sites at the ends of the fracture zones. This is based on grizzly bear research that has demonstrated human activity results in changes in bear behavior and movement patterns (see report titled "ASARCO Rock Creek Project: Grizzly Bear Analysis - Corridor Constriction: Recreation Use Levels" for references).

Based on the above information, bear movement, north and south in the Cabinet Mountains, is not likely to stop but bearihuman encounters are likely to increase. Most grizzly bear mortality research shows that increased encounters with humans results in greater bear mortality, The mortality risk index (MRI) increases only 0.2% due to the ASARCO Rock Creek project. Cumulatively the MRI would increase 2.1 percent over the present (1998) situation. The cumulative increase is primarily due to the Noranda, Skranak, and Harpole projects.

There are three alternatives that would eliminate this impact: 1) drop the ASARCO Rock Creek project; 2) Use a combined set of mine facilities (including adit) with Noranda; and 3) Time the ASARCO project to start only after the Noranda project is fully competed (including rehabilitation). Since there is no mitigation proposed that would minimize the spatial location impacts, this becomes a contributing factor for the "may adversely affect" determination displayed in the biological assessment.

References

USDI et.al. 1988. Cumulative Effects Analysis Process for the Selkirk/Cabinet-Yaak Grizzly Bear Ecosystems. FWS Boise, ID. 32 pp.

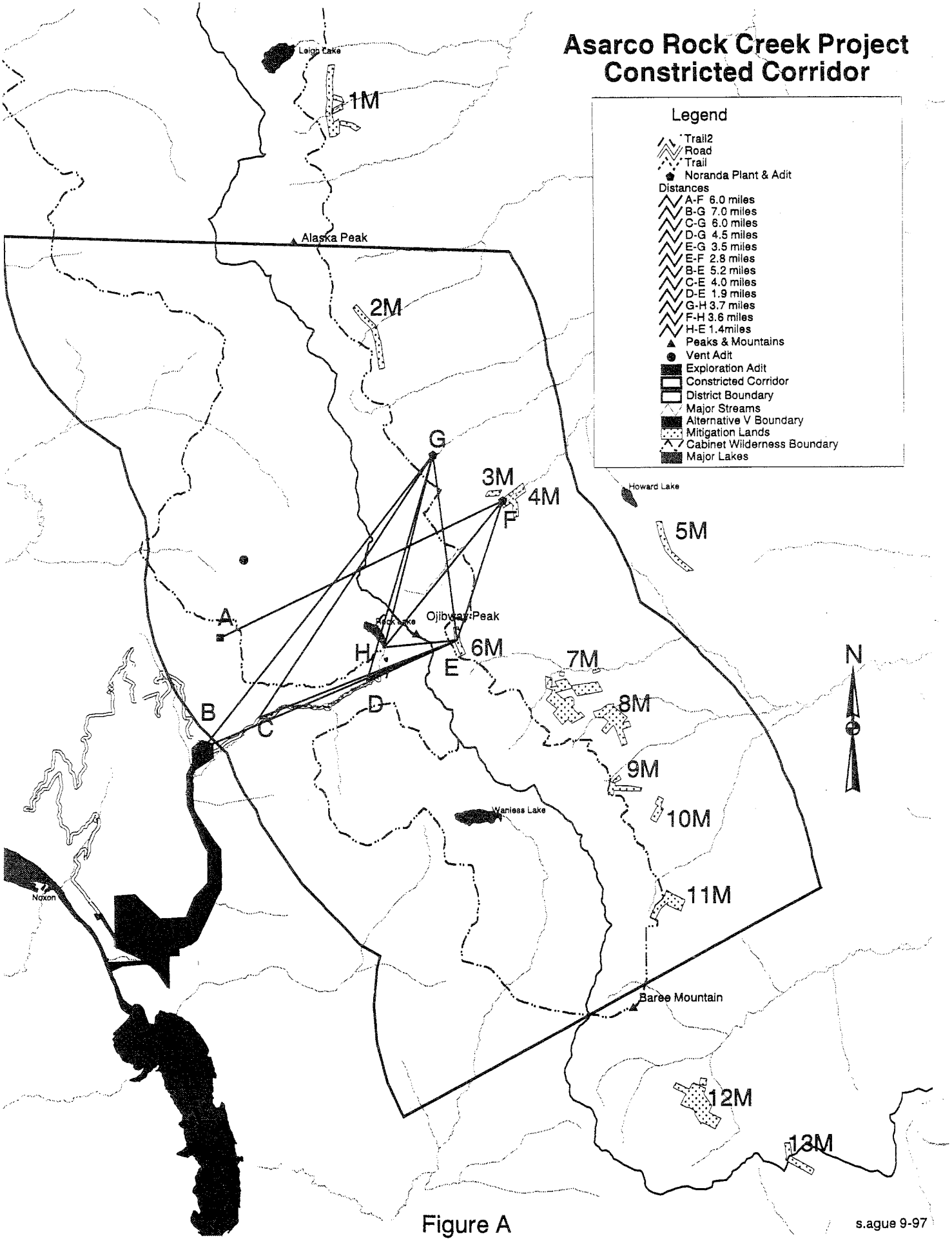

Figure A

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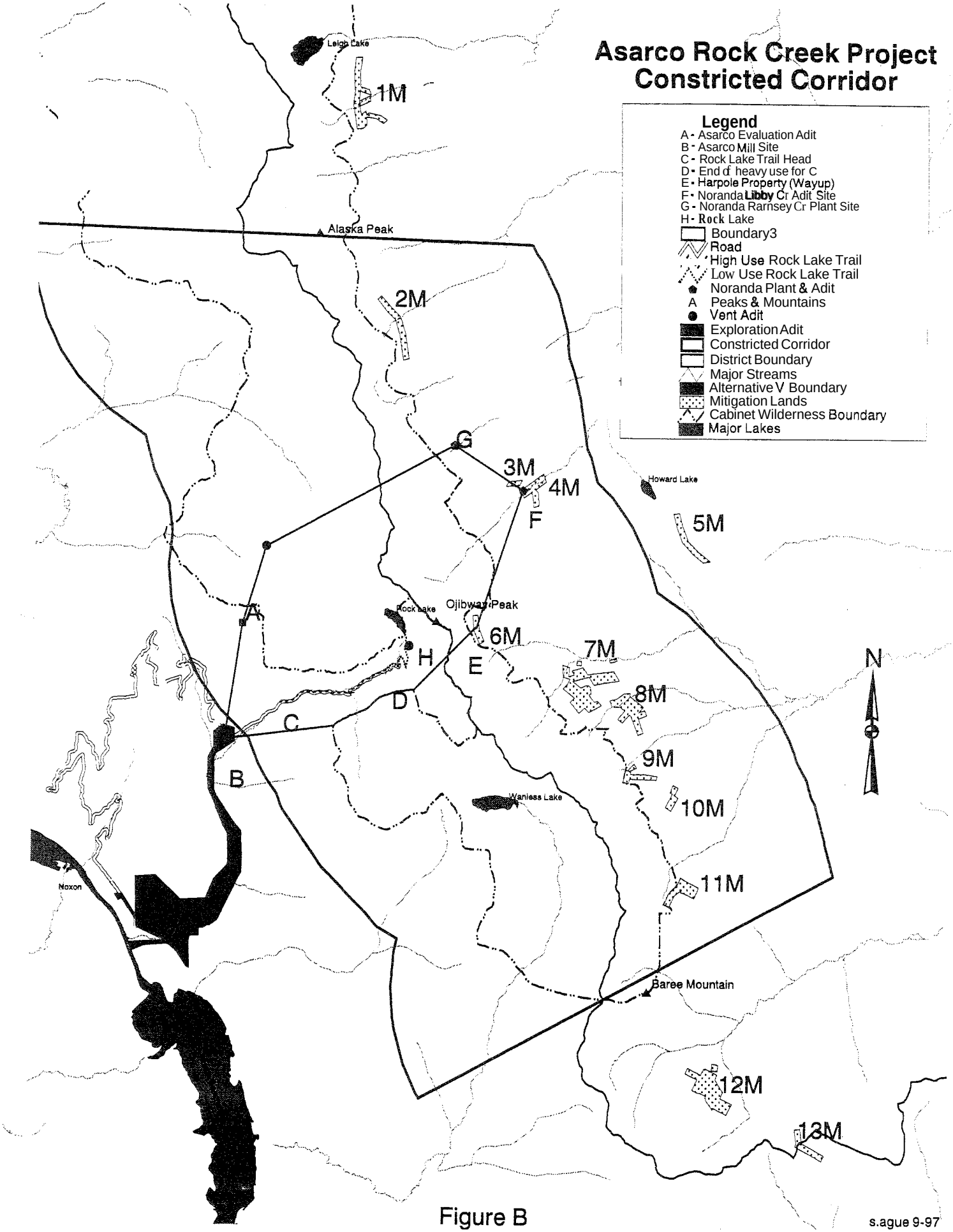

Figure B

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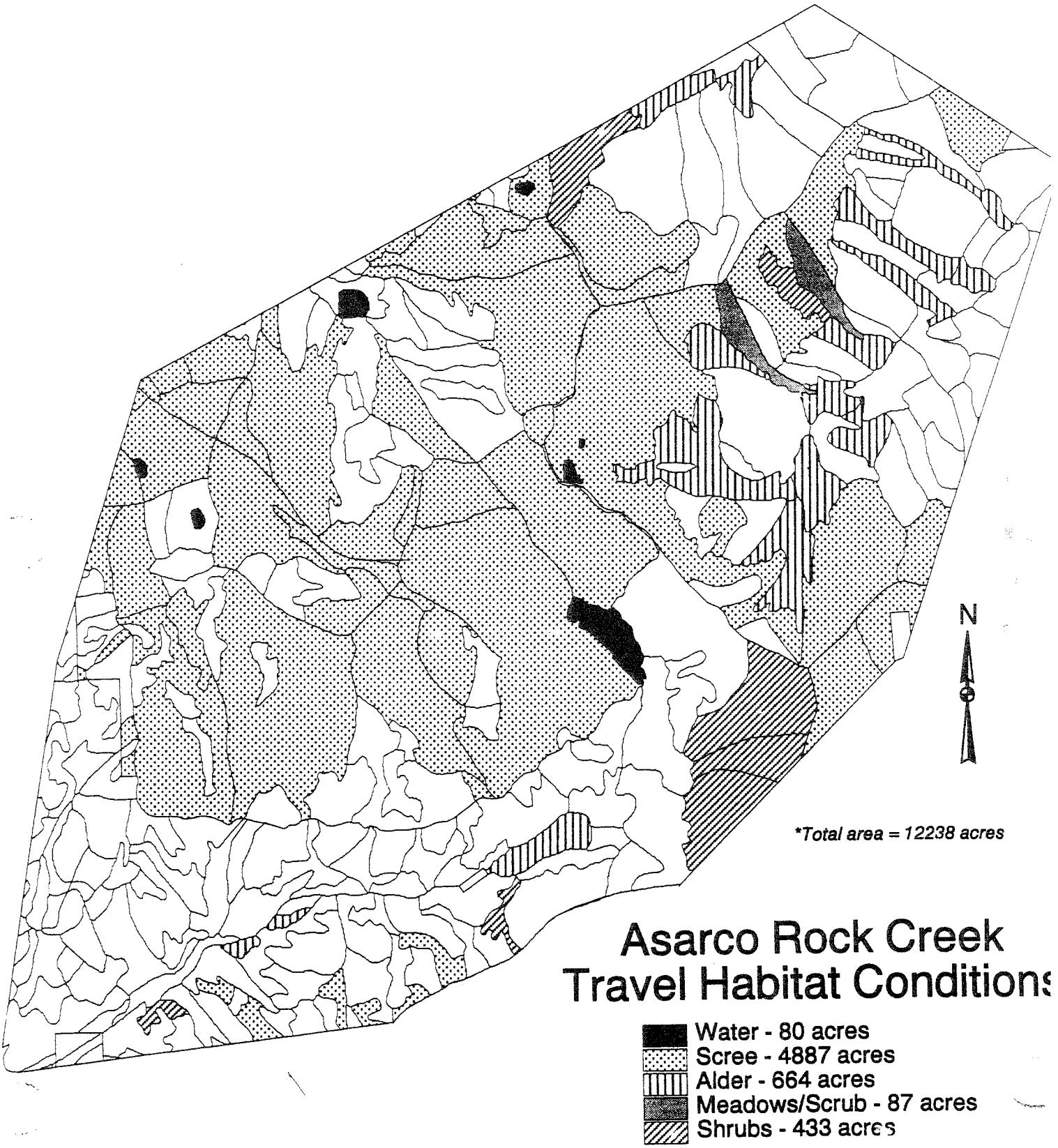

Figure C

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