

APPENDIX C

SOIL EROSION AND VEGETATION IMPACT ASSUMPTIONS AND ESTIMATES

This appendix outlines the assumptions and calculations used to estimate impacts to soil and vegetation from military vehicles for Fort Lewis and YTC.

C.1 STRYKER FOOTPRINT

The average Stryker tire width is 12.5 inches (actual tire width varies due to variable operational tire pressure), according to the following four sources:

width	citation
12.2"	Jones 2002
13.3"	Alaska Army EIS
13.5"	Jeff Hoerauf, Stryker environmental coordinator
11.0"	Ayers et al. 2002
12.5"	average

Stryker footprint is therefore $(12.5'' * 2 \text{ tracks}) / 12 \text{ inches/foot} = 2.08 \text{ feet}$

C.2 IMPACT FACTOR

For each vehicle-mile traveled, approximately 1/4 acre would be impacted:

$$2.08 \text{ feet} * 5,280 \text{ feet/mile} * 43,560 \text{ feet}^2/\text{acre} = 0.25 \text{ acres/mile}$$

C.3 MAXIMUM IMPACTED AREA

The maximum number of acres impacted under the various alternatives is estimated by multiplying the impact factor (0.25 acres/mile) by the total number of miles traveled under the alternative. As an example:

Fort Lewis Alternative 1 35,250 off-road miles * 0.25 acres/mile = 8,813 acres

YTC Alternative 1 105,000 off-road miles * 0.25 acres/mile = 26,250 acres

This maximum impact reflects the *unrealistic* assumption that Stryker vehicles would operate independently traveling in single-file lanes, not cross another vehicle's lane, or make multiple passes on a single travel lane. A more realistic training scenario would involve vehicles traveling in small groups or clusters. Most of the off-road training would occur at the company level. The number of Strykers in a company ranges from three in a headquarters company to about 20 in an infantry company, with an average of about 15 Strykers per company.

During company-level off-road training maneuvers, vehicles would tend to move in small groups of two to four, rather than completely spread out or single-file (Tom Oxford, personal conversation). Therefore, the actual number of acres impacted by off-road training would be expected to be less than the maximum

values presented above but the impact would be more severe, with several passes occurring on a given area. Various company-level maneuver scenarios were estimated to evaluate the amount of acres impacted by training under the various alternatives (Table C-1 and C-2). These scenarios range from all 15 Strykers traveling in 15 individual lanes (impacting a maximum number of acres) to all 15 Strykers traveling in one single lane (impacting a minimum number of acres). For example, three travel lanes would impact 3/15 of the maximum area, but each lane would receive five passes instead of one. The number of acres disturbed was then evaluated in the context of the total acreage of available training lands.

Under these probable training scenarios, Strykers would travel in groups of two to four vehicles. Areas impacted would therefore receive about two to four vehicle passes. There are approximately 56,000 acres of training lands on Fort Lewis, and 80,000 acres of training lands on YTC that are suitable for Stryker vehicle training.

C.4 SUMMARY OF IMPACTS

	Alternative	Acres Impacted/Year	Percent of Total Maneuver Areas
Fort Lewis	1	2,350 – 3,525	4 – 6
YTC	1	7,000 – 10,500	9 – 13

Areas impacted would receive between 2 and 4 vehicle passes.

TABLE C-1
Estimates of Area Impacted at Fort Lewis under Each Alternative

Number of Travel Lanes	Approximate Number of Vehicle Passes Per Lane	Acres Impacted			
		Alternative 1	Alternative 2	Alternative 3	Alternative 4
1	15	588	3,918	3,985	4,219
2	7-8	1,175	7,837	7,970	8,439
3	5	1,763	11,755	11,955	12,658
4	3-4	2,350	15,673	15,940	16,877
5	3	2,938	19,592	19,925	21,097
6	2-3	3,525	23,510	23,910	25,316
7	2-3	4,113	27,428	27,895	29,535
8	1-2	4,700	31,347	31,880	33,755
9	1-2	5,288	35,265	35,865	37,974
10	1-2	5,875	39,183	39,850	42,193
11	1-2	6,463	43,102	43,835	46,413
12	1-2	7,050	47,020	47,820	50,632
13	1-2	7,638	50,938	51,805	54,851
14	1-2	8,225	54,857	55,790	59,071
15	1	8,813	58,775	59,775	63,290

TABLE C-2**Estimates of Area Impacted at Yakima Training Center under Each Alternative**

Number of Travel Lanes	Approximate Number of Vehicle Passes Per Lane	Acres Impacted			
		Alternative 1	Alternative 2	Alternative 3	Alternative 4
1	15	1,750	9,121	9,204	9,497
2	7-8	3,500	18,242	18,408	18,994
3	5	5,250	27,363	27,613	28,491
4	3-4	7,000	36,483	36,817	37,988
5	3	8,750	45,604	46,021	47,485
6	2-3	10,500	54,725	55,225	56,983
7	2-3	12,250	63,846	64,429	66,480
8	1-2	14,000	72,967	73,633	75,977
9	1-2	15,750	82,088	82,838	85,474
10	1-2	17,500	91,208	92,042	94,971
11	1-2	19,250	100,329	101,246	104,468
12	1-2	21,000	109,450	110,450	113,965
13	1-2	22,750	118,571	119,654	123,462
14	1-2	24,500	127,692	128,858	132,959
15	1	26,250	136,813	138,063	142,456