

APPENDIX A | SECTION 7 ADMINISTRATIVE CONSULTATION COSTS

1. This appendix presents administrative costs of consultations undertaken according to section 7 of the Act associated with the potential critical habitat area for the lynx. First, this Appendix defines the types of administrative costs quantified. Next, it presents the estimated number of pre-designation and post-designation consultations associated with the potential critical habitat area by activity and subunit.

A.1 CATEGORIES OF CONSULTATIONS

2. Section 7(a)(2) of the Act requires Federal agencies to consult with the Service whenever activities that they undertake, authorize, permit, or fund may affect a listed species or designated critical habitat. There are two scenarios under which the designation of critical habitat can result in section 7 consultations with the Service beyond those required by the listing. These include:

- New consultations, which can occur when activities involving a Federal nexus are proposed in critical habitat not thought to be currently occupied by the species; and
- Re-initiations of consultations, which result when consultations that previously occurred under the listing are re-initiated due to new information or circumstances generated by the designation.

In some cases, consultations will involve the Service and another Federal agency only, such as the U.S. Forest Service. Consultations may also include a third party involved in projects on non-Federal lands with a Federal nexus, such as state agencies and private landowners.

3. During a consultation, the Service, the Federal agency, and the third party applying for Federal funding or permitting (if applicable) communicate in an effort to minimize potential adverse effects to the species and/or to the proposed critical habitat. Communication between these parties may occur via written letters, phone calls, in-person meetings, or any combination of these. The duration and complexity of these interactions depends on a number of variables, including the type of consultation, the species, the activity of concern, and the potential effects to the species and designated critical habitat associated with the activity that has been proposed, the Federal agency, and whether there is a private applicant involved.
4. Section 7 consultations with the Service may be either informal or formal. *Informal consultations* consist of discussion between the Service, the Federal agency, and the applicant concerning an action that may affect a listed species or its designated critical

habitat. The process is designed to identify and resolve potential concerns at an early stage in the planning process. By contrast, a *formal consultation* is required if the Federal agency determines that its proposed action may or will adversely affect the listed species or designated critical habitat in ways that cannot be resolved through informal consultation. The formal consultation process results in the Service's determination in a Biological Opinion of whether the action is likely to jeopardize a species or adversely modify critical habitat, and recommendations to minimize those impacts. Regardless of the type of consultation or proposed project, section 7 consultations can require substantial administrative effort on the part of all participants.

5. In December 2002, the U.S. District Court for the District of Columbia enjoined the Service from concurring in any section 7 consultation that an activity was "not likely to adversely affect" the lynx until after the final critical habitat designation was completed.¹ The Plaintiffs in the case were 12 conservation organizations including Defenders of Wildlife, Biodiversity Legal Foundation, Northwest Ecosystem Alliance, The Fund for Animals, Humane Society of the U.S., Kettle Range Conservation Group, Oregon Natural Resources Council, Predator Conservation Alliance, Restore: The North Woods, Superior Wilderness Action Network, American Lands Alliance, Conservation Action Project, and Mark Skatrud. The goal of the injunction was to require the Service to fully review the conservation implications on the lynx of all activities with a Federal nexus by preparing a formal biological opinion. In January of 2004, however, the Plaintiffs concluded that the injunctive relief sought and obtained did not provide the protection that they had hoped in motivating the Service to complete the critical habitat designation faster. The injunction was therefore lifted.²

A.2 ESTIMATED COSTS OF CONSULTATIONS AND TECHNICAL ASSISTANCE

6. Estimates of the cost of an individual consultation and technical assistance request were developed from a review and analysis of historical section 7 files from a number of Service field offices around the country conducted in 2002. These files addressed consultations conducted for both listings and critical habitat designations. Cost figures were based on an average level of effort of low, medium, or high complexity, multiplied by the appropriate labor rates for staff from the Service and other Federal agencies.
7. The administrative costs estimates presented in this section take into consideration the level of effort of the Service, the Federal agency, and the applicant, as well as the varying complexity of the consultation. Costs associated with these consultations include the administrative costs associated with conducting the consultations, such as the costs of time spent in meetings, preparing letters, and the development of a biological opinion.

¹ United States District Court for the District of Columbia, Memorandum Opinion, Civil Action No. 00-2996 (GK), December 26, 2002.

² United States District Court for the District of Columbia, Memorandum Opinion, Civil Action No. 00-2996 (GK), January 12, 2004.

Exhibit A-1 provides a summary of the estimated administrative costs per consultation effort.

EXHIBIT A-1. ESTIMATED ADMINISTRATIVE COSTS OF CONSULTATION (PER EFFORT), 2006\$

CONSULTATION TYPE	SERVICE	FEDERAL AGENCY	THIRD PARTY	BIOLOGICAL ASSESSMENT
Informal	\$2,250	\$2,900	\$2,050	\$2,000
Formal	\$5,050	\$5,750	\$3,500	\$4,800
Source: IEC analysis based on data from the Federal Government Schedule Rates, Office of Personnel Management, 2006, and a review of consultation records from several Service field offices across the country. Note: Estimates reflect average hourly time required by staff.				

A.3 SUMMARY OF PAST ADMINISTRATIVE COSTS

8. Since the listing of the lynx in 2000, there have been more than 800 section 7 consultations. This analysis, however, quantifies only past consultation efforts regarding activities within the boundaries of the potential critical habitat. Where the exact location of a project is unknown, the administrative costs of consultation are included in this analysis. Pre-designation administrative costs are estimated to have been approximately \$827,000 in areas proposed for designation and \$200,000 in areas considered for exclusion (undiscounted dollars).

A.4 SUMMARY OF FUTURE ADMINISTRATIVE COSTS

9. This analysis forecasts informal and formal consultations by activity based on review of historical consultations, and research regarding future projects within the potential critical habitat area. Where possible, these future consultations are described by subunit. In the case that information is not available to break out projected consultations by subunit, this analysis distributes consultation efforts proportionally by size of subunit. Over the next 20 years, this analysis estimates approximately \$9.03 million in undiscounted dollars (present value of \$4.78 million applying a seven percent discount rate or \$6.72 million applying a three percent discount rate) in administrative costs in areas proposed for designation and \$896,000 in undiscounted dollars (a present value of \$475,000 applying a seven percent discount rate or \$667,000 applying a three percent discount rate) in areas considered for exclusion. These future consultations break down by activity and subunit as described in Exhibit A-3.
10. The number of forecast consultations is based on the following assumptions:
- **Silviculture:** 48 informal and 20 formal consultations in areas proposed for designation- These estimates assume future consultations will happen with similar frequency to past consultations. These consultations are either with regard to

silviculture activities within Superior National Forest, or associated with access permits to private inholdings in Federal lands in Montana.

- **Development:** *one consultation* - Only one consultations is forecast for development activities. Although eight informal consultations occurred in the past regarding permitting of commercial or industrial developments, this analysis does not forecast specific development projects across the designation but instead provides information on the value of the development option of the lands within potential critical habitat. The exception is the potential Plum Creek development project as discussed in Section 4 of this analysis; a formal consultation is anticipated for that project.
- **Recreation:** *zero consultations* – As no currently planned recreation projects involving a Federal nexus were identified, this analysis does not forecast future consultations related to recreation in the potential critical habitat. Impacts to recreation described in Section 5 of this analysis are primarily lost welfare values associated with decreased quality of snowmobiling experience due to increased crowding.
- **Public Lands Management and Conservation Planning:** *four formal consultations in areas proposed for designation; six formal consultations in areas considered for exclusion* – As this analysis assumes that landowners will develop lynx management plans in the future, forecast consultations for public lands management are formal consultations primarily for review of lynx management plans for Federal lands managers. One formal consultation is forecast in Glacier National Park with regard to an avalanche control program.
- **Transportation, Utilities, and Municipal Activities:** *96 formal and 644 informal consultations in areas proposed for designation; 1 formal and 28 informal consultations in areas considered for exclusion* – The majority of the total forecast consultations are for transportation, utilities, and municipal activities as described in Section 7 of this analysis. Where information is not available regarding specific future permitted transportation and utility activities, this analysis assumes they will occur with similar frequencies as in the past. This analysis further assumes that all future consultations transportation and dam licensing projects will be formal, and 404-permitted projects will undergo informal consultation.
- **Mining:** *five formal consultations in areas proposed for designation* – This estimate assumes that the five forecast future mining developments will undergo formal consultation.
- **Tribal Activities:** *52 informal consultations* - Consultations associated with Tribal activities in Minnesota and Maine are based on the frequency of these activities over the past six years. These consultations are for a range of activities, from timber sales to Tribal Landowner Incentive Program grants.

11. The number of estimated post-designation consultations for activities within a given subunit is highly uncertain. The frequency of such efforts will be related to the level of economic activity, and the presence of HCPs or other management plans that obviate the need for consultation.

EXHIBIT A-2. PRE-DESIGNATION CONSULTATION NUMBERS BY SUBUNIT AND ACTIVITY, 2000-2006

SUBUNIT	TYPE OF CONSULT	SILVI-CULTURE	DEVELOPMENT	RECREATION	PUBLIC AND CONSERVATION LANDS	TRANSPORTATION AND UTILITIES	MINING	TRIBAL ACTIVITIES	TOTAL NUMBER
PROPOSED FOR DESIGNATION									
Unit 1: National Park Service	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	-	-	-	-
Unit 1: U.S. Fish and Wildlife Service	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	-	-	-	-
Unit 1: Maine Department of Conservation	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	-	-	-	-
Unit 1: Maine Dept. of Inland Fisheries and Wildlife	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	-	-	-	-
Unit 1: Baxter State Park Authority	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	-	-	-	-
Unit 1: Private Timber Lands	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	-	-	-	-
Unit 1: Conservation NGO	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	-	-	-	-
Unit 1: Unknown Landowners	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	-	-	-	-
Unit 2: Superior National Forest	Formals	4	-	2	4	-	1	-	11
	Informals	7	-	11	6	-	4	-	28
Unit 2: MN Dept. of Natural Resources	Formals	-	-	-	3	-	-	-	3
	Informals	-	-	1	-	-	-	-	1

EXHIBIT A-2. CONTINUED

SUBUNIT	TYPE OF CONSULT	SILVI-CULTURE	DEVELOPMENT	RECREATION	PUBLIC AND CONSERVATION LANDS	TRANSPORTATION AND UTILITIES	MINING	TRIBAL ACTIVITIES	TOTAL NUMBER
PROPOSED FOR DESIGNATION									
Unit 2: Private Timber Lands	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	-	-	-	-
Unit 2: Private Mining Lands	Formals	-	-	-	-	-	2	-	2
	Informals	-	-	-	-	-	3	-	3
Unit 2: Unknown Landowner	Formals	-	-	-	-	-	-	-	-
	Informals	-	7	-	-	-	-	-	7
Unit 3: U.S. Fish and Wildlife Service	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	-	-	-	-
Unit 3: Bureau of Reclamation	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	-	-	-	-
Unit 3: Bureau of Land Management	Formals	-	-	1	2	-	-	-	3
	Informals	-	-	1	-	-	-	-	1
Unit 3: MT Department of Natural Resources	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	-	-	-	-
Unit 3: MT Department of Fish, Wildlife, and Parks	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	-	-	-	-
Unit 3: Montana University System	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	-	-	-	-
Unit 3: Idaho Dept. of Land	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	-	-	-	-

EXHIBIT A-2. CONTINUED

SUBUNIT	TYPE OF CONSULT	SILVI-CULTURE	DEVELOPMENT	RECREATION	PUBLIC AND CONSERVATION LANDS	TRANSPORTATION AND UTILITIES	MINING	TRIBAL ACTIVITIES	TOTAL NUMBER
PROPOSED FOR DESIGNATION									
Unit 3: Municipal/City Government	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	-	-	-	-
Unit 3: Private Timber Lands	Formals	1	-	-	-	-	-	-	1
	Informals	5	-	-	-	-	-	-	5
Unit 3: Conservation NGO	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	-	-	-	-
Unit 3: Unknown Landowner	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	-	-	-	-
Unit 4: WA Department of Fish and Wildlife	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	-	-	-	-
Unit 4: WA Dept. of Natural Resources	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	-	-	-	-
Unit 4: Unknown Landowner	Formals	-	-	-	-	-	-	-	-
	Informals	-	1	-	-	-	-	-	1
Total	Formal	5	-	3	9	-	3	-	20
	Informal	12	8	13	6	-	7	-	46

EXHIBIT A-2. CONTINUED

SUBUNIT	TYPE OF CONSULT	SILVI-CULTURE	DEVELOPMENT	RECREATION	PUBLIC AND CONSERVATION LANDS	TRANSPORTATION AND UTILITIES	MINING	TRIBAL ACTIVITIES	TOTAL NUMBER
CONSIDERED FOR EXCLUSION									
Unit 1: Tribal Lands	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	-	-	5	5
Unit 2: Voyageurs National Park	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	2	-	-	-	2
Unit 2: Tribal Lands	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	1	-	-	8	9
Unit 3: Glacier National Park	Formals	-	-	-	2	-	-	-	2
	Informals	-	-	-	1	-	-	-	1
Unit 3: Bureau of Land Management	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	-	-	-	-
Unit 4: North Cascades National Park	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	-	-	-	-
Unit 4: Lake Chelan National Recreation Area	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	-	-	-	-
Total	Formal	-	-	-	2	-	-	-	2
	Informal	-	-	-	4	-	-	13	17

A-3. POST-DESIGNATION CONSULTATION NUMBERS BY SUBUNIT AND ACTIVITY, 2006-2025

SUBUNIT	TYPE OF CONSULT	SILVI-CULTURE	DEVELOPMENT	RECREATION	PUBLIC AND CONSERVATION LANDS	TRANSPORTATION AND UTILITIES	MINING	TRIBAL ACTIVITIES	TOTAL NUMBER
PROPOSED FOR DESIGNATION									
Unit 1: National Park Service	Formals	-	-	-	1	-	-	-	1
	Informals	-	-	-	-	-	-	-	-
Unit 1: U.S. Fish and Wildlife Service	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	-	-	-	-
Unit 1: Maine Department of Conservation	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	-	-	-	-
Unit 1: Maine Dept. of Inland Fisheries and Wildlife	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	-	-	-	-
Unit 1: Baxter State Park Authority	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	-	-	-	-
Unit 1: Private Timber Lands	Formals	-	1	-	-	13	-	-	14
	Informals	-	-	-	-	-	-	-	-
Unit 1: Conservation NGO	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	-	-	-	-
Unit 1: Unknown Landowners	Formals	-	-	-	-	49	-	-	49
	Informals	-	-	-	-	-	-	-	-
Unit 2: Superior National Forest	Formals	16	-	-	1	6	4	-	27
	Informals	28	-	-	-	164	-	-	192
Unit 2: MN Dept. of Natural Resources	Formals	-	-	-	-	9	-	-	9
	Informals	-	-	-	-	68	-	-	68

EXHIBIT A-3. CONTINUED

SUBUNIT	TYPE OF CONSULT	SILVI-CULTURE	DEVELOPMENT	RECREATION	PUBLIC AND CONSERVATION LANDS	TRANSPORTATION AND UTILITIES	MINING	TRIBAL ACTIVITIES	TOTAL NUMBER
PROPOSED FOR DESIGNATION									
Unit 2: Private Timber Lands	Formals	-	-	-	-	1	-	-	1
	Informals	-	-	-	-	-	-	-	-
Unit 2: Private Mining Lands	Formals	-	-	-	-	-	1	-	1
	Informals	-	-	-	-	-	-	-	-
Unit 2: Unknown Landowner	Formals	-	-	-	-	15	-	-	15
	Informals	-	-	-	-	224	-	-	224
Unit 3: U.S. Fish and Wildlife Service	Formals	-	-	-	1	-	-	-	1
	Informals	-	-	-	-	-	-	-	-
Unit 3: Bureau of Reclamation	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	-	-	-	-
Unit 3: Bureau of Land Management	Formals	-	-	-	1	-	-	-	1
	Informals	-	-	-	-	-	-	-	-
Unit 3: MT Department of Natural Resources	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	4	-	-	4
Unit 3: MT Department of Fish, Wildlife, and Parks	Formals	-	-	-	-	1	-	-	1
	Informals	-	-	-	-	-	-	-	-
Unit 3: Montana University System	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	16	-	-	16
Unit 3: Idaho Dept. of Land	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	-	-	-	-

EXHIBIT A-3. CONTINUED

SUBUNIT	TYPE OF CONSULT	SILVI-CULTURE	DEVELOPMENT	RECREATION	PUBLIC AND CONSERVATION LANDS	TRANSPORTATION AND UTILITIES	MINING	TRIBAL ACTIVITIES	TOTAL NUMBER
PROPOSED FOR DESIGNATION									
Unit 3: Municipal/City Government	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	-	-	-	-
Unit 3: Private Timber Lands	Formals	4	-	-	-	-	-	-	4
	Informals	20	-	-	-	4	-	-	24
Unit 3: Conservation NGO	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	4	-	-	4
Unit 3: Unknown Landowner	Formals	-	-	-	-	2	-	-	2
	Informals	-	-	-	-	160	-	-	160
Unit 4: WA Department of Fish and Wildlife	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	-	-	-	-
Unit 4: WA Dept. of Natural Resources	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	-	-	-	-
Unit 4: Unknown Landowner	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	-	-	-	-
Total	Formal	20	1	-	4	96	5	-	126
	Informal	48	-	-	-	644	-	-	692

EXHIBIT A-3. CONTINUED

SUBUNIT	TYPE OF CONSULT	SILVI-CULTURE	DEVELOPMENT	RECREATION	PUBLIC AND CONSERVATION LANDS	TRANSPORTATION AND UTILITIES	MINING	TRIBAL ACTIVITIES	TOTAL NUMBER
CONSIDERED FOR EXCLUSION									
Unit 1: Tribal Lands	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	-	-	20	20
Unit 2: Voyageurs National Park	Formals	-	-	-	1	-	-	-	1
	Informals	-	-	-	-	-	-	-	-
Unit 2: Tribal Lands	Formals	-	-	-	-	-	-	-	-
	Informals	-	-	-	-	-	-	32	32
Unit 3: Glacier National Park	Formals	-	-	-	2	1	-	-	3
	Informals	-	-	-	-	28	-	-	28
Unit 3: Bureau of Land Management	Formals	-	-	-	1	-	-	-	1
	Informals	-	-	-	-	-	-	-	-
Unit 4: North Cascades National Park	Formals	-	-	-	1	-	-	-	1
	Informals	-	-	-	-	-	-	-	-
Unit 4: Lake Chelan National Recreation Area	Formals	-	-	-	1	-	-	-	1
	Informals	-	-	-	-	-	-	-	-
Total	Formal	-	-	-	6	1	-	-	7
	Informal	-	-	-	-	28	-	52	80

APPENDIX B | ANALYSIS OF THE ECONOMIC BENEFIT MEASURES PRESENTED IN THE DEFENDERS OF WILDLIFE STUDY (JUNE 2004)¹

1. This appendix considers the June 2004 report by the Defenders of Wildlife titled, “Economic Impact Assessment of Designating Critical Habitat for the Lynx (*Lynx Canadensis*)” – hereafter referred to as the DOW Report. Specifically, this appendix considers Section II of that report, “Economic Impact Analysis of the Critical Habitat Designation: Methodology,” in particular, sub-section II.3 “Quantification of benefits generated by designation of critical habitat” as it pertains to the Canada lynx designation.
2. This discussion focuses on three issues: 1) defining the appropriate “extent-of-the-market”, 2) the proper measurement of non-use values for the purposes of policy analysis, and 3) the defensibility of the benefits transfer performed in the report.

B.1 EXTENT OF THE MARKET

3. The phrase “extent of the market” as it applies to policy analysis has to do with the types of benefits quantified in the analysis and the types and numbers of people over which these benefits are measured. The DOW Report asserts two large groups of benefits should be included in the analysis and labels these “Improved prospects for lynx recovery” and “Preservation of undeveloped landscapes.” The DOW Report states,

To the extent that people place a value on the recovery of lynx populations and on the protection of other forest species, and to the extent that people value the other (besides habitat provision) services provided by forested ecosystems, economic theory requires that those values be included in the present analysis (emphasis added).²

4. The DOW Report appeals to economic theory as justification for the inclusion of these two categories of benefits (one due entirely to the protection of the species and one due entirely to the form of the regulatory action giving rise to the protection). It is important to recognize that the economic theory which underlies regulatory analysis, called “welfare economics”, does not identify categories of benefits (or values), and therefore, economic theory does not require that any specific set of values be considered. This is not to say there are no benefits from land preservation or species conservation (whether

¹ The appendix was written by Dr. Raymond Kopp, Senior Fellow, Resources for the Future.

² Pg. 19.

there are or not is an empirical matter), only that there are numerous categories of benefits, and those chosen for inclusion in a policy study are chosen by decision makers. Thus, for example, while some might enjoy benefits from violating the legal rights of others, such benefits would likely be excluded from policy consideration on non-economic grounds.

5. Similarly, the DOW Report states,

The validity of including both non-use and option values in economic analyses also has been recognized by the courts (U.S. Court of Appeals 1989) and in legislation (U.S. Department of Commerce 1994; U.S. Department of Interior 1994).³
6. It is important to note the DOI 1989 ruling was in the context of natural resource damages where compensation is the standard. The ruling is not concerned with regulatory analysis with the exception of the Court's acknowledgement that non-use values are a proper component of human well-being. Like the category of benefits due to open space preservation considered in the DOW Report, the inclusion of non-use values is not a decision made on economic grounds. As noted above, whether such benefits as enhanced non-use values are or are not included in a specific regulatory analysis is up to the decision maker, not the economist.
7. Issues of extent of the market pertain not only to categories of benefits but to the categories of people over which benefits are measured as well. Individuals viewing lynx in the wild may enjoy the benefit of such viewing and efforts to increase the lynx population through habitat designation may lead to more viewing opportunities and thus more benefits to those viewing the animals. Suppose some of these viewers come from Germany, should the value they receive be included in the cost-benefit analysis? Again, this is not an economic question, but rather a policy one.
8. While few Germans may come to lynx country for animal viewing making the benefits they receive exceedingly small, the category of non-use values does not require travel to lynx habitat, and therefore the category could be quite large. Whether an analysis includes the nonuse value of non-US citizens, or the non-use value of US citizens living outside the states of Montana, Minnesota and Maine (where most of the cost of designation will fall), are non-economic, policy questions and therefore the categories of people over which benefits are quantified are non-economic decisions.
9. The DOW Report argues that economic theory requires that every measurable benefit attributable to the preservation of the lynx and its habitat be summed across all individuals in the US and be included in these types of economic analyses. As stated above, economic theory is silent on this issue and it is up to the decision maker to define the extent of the market and categories of benefits considered.

³ Pg. 19.

B.2 REGULATORY ANALYSIS OF ENVIRONMENTAL REGULATIONS AND NON-USE VALUES

10. Following the Court of Appeals ruling in 1989 a lengthy debate ensued over the inclusion of non-use value (or equivalently termed existence value, bequest value, and passive use value) in economic analysis of Federal regulations. Much of the discussion focused on the measurement technique use for non-use value, contingent valuation (CV), and the notion stated by Rosenthal and Nelson "[i]f the concept of existence value is accepted for general use by economists and policy analysts, and a whole host of new existence values is identified, virtually any kind of project or proposal may become justifiable."⁴
11. Assuming that estimates of passive use are valid and reliable, is there a case to be made for the position that using such estimates in analyses of government regulations will lead to "too many" programs passing the cost-benefit test? Too many programs passing a cost-benefit test is not reflective of some underlying inadequacy in the measurement of non-use value in the cost-benefit context, but rather indicates a failure on the part of the Federal government to coordinate and conduct proper regulatory analyses.
12. The "too many programs pass" phenomenon can be examined with a simple hypothetical example. Suppose EPA is considering two major regulations -- one on air toxic emissions and one on ground water protection. It is thought by EPA that both regulatory programs would have significant passive use benefits and so a contingent valuation study is proposed to be used in each analysis. EPA designs two independent CV surveys that meet the relevant requirements for valid and reliable estimates of total value. One survey focuses exclusively on the air toxic regulation and the other on the water regulation. Both surveys use the same payment vehicle, a tax surcharge for the next five years.
13. EPA fields each survey to independent samples of U.S. households, constructs an aggregate estimate of the willingness to pay (WTP) for each individual program, and then uses these WTP estimates as the basis for benefit estimates in each proposed regulation's economic analysis. If EPA intends these regulations to be put in place at approximately the same time, under particular circumstances one can argue that the benefits of either program may be overstated.
14. The overstatement could come from at least two causes. First, there is the pure substitution effect. If some CV respondents viewed these programs as substitutes, then the WTP for one program, given that the other already exists, will be less than the WTP if the other program does not exist. Second, to the extent the required tax payments are sufficiently large to be binding on the income of some CV respondents, the WTP for either program will be less when the other program (and its associated tax) is in place.
15. Given the example above, one can imagine the problems that would arise if numerous proposed regulations from various federal agencies use CV based estimates of benefits in their respective regulatory analyses, but where independent respondents were asked about each proposed program in the absence of knowledge regarding the other programs. Each CV benefit estimate is valid and reliable given the circumstances of the choice as

⁴ See Rosenthal and Nelson, 1992.

presented to the respondent, that is, no other public goods are offered. However, taken as a package of programs providing multiple public goods, respondents would view each component (proposed program) differently, where the WTP for the package would be less than or equal to the sum of the WTP for the individual components.⁵

16. If one is using CV to estimate the value of species and habitat conservation, then one might imagine establishing an “ESA budget” for the respondent. That is, determine the length of time respondents consider to be the appropriate budget period for such designations – perhaps three years - decide how many ESA designations will occur in the 3-year period, and combine them into one WTP to pay elicitation for those designations.
17. Whether the above approach can produce reliable benefits estimates is a question that must be answered with empirical analysis, but such analysis is not needed to identify a problem in the DOW approach of asking WTP for a public good under the assumption the good has no substitutes of any degree and no budget implications.

B.3 BENEFITS TRANSFER

18. The basis for the valuation of benefits contained in the DOW Report is a “benefits transfer.” That is, new analysis of the benefits of lynx preservation was not conducted, rather estimates of benefits from the literature were used. This is not an uncommon approach and is appropriate if certain guidance is followed.
19. The Office of Management and Budget (OMB) has written guidelines for conducting credible benefit transfers.⁶ The important steps in the OMB guidance are listed below followed by an analysis of the extent to which the DOW Report’s adheres to these guidelines.
 1. Specify the value to be estimated for the rulemaking.
 2. Identify appropriate studies to conduct benefits transfer based on the following criteria:
 - The selected studies should be based on adequate data, sound and defensible empirical methods and techniques.
 - The selected studies should documents parameter estimates of the valuation function.

⁵ There is an important caveat to this statement. And that is, for the statement to be valid the individual program CV surveys must not underestimate the WTP for the objects of choice offered respondents. This is not always guaranteed since there are several features of the survey design that could lead to an understatement of WTP. For example, respondents may not believe that governments can provide the environmental public goods as described in the survey, or they may feel the tax surcharge would not end after five years, or they may believe it is the polluter’s financial responsibility to undertake the regulatory action. If the individual surveys do understate WTP, then even if they are conducted independent of one another, actual benefits of the package of programs may not be overstated.

⁶ U.S. Office of Management and Budget, “Circular A-4,” September 17, 2003, available at <http://www.whitehouse.gov/omb/circulars/a004/a-4.pdf>.

- The study and policy contexts should have similar populations (e.g., demographic characteristics). The market size (e.g., target population) between the study site and the policy site should be similar.
 - The good, and the magnitude of change in that good, should be similar in the study and policy contexts.
 - The relevant characteristics of the study and policy contexts should be similar.
 - The distribution of property rights should be similar so that the analysis uses the same welfare measure (i.e., If the property rights in the study context support the use of willingness-to-accept measures while the rights in the rulemaking context support the use of willingness-to-pay measures, benefits transfer is not appropriate).
 - The availability of substitutes across study and policy contexts should be similar.
3. If it is possible to choose between transferring a function or a point estimate, the entire demand function should be transferred rather than adopting a single point estimate.
20. As described above, an initial step of benefits transfer is to describe the policy context so that its characteristics and consequences are understood. It is equally important to describe the population impacted by the proposed policy. As part of this step, it is important to determine whether effects of the policy will be felt by the general population or by specific subsets of individuals (e.g., users of a particular recreation site or children). Information on the affected population will generally be used to convert per person (or household) values to an aggregate benefits estimate.
21. The policy context in the case of the lynx is the regulatory action under consideration (lynx habitat protection in Maine, Minnesota, Montana, and Washington), the nature of the consequences, (specific, quantitative measures of improvements to the lynx and its population), and the people who will benefit from the program. The DOW report does a good job of describing the lynx, its habitat and the process of designation.
22. Existing, relevant studies are then identified by conducting a literature search. This literature search should, ideally, include searches of published literature, reviews of survey articles, examination of databases, and consultation with researchers to identify government publications, unpublished research, works in progress, and other "gray literature."
23. The analyst should then review and assess the studies identified in the literature review for their quality and applicability to the policy case. The quality of the study case estimates will, in part, determine the quality of the benefit transfer. Indicators of quality will generally depend on the method used. See the previous discussions on each of the primary research methods for more information on assessing the quality of studies.

24. Assessing studies for applicability involves determining whether available studies are comparable to the policy case. Specifically, the analyst should assure that (1) the basic commodities are essentially equivalent; (2) the baseline and extent of the change are similar; and (3) the affected populations are similar. Only one study is identified in the DOW report.
25. The DOW Report transfers the values from a single study, a published 1997 survey conducted in the United Kingdom (UK study) valuing increases in river otter populations.⁷ In the DOW Report the “commodity” being valued is certainly not equivalent as it is a different animal living in a different type of ecosystem. The “affected populations” refers to those enjoying the benefits of the lynx preservation, an obviously different population than those surveyed in the UK study.
26. The 25 percent population increase is the same in the UK study as the increase assumed in the lynx benefits analysis, but there is no way to tell if the baseline populations are the same. Perhaps most important, the consequences of the regulatory action are not based on any scientific understanding of the affect the designation would have on the lynx and its population. Rather, a 10 and 25 percent improvement in lynx population is simply asserted with no reference to any scientific literature. Thus, there is no basis for the policy case modeled in the analysis.
27. There are four types of benefit transfer studies: point estimate, benefit function, meta-analysis, and Bayesian techniques. The point estimate approach involves taking the mean value (or range of values) from the study case and applying it directly to the policy case. As it is rare that a policy case and study case will be identical, this approach is not preferable. The DOW study uses a single point estimate from a single study. As noted in the OMB Guidance, use of a single point estimate is generally not recommended.
28. Benefit transfer involves judgments and assumptions. Throughout the analysis, the researcher should clearly describe all judgments and assumptions and their potential impact on final estimates, as well as any other sources of uncertainty inherent in the analysis. However, the DOW Report does not consider uncertainty.
29. In summary, the benefits transfer contained in the DOW Report does not follow the guidelines specified by the OMB for defensible benefits transfers, and thus it is not possible to know if the results obtained are valid.

⁷ White, Piran C.L., Keith W. Gregory, Patrick J. Lindley, and Glenn Richards. 1997. Economic Values of Threatened Mammals in Britain: A Case Study of the Otter *Lutra lutra* and the Water Vole *Arvicola terrestris*. *Biological Conservation* 82: 345-354.

APPENDIX C | INITIAL REGULATORY FLEXIBILITY ANALYSIS AND ENERGY IMPACT ANALYSIS

1. This appendix considers the extent to which the impacts discussed in the previous Sections will be borne by small businesses and the energy industry. The analysis presented in Section C.1 is conducted pursuant to the Regulatory Flexibility Act (RFA) as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996, and meets the requirements of an Initial Regulatory Flexibility Analysis (IRFA). The energy analysis in Section C.2 is conducted pursuant to Executive Order No. 13211.

C.1 IMPACTS TO SMALL ENTITIES

2. When a Federal agency proposes regulations, the RFA requires the agency to prepare and make available for public comment an IRFA that describes the effect of the rule on small entities (i.e., small businesses, small organizations, and small government jurisdictions).¹
3. If a proposed rule is not expected to have a significant impact on a substantial number of small entities, the RFA allows an agency to so certify the rule, in lieu of preparing an IRFA.² In the case of the proposed critical habitat for the Canada lynx, uncertainty exists surrounding both the numbers of entities that will be subject to the proposed rule and the degree of impact on particular entities. In particular, uncertainty exists regarding the nature and cost of project modifications that may be requested by the Service, and the distribution of these costs across the affected industries. The problem is complicated by differences among entities—even in the same sector—as to the nature and size of their operations. Therefore, to ensure a broad consideration of impacts on small entities, the Service has prepared this IRFA without first making the threshold determination whether the proposed critical habitat designation could be certified as not having a significant economic impact on a substantial number of small entities. The Service may determine such certification to be appropriate if established by information received in the public comment period.
4. This appendix meets the requirements for completing an Initial Regulatory Flexibility Analysis (IRFA) according to RFA/SBREFA.

¹ 5 U.S.C. 601 et seq.

² Thus, for a regulatory flexibility analysis to be required, impacts must exceed a threshold for “significant impact” and a threshold for a “substantial number of small entities.” 5 U.S.C. 605(b).

C.1.1 SUMMARY OF IMPACTS ON SMALL ENTITIES

5. This analysis concludes that, of the activities considered to be impacted by this rulemaking in Sections 3 through 9 of this report, only impacts to timber activities are expected to be experienced by small entities.
6. Exhibit C-1 describes the number of small businesses that may be impacted by the rulemaking, their forestry-related earnings, and estimated co-extensive impacts of critical habitat designation for the lynx.

EXHIBIT C-2. SUMMARY OF IMPACTS ON SMALL ENTITIES BY UNIT

IMPACTS OF LYNX CONSERVATION ON SMALL ENTITIES IN THE TIMBER INDUSTRY				
SUBUNIT	NUMBER OF SMALL TIMBER-RELATED FIRMS	TOTAL FORESTRY-RELATED EARNINGS IN COUNTIES CONTAINING CRITICAL HABITAT*	ESTIMATED ECONOMIC IMPACT TO SMALL TIMBER-RELATED ENTITIES* (POTENTIAL LOST REVENUES)	POTENTIAL LOST REVENUE AS A PERCENT OF TOTAL EARNINGS
Unit 1: Maine	408	\$191 million	\$10.8 million	5.6 %
Unit 2: Minnesota	198	\$52.7 million	\$5.11 million	9.7 %
Unit 3: Northern Rocky Mountains	680	\$195 million	\$6.03 million	3.1 %
Unit 4: Northern Cascades	258	\$14.6 million	\$1.42 million	9.7 %
<p>*Total forestry-related earnings and estimated economic impacts are totals within the industries; the earnings by and impacts to large businesses are included. However, as described in Section C.1.2.3, most (74 to 100 percent depending on State and sector) of all businesses in relevant industries are small. This analysis therefore assumes that the earnings and impacts are associated with small businesses.</p> <p>Sources: Forestry related earnings represents combined earnings for the Forestry and Logging and the Wood Products Manufacturing sectors. BEA data for 2003 accessed at http://www.bea.gov/bea/regional/reis. Derivation of impacts by Unit is detailed in Appendix D, and summarized by subunit in Appendix F.2.</p>				

C.1.2 IRFA

7. This IRFA is intended to improve the Service's understanding of the effects of the proposed rule on small entities and to identify opportunities to minimize these impacts in the final rulemaking. Exhibit C-2 describes the components of an IRFA. The remainder of this section addresses each of these IRFA requirements.

EXHIBIT C-2. ELEMENTS OF AN IRFA

ELEMENTS OF AN INITIAL REGULATORY FLEXIBILITY ANALYSIS
1. A description of the reasons why the action by the agency is being considered (Section C.1.2.1).
2. A succinct statement of the objectives of, and legal basis for, the proposed rule (Section C.1.2.2).
3. A description- and, where feasible, an estimate of the number- of small entities to which the rule will apply (Section C.1.2.3).
4. A description of the projected reporting, recordkeeping, and other compliance requirements of the proposed rule, including an estimate of the classes of small entities that will be subject to the requirement and the types of professional skills necessary for the preparation of the report or record (Section C.1.2.3).
5. An identification, to the extent practicable, of all relevant Federal rules that may duplicate, overlap, or conflict with the proposed rule (Section C.1.2.4).
6. A description of alternatives to the proposed rule which accomplish the stated objectives of applicable statutes and which minimize any significant economic impact of the proposed rule on small entities(Section C.1.2.5).
Source: Small Business Administration, Office of Advocacy. May 2003. A Guide for Government Agencies: How to Comply with the Regulatory Flexibility Act. pg. 32.

C.1.2.1 Reasons for Considering the Proposed Action

8. Section 4(a)(3) of the Endangered Species Act (Act) requires the Service to designate critical habitat for threatened and endangered species to the maximum extent prudent and determinable.³ Given that the Canada lynx is Federally-listed as threatened under the Act, the Service finds that the designation of critical habitat is required.
9. Additionally, pursuant to Defenders of Wildlife, *et al.*, the U.S. District Court for the District of Columbia instructed the Service to propose critical habitat by November 1, 2005, and to issue a final rule for critical habitat by November 1, 2006. This proposed rule has been completed in compliance with the Court order.
10. The benefits of critical habitat designation derive from section 7 of the Act, which requires that Federal agencies, in consultation with the Service, ensure that actions they carry out, permit, or fund are not likely to destroy or adversely modify critical habitat.

C.1.2.2 Objectives and Legal Basis of the Proposed Rule

11. The purpose of the proposed rule is to designate critical habitat for the Canada lynx pursuant to the Act.
12. As noted above, the Act requires the Service to designate critical habitat for threatened and endangered species to the maximum extent prudent and determinable. Section 4(b)(2) of the Act requires that the Service designate critical habitat "on the basis of the best scientific data available and after taking into consideration the economic impact, the impact on national security, and any other relevant impacts, of specifying any particular area as critical habitat." This section grants the Secretary [of Interior] to exclude any area

³ 16 U.S.C. Sections 1531-1544.

from critical habitat if (s)he determines "the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat". The Secretary's discretion is limited, as (s)he may not exclude areas if it "will result in the extinction of the species."

C.1.2.3 Description and Types and Number of Small Entities to which the Rule will Apply

Definition of a Small Entity

13. Three types of small entities are defined in the RFA:
- Small Business - Section 601(3) of the RFA defines a small business as having the same meaning as small business concern under section 3 of the Small Business Act. This includes any firm that is independently owned and operated and is not dominant in its field of operation. The U.S. Small Business Administration (SBA) has developed size standards to carry out the purposes of the Small Business Act, and those size standards can be found in 13 CFR 121.201. The size standards are matched to North American Industry Classification System (NAICS) industries. The SBA definition of a small business applies to a firm's parent company and all affiliates as a single entity.
 - Small Governmental Jurisdiction - Section 601(5) defines small governmental jurisdictions as governments of cities, counties, towns, townships, villages, school districts, or special districts with a population of less than 50,000. Special districts may include those servicing irrigation, ports, parks and recreation, sanitation, drainage, soil and water conservation, road assessment, etc. When counties have populations greater than 50,000, those municipalities of fewer than 50,000 can be identified using population reports. Other types of small government entities are not as easily identified under this standard, as they are not typically classified by population.
 - Small Organization - Section 601(4) defines a small organization as any not-for-profit enterprise that is independently owned and operated and not dominant in its field. Small organizations may include private hospitals, educational institutions, irrigation districts, public utilities, agricultural co-ops, etc. Depending upon state laws, it may be difficult to distinguish whether a small entity is a government or non-profit entity. For example, a water supply entity may be a cooperative owned by its members in one case and in another a publicly chartered small government with the assets owned publicly and officers elected at the same elections as other public officials.

Description of Small Entities to which the Proposed Rule will Apply

14. The courts have held that the RFA/SBREFEA requires federal agencies to perform a regulatory flexibility analysis of forecast impacts to small entities that are **directly** regulated. In the case of *Mid-Tex Electric Cooperative, Inc., v. Federal Energy Regulatory Commission (FERC)*, FERC proposed regulations affecting the manner in which generating utilities incorporated construction work in progress in their rates. The

generating utilities expected to be regulated were large businesses; however, their customers -- transmitting utilities such as electric cooperatives -- included numerous small entities. In this case, the court agreed that FERC simply authorized large electric generators to pass these costs through to their transmitting and retail utility customers, and FERC could therefore certify that small entities were not directly impacted within the definition of the RFA.⁴

15. Similarly, *American Trucking Associations, Inc. v. Environmental Protection Agency* (EPA) addressed a rulemaking in which EPA established a primary national ambient air quality standard for ozone and particulate matter.⁵ The basis of EPA's RFA/SBREFA certification was that this standard did not directly regulate small entities; instead, small entities were indirectly regulated through the implementation of state plans that incorporated the standards. The court found that, while EPA imposed regulation on states, it did not have authority under this rule to impose regulations directly on small entities and therefore small entities were not directly impacted within the definition of the RFA.
16. The Small Business Administration (SBA) in its guidance on how to comply with the RFA recognizes that consideration of indirectly affected small entities is not required by the RFA, but encourages agencies to perform a regulatory flexibility analysis even when the impacts of its regulation are indirect.⁶ "If an agency can accomplish its statutory mission in a more cost-effective manner, the Office of Advocacy [of the SBA] believes that it is good public policy to do so. The only way an agency can determine this is if it does not certify regulations that it knows will have a significant impact on small entities even if the small entities are regulated by a delegation of authority from the federal agency to some other governing body."⁷
17. The regulatory mechanism through which critical habitat protections are enforced is Section 7 of the Act, which directly regulates only those activities carried out, funded, or permitted by a Federal agency. By definition, Federal agencies are not considered small entities, although the activities they may fund or permit, may be proposed or carried out by small entities. Given the SBA guidance described above, this analysis considers the extent to which this designation could potentially affect small entities, regardless of whether these entities would be directly regulated by the Service through the proposed rule or by a delegation of impact from the directly regulated entity. The small entities described in this IRFA are not considered to be directly regulated by the Service through Section 7.

⁴ 773 F. 2d 327 (D.C. Cir. 1985).

⁵ 175 F. 3d 1027, 1044 (D.C. Cir. 1999).

⁶ Small Business Administration, Office of Advocacy. May 2003. A Guide for Government Agencies: How to Comply with the Regulatory Flexibility Act. pg. 20.

⁷ *Ibid.*, pg. 21.

18. This IRFA focuses on small entities that may bear the regulatory costs quantified in this economic analysis. Although indirectly impacted businesses are considered, this analysis considers only those entities whose impact would not be measurably diluted. Specifically, this economic analysis quantifies economic impacts of lynx conservation associated with timber, recreation, public and conservation land management, transportation, and mining.⁸ However, as described below, only changes in timber activities are expected to measurably impact small entities.
19. The economic analysis applies two scenarios to bound the potential impacts resulting from changes to timber activities, as described in Section 3. Scenario 1, the lower cost scenario, assumes lands subject to existing lynx management plans continue to implement their ongoing lynx conservation efforts. Additionally, a per acre cost of lynx management (i.e., developing lynx management plans and associated surveying and monitoring) is assumed based on the cost of implementing existing plans, and applied broadly across the habitat area that is not currently subject to lynx management plans.
20. Scenario 2, the higher impact scenario of the timber impact analysis, includes additional costs that could result from compliance with Lynx Conservation Assessment and Strategy (LCAS) pre-commercial thinning guidelines across the entire study area. These additional impacts are estimated based on the assumption that all timberland owners will cease pre-commercial thinning activity. Estimated impacts due to potential restrictions on pre-commercial thinning vary based on regional factors as well as the types of information available to model these impacts. This IRFA estimates impacts to small businesses based on the impacts to timber activities estimated in Scenario 2.
21. Because the primary impacts of lynx conservation estimated in Scenario 2 are restrictions on pre-commercial thinning, the small entities that may be affected are the following industries that conduct pre-commercial thinning activities or rely on associated forest products:
- Timber tract operations (NAICS code 113110)
 - Logging (NAICS code 113310)
 - Support activities for forestry (NAICS code 115310)
 - Wood products manufacturing (NAICS code 321)
 - Pulp mills (NAICS code 332110)

⁸ Section 9 of this analysis also quantifies impacts to tribal activities. Tribal lands are being considered for exclusion from critical habitat. Tribes are not considered small entities in this analysis (the U.S. EPA has noted that, "for the purposes of the RFA, States and Tribal governments are not considered small governments but rather as independent sovereigns." EPA. "Regulatory Flexibility Act/Small Business Regulatory Enforcement Fairness Act. What is a "small government?" Accessed at <http://www.epa.gov/sbrefa/government.htm>.)

22. In addition, two small Minnesota counties may experience timber impacts resulting from lynx conservation efforts, Koochiching and Lake Counties.⁹ These counties manage tax-forfeit lands for timber purposes.
23. Impacts are not expected to small entities in other economic sectors potentially affected by this rule for the following reasons:
- Development - Due to the absence of information regarding how development may be affected by lynx conservation, this analysis does not quantify specific impacts to this activity but rather provides the full option value for development within the study area; thus, impacts to small entities associated with development are not addressed in this IRFA.
 - Recreation - Impacts to recreation activity forecast in Section 5 of this report include welfare impacts to individual snowmobilers. As a result of potential restrictions on development of new snowmobile trails, the analysis estimates impacts resulting from potential congestion on existing trails. Impacts quantified in the analysis result from a change in the quality of the experience for the individual recreator, while the level of participation is not expected to change. As no decrease in the level of snowmobiling activity is forecast, impacts to small businesses that support the recreation sector are not anticipated. In addition to snowmobiling welfare impacts, costs of hunter and trapper education efforts considering lynx are forecast. As these costs are expected to be borne by individual recreators and state agencies, impacts to small entities are not anticipated.
 - Public Land Management and Conservation Planning - The analysis of impacts to public land management and conservation planning addresses three types of activity: development of lynx management plans, lynx research and monitoring, and grazing. As discussed in Section 6 of this report, these activities are undertaken by State and Federal agencies. As such, these impacts are not anticipated to affect small entities.
 - Transportation, Utility and Municipal Activities - Section 7 of this analysis presents the potential impacts to transportation, utility and municipal activities. Impacts to transportation and municipal projects are expected to be borne by the Federal and State agencies undertaking lynx-related modifications to these types of projects, including The Federal Highways Administration (FHWA), Federal Emergency Management Agency (FEMA), United States Army Corps of Engineers (USACE) and state transportation departments. These impacts are therefore not expected to affect small entities. Impacts to dam projects include costs of remote monitoring for lynx that could be required for relicensing of dams, and are expected to be borne by the companies that own the dams. In

⁹ Koochiching County (population 13,907) and Lake County (population 11,156) meet the criteria (fewer than 50,000 residents) for "small entity".

particular, 14 dams in Minnesota and two in Maine are expected to consider lynx conservation at the time of relicensing.¹⁰ None of these dam projects is operated by a small entity.¹¹

- Impacts to Small Entities Related to Mining Activities - The analysis of impacts to mining activities quantifies impacts to two mining companies in Minnesota, and describes the total value of another mining project, as discussed in detail in Section 8. None of these three mining companies is a small entity, however.¹²

Estimate of the Number of Small Entities to which the Proposed Rule will Apply

24. The Service has determined that the most practical unit of analysis for designating critical habitat for the Canada lynx is in four "units" as described in Section 2 of this economic analysis. This economic analysis further divides the units as described into subunits according to landowner type. However, it is not possible to directly determine the number of firms in each industry sector in each of the subunits because of the geo-political coverage of the business activity data sets, which are available at the county level in each state containing proposed critical habitat.
25. This IRFA therefore provides information on the number of small businesses in the timber industry potentially impacted by changes to timber activities at the county level for all counties containing proposed critical habitat. Estimates of the number and type of potentially impacted small businesses in each critical habitat unit are provided in Exhibits C-3 through C-6 and summarized below. Importantly, some portion of these small businesses may not conduct activities within the critical habitat area, or may not engage in activities expected to be restricted by lynx conservation (e.g., pre-commercial thinning), and therefore would not be impacted by the rule. These estimates may therefore overstate the number of impacted small entities.
- Unit 1: Maine - 408 small businesses
 - Unit 2: Minnesota - 198 small businesses
 - Unit 3: Northern Rocky Mountains - 680 small businesses
 - Unit 4: North Cascades - 258 small businesses

¹⁰ All 14 hydroelectric dams in Minnesota are owned by the Allete Inc., a parent company of Minnesota Power, and will be due for license renewal in 2025.

¹¹ All 14 Dams in Minnesota are public utilities owned by ALLETE, Inc., a Parent Company of Minnesota Power generating, transmitting, and distributing electrical power for retail and wholesale customers in the Upper Midwest. One dam in Maine is owned by FPL energy Maine Hydro LLC, a public utility, and one is owned by WPS New England Generation, Inc. (<http://www.wpspower.com/market.asp>).

¹² The small business standard for mining is less than 500 employees. Northshore Mining Company is a subsidiary of Cleveland Cliffs, Inc. which has approximately 4,000 employees according to its website (<http://www.cleveland-cliffs.com/general/>). Information from Dun and Bradstreet indicates Mittal Steel USA Inc. has 20,500 employees. PolyMet is a Canadian company, not subject to the Small Business Administrations size standards.

EXHIBIT C-3. SMALL BUSINESSES THAT MAY BE AFFECTED BY LYNX CRITICAL HABITAT DESIGNATION UNIT 1: MAINE

NAICS CODE / INDUSTRY	SMALL BUSINESS SIZE STANDARD		COUNTY						
			AROO-STOOK	FRANKLIN	PENOBSCOT	PISCATA-QUIS	SOMERSET	TOTAL	% SMALL
113110: Timber Tract Operations	\$6,500,000	Total	2	0	4	2	1	9	
		Small	2	0	4	2	1	9	100%
113310: Logging	500 employees	Total	78	28	74	21	49	250	
		Small	77	28	72	21	47	245	98%
115310: Support Activities for Forestry	\$6,500,000	Total	10	4	16	1	3	34	
		Small	10	4	16	1	3	34	100%
321: Wood Products Manufacturing (Including Sawmills)	500 employees	Total	36	25	41	9	31	142	
		Small	30	23	31	8	24	116	82%
322110: Pulpmills	750 employees	Total	4	0	1	0	0	5	
		Small	3	0	1	0	0	4	80%
TOTALS		TOTAL	130	57	136	33	84	440	
		SMALL	122	55	124	32	75	408	93%

NOTE: Size standards based on SBA's Table of Small Business Size Standards based on NAICS 2002 (<http://www.sba.gov/size/sizetable2002.pdf>). Numbers of businesses are based on Dun and Bradstreet information downloaded in February 2006.

EXHIBIT C-4. SMALL BUSINESSES THAT MAY BE AFFECTED BY LYNX CRITICAL HABITAT DESIGNATION UNIT 2: MINNESOTA

NAICS CODE / INDUSTRY	SMALL BUSINESS SIZE STANDARD		COUNTY					TOTAL	% SMALL
			ST. LOUIS	COOK	LAKE	KOOCHICHING			
113110: Timber Tract Operations	\$6,500,000	Total	2	0	1	1	4		
		Small	2	0	1	1	4	100%	
113310: Logging	500 employees	Total	71	8	18	29	126		
		Small	71	8	18	29	126	100%	
115310: Support Activities for Forestry	\$6,500,000	Total	13	5	0	1	19		
		Small	13	5	0	1	19	100%	
321: Wood Products Manufacturing (Including Sawmills)	500 employees	Total	29	6	7	11	53		
		Small	25	6	5	10	46	87%	
322110: Pulpmills	750 employees	Total	3	0	1	0	4		
		Small	3	0	0	0	3	75%	
TOTALS		TOTAL	118	19	27	42	206		
		SMALL	114	19	24	41	198	96%	

NOTE: Size standards based on SBA's Table of Small Business Size Standards based on NAICS 2002 (<http://www.sba.gov/size/sizetable2002.pdf>). Numbers of businesses are based on Dun and Bradstreet information downloaded in February 2006.

EXHIBIT C-5. SMALL BUSINESSES THAT MAY BE AFFECTED BY LYNX CRITICAL HABITAT DESIGNATION UNIT 3: NORTHERN ROCKIES

NAICS CODE / INDUSTRY	SMALL BUSINESS SIZE STANDARD	COUNTY												
		LINCOLN	FLATHEAD	GLACIER	LAKE	MISSOULA	GRANITE	TETON	LEWIS AND CLARK	POWELL	BOUNDARY (ID)	TOTAL	% SMALL	
113110: Timber Tract Operations	\$6,500,000	Total	1	2	0	2	4	0	0	0	0	0	9	
		Small	1	2	0	2	4	0	0	0	0	0	9	100%
113310: Logging	500 employees	Total	63	87	1	13	57	17	0	9	13	18	278	
		Small	63	86	1	13	56	17	0	9	13	17	275	99%
115310: Support Activities for Forestry	\$6,500,000	Total	57	59	9	13	78	5	6	25	3	6	261	
		Small	57	59	9	13	78	5	6	25	3	6	261	100%
321: Wood Products Manufacturing (Including Sawmills)	500 employees	Total	25	59	2	12	27	2	3	12	4	13	159	
		Small	21	52	2	11	21	1	2	11	4	9	134	84%
322110: Pulpmills	750 employees	Total	0	0	0	0	1	0	0	0	0	0	1	
		Small	0	0	0	0	1	0	0	0	0	0	1	100%
TOTALS		TOTAL	146	207	12	40	167	24	9	46	20	37	708	
		SMALL	142	199	12	39	160	23	8	45	20	32	680	96%

NOTE: Size standards based on SBA's Table of Small Business Size Standards based on NAICS 2002 (<http://www.sba.gov/size/sizetable2002.pdf>). Numbers of businesses are based on Dun and Bradstreet information downloaded in February 2006, except Lewis and Clark County NAICS 112111 downloaded in June 2006.

EXHIBIT C-6. SMALL BUSINESSES THAT MAY BE AFFECTED BY LYNX CRITICAL HABITAT DESIGNATION UNIT 4: NORTH CASCADES

NAICS CODE / INDUSTRY	SMALL BUSINESS SIZE STANDARD		COUNTY				
			OKANOGAN	SKAGIT	CHELAN	TOTAL	% SMALL
113110: Timber Tract Operations	\$6,500,000	Total	1	5	2	8	
		Small	1	5	2	8	100%
113310: Logging	500 employees	Total	31	34	17	82	
		Small	31	33	17	81	99%
115310: Support Activities for Forestry	\$6,500,000	Total	67	8	27	102	
		Small	67	8	27	102	100%
321: Wood Products Manufacturing (Including Sawmills)	500 employees	Total	14	45	20	79	
		Small	11	38	17	66	84%
322110: Pulpmills	750 employees	Total	0	0	1	1	
		Small	0	0	1	1	100%
TOTALS		TOTAL	113	92	67	272	
		SMALL	110	84	64	258	95%

NOTE: Size standards based on SBA's Table of Small Business Size Standards based on NAICS 2002 (<http://www.sba.gov/size/sizetable2002.pdf>). Numbers of businesses are based on Dun and Bradstreet information downloaded in February 2006, except for Okanogan County NAICS 445290 downloaded in June 2006.

26. In addition, two small Minnesota counties that manage lands for timber may experience impacts resulting from timber-related lynx conservation efforts, Koochiching and Lake Counties.¹³

Estimate of the Economic Impact of Compliance Requirements on Small Entities

27. Exhibits C-3 through C-6 provide evidence that, given the rural nature of the proposed designation and the nature of the affected activities, most of the potentially affected timber entities (between 75 and 100 percent) in these regions are small. This IRFA therefore assumes that all impacted timber-related entities are small.
28. Under Scenario 2 of the timber impacts analysis, as described above, impacts to small entities include the cost of developing lynx management plans (along with associated species surveying and monitoring), and precluding pre-commercial thinning in the critical habitat area. The annualized value of these activities is forecast to be \$23.4 million (assuming a three percent discount rate) across the entire proposed critical habitat. Forestry-related earnings across counties in the study area were \$454 million in 2003. Thus, potential reductions in revenue from changes to timber activities resulting from lynx conservation efforts represent approximately five percent of total forestry-related earnings by businesses in all counties containing proposed critical habitat.¹⁴
29. These estimated impacts to timber activities are distributed across the critical habitat area by subunit as described in Appendix F.2 of this analysis. This analysis does not estimate impacts as a percent of earnings on a subunit level, as information on forestry-related earnings is only available at the county level. However, Exhibit C-7 describes impacts of lynx conservation efforts on forestry earnings for all counties containing critical habitat in each of the proposed units.

¹³ Koochiching County (population 13,907) and Lake County (population 11,156) meet the criteria (fewer than 50,000 residents) for "small entity".

¹⁴ Forestry related earnings represents combined earnings for the Forestry and Logging and the Wood Products Manufacturing sectors. BEA data for 2003 accessed at <http://www.bea.gov/beat/regional/reis>.

EXHIBIT C-7. IMPACTS ON SMALL ENTITIES BY UNIT

IMPACTS OF LYNX CONSERVATION ON SMALL ENTITIES IN THE TIMBER INDUSTRY			
SUBUNIT	TOTAL FORESTRY-RELATED EARNINGS IN COUNTIES CONTAINING CRITICAL HABITAT	ESTIMATED ECONOMIC IMPACT TO SMALL TIMBER-RELATED ENTITIES (SCENARIO 2)	IMPACTS AS A PERCENT OF TOTAL EARNINGS
Unit 1: Maine	\$191 million	\$10.8 million	5.6 %
Unit 2: Minnesota	\$52.7 million	\$5.11 million	9.7 %
Unit 3: Northern Rocky Mountains	\$195 million	\$6.03 million	3.1 %
Unit 4: Northern Cascades	\$14.6 million	\$1.42 million	9.7 %
Notes: Estimates may not calculate exactly due to rounding. Sources: Forestry related earnings represents combined earnings for the Forestry and Logging and the Wood Products Manufacturing sectors. BEA data for 2003 accessed at http://www.bea.gov/bea/regional/reis . Derivation of impacts by Unit is detailed in Appendix D, and summarized by subunit in Appendix F.2.			

30. These impacts of precluding pre-commercial thinning do not represent an additional capital cost of operations to the impacted entities. Instead, they represent a reduction in the demand for the services provided by these entities as a result of restrictions on particular timber management activities. It is unclear how the impact of implementing lynx conservation may affect the profit margins of these forest-related businesses. That is, while the estimated percent impact on earnings represents a decrease in the volume of economic activity, how this change may actually manifest in the forestry industry, whether in decreased employment, decreased number of businesses, or foregone revenue or profit per business, is unknown.

C.1.2.4 Identification of all relevant Federal rules that may duplicate, overlap, or conflict with the proposed rule

31. An IRFA must identify any duplicative, overlapping, and conflicting Federal rules. Rules are duplicative or overlapping if they are based on the same or similar reasons for the regulation, the same or similar regulatory goals, and if they regulate the same classes of industry. Rules are conflicting when they impose two conflicting regulatory requirements on the same classes of industry.
32. The protection of listed species and habitat may overlap other sections of the Act. The protections afforded to threatened and endangered species and their habitat are described in sections 7, 9, and 10 of the Act. While the proposed critical habitat regulates activities that are Federally funded, authorized by a Federal agency, or carried out by a Federal agency, section 7 also requires Federal agencies to consult with the Service to ensure that any action authorized, funded, or carried out will not likely jeopardize the continued existence of any endangered or threatened species. The conservation efforts quantified in this report may overlap with the jeopardy standard invoked by the listing of the species,

and some fraction of the forecast impact may therefore be incurred even absent critical habitat designation.

33. Further, if a consultation is triggered for any listed species, the consultation process will generally take into account all other listed species known or thought to occupy areas on or near the project lands. As such, management efforts for other listed species may overlap with those for another listed species and benefit both species.

34. Additionally, Section 6 of this analysis describes development of a number of Habitat Conservation Plans (HCP) in order to meet the Act's conditions for issuance of an incidental take permit in connection with the management of a property.¹⁵ The requirements posed by the HCP may overlap the conservation efforts quantified in this analysis.

C.1.2.5 A description of alternatives to the proposed rule which accomplish the objectives and which minimize impact on small entities

35. The Service identified four units as potential critical habitat for the lynx. This analysis describes subunits by landowner type to provide economic impact information at a more refined geographic scale. Specifically, 27 subunits are proposed for designation of critical habitat and seven subunits are considered for exclusion from critical habitat by the Service. An alternative to the Proposed Rule (designating the land area of the 27 proposed subunits for critical habitat) is the designation of all 34 subunits. In addition, section 4(b)(2) of the Act allows the Service to exclude additional areas proposed for designation based on economic impact and other relevant impacts. As a result, the designation of multiple combinations of subunits are also available to the Service as alternatives.

36. Under the Proposed Rule alternative (designation of 27 subunits), no areas are excluded for economic reasons. A reduction in the size of critical habitat will reduce the number of small businesses potentially affected. The extent to which the economic impact to small entities is reduced depends on how many, and which, subunits or portions of subunits of critical habitat are excluded.

37. As described above, the activity most expected to be burdened with conservation efforts that may result in impacts to small entities is timber management. The small business profiles of the timber industry across the designation is provided in Exhibits C-3 through C-6. The exact number of small businesses within each subunit, however, is unknown, as small business information is available at the county level. Appendix F.2 provides a detailed accounting of the impacts to the timber industry, expected to be experienced by small entities, in each of the 34 subunits.

¹⁵ U.S. Fish and Wildlife Service, "Endangered Species and Habitat Conservation Planning," August 6, 2002, accessed at <http://endangered.fws.gov/hcp/>.

C.2 POTENTIAL IMPACTS TO THE ENERGY INDUSTRY

38. Pursuant to Executive Order No. 13211, “Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use,” issued May 18, 2001, Federal agencies must prepare and submit a “Statement of Energy Effects” for all “significant energy actions.” The purpose of this requirement is to ensure that all Federal agencies “appropriately weigh and consider the effects of the Federal Government’s regulations on the supply, distribution, and use of energy.”¹⁶ The OMB’s guidance for implementing this Executive Order outlines nine outcomes that may constitute “a significant adverse effect” as compared to a scenario without the regulatory action under consideration:

- Reductions in crude oil supply in excess of 10,000 barrels per day (bbls);
- Reductions in fuel production in excess of 4,000 barrels per day;
- Reductions in coal production in excess of 5 million tons per year;
- Reductions in natural gas production in excess of 25 million Mcf per year;
- Reductions in electricity production in excess of 1 billion kilowatts-hours per year or in excess of 500 megawatts of installed capacity;
- Increases in energy use required by the regulatory action that exceed the thresholds above;
- Increases in the cost of energy production in excess of one percent;
- Increases in the cost of energy distribution in excess of one percent; or
- Other similarly adverse outcomes.¹⁷

As none of these criteria is relevant to this analysis, energy-related impacts associated with lynx conservation activities within the study area are not expected.

¹⁶ Memorandum For Heads of Executive Department Agencies, and Independent Regulatory Agencies, Guidance For Implementing E.O. 13211, M-01-27, Office of Management and Budget, July 13, 2001, <http://www.whitehouse.gov/omb/memoranda/m01-27.html>.

¹⁷ Ibid.

APPENDIX D | TECHNICAL APPENDIX DESCRIBING DERIVATION OF IMPACTS TO TIMBER ACTIVITIES

1. This Appendix is divided into two sections. The first provides details on the on the derivation of impacts resulting from expected changes to timber activities within the study area. The second provides a sensitivity analysis for the results, based on different assumptions regarding the amount of pre-commercial thinning expected in the study area.

D.1 DERIVATION OF TIMBER IMPACTS

2. This analysis considers the impacts of changes in timberland management resulting from lynx conservation efforts.¹ The analysis of timber-related impacts considers two scenarios, representing varying levels of lynx conservation efforts.

D.1.1 SCENARIO 1

3. The first scenario assumes landowners implement existing lynx management plans where available, and for all other areas, only initial lynx conservation efforts are undertaken. Under this scenario, three types of impacts are quantified (as detailed in Exhibits D-1 and D-2 for pre- and post-designation impacts, respectively):
 1. Impacts expected to result from implementation of existing lynx management plans and strategies.
 2. Project modifications to timber projects requiring access across Federal lands.
 3. Costs of researching and developing lynx management guidelines.

¹ The analysis does not calculate regional economic impacts related to timber activities given the lengthy timeframe and uncertainty of expected impacts.

EXHIBIT D-1. DERIVATION OF PRE-DESIGNATION SCENARIO 1 COST ESTIMATES

CRITICAL HABITAT UNIT	SUBUNIT	COSTS OF IMPLEMENTING EXISTING LYNX PLANS	PROJECT MODIFICATION COSTS	COST OF DEVELOPING LYNX MANAGEMENT PLANS
Unit 2: Minnesota	Superior National Forest	\$150,000 in 2005 (1)	\$30,000 (2)	Included in Section 6
Unit 2: North Cascades	WADNR	\$1.02 million/year (3)	None	Included in Section 6
Sources: (1) Costs of \$150,000 per year to implement revised forest plan lynx timber-related standards & guidelines beginning in 2005. Email and personal communication with Mary Shedd, Superior NF, March 7 and March 17, 2006. (2) Includes road decommissioning costs related to two projects in 2002, three projects in 2003, and one project in 2005; \$5,000 per project. IEC analysis of consultation history and personal communication with Mary Shedd, Superior NF, March 17, 2006. (3) Cost of compliance with all aspects of lynx management plan. Personal communication with Scott Fisher, WADNR, March 16, 2006 (as revised).				

Existing Lynx Management Plans

4. Four subunits have or are planning to adopt some form of lynx conservation guidance covering timber practices. These include Conservation NGO lands in Maine owned by the Nature Conservancy, Superior National Forest, Montana Department of Natural Resource Conservation (MTDNRC) and Washington Department of Natural Resources (WADNR) lands. These existing conservation efforts are described briefly below.
5. *The Nature Conservancy* owns an area of the St. John River Forest, of which 133,255 acres are “Managed Forest,” managed by the Huber Resources Corporation. The management plan includes conservation efforts to benefit the lynx including:
 - “At the present time, the Conservancy does not plan to use pre-commercial thinning as it represents a significant, low priority investment without ecological or biodiversity benefits, and is counter to lynx habitat needs.”
 - “For Canada lynx the goal is to provide adequate early succession habitat to maintain a food source (i.e., hare) for a viable Canada lynx population. Given the large proportion (28%) of regenerating softwood forest on the Conservancy’s ownership, this goal is considered met for the near future. (As further research on the individual home range requirements of lynx, and the effects of partial harvest and pre-commercial thinning on both lynx and hare, are conducted, this goal will be further refined.)”²

² Stockwell, Kyle. Upper St. John River Forest Management Plan, April 25, 2003. Update September 2004. Prepared for the Nature Conservancy (Land Owner) and Huber Resources (Land Manager).

EXHIBIT D-2. DERIVATION OF POST-DESIGNATION SCENARIO 1 COST ESTIMATES (2006 - 2025)

CRITICAL HABITAT UNIT	SUBUNIT	COSTS OF IMPLEMENTING EXISTING LYNX PLANS	PROJECT MODIFICATION COSTS	COST OF DEVELOPING LYNX MANAGEMENT PLANS (7)	TOTAL UNDISCOUNTED COSTS (2006 - 2025)
Unit 1: Maine	Maine Dept. of Conservation	None	None	Included in Section 6	None
	Conservation NGO	\$5,170,000 (1)	None	Included in Section 6	\$5,170,000
	Private Timber Lands	None	None	\$31,100,000	\$31,100,000
	Unknown	None	None	\$1,640,000	\$1,640,000
Unit 2: Minnesota	Superior National Forest	\$3,000,000 (2)	\$500,000 (3) (4)	Included in Section 6	\$3,500,000
	MNDNR	None	None	Included in Section 6	None
	Private Timber Lands	None	None	\$295,000	\$295,000
	Unknown	None	None	\$5,320,000	\$5,320,000
Unit 3: Northern Rockies	MTDNRC	\$42,200,000 (1)	\$800,000 (5)	Included in Section 6	\$43,000,000 (1)
	Montana University System	None	None	Included in Section 6	None
	Idaho Dept. of Land	None	None	Included in Section 6	None
	Private Timber Lands	None	None	\$2,680,000	\$2,680,000
	Unknown	None	None	\$3,920,000	\$3,920,000
Unit 4: North Cascades	WADNR	\$20,500,000(6)	None	Included in Section 6	\$20,500,000 (6)

Sources:

(1) Impacts of precluding pre-commercial thinning (see Exhibits D-5 through D-8 for details); costs estimated over 100 years, then annualized to estimate costs over a 20 year period.

(2) Cost to implement forest plan lynx timber-related standards & guidelines of \$150,000 per year over 20 years. Email and personal communication with Mary Shedd, Superior NF, March 7 and March 17, 2006.

(3) Road decommissioning costs of \$5,000 for one project per year over 20 years. IEC analysis of consultation history and personal communication with Mary Shedd, Superior NF, March 17, 2006.

(4) Alternative road building costs to avoid federal access for five projects per year at \$4,000 per project over 20 years. IEC analysis of consultation history and personal communication with Mike Houser, Potlatch Corporation, April 14, 2006.

(5) \$40,000 per year over 20 years assuming 10 projects per year based on 20% of MTDNRC acres needing federal access. Personal communication with Scott McLeod April 14, 2006. Per project cost to build alternative roads is \$4,000; based on personal communication with Mike Houser, Potlatch Corporation, April 14, 2006.

(6) Estimate of \$1.02 million provided by WADNR based on compliance with lynx management plan. Personal communication with Scott Fisher, WADNR, March 16, 2006.

(7) For Private timber lands and Unknown landowners, costs of lynx plan development are based on a weighted average per acre cost of \$5.73 per acre spread over six years (2006 - 2011) and associated survey and monitoring costs of \$45,230 per year for the following five years (See Exhibit D-6 for acreage of subunits and Exhibit 6-4 for details on development of per acre costs). Costs for public and conservation lands are included in Section 6.

6. *Superior National Forest* operated under an agreement with the Service to implement the LCAS from 2000 until its revised forest plan was published in 2004.³ Superior National Forest's revised Forest Plan includes measures similar to the LCAS. With regard to areas outside lynx analysis units (LAUs) included in the study area, the revised forest plan states:
- “Exceptions to management and analysis at the LAU scale may also be warranted for some projects where it is determined that the lynx may occur in areas outside of mapped LAUs and projects may affect the lynx.”⁴
7. Superior National Forest indicated that it applies similar guidelines, defining an area similar in size to an LAU, in order to review projects that fall outside of mapped LAUs.⁵
8. *MTDNRC* is currently drafting a habitat conservation plan (HCP) under which pre-commercial thinning may occur at a delayed interval to benefit the lynx. As *MTDNRC* has not yet published its draft HCP, the analysis applies the assumption that pre-commercial thinning will be precluded under Scenario 1.

MTDNRC Habitat Conservation Plan – Excerpts of Lynx Strategy

Commitments for Lynx Management Areas (LMAs)

- Maintain 65 percent as suitable lynx habitat
- No more than 15 percent of lynx habitat converted to non-suitable per decade per LMA
- Maintain at least 20 percent as forage habitat

Commitments for all HCP covered lands in lynx habitat

- Retain two potential den sites per square mile
- Leave one percent of downed woody material
- No mechanical harvest with 0.25 miles of den sites from May 1 – July 15
- Emphasize retention of downed large logs (>15 inches)
- Retain some shade tolerant trees in pre-commercially thinned areas

Source: Montana Department of Natural Resource Conservation. 2005. Lynx Conservation Strategy. October 2005. Available at <http://dnrc.mt.gov/HCP/speciesacct.asp>.

³ USDA, Forest Service. 2000. Canada Lynx conservation agreement. February 7, 2000. US Forest Service and US Fish and Wildlife Service. USFS Agreement #00-MU-11015600-013.

⁴ USFS, Superior National Forest. Land and Resource Management Plan Superior National Forest. July 2004. Available online at http://www.fs.fed.us/r9/forests/superior/projects/forest_plan/2004_forest_plan.php

⁵ Personal Communication, Mary Shedd, Wildlife Biologist, Superior National Forest, February 21, 2006. These impacts may be overstated as they would have been incurred regardless of lynx conservation efforts.

9. **WADNR** developed a lynx management plan in 1996. After the lynx was listed in 2000, the Service recommended changes to the plan, which has recently been revised and is currently undergoing review. Exhibit D-3 presents the major guidelines included in the plan, which are similar to LCAS measures. WADNR estimates that approximately 30 percent of their timberlands are effectively set-aside due to lynx conservation efforts, due to the requirements of the lynx plan. Information related to past costs was not provided, but is assumed to have been similar to estimated future costs as the conservation guidelines suggested by the Service have not changed since 2000.

EXHIBIT D-3. WADNR LYNX MANAGEMENT PLAN

WADNR LYNX PLAN STANDARDS
1. Quality snowshoe hare habitat, located within lynx Forage Habitat, will be maintained by providing adequate horizontal cover above average snow depth.
2. To ensure that potential denning structure is available across the landscape, at least two den sites per square mile will be provided in all Lynx Management Zones where WADNR manages at least one square mile.
3. Potential human disturbance to den sites and Denning Habitat will be minimized. Roads will be far from dens and timber harvest will not occur during denning season.
4. The following ratios of lynx habitat components will be maintained in each LAU on DNR-managed lands where DNR manages 20 percent or more of the LAU: <ul style="list-style-type: none"> ○ Forage Habitat 20% minimum ○ Denning Habitat 10% minimum (including at least 2 den sites/mi²) ○ Travel Habitat 40% ○ Temporary Non-lynx Areas 30% maximum
Source: WADNR draft Lynx Habitat Management Plan, pages 32-45.

Project Modifications

10. Based on a review of the consultation history and discussions with land managers, project modifications are expected to occur in two subunits under this scenario: Superior National Forest and MTDNRC. Conservation needs may result in modifications to timber projects requiring that new or reconstructed roads be closed after the project, in part to benefit lynx. Thus, estimated impacts include road decommissioning costs. In addition, federal review of access permits may delay projects from one month to two years or more in some instances.⁶ The analysis estimates costs of building alternative roads in lieu of obtaining an access permit.⁷

⁶ Personal communication with Mike Houser, Potlatch Corporation April 14, 2006. Personal communication Scott McLeod, MTDNRC, April 14, 2006.

⁷ Note that the analysis does not anticipate any changes to the current exemption from U.S. Army Corps of Engineering 404 wetlands permits for roads constructed and used specifically for timber access; however, stakeholders have expressed concern that if this exemption were affected by lynx conservation efforts this could result in extensive impacts.

Preparation of Lynx Management Plans

11. For areas that have not undertaken any specific lynx management planning to date, the analysis estimates costs related to this type of conservation effort. Specifically, for Private timber lands and Unknown landowners, costs of lynx plan development are based on a weighted average per acre cost of \$5.73 per acre spread over six years (2006 – 2011) and associated survey and monitoring costs of \$45,230 per year for the following five years (See Exhibit D-6 for acreage of subunits and Exhibit 6-4 for details on development of per acre costs). Costs of preparing lynx management plans for public and conservation lands are included in Section 6.
12. Exhibit D-4 provides an example to illustrate the calculation of Scenario 1 impacts, based on the Superior National Forest subunit.

EXHIBIT D-4. SUPERIOR NATIONAL FOREST SUBUNIT: EXAMPLE OF SCENARIO 1 IMPACT CALCULATION (2006- 2025)

YEAR	COSTS OF IMPLEMENTING EXISTING LYNX PLANS	PROJECT MODIFICATION COSTS	COST OF DEVELOPING LYNX MANAGEMENT PLANS	SCENARIO 1 IMPACTS		
				UNDISCOUNTED	PRESENT VALUE 3%	PRESENT VALUE 7%
<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	$E = A+B+C$	$F = E / (1.03)^{(A-2006)}$	$G = E / (1.07)^{(A-2006)}$
2006	\$150,000	\$25,000	\$0	\$175,000	\$175,000	\$175,000
2007	\$150,000	\$25,000	\$0	\$175,000	\$170,000	\$164,000
2008	\$150,000	\$25,000	\$0	\$175,000	\$165,000	\$153,000
2009	\$150,000	\$25,000	\$0	\$175,000	\$160,000	\$143,000
2010	\$150,000	\$25,000	\$0	\$175,000	\$155,000	\$133,000
2011	\$150,000	\$25,000	\$0	\$175,000	\$151,000	\$125,000
2012	\$150,000	\$25,000	\$0	\$175,000	\$147,000	\$117,000
2013	\$150,000	\$25,000	\$0	\$175,000	\$142,000	\$109,000
2014	\$150,000	\$25,000	\$0	\$175,000	\$138,000	\$102,000
2015	\$150,000	\$25,000	\$0	\$175,000	\$134,000	\$95,200
2016	\$150,000	\$25,000	\$0	\$175,000	\$130,000	\$89,000
2017	\$150,000	\$25,000	\$0	\$175,000	\$126,000	\$83,100
2018	\$150,000	\$25,000	\$0	\$175,000	\$123,000	\$77,700
2019	\$150,000	\$25,000	\$0	\$175,000	\$119,000	\$72,600
2020	\$150,000	\$25,000	\$0	\$175,000	\$116,000	\$67,900
2021	\$150,000	\$25,000	\$0	\$175,000	\$112,000	\$63,400
2022	\$150,000	\$25,000	\$0	\$175,000	\$109,000	\$59,300
2023	\$150,000	\$25,000	\$0	\$175,000	\$106,000	\$55,400
2024	\$150,000	\$25,000	\$0	\$175,000	\$103,000	\$51,800
2025	\$150,000	\$25,000	\$0	\$175,000	\$100,000	\$48,400
Total	\$3,000,000	\$500,000	\$0	\$3,500,000	\$2,680,000	\$1,980,000
Annualized				\$175,000	\$180,000	\$187,000

D.1.2 SCENARIO 2

13. As discussed in Section 3, Scenario 2 focuses on the LCAS conservation measure that states “Pre-commercial thinning will be allowed only when stands no longer provide snowshoe hare habitat.”⁸ Forecast timber impacts under Scenario 2 include:
1. Impacts as estimated under Scenario 1; plus
 2. Impacts of eliminating pre-commercial thinning activity, resulting in forgone timber harvest.

These two components are summed across each year and the present value of the stream of impacts is calculated according to the formulas presented in Section 1.

Pre-Commercial Thinning Impacts

14. Pre-commercial thinning impacts are estimated over a 100-year timeframe.⁹ Rotation schedules vary across the study area and are dependent on species mix and timber management regime. The analysis of pre-commercial thinning impacts has several limitations, see Section 3.3 for a discussion of these caveats.
15. In Maine, a previously conducted study provides a robust estimate of the benefits of pre-commercial thinning.¹⁰ To estimate impacts for Maine, the model applies the per-acre net present value amount from this model to the acreage of timberland in each subunit, as illustrated in Exhibit D-5.

⁸ Ruediger, B., et. al. 2000.

⁹ Rotations vary from 40 to 120 years across the study area depending on species. This time frame was chosen in part to match the University of Maine model (Wagner et. al., 2003) used to assess silvicultural research priorities in Maine, which is applied in this analysis. However, these results are annualized in order to present results over a 20 year period.

¹⁰ Wagner, Robert G., Bowling, Ernest, and Seymour, Robert. 2003. Assessing Silviculture Research Priorities for Maine Using Wood Supply Analysis. Technical Bulletin 186. February 2003 Maine Agricultural and Forest Experiment Station. The University of Maine. Accessed at <http://library.umaine.edu/cfru/pubs/CFRU309.pdf> on March 14, 2006. Additional model runs provided by Ernest Bowling, JW Sewall on June 15, 2006.

EXHIBIT D-5. PRE-COMMERCIAL THINNING IMPACTS: MAINE

SUBUNIT	TIMBERLAND ACREAGE ⁽¹⁾	UNDISCOUNTED IMPACTS (2006 - 2105) ⁽²⁾		
		UNDISCOUNTED	3% DISCOUNT RATE	7% DISCOUNT RATE
Maine Dept. of Conservation	290,170	\$56,300,000	\$9,910,000	\$5,230,000
Private Timber Lands	5,385,955	\$1,050,000,000	\$184,000,000	\$97,100,000
Conservation NGO	140,570	\$27,300,000	\$4,800,000	\$2,540,000
Unknown	247,421	\$48,000,000	\$8,450,000	\$4,460,000
Total	9,335,880	\$1,180,000,000	\$207,000,000	\$109,000,000

Notes: Totals may not sum due to rounding.
(1) Based on IEc GIS analysis, except for Maine Conservation NGO lands, based on info from Stockwell, et al. 2004. The Nature Conservancy. Upper St. John River Forest: Forest Management Plan, April 25, 2003. Update: September 2004, Appalachian Mountain Club, May 5, 2006.
(2) Acreage multiplied by per acre benefits of pre-commercial thinning. Per-acre benefits estimated to be \$194/acre (undiscounted); \$34/acre (3% discount rate) and \$18/acre (7% discount rate) based on NPV calculated in Wagner et. al (2003) and additional model runs provided by JW Sewall.

16. For Minnesota and Montana, a more simplified analysis was conducted to estimate net impacts. Based on estimates of pre-commercially thinned acreage, per acre costs of pre-commercial thinning, and studies of the benefits attributable to pre-commercial thinning, the analysis estimates the impacts of precluding pre-commercial thinning in each unit. Estimated pre-commercial thinning acreage is presented in Exhibit D-6. Several sources indicated one percent per year of acreage pre-commercially thinned is an acceptable assumption.¹¹ Details on the underlying assumptions and derivation of pre-commercial thinning impacts are shown in Exhibit D-7. Exhibit D-8 provides additional explanation of the calculation of pre-commercial thinning impacts for Minnesota and Montana. Finally, Exhibits D-9 and D-10 provide an example to illustrate the calculation of pre-commercial thinning impacts and Scenario 2 impacts overall, based on the Superior National Forest subunit.

¹¹ Personal communication with: Scott McLeod, MTDNRC, April 10, 2006; Bill Berguson, NRRI, April 6, 2006; Jon Nelson, MNDNR, March 8, 2006; Cheryl Adams, UPM Blandin March 14, 2006; and Tom Ray, Plum Creek Timber Company, June 30, 2006. Also, F.H. Stoltze Land & Lumber Co. Comments on potential impacts of designation of Critical Habitat for Canada Lynx. Provided via facsimile on February 21, 2006.

EXHIBIT D-6. ACREAGE BY SUBUNIT

CRITICAL HABITAT UNIT	SUBUNIT	TIMBERLAND ACREAGE (1)	ANNUAL ACREAGE OF PRE-COMMERCIAL THINNING (2)
Unit 1: Maine	Maine Dept. of Conservation	290,170	Model applied in Maine assumes 20,000 acres per year statewide
	Private Timber Lands	5,385,955	
	Conservation NGO	140,570	
	Unknown	247,421	
Unit 2: Minnesota	Superior National Forest (3)	473,366	4,734
	MNDNR	507,473	5,075
	Private Timber Lands	12,074	121
	Unknown	889,522	8,895
Unit 3: Northern Rockies	MTDNRC	189,771	1,500
	Montana University System	21,656	217
	Idaho Dept. of Land	646	100 (one time)
	Private Timber Lands	428,205	4,282
	Unknown	644,028	6,440
Unit 4: North Cascades	WADNR	105,023	n/a (WADNR estimates impact of all conservation efforts combined)
Total		9,335,880	
Notes:			
(1) Based on IEC GIS analysis, except for Maine Conservation NGO lands, based on info from Stockwell, et al. 2004. The Nature Conservancy. Upper St. John River Forest: Forest Management Plan, April 25, 2003. Update: September 2004, Appalachian Mountain Club, May 5, 2006.			
(2) Based on assumption that one percent of timberlands are per-commercially thinned per year, except where specific information was available as follows: For MTDNRC, 1,500 acres per year is based on personal communication with Scott McLeod, MTDNRC, April 10, 2006. For Idaho Department of Lands, only 100 acres total are expected to be thinned within the study area over the analysis timeframe (personal communication with Patrick Seymour, March 15, 2006).			
(3) Superior National Forest does not conduct pre-commercial thinning; therefore, this LCAS guideline was not included in its forest plan. However, private, state and county lands are included in this subunit as inholdings, and therefore costs associated with a limitation on pre-commercial thinning are relevant to the quantification of impacts in this subunit.			

EXHIBIT D-7. ASSUMPTIONS UNDERLYING ANALYSIS OF PRE-COMMERCIAL THINNING IMPACTS

CRITICAL HABITAT UNIT	SUBUNIT	PER-ACRE IMPACT OF PRE-COMMERCIAL THINNING (2006 - 2105) ⁽⁶⁾			BASIS FOR PRE-COMMERCIAL THINNING IMPACTS
		UNDISCOUNTED	3% DISCOUNT RATE	7% DISCOUNT RATE	
Unit 1: Maine	All Subunits	\$194	\$34	\$18	Estimate based on NPV of benefits per acre with pre-commercial thinning (over a 100 year time period statewide). (1)
Unit 2: Minnesota	All Subunits	\$407	\$57	\$1	Based on increased yield of 10 cords per acre on acreage treated with pre-commercial thinning, with average stumpage value of \$65/cord. Assumes pre-commercial thinning occurs at age 10 (year 1) and harvest occurs at age 40 (year 30). (2)
Unit 3: Northern Rockies	MTDNRC	\$1,364	\$102	\$0	Based on increased yield of 10 mbf per acre on acreage treated with pre-commercial thinning, with average stumpage value of \$405/mbf. Assumes pre-commercial thinning occurs at age 20 (year 1) and harvest occurs at age 85 (year 65). (3) For Idaho Dept. of Lands, impacts based solely on time value of money. Expected pre-commercial thinning will reduce time to harvest from age 35 to age 20. (4)
	Montana University System				
	Unknown				
	Private Timber Lands				
	Idaho Dept. of Land				
Unit 4: North Cascades	WADNR	\$975	\$317	\$149	Impacts based on compliance with all aspects of lynx management plan. (5)
Notes:					
(1) Wagner, Robert G., Bowling, Ernest, and Seymour, Robert. 2003. Assessing Silviculture Research Priorities for Maine Using Wood Supply Analysis. Technical Bulletin 186. February 2003 Maine Agricultural and Forest Experiment Station. The University of Maine. Accessed at http://library.umaine.edu/cfru/pubs/CFRU309.pdf on March 14, 2006. Additional model runs by Ernest Bowling, JW Sewall on June 15, 2006.					
(2) Personal communication with Bill Berguson NRRI, April 6, 2006; Natural Resource Research Institute, Winter 1999. "Aspen Thinning Improves Timber Yield." Available at http://www.nrri.umn.edu/default/news/1999news/w99now.pdf ; and, 2005 Stumpage Price Report faxed by Jon Nelson 4-7-06; price for Aspen pulp & bolts.					
(3) Personal communication with Scott McLeod, MTDNRC, April 10, 2006; BBER, U. MT, Montana Sawlog and Veneer Log Price Report, July - September, 2005. Accessed at: http://www.bber.umt.edu/content/?x=1084 .					
(4) Email communication from Patrick Seymour, Idaho Department of Lands, March 15, 2006.					
(5) Estimates provided by WADNR are included in Scenario 1 and are based on compliance with all aspects of lynx management plan. Personal communication with Scott Fisher, WADNR, March 16, 2006.					
(6) For Unit 3, benefits are shown as zero, assuming that seven percent discount rate is inappropriate discount rate as it results in net benefits to the land manager of precluding pre-commercial thinning.					

EXHIBIT D-8. ANALYSIS OF PRE-COMMERCIAL THINNING IMPACTS: MINNESOTA AND MONTANA

CRITICAL HABITAT UNIT	SUBUNIT	ANNUAL PRE-COMMERCIAL THINNING ACREAGE (1)	CALCULATION OF COST SAVINGS			CALCULATION OF LOST VALUE DUE TO DECREASED YIELD		
			COST PER ACRE OF PRE-COMMERCIAL THINNING (2)	ANNUAL COST SAVINGS	YEARS ACCRUED (3)	PER ACRE VALUE OF DECREASED YIELD WITHOUT PRE-COMMERCIAL THINNING (3)	ANNUAL LOST VALUE	YEARS ACCRUED (3)
Unit 2: Minnesota	Superior National Forest	4,734	\$81	\$383,000	2006 - 2065	\$650	\$3,080,000	2036 - 2105
	MNDNR	5,075	\$81	\$411,000	2006 - 2065	\$650	\$3,310,000	2036 - 2105
	Private Timber Lands	121	\$81	\$9,870	2006 - 2065	\$650	\$78,700	2036 - 2105
	Unknown	8,895	\$81	\$721,000	2006 - 2065	\$650	\$5,790,000	2036 - 2105
Unit 3: Northern Rockies	MTDNRC	1,500	\$132	\$198,000	2006 - 2039	\$450	\$6,230,000	2071 - 2105
	Montana University System	217	\$132	\$28,600	2006 - 2039	\$450	\$900,000	2071 - 2105
	Private Timber Lands	4,282	\$132	\$565,000	2006 - 2039	\$450	\$17,800,000	2071 - 2105
	Unknown	6,440	\$132	\$850,000	2006 - 2039	\$450	\$26,800,000	2071 - 2105

Notes: Totals may not sum due to rounding.
 (1) See Exhibit D-5.
 (2) Minnesota regional average based on cost estimates provided by Lake County Lands Department, MNDNR, UPM Blandin, Natural Resource Research Institute, and Potlatch Corporation. Montana regional average based on cost estimates provided by USFS Region 1, Idaho Department of Land, and MTDNRC.
 (3) Based on assumptions outlined in Exhibit D-7.

EXHIBIT D-9. SUPERIOR NATIONAL FOREST SUBUNIT: EXAMPLE OF PRE-COMMERCIAL THINNING IMPACT CALCULATION (2006- 2105)

YEAR	COST OF PRE-COMMERCIAL THINNING	LOST VALUE FROM NOT PRE-COMMERCIAL THINNING	NET IMPACTS OF PRECLUDING PRE-COMMERCIAL THINNING		
			UNDISCOUNTED	PRESENT VALUE 3%	PRESENT VALUE 7%
<i>A</i>	<i>B</i>	<i>C</i>	<i>D = C - B</i>	$E = D / (1.03)^{(A-2006)}$	$F = D / (1.07)^{(A-2006)}$
2006	\$383,000	\$0	(\$383,000)	(\$383,000)	(\$383,000)
2007	\$383,000	\$0	(\$383,000)	(\$372,000)	(\$358,000)
2008	\$383,000	\$0	(\$383,000)	(\$361,000)	(\$335,000)
2009	\$383,000	\$0	(\$383,000)	(\$351,000)	(\$313,000)
2010	\$383,000	\$0	(\$383,000)	(\$341,000)	(\$293,000)
2011	\$383,000	\$0	(\$383,000)	(\$331,000)	(\$273,000)
2012	\$383,000	\$0	(\$383,000)	(\$321,000)	(\$255,000)
2013	\$383,000	\$0	(\$383,000)	(\$312,000)	(\$239,000)
2014	\$383,000	\$0	(\$383,000)	(\$303,000)	(\$223,000)
2015	\$383,000	\$0	(\$383,000)	(\$294,000)	(\$209,000)
2016	\$383,000	\$0	(\$383,000)	(\$285,000)	(\$195,000)
2017	\$383,000	\$0	(\$383,000)	(\$277,000)	(\$182,000)
2018	\$383,000	\$0	(\$383,000)	(\$269,000)	(\$170,000)
2019	\$383,000	\$0	(\$383,000)	(\$261,000)	(\$159,000)
2020	\$383,000	\$0	(\$383,000)	(\$253,000)	(\$149,000)
2021	\$383,000	\$0	(\$383,000)	(\$246,000)	(\$139,000)
2022	\$383,000	\$0	(\$383,000)	(\$239,000)	(\$130,000)
2023	\$383,000	\$0	(\$383,000)	(\$232,000)	(\$121,000)
2024	\$383,000	\$0	(\$383,000)	(\$225,000)	(\$113,000)
2025	\$383,000	\$0	(\$383,000)	(\$219,000)	(\$106,000)
2026	\$383,000	\$0	(\$383,000)	(\$212,000)	(\$99,100)
2027	\$383,000	\$0	(\$383,000)	(\$206,000)	(\$92,600)
2028	\$383,000	\$0	(\$383,000)	(\$200,000)	(\$86,500)
2029	\$383,000	\$0	(\$383,000)	(\$194,000)	(\$80,900)
2030	\$383,000	\$0	(\$383,000)	(\$189,000)	(\$75,600)
2031	\$383,000	\$0	(\$383,000)	(\$183,000)	(\$70,600)
2032	\$383,000	\$0	(\$383,000)	(\$178,000)	(\$66,000)
2033	\$383,000	\$0	(\$383,000)	(\$173,000)	(\$61,700)
2034	\$383,000	\$0	(\$383,000)	(\$168,000)	(\$57,700)
2035	\$383,000	\$0	(\$383,000)	(\$163,000)	(\$53,900)
2036	\$383,000	\$3,080,000	\$2,700,000	\$1,110,000	\$355,000
2037	\$383,000	\$3,080,000	\$2,700,000	\$1,080,000	\$331,000
2038	\$383,000	\$3,080,000	\$2,700,000	\$1,050,000	\$310,000
2039	\$383,000	\$3,080,000	\$2,700,000	\$1,018,000	\$290,000
2040	\$383,000	\$3,080,000	\$2,700,000	\$988,000	\$271,000
2041	\$383,000	\$3,080,000	\$2,700,000	\$960,000	\$253,000
2042	\$383,000	\$3,080,000	\$2,700,000	\$932,000	\$236,000
2043	\$383,000	\$3,080,000	\$2,700,000	\$904,000	\$221,000
2044	\$383,000	\$3,080,000	\$2,700,000	\$878,000	\$206,000
2045	\$383,000	\$3,080,000	\$2,700,000	\$853,000	\$193,000
2046	\$383,000	\$3,080,000	\$2,700,000	\$828,000	\$180,000
2047	\$383,000	\$3,080,000	\$2,700,000	\$804,000	\$169,000
2048	\$383,000	\$3,080,000	\$2,700,000	\$780,000	\$157,000

YEAR	COST OF PRE-COMMERCIAL THINNING	LOST VALUE FROM NOT PRE-COMMERCIAL THINNING	NET IMPACTS OF PRECLUDING PRE-COMMERCIAL THINNING		
			UNDISCOUNTED	PRESENT VALUE 3%	PRESENT VALUE 7%
2049	\$383,000	\$3,080,000	\$2,700,000	\$757,000	\$147,000
2050	\$383,000	\$3,080,000	\$2,700,000	\$735,000	\$138,000
2051	\$383,000	\$3,080,000	\$2,700,000	\$714,000	\$129,000
2052	\$383,000	\$3,080,000	\$2,700,000	\$693,000	\$120,000
2053	\$383,000	\$3,080,000	\$2,700,000	\$673,000	\$112,000
2054	\$383,000	\$3,080,000	\$2,700,000	\$653,000	\$105,000
2055	\$383,000	\$3,080,000	\$2,700,000	\$634,000	\$98,100
2056	\$383,000	\$3,080,000	\$2,700,000	\$616,000	\$91,700
2057	\$383,000	\$3,080,000	\$2,700,000	\$598,000	\$85,700
2058	\$383,000	\$3,080,000	\$2,700,000	\$581,000	\$80,100
2059	\$383,000	\$3,080,000	\$2,700,000	\$564,000	\$74,800
2060	\$383,000	\$3,080,000	\$2,700,000	\$547,000	\$69,900
2061	\$383,000	\$3,080,000	\$2,700,000	\$531,000	\$65,000
2062	\$383,000	\$3,080,000	\$2,700,000	\$516,000	\$61,100
2063	\$383,000	\$3,080,000	\$2,700,000	\$501,000	\$57,100
2064	\$383,000	\$3,080,000	\$2,700,000	\$486,000	\$53,300
2065	\$383,000	\$3,080,000	\$2,700,000	\$472,000	\$49,900
2066	\$383,000	\$3,080,000	\$2,700,000	\$458,000	\$46,600
2067	\$0	\$3,080,000	\$3,080,000	\$508,000	\$49,700
2068	\$0	\$3,080,000	\$3,080,000	\$493,000	\$46,500
2069	\$0	\$3,080,000	\$3,080,000	\$479,000	\$43,400
2070	\$0	\$3,080,000	\$3,080,000	\$465,000	\$40,600
2071	\$0	\$3,080,000	\$3,080,000	\$451,000	\$37,900
2072	\$0	\$3,080,000	\$3,080,000	\$438,000	\$35,500
2073	\$0	\$3,080,000	\$3,080,000	\$426,000	\$33,100
2074	\$0	\$3,080,000	\$3,080,000	\$413,000	\$31,000
2075	\$0	\$3,080,000	\$3,080,000	\$401,000	\$28,900
2076	\$0	\$3,080,000	\$3,080,000	\$389,000	\$27,100
2077	\$0	\$3,080,000	\$3,080,000	\$378,000	\$25,300
2078	\$0	\$3,080,000	\$3,080,000	\$367,000	\$23,600
2079	\$0	\$3,080,000	\$3,080,000	\$356,000	\$22,100
2080	\$0	\$3,080,000	\$3,080,000	\$346,000	\$20,600
2081	\$0	\$3,080,000	\$3,080,000	\$336,000	\$19,300
2082	\$0	\$3,080,000	\$3,080,000	\$326,000	\$18,000
2083	\$0	\$3,080,000	\$3,080,000	\$317,000	\$16,800
2084	\$0	\$3,080,000	\$3,080,000	\$307,000	\$15,700
2085	\$0	\$3,080,000	\$3,080,000	\$298,000	\$14,700
2086	\$0	\$3,080,000	\$3,080,000	\$290,000	\$13,800
2087	\$0	\$3,080,000	\$3,080,000	\$281,000	\$12,900
2088	\$0	\$3,080,000	\$3,080,000	\$273,000	\$12,000
2089	\$0	\$3,080,000	\$3,080,000	\$265,000	\$11,200
2090	\$0	\$3,080,000	\$3,080,000	\$257,000	\$10,500
2091	\$0	\$3,080,000	\$3,080,000	\$250,000	\$9,800
2092	\$0	\$3,080,000	\$3,080,000	\$243,000	\$9,160
2093	\$0	\$3,080,000	\$3,080,000	\$236,000	\$8,560
2094	\$0	\$3,080,000	\$3,080,000	\$229,000	\$8,000
2095	\$0	\$3,080,000	\$3,080,000	\$222,000	\$7,480
2096	\$0	\$3,080,000	\$3,080,000	\$216,000	\$6,990
2097	\$0	\$3,080,000	\$3,080,000	\$209,000	\$6,530

YEAR	COST OF PRE-COMMERCIAL THINNING	LOST VALUE FROM NOT PRE-COMMERCIAL THINNING	NET IMPACTS OF PRECLUDING PRE-COMMERCIAL THINNING		
			UNDISCOUNTED	PRESENT VALUE 3%	PRESENT VALUE 7%
2098	\$0	\$3,080,000	\$3,080,000	\$203,000	\$6,110
2099	\$0	\$3,080,000	\$3,080,000	\$197,000	\$5,710
2100	\$0	\$3,080,000	\$3,080,000	\$192,000	\$5,330
2101	\$0	\$3,080,000	\$3,080,000	\$186,000	\$4,980
2102	\$0	\$3,080,000	\$3,080,000	\$181,000	\$4,660
2103	\$0	\$3,080,000	\$3,080,000	\$175,000	\$4,350
2104	\$0	\$3,080,000	\$3,080,000	\$170,000	\$4,070
2105	\$0	\$3,080,000	\$3,080,000	\$165,000	\$3,800
Total	\$23,400,000	\$216,000,000	\$192,000,000	\$27,100,000	\$371,000
Annualized			\$1,920,000	\$858,000	\$26,000

EXHIBIT D-10. SUPERIOR NATIONAL FOREST SUBUNIT: EXAMPLE OF SCENARIO 2 IMPACT CALCULATION (2006- 2025)

YEAR	SCENARIO 1 IMPACTS			PRE-COMMERCIAL THINNING IMPACTS			SCENARIO 2 IMPACTS		
	UNDISCOUNTED	PRESENT VALUE 3%	PRESENT VALUE 7%	UNDISCOUNTED	PRESENT VALUE 3%	PRESENT VALUE 7%	UNDISCOUNTED	PRESENT VALUE 3%	PRESENT VALUE 7%
2006	\$175,000	\$175,000	\$175,000	\$1,920,000	\$858,000	\$26,000	\$2,100,000	\$1,030,000	\$201,000
2007	\$175,000	\$170,000	\$164,000	\$1,920,000	\$858,000	\$26,000	\$2,100,000	\$1,030,000	\$190,000
2008	\$175,000	\$165,000	\$153,000	\$1,920,000	\$858,000	\$26,000	\$2,100,000	\$1,020,000	\$179,000
2009	\$175,000	\$160,000	\$143,000	\$1,920,000	\$858,000	\$26,000	\$2,100,000	\$1,020,000	\$169,000
2010	\$175,000	\$155,000	\$134,000	\$1,920,000	\$858,000	\$26,000	\$2,100,000	\$1,010,000	\$160,000
2011	\$175,000	\$151,000	\$125,000	\$1,920,000	\$858,000	\$26,000	\$2,100,000	\$1,010,000	\$151,000
2012	\$175,000	\$147,000	\$117,000	\$1,920,000	\$858,000	\$26,000	\$2,100,000	\$1,000,000	\$143,000
2013	\$175,000	\$142,000	\$109,000	\$1,920,000	\$858,000	\$26,000	\$2,100,000	\$1,000,000	\$135,000
2014	\$175,000	\$138,000	\$102,000	\$1,920,000	\$858,000	\$26,000	\$2,100,000	\$996,000	\$128,000
2015	\$175,000	\$134,000	\$95,200	\$1,920,000	\$858,000	\$26,000	\$2,100,000	\$992,000	\$121,000
2016	\$175,000	\$130,000	\$89,000	\$1,920,000	\$858,000	\$26,000	\$2,100,000	\$988,000	\$115,000
2017	\$175,000	\$126,000	\$83,100	\$1,920,000	\$858,000	\$26,000	\$2,100,000	\$984,000	\$109,000
2018	\$175,000	\$123,000	\$77,700	\$1,920,000	\$858,000	\$26,000	\$2,100,000	\$981,000	\$104,000
2019	\$175,000	\$119,000	\$72,600	\$1,920,000	\$858,000	\$26,000	\$2,100,000	\$977,000	\$98,600
2020	\$175,000	\$116,000	\$67,900	\$1,920,000	\$858,000	\$26,000	\$2,100,000	\$974,000	\$93,900
2021	\$175,000	\$112,000	\$63,400	\$1,920,000	\$858,000	\$26,000	\$2,100,000	\$970,000	\$89,400
2022	\$175,000	\$109,000	\$59,300	\$1,920,000	\$858,000	\$26,000	\$2,100,000	\$967,000	\$85,300
2023	\$175,000	\$106,000	\$55,400	\$1,920,000	\$858,000	\$26,000	\$2,100,000	\$964,000	\$81,400
2024	\$175,000	\$103,000	\$51,800	\$1,920,000	\$858,000	\$26,000	\$2,100,000	\$961,000	\$77,800
2025	\$175,000	\$99,800	\$48,400	\$1,920,000	\$858,000	\$26,000	\$2,100,000	\$958,000	\$74,400
Total	\$3,500,000	\$2,680,000	\$1,980,000	\$38,500,000	\$17,200,000	\$520,000	\$42,000,000	\$19,800,000	\$2,500,000
Annualized	\$175,000	\$180,000	\$187,000	\$1,920,000	\$858,000	\$26,000	\$2,100,000	\$1,330,000	\$236,000

17. The difference in per acre impacts across the Units results from the underlying assumptions in the Wagner model applied in Maine and the simplified model used to estimate impacts in Minnesota and Montana. The model applied in Minnesota and Montana does not include impacts related to lost cash flows that would result from delaying harvests across ownerships (e.g., allowable cut effects).¹² If owners are no longer able to increase growth through yield enhancing practices such as pre-commercial thinning, they may compensate by adjusting harvest schedules to make standing timber last longer. The analysis in Minnesota and Montana only accounts for a reduction in harvest at the time at which increased yields would have been available on thinned acres.

D.1.3 ADDITIONAL BREAKDOWN OF MINNESOTA IMPACTS

18. Some tax-forfeit lands managed for timber purposes by Minnesota counties are included in the MNDNR and Unknown Landowner subunits.¹³ This section details the allocation of these impacts to Minnesota counties.

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19. The MNDNR subunit includes 253,737 acres managed by St. Louis County, 11,970 acres managed by Lake County, and 4,982 acres managed by Koochiching County; the remaining 236,780 acres of this subunit is assumed to be timberlands managed by MNDNR. Based on these acreages, impacts broken down as illustrated in Exhibit D-11.

EXHIBIT D-11. BREAKDOWN OF SCENARIO 2 IMPACTS: UNIT 2 MNDNR LANDS (2006 - 2025)

LANDOWNER	UNDISCOUNTED	PRESENT VALUE AT 3%	PRESENT VALUE AT 7%
MNDNR	\$96,300,000	\$8,580,000	\$186,000
Koochiching County	\$2,030,000	\$181,000	\$3,910
Lake County	\$4,870,000	\$434,000	\$9,380
St. Louis County	\$103,000,000	\$9,200,000	\$199,000
Totals	\$206,000,000	\$18,400,000	\$398,000
Note: Totals may not sum due to rounding. Cook County not included because it has less than five acres in this subunit.			

20. The Unknown landowner subunit includes 163,944 acres managed by St. Louis County, 102,521 acres managed by Lake County, and 7,236 acres managed by Koochiching County.¹⁴ For purposes of this analysis, the remaining 615,817 acres are assumed to be private timberlands.

¹² Allowable cut effect is defined as: "the allocation of anticipated future timber yields to the present allowable cut. Note: the allowable cut effect is employed to increase current harvest levels by spreading future growth over all the years in a rotation." (Seven Islands Land Co. website, http://www.sevenislands.com/General_Terms.htm.)

¹³ Acreages used to calculate impacts were based on IEc GIS analysis of GIS data provided by St. Louis County and Lake County, and GIS data available from MNDNR.

¹⁴ Based on IEc GIS analysis.

21. Based on these acreages, the breakdown of impacts under Scenario 1 and Scenario 2 are presented in Exhibits D-12 and D-13, respectively.

**EXHIBIT D-12. BREAKDOWN OF SCENARIO 1 IMPACTS: UNIT 2 UNKNOWN
LANDOWNER (2006 - 2025)**

LANDOWNER	UNDISCOUNTED	PRESENT VALUE AT 3%	PRESENT VALUE AT 7%
Private Timber Lands	\$3,690,000	\$3,410,000	\$3,090,000
Koochiching County	\$43,300	\$40,000	\$36,300
Lake County	\$614,000	\$567,000	\$515,000
St. Louis County	\$981,000	\$907,000	\$823,000
Totals	\$5,320,000	\$4,92,000	\$4,460,000
Note: Totals may not sum due to rounding. Cook County not included as it has less than five acres in this subunit.			

**EXHIBIT D-13. BREAKDOWN OF SCENARIO 2 IMPACTS: UNIT 2 UNKNOWN
LANDOWNER (2006 - 2025)**

LANDOWNER	UNDISCOUNTED	PRESENT VALUE AT 3%	PRESENT VALUE AT 7%
Private Timber Lands	\$53,800,000	\$25,700,000	\$3,770,000
Koochiching County	\$632,000	\$302,000	\$44,300
Lake County	\$8,950,000	\$4,280,000	\$627,000
St. Louis County	\$14,300,000	\$6,850,000	\$1,000,000
Totals	\$77,700,000	\$37,200,000	\$5,440,000
Note: Totals may not sum due to rounding. Cook County not included because it has less than 5 acres in this subunit.			

D.2 SENSITIVITY ANALYSIS

22. Because the actual amount of pre-commercial thinning occurring in the study area outside of Maine is not known, the analysis assumes that one percent of timberlands in the study area in Minnesota and Montana would be pre-commercially thinned in the absence of lynx conservation efforts. In Maine, based on available information, approximately 0.27 percent of timberland in the study area was pre-commercial thinned in 2004.¹⁵ To test the sensitivity of our model to this assumption of acreage pre-commercially thinned annually, the model for Minnesota and Montana was run applying the assumption of 0.27 percent in place of one percent. The comparison of results for subunits where pre-commercial thinning acreage is not known is shown below in Exhibit D-14.

¹⁵ Approximately 16,417 acres of pre-commercial thinning were conducted in the northern region of Maine in 2004 (Email communication with Ken Laustsen, Maine Forest Service). This is equivalent to 0.27 percent of the 6.3 million acres of timberland in the study area in Maine.

EXHIBIT D-14. SENSITIVITY ANALYSIS: 1% VERSUS 0.27% ANNUAL PRE-COMMERCIAL THINNING ACREAGE

CRITICAL HABITAT UNIT	SUBUNIT	ASSUMING 1% OF ACREAGE PRE-COMMERCIAL THINNING		ASSUMING 0.27% OF ACREAGE PRE-COMMERCIAL THINNING	
		ANNUAL ACREAGE OF PRE-COMMERCIAL THINNING	TOTAL UNDISCOUNTED IMPACTS (2006 - 2105)	ANNUAL ACREAGE OF PRE-COMMERCIAL THINNING	TOTAL UNDISCOUNTED IMPACTS (2006 - 2105)
Unit 2: Minnesota	Superior National Forest	4,734	\$192,000,000	1,278	\$52,000,000
	MNDNR	5,075	\$206,000,000	1,370	\$55,700,000
	Private Timber Lands	121	\$4,910,000	33	\$1,330,000
	Unknown	8,895	\$362,000,000	2,402	\$97,600,000
Unit 3: Northern Rockies	Montana University System	217	\$30,500,000	58	\$8,230,000
	Private Timber Lands	4,282	\$603,000,000	1,156	\$163,000,000
	Unknown	6,440	\$907,000,000	1,739	\$245,000,000

APPENDIX E | RECREATION BENEFITS TRANSFER DISCUSSION

1. This appendix discusses the benefits transfer applied in Section 5 of this analysis to estimate a reduction in social welfare that may occur associated with increased congestion on snowmobile trails.
2. The economics literature has considered the reduction in social welfare that can result from congestion at a recreational site. For example, Cicchetti and Smith (1976) considered how varying the levels of congestion at a low-density recreation area in a National Forest varied the overall consumer surplus provided to recreators in the area. Only one study, however, provides insight into whether snowmobilers experience a reduction in surplus in response to an increase in congestion. This study was conducted for the National Park Service study to assess the impacts of temporary changes in snowmobiling regulations at Yellowstone National Park (RTI International, 2004 and 2005) provides insight into whether snowmobilers experience a reduction in surplus in response to an increase in congestion.¹
3. The Yellowstone study applied a travel cost (random utility) model to assess the changes in surplus associated with varying management regimes. In particular, the Yellowstone study estimated per-day willingness to pay values under various alternative management regimes. These alternatives varied in terms of the mix in mode of access (e.g., snowcoach, guided snowmobile, unguided snowmobile) as well as daily entry limits (i.e., degree of crowding). The values reported by the authors are relative to a scenario in which there is a ban on snowmobiles in the park. This study received considerable review and public comment, and represents a high-quality random utility model (RUM).
4. The Yellowstone study reports that scenarios in which there was less crowding provided snowmobilers with a greater per-day surplus; that is, we would expect snowmobilers at Yellowstone to hold a slightly higher willingness to pay for a day of snowmobiling under conditions of "low crowding" versus conditions of "moderate crowding." For the Yellowstone sample of snowmobilers, congestion was a negative attribute of their recreational experience. Specifically, mean willingness to pay across the scenarios based on the moderate crowding condition varied from \$230 to \$260, while mean willingness to pay under the low crowding condition varied from \$300 to \$320. Thus, The implied reduction in willingness to pay resulting from a change from low to moderate crowding was \$60-\$70 per day, representing a reduction in willingness to pay of 22 percent due to greater congestion.

¹ For a complete discussion of the data relied upon and model developed, see RTI, International 2004. Economic Analysis of Temporary Regulations on Snowmobile Use in the Greater Yellowstone Area. Final Report; and RTI, International 2005. Winter 2002-2003 Visitor Survey: Yellowstone and Grand Teton National Parks. Revised Final Report.

5. The above estimates are based on a definition of "low" crowding equal to "fewer than 250 machines in Yellowstone per day." The definition of "moderate" crowding is "250-700 machines in Yellowstone per day". With about 185 miles of groomed trail in Yellowstone, these densities equate to one to nearly four snowmobilers per mile per day. Information is not available regarding the per mile density of snowmobilers in the study area. For perspective, however, the 60,427 snowmobilers per year in Yellowstone recreate on 185 miles of trail (326 snowmobilers per mile per year), while in Unit 1 of the study area, an estimated 26,468 participants recreate over 784 miles of trail (35 snowmobilers per mile per year).²
6. This analysis interprets these definitions of crowding to imply that moderate crowding represents about three times as many participants as low crowding, or a 300 percent increase in crowding. Thus, for a 300 percent increase in crowding, The Yellowstone study found a 22 percent reduction in willingness to pay, or about a 0.07 percentage point change in willingness to pay for each one percentage point increase in crowding. This reduction in willingness to pay is applied in this analysis. In Maine, the predicted increase in registrants is approximately 3.5 percent per year resulting in an increase in snowmobilers of 92 percent between 2006 and 2025. Even considering this projected increase, the estimated number of snowmobilers per mile per year in Maine in 2025 will be 67, compared to 326 in Yellowstone based on the 2004 study.
7. In addition to consideration of the quality of the underlying study, a principal factor to consider in transferring information from a study conducted at one location to another location is whether the sites are sufficiently similar. In comparing Yellowstone National Park to northern Maine and sites in Minnesota there are numerous and significant differences. Principal among these differences is the extent to which congestion currently affects snowmobilers in Maine. A qualitative survey-based consumer profile conducted in Maine in 1996 ranked the attribute of "few people using trails" as between somewhat important and very important to snowmobilers when deciding where to snowmobile in Maine.³ The Yellowstone study notes that snowmobilers are attracted to the park for the chance to see unique natural features such as wildlife, and geysers, and may not mind what some see as a hindering 45-mph speed limit in place in the park.⁴ However, the existing literature base does not provide information specific to Maine; in the absence of site-specific information, this analysis applies general estimates of the likely impact of increased congestion from the Yellowstone study to areas in the study area. Given the paucity of underlying research, the magnitude of error inherent in this transfer is unknown, and the results presented should be interpreted in this context.

² Source: Maine Snowmobile Association registration data, and trail GIS layer.

³ Reiling, et al. 1996. An Economic Evaluation of Snowmobiling in Maine. Conducted by Stephen Reiling, Department of Resource Economics and Policy University of Maine, Orono, Maine for The Maine Snowmobile Association.

⁴ RTI, 2004. p.3-22.

APPENDIX F | DETAILED UNIT BY UNIT IMPACTS

APPENDIX F-1. DETAILED IMPACTS TO ALL ACTIVITIES

UNIT/SUBUNIT	PAST (UNDISCOUNTED)		PAST PRESENT VALUE 3%		PAST PRESENT VALUE 7%		FUTURE (UNDISCOUNTED)		FUTURE PRESENT VALUE 3%		FUTURE PRESENT VALUE 7%		ANNUALIZED 3%		ANNUALIZED 7%	
	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
Proposed Critical Habitat																
UNIT 1: MAINE																
National Park Service	-	-	-	-	-	-	\$303,000	\$307,000	\$247,000	\$250,000	\$192,000	\$194,000	\$16,600	\$16,800	\$18,100	\$18,300
U.S. Fish and Wildlife Service	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Maine Dept of Conservation	-	-	-	-	-	-	\$2,210,000	\$13,600,000	\$2,030,000	\$8,390,000	\$1,820,000	\$9,220,000	\$136,000	\$564,000	\$172,000	\$871,000
Maine Dept. of Inland Fish & Wildlife	-	-	-	-	-	-	\$255,000	\$260,000	\$205,000	\$209,000	\$156,000	\$159,000	\$13,800	\$14,000	\$14,800	\$15,000
Baxter State Park Authority	-	-	-	-	-	-	\$1,400,000	\$1,410,000	\$1,270,000	\$1,280,000	\$1,130,000	\$1,140,000	\$85,600	\$85,900	\$107,000	\$107,000
Private Timber Lands	\$1,650,000	\$1,710,000	\$1,830,000	\$1,900,000	\$2,100,000	\$2,180,000	\$36,500,000	\$250,000,000	\$33,100,000	\$153,000,000	\$29,600,000	\$168,000,000	\$2,230,000	\$10,300,000	\$2,790,000	\$15,900,000
Conservation NGO	-	-	-	-	-	-	\$6,780,000	\$7,090,000	\$3,600,000	\$3,740,000	\$3,090,000	\$3,200,000	\$242,000	\$252,000	\$292,000	\$302,000
Unknown Landowner	-	-	-	-	-	-	\$15,600,000	\$35,600,000	\$12,200,000	\$25,500,000	\$9,210,000	\$21,300,000	\$818,000	\$1,710,000	\$869,000	\$2,010,000
Subtotal Unit 1	\$1,650,000	\$1,710,000	\$1,830,000	\$1,900,000	\$2,100,000	\$2,180,000	\$63,100,000	\$308,000,000	\$52,600,000	\$192,000,000	\$45,200,000	\$203,000,000	\$3,540,000	\$12,900,000	\$4,270,000	\$19,200,000
UNIT 2: MINNESOTA																
Superior National Forest	\$803,000	\$887,000	\$858,000	\$954,000	\$938,000	\$1,050,000	\$10,000,000	\$50,600,000	\$7,570,000	\$26,200,000	\$5,520,000	\$7,030,000	\$509,000	\$1,760,000	\$521,000	\$664,000
Minnesota Dept. of Natural Resources	\$109,000	\$138,000	\$117,000	\$148,000	\$128,000	\$162,000	\$6,450,000	\$49,100,000	\$5,310,000	\$24,700,000	\$4,290,000	\$5,500,000	\$357,000	\$1,660,000	\$405,000	\$519,000
Private Timber Lands	-	-	-	-	-	-	\$333,000	\$1,320,000	\$272,000	\$715,000	\$212,000	\$230,000	\$18,300	\$48,000	\$20,000	\$21,600
Private Mining Lands	\$67,500	\$67,500	\$72,800	\$72,800	\$80,500	\$80,500	\$29,000	\$30,600	\$21,800	\$23,000	\$15,700	\$16,600	\$1,460	\$1,540	\$1,480	\$1,560
Unknown Landowner	\$66,500	\$66,500	\$71,700	\$71,700	\$79,300	\$79,300	\$13,700,000	\$88,300,000	\$11,400,000	\$45,300,000	\$9,340,000	\$11,500,000	\$764,000	\$3,050,000	\$881,000	\$1,080,000
Subtotal Unit 2	\$1,050,000	\$1,160,000	\$1,120,000	\$1,250,000	\$1,230,000	\$1,380,000	\$30,500,000	\$189,000,000	\$24,500,000	\$97,000,000	\$19,400,000	\$24,300,000	\$1,650,000	\$6,520,000	\$1,830,000	\$2,290,000
UNIT 3: NORTHERN ROCKY MOUNTAINS																
U.S. Fish and Wildlife Service	-	-	-	-	-	-	\$287,000	\$293,000	\$230,000	\$234,000	\$174,000	\$177,000	\$15,400	\$15,700	\$16,400	\$16,700
U.S. Bureau of Reclamation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
U.S. Bureau of Land Management	\$68,000	\$68,000	\$73,300	\$73,300	\$81,100	\$81,100	\$256,000	\$260,000	\$201,000	\$204,000	\$149,000	\$150,000	\$13,500	\$13,700	\$14,000	\$14,200
Montana Dept. of Natural Resources	\$306,000	\$306,000	\$336,000	\$336,000	\$381,000	\$381,000	\$44,100,000	\$44,200,000	\$11,500,000	\$11,500,000	\$662,000	\$694,000	\$772,000	\$775,000	\$62,500	\$65,600
Montana Fish, Wildlife, and Parks	\$300	\$501	\$318	\$532	\$344	\$574	\$2,650,000	\$2,670,000	\$2,580,000	\$2,600,000	\$2,520,000	\$2,530,000	\$173,000	\$175,000	\$238,000	\$239,000
Montana University System	-	-	-	-	-	-	\$724,000	\$6,920,000	\$577,000	\$2,100,000	\$444,000	\$500,000	\$38,800	\$141,000	\$41,900	\$47,200
Idaho Dept. of Land	-	-	-	-	-	-	\$230,000	\$230,000	\$182,000	\$258,000	\$135,000	\$272,000	\$12,200	\$17,300	\$12,800	\$25,600
Municipal/City Government	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Private Timber Lands	\$67,000	\$67,000	\$72,200	\$72,200	\$79,900	\$79,900	\$3,050,000	\$124,000,000	\$2,730,000	\$31,300,000	\$2,410,000	\$218,000	\$184,000	\$2,110,000	\$228,000	\$20,500
Conservation NGO	-	-	-	-	-	-	\$547,000	\$576,000	\$458,000	\$480,000	\$372,000	\$388,000	\$30,800	\$32,300	\$35,100	\$36,600
Unknown landowner	-	-	-	-	-	-	\$8,870,000	\$192,000,000	\$7,370,000	\$51,300,000	\$6,020,000	\$3,480,000	\$495,000	\$3,450,000	\$568,000	\$328,000
Subtotal Unit 3	\$441,000	\$441,000	\$482,000	\$482,000	\$543,000	\$543,000	\$60,800,000	\$370,000,000	\$25,800,000	\$100,000,000	\$12,900,000	\$8,400,000	\$1,740,000	\$6,730,000	\$1,220,000	\$793,000
UNIT 4: NORTH CASCADES																
Washington Dept of Fish and Wildlife	\$60,000	\$60,000	\$66,600	\$66,600	\$76,500	\$76,500	\$20,000	\$180,000	\$19,700	\$134,000	\$19,300	\$94,000	\$1,330	\$8,980	\$1,830	\$8,870
Washington Dept of Natural Resources	\$7,150,000	\$7,150,000	\$7,950,000	\$7,950,000	\$9,140,000	\$9,140,000	\$21,000,000	\$21,000,000	\$21,600,000	\$21,600,000	\$22,400,000	\$22,400,000	\$1,450,000	\$1,450,000	\$2,110,000	\$2,110,000
Unknown Private Landowners	\$9,500	\$9,500	\$10,200	\$10,200	\$11,300	\$11,300	-	-	-	-	-	-	-	-	-	-
Subtotal Unit 4	\$7,220,000	\$7,220,000	\$8,030,000	\$8,030,000	\$9,230,000	\$9,230,000	\$21,100,000	\$21,200,000	\$21,600,000	\$21,800,000	\$22,400,000	\$22,500,000	\$1,450,000	\$1,460,000	\$2,110,000	\$2,120,000
SUBTOTAL AREAS PROPOSED FOR DESIGNATION	\$10,400,000	\$10,500,000	\$11,500,000	\$11,700,000	\$13,100,000	\$13,300,000	\$175,000,000	\$889,000,000	\$125,000,000	\$411,000,000	\$99,900,000	\$259,000,000	\$8,380,000	\$27,600,000	\$9,430,000	\$24,400,000

UNIT/SUBUNIT	PAST (UNDISCOUNTED)		PAST PRESENT VALUE 3%		PAST PRESENT VALUE 7%		FUTURE (UNDISCOUNTED)		FUTURE PRESENT VALUE 3%		FUTURE PRESENT VALUE 7%		ANNUALIZED 3%		ANNUALIZED 7%	
	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
Areas Considered for Exclusion																
UNIT 1: MAINE																
Tribal lands	\$60,800	\$60,800	\$64,900	\$64,900	\$70,800	\$70,800	\$283,000	\$2,380,000	\$231,000	\$1,210,000	\$187,000	\$912,000	\$15,600	\$81,200	\$17,700	\$86,100
Subtotal Unit 1	\$60,800	\$60,800	\$64,900	\$64,900	\$70,800	\$70,800	\$283,000	\$2,380,000	\$231,000	\$1,210,000	\$187,000	\$912,000	\$15,600	\$81,200	\$17,700	\$86,100
UNIT 2: MINNESOTA																
Voyageurs National Park	\$60,100	\$60,100	\$66,400	\$66,400	\$75,700	\$75,700	\$1,100,000	\$1,110,000	\$995,000	\$1,000,000	\$885,000	\$890,000	\$66,900	\$67,400	\$83,500	\$84,000
Tribal Lands	\$85,500	\$85,500	\$92,200	\$92,200	\$102,000	\$102,000	\$1,530,000	\$2,430,000	\$1,170,000	\$1,860,000	\$870,000	\$1,380,000	\$78,800	\$125,000	\$82,100	\$130,000
Subtotal Unit 2	\$146,000	\$146,000	\$159,000	\$159,000	\$178,000	\$178,000	\$2,630,000	\$3,540,000	\$2,170,000	\$2,860,000	\$1,750,000	\$2,270,000	\$146,000	\$192,000	\$166,000	\$214,000
UNIT 3: NORTHERN ROCKY MOUNTAINS																
Glacier National Park	\$958,000	\$1,260,000	\$1,030,000	\$1,360,000	\$1,140,000	\$1,510,000	\$6,050,000	\$6,050,000	\$5,560,000	\$5,560,000	\$5,030,000	\$5,030,000	\$374,000	\$374,000	\$475,000	\$475,000
BLM: Butte Resource Area	-	-	-	-	-	-	\$246,000	\$246,000	\$222,000	\$222,000	\$196,000	\$196,000	\$14,900	\$14,900	\$18,500	\$18,500
Subtotal Unit 3	\$958,000	\$1,260,000	\$1,030,000	\$1,360,000	\$1,140,000	\$1,510,000	\$6,290,000	\$6,290,000	\$5,780,000	\$5,780,000	\$5,230,000	\$5,230,000	\$388,000	\$388,000	\$494,000	\$494,000
UNIT 4: NORTH CASCADES																
North Cascades National Park	\$141,000	\$141,000	\$151,000	\$151,000	\$164,000	\$164,000	\$550,000	\$550,000	\$476,000	\$476,000	\$401,000	\$401,000	\$32,000	\$32,000	\$37,900	\$37,900
Lake Chelan National Recreation Area	-	-	-	-	-	-	\$433,000	\$433,000	\$367,000	\$367,000	\$302,000	\$302,000	\$24,700	\$24,700	\$28,500	\$28,500
Subtotal Unit 4	\$141,000	\$141,000	\$151,000	\$151,000	\$164,000	\$164,000	\$983,000	\$983,000	\$844,000	\$844,000	\$703,000	\$703,000	\$56,700	\$56,700	\$66,400	\$66,400
SUBTOTAL AREAS CONSIDERED FOR EXCLUSION	\$1,310,000	\$1,610,000	\$1,410,000	\$1,740,000	\$1,560,000	\$1,920,000	\$10,200,000	\$13,200,000	\$9,020,000	\$10,700,000	\$7,870,000	\$9,110,000	\$606,000	\$719,000	\$743,000	\$860,000

APPENDIX F-2. DETAILED SILVICULTURAL ACTIVITIES IMPACTS

UNIT/SUBUNIT	PAST (UNDISCOUNTED)		PAST PRESENT VALUE 3%		PAST PRESENT VALUE 7%		FUTURE (UNDISCOUNTED)		FUTURE PRESENT VALUE 3%		FUTURE PRESENT VALUE 7%		ANNUALIZED 3%		ANNUALIZED 7%	
	Scenario 1	Scenario 2	Scenario 1	Scenario 2	Scenario 1	Scenario 2	Scenario 1	Scenario 2	Scenario 1	Scenario 2	Scenario 1	Scenario 2	Scenario 1	Scenario 2	Scenario 1	Scenario 2
Proposed Critical Habitat																
UNIT 1: MAINE																
National Park Service	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
U.S. Fish and Wildlife Service	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Maine Dept of Conservation	-	-	-	-	-	-	-	\$11,300,000	-	\$6,270,000	-	\$7,330,000	-	\$421,000	-	\$692,000
Maine Dept. of Inland Fish & Wildlife	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Baxter State Park Authority	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Private Timber Lands	-	-	-	-	-	-	\$31,100,000	\$240,000,000	\$28,900,000	\$145,000,000	\$26,400,000	\$162,500,000	\$1,940,000	\$9,760,000	\$2,490,000	\$15,300,000
Conservation NGO	-	-	-	-	-	-	\$5,170,000	\$5,460,000	\$2,140,000	\$2,260,000	\$1,780,000	\$1,880,000	\$144,000	\$152,000	\$168,000	\$178,000
Unknown Landowner	-	-	-	-	-	-	\$1,640,000	\$11,250,000	\$1,500,000	\$6,840,000	\$1,340,000	\$7,590,000	\$101,000	\$460,000	\$126,000	\$717,000
Subtotal Unit 1	-	-	-	-	-	-	\$37,900,000	\$268,000,000	\$32,500,000	\$161,000,000	\$29,500,000	\$179,000,000	\$2,190,000	\$10,800,000	\$2,780,000	\$16,900,000
UNIT 2: MINNESOTA																
Superior National Forest	\$180,000	\$180,000	\$187,000	\$187,000	\$197,000	\$197,000	\$3,500,000	\$41,100,000	\$2,680,000	\$19,800,000	\$1,980,000	\$2,500,000	\$180,000	\$1,330,000	\$187,000	\$236,000
Minnesota Dept. of Natural Resources	-	-	-	-	-	-	-	\$41,300,000	-	\$18,400,000	-	\$558,000	-	\$1,240,000	-	\$52,600
Private Timber Lands	-	-	-	-	-	-	\$295,000	\$1,280,000	\$243,000	\$681,000	\$191,000	\$204,000	\$16,300	\$45,800	\$18,000	\$19,300
Private Mining Lands	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown Landowner	-	-	-	-	-	-	\$5,320,000	\$77,700,000	\$4,920,000	\$37,200,000	\$4,460,000	\$5,440,000	\$331,000	\$2,500,000	\$421,000	\$514,000
Subtotal Unit 2	\$180,000	\$180,000	\$187,000	\$187,000	\$197,000	\$197,000	\$9,120,000	\$162,000,000	\$7,840,000	\$76,100,000	\$6,640,000	\$8,708,000	\$527,000	\$5,110,000	\$627,000	\$822,000
UNIT 3: NORTHERN ROCKY MOUNTAINS																
U.S. Fish and Wildlife Service	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
U.S. Bureau of Reclamation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
U.S. Bureau of Land Management	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Montana Dept. of Natural Resources	-	-	-	-	-	-	\$43,000,000	\$43,000,000	\$10,600,000	\$10,600,000	-	-	\$714,000	\$714,000	-	-
Montana Fish, Wildlife, and Parks	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Montana University System	-	-	-	-	-	-	-	\$6,100,000	-	\$1,450,000	-	-	-	\$97,100	-	-
Idaho Dept. of Land	-	-	-	-	-	-	-	-	-	\$76,000	-	\$136,000	-	\$5,100	-	\$12,900
Municipal/City Government	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Private Timber Lands	-	-	-	-	-	-	\$2,680,000	\$123,000,000	\$2,460,000	\$31,000,000	\$2,220,000	-	\$165,000	\$2,090,000	\$209,000	-
Conservation NGO	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown landowner	-	-	-	-	-	-	\$3,920,000	\$185,000,000	\$3,610,000	\$46,600,000	\$3,270,000	-	\$243,000	\$3,130,000	\$309,000	-
Subtotal Unit 3	-	-	-	-	-	-	\$49,600,000	\$358,000,000	\$16,700,000	\$89,800,000	\$5,490,000	\$136,000	\$1,120,000	\$6,030,000	\$518,000	\$12,900
UNIT 4: NORTH CASCADES																
Washington Dept of Fish and Wildlife	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Washington Dept of Natural Resources	\$6,140,000	\$6,140,000	\$6,820,000	\$6,820,000	\$7,840,000	\$7,840,000	\$20,500,000	\$20,500,000	\$21,100,000	\$21,100,000	\$21,900,000	\$21,900,000	\$1,420,000	\$1,420,000	\$2,070,000	\$2,070,000
Unknown Private Landowners	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal Unit 4	\$6,140,000	\$6,140,000	\$6,820,000	\$6,820,000	\$7,840,000	\$7,840,000	\$20,500,000	\$20,500,000	\$21,100,000	\$21,100,000	\$21,900,000	\$21,900,000	\$1,420,000	\$1,420,000	\$2,070,000	\$2,070,000
SUBTOTAL AREAS PROPOSED FOR DESIGNATION	\$6,320,000	\$6,320,000	\$7,010,000	\$7,010,000	\$8,030,000	\$8,030,000	\$117,000,000	\$809,000,000	\$78,100,000	\$348,000,000	\$63,500,000	\$210,000,000	\$5,250,000	\$23,400,000	\$6,000,000	\$19,800,000

APPENDIX F-3. DETAILED RECREATION IMPACTS

UNIT/SUBUNIT	PAST (UNDISCOUNTED)		PAST PRESENT VALUE 3%		PAST PRESENT VALUE 7%		FUTURE (UNDISCOUNTED)		FUTURE PRESENT VALUE 3%		FUTURE PRESENT VALUE 7%		ANNUALIZED 3%		ANNUALIZED 7%	
	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
Proposed Critical Habitat																
UNIT 1: MAINE																
National Park Service	-	-	-	-	-	-	-	\$3,770	-	\$2,800	-	\$1,980	-	\$188	-	\$187
U.S. Fish and Wildlife Service	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Maine Dept of Conservation	-	-	-	-	-	-	-	\$131,000	-	\$96,700	-	\$68,600	-	\$6,500	-	\$6,480
Maine Dept. of Inland Fish & Wildlife	-	-	-	-	-	-	-	\$5,720	-	\$4,240	-	\$3,000	-	\$285	-	\$283
Baxter State Park Authority	-	-	-	-	-	-	-	\$5,350	-	\$3,960	-	\$2,810	-	\$266	-	\$265
Private Timber Lands	\$300,000	\$360,000	\$333,000	\$400,000	\$383,000	\$459,000	\$1,000,000	\$2,550,000	\$766,000	\$1,920,000	\$567,000	\$1,390,000	\$51,500	\$129,000	\$53,500	\$131,000
Conservation NGO	-	-	-	-	-	-	-	\$31,100	-	\$23,000	-	\$16,300	-	\$1,550	-	\$1,540
Unknown Landowner	-	-	-	-	-	-	-	\$212,000	-	\$157,000	-	\$111,000	-	\$10,500	-	\$10,500
Subtotal Unit 1	\$300,000	\$360,000	\$333,000	\$400,000	\$383,000	\$459,000	\$1,000,000	\$2,940,000	\$766,000	\$2,210,000	\$567,000	\$1,590,000	\$51,500	\$148,000	\$53,500	\$150,000
UNIT 2: MINNESOTA																
Superior National Forest	-	-	-	-	-	-	-	\$55,900	-	\$41,800	-	\$30,000	-	\$2,810	-	\$2,830
Minnesota Dept. of Natural Resources	\$300	\$501	\$318	\$532	\$344	\$574	\$24,100	\$85,400	\$23,600	\$69,500	\$23,200	\$56,000	\$1,590	\$4,670	\$2,190	\$5,300
Private Timber Lands	-	-	-	-	-	-	-	\$2,010	-	\$1,500	-	\$1,080	-	\$101	-	\$102
Private Mining Lands	-	-	-	-	-	-	-	\$1,620	-	\$1,210	-	\$867	-	\$81	-	\$82
Unknown Landowner	-	-	-	-	-	-	-	\$107,000	-	\$80,400	-	\$57,700	-	\$5,400	-	\$5,440
Subtotal Unit 2	\$300	\$501	\$318	\$532	\$344	\$574	\$24,100	\$252,000	\$23,600	\$194,000	\$23,200	\$146,000	\$1,590	\$13,100	\$2,190	\$13,800
UNIT 3: NORTHERN ROCKY MOUNTAINS																
U.S. Fish and Wildlife Service	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
U.S. Bureau of Reclamation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
U.S. Bureau of Land Management	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Montana Dept. of Natural Resources	-	-	-	-	-	-	-	\$14,500	-	\$10,800	-	\$7,710	-	\$725	-	\$728
Montana Fish, Wildlife, and Parks	\$300	\$501	\$318	\$532	\$344	\$574	\$2,000	\$17,800	\$1,530	\$13,300	\$1,130	\$9,600	\$103	\$897	\$107	\$906
Montana University System	-	-	-	-	-	-	-	\$14,500	-	\$10,800	-	\$7,710	-	\$725	-	\$728
Idaho Dept. of Land	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Municipal/City Government	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Private Timber Lands	-	-	-	-	-	-	-	\$14,500	-	\$10,800	-	\$7,710	-	\$725	-	\$728
Conservation NGO	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown landowner	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal Unit 3	\$300	\$501	\$318	\$532	\$344	\$574	\$2,000	\$61,200	\$1,530	\$45,700	\$1,130	\$32,700	\$103	\$3,070	\$107	\$3,090
UNIT 4: NORTH CASCADES																
Washington Dept of Fish and Wildlife	\$60,000	\$60,000	\$66,600	\$66,600	\$76,500	\$76,500	\$20,000	\$180,000	\$19,700	\$134,000	\$19,300	\$94,000	\$1,330	\$8,980	\$1,830	\$8,870
Washington Dept of Natural Resources	-	-	-	-	-	-	-	\$31,700	-	\$23,100	-	\$16,100	-	\$1,560	-	\$1,510
Unknown Private Landowners	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal Unit 4	\$60,000	\$60,000	\$66,600	\$66,600	\$76,500	\$76,500	\$20,000	\$212,000	\$19,700	\$157,000	\$19,300	\$110,000	\$1,330	\$10,500	\$1,830	\$10,400
SUBTOTAL AREAS PROPOSED FOR DESIGNATION	\$360,600	\$421,000	\$400,000	\$467,000	\$460,000	\$537,000	\$1,050,000	\$3,460,000	\$811,000	\$2,600,000	\$610,000	\$1,880,000	\$54,500	\$175,000	\$57,600	\$178,000

UNIT/SUBUNIT	PAST (UNDISCOUNTED)		PAST PRESENT VALUE 3%		PAST PRESENT VALUE 7%		FUTURE (UNDISCOUNTED)		FUTURE PRESENT VALUE 3%		FUTURE PRESENT VALUE 7%		ANNUALIZED 3%		ANNUALIZED 7%	
	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
<i>Areas Considered for Exclusion</i>																
<i>UNIT 1: MAINE</i>																
Tribal lands	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Subtotal Unit 1</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>UNIT 2: MINNESOTA</i>																
Voyageurs National Park	-	-	-	-	-	-	-	\$10,700	-	\$7,970	-	\$5,700	-	\$536	-	\$540
Tribal Lands	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Subtotal Unit 2</i>	-	-	-	-	-	-	-	\$10,700	-	\$7,970	-	\$5,700	-	\$536	-	\$540
<i>UNIT 3: NORTHERN ROCKY MOUNTAINS</i>																
Glacier National Park	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BLM: Butte Resource Area	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Subtotal Unit 3</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>UNIT 4: NORTH CASCADES</i>																
North Cascades National Park	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lake Chelan National Recreation Area	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Subtotal Unit 4</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SUBTOTAL AREAS CONSIDERED FOR EXCLUSION	-	-	-	-	-	-	-	\$10,700	-	\$7,970	-	\$5,700	-	\$536	-	\$540

APPENDIX F-4. DETAILED PUBLIC LANDS MANAGEMENT AND CONSERVATION PLANNING IMPACTS

UNIT/SUBUNIT	PAST (UNDISCOUNTED)		PAST PRESENT VALUE 3%		PAST PRESENT VALUE 7%		FUTURE (UNDISCOUNTED)		FUTURE PRESENT VALUE 3%		FUTURE PRESENT VALUE 7%		ANNUALIZED 3%		ANNUALIZED 7%	
	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
Proposed Critical Habitat																
UNIT 1: MAINE																
National Park Service	-	-	-	-	-	-	\$284,000	\$284,000	\$232,000	\$232,000	\$181,000	\$181,000	\$15,600	\$15,600	\$17,100	\$17,100
U.S. Fish and Wildlife Service	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Maine Dept of Conservation	-	-	-	-	-	-	\$2,210,000	\$2,210,000	\$2,026,000	\$2,026,000	\$1,820,000	\$1,820,000	\$136,000	\$136,000	\$172,000	\$172,000
Maine Dept. of Inland Fish & Wildlife	-	-	-	-	-	-	\$255,000	\$255,000	\$205,000	\$205,000	\$156,000	\$156,000	\$13,800	\$13,800	\$14,800	\$14,800
Baxter State Park Authority	-	-	-	-	-	-	\$1,400,000	\$1,400,000	\$1,270,000	\$1,270,000	\$1,130,000	\$1,130,000	\$85,600	\$85,600	\$107,000	\$107,000
Private Timber Lands	\$1,350,000	\$1,350,000	\$1,500,000	\$1,500,000	\$1,720,000	\$1,720,000	\$450,000	\$450,000	\$437,000	\$437,000	\$421,000	\$421,000	\$29,400	\$29,400	\$39,800	\$39,800
Conservation NGO	-	-	-	-	-	-	\$1,610,000	\$1,610,000	\$1,460,000	\$1,460,000	\$1,310,000	\$1,310,000	\$98,300	\$98,300	\$123,000	\$123,000
Unknown Landowner	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal Unit 1	\$1,350,000	\$1,350,000	\$1,500,000	\$1,500,000	\$1,720,000	\$1,720,000	\$6,210,000	\$6,210,000	\$5,640,000	\$5,640,000	\$5,020,000	\$5,020,000	\$379,000	\$379,000	\$474,000	\$474,000
UNIT 2: MINNESOTA																
Superior National Forest	\$57,100	\$86,100	\$62,600	\$93,500	\$70,600	\$104,000	\$10,400	\$20,800	\$10,200	\$20,400	\$9,950	\$19,900	\$686	\$1,370	\$939	\$1,880
Minnesota Dept. of Natural Resources	\$40,400	\$69,300	\$43,000	\$73,900	\$46,600	\$80,200	\$3,240,000	\$3,250,000	\$2,970,000	\$2,980,000	\$2,670,000	\$2,680,000	\$200,000	\$200,000	\$252,000	\$253,000
Private Timber Lands	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Private Mining Lands	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown Landowner	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal Unit 2	\$97,500	\$155,000	\$106,000	\$167,000	\$117,000	\$184,400	\$3,250,000	\$3,280,000	\$2,980,000	\$3,000,000	\$2,680,000	\$2,700,000	\$200,000	\$202,000	\$253,000	\$255,000
UNIT 3: NORTHERN ROCKY MOUNTAINS																
U.S. Fish and Wildlife Service	-	-	-	-	-	-	\$254,000	\$254,000	\$204,000	\$204,000	\$156,000	\$156,000	\$13,700	\$13,700	\$14,700	\$14,700
U.S. Bureau of Reclamation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
U.S. Bureau of Land Management	-	-	-	-	-	-	\$226,000	\$226,000	\$179,000	\$179,000	\$132,000	\$132,000	\$12,000	\$12,000	\$12,500	\$12,500
Montana Dept. of Natural Resources	\$306,000	\$306,000	\$336,000	\$336,000	\$381,000	\$381,000	\$944,000	\$944,000	\$745,000	\$745,000	\$575,000	\$575,000	\$50,100	\$50,100	\$54,300	\$54,300
Montana Fish, Wildlife, and Parks	-	-	-	-	-	-	\$343,000	\$343,000	\$288,000	\$288,000	\$232,000	\$232,000	\$19,300	\$19,300	\$21,900	\$21,900
Montana University System	-	-	-	-	-	-	\$350,000	\$350,000	\$294,000	\$294,000	\$238,000	\$238,000	\$19,800	\$19,800	\$22,400	\$22,400
Idaho Dept. of Land	-	-	-	-	-	-	\$230,000	\$230,000	\$182,000	\$182,000	\$135,000	\$135,000	\$12,200	\$12,200	\$12,800	\$12,800
Municipal/City Government	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Private Timber Lands	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Conservation NGO	-	-	-	-	-	-	\$434,000	\$434,000	\$372,000	\$372,000	\$309,000	\$309,000	\$25,000	\$25,000	\$29,100	\$29,100
Unknown landowner	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal Unit 3	\$305,534	\$305,534	\$336,156	\$336,156	\$381,391	\$381,391	\$2,780,000	\$2,780,000	\$2,260,000	\$2,260,000	\$1,780,000	\$1,780,000	\$152,000	\$152,000	\$168,000	\$168,000
UNIT 4: NORTH CASCADES																
Washington Dept of Fish and Wildlife	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Washington Dept of Natural Resources	\$1,009,000	\$1,009,000	\$1,130,000	\$1,130,000	\$1,307,000	\$1,307,000	\$557,000	\$557,000	\$517,000	\$517,000	\$471,000	\$471,000	\$34,700	\$34,700	\$44,500	\$44,500
Unknown Private Landowners	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal Unit 4	\$1,009,000	\$1,009,000	\$1,130,000	\$1,130,000	\$1,307,000	\$1,307,000	\$557,000	\$557,000	\$517,000	\$517,000	\$471,000	\$471,000	\$34,700	\$34,700	\$44,500	\$44,500
SUBTOTAL AREAS PROPOSED FOR DESIGNATION	\$2,760,000	\$2,820,000	\$3,070,000	\$3,130,000	\$3,530,000	\$3,600,000	\$12,800,000	\$12,800,000	\$11,400,000	\$11,420,000	\$9,950,000	\$9,970,000	\$766,000	\$767,000	\$939,000	\$941,000

UNIT/SUBUNIT	PAST (UNDISCOUNTED)		PAST PRESENT VALUE 3%		PAST PRESENT VALUE 7%		FUTURE (UNDISCOUNTED)		FUTURE PRESENT VALUE 3%		FUTURE PRESENT VALUE 7%		ANNUALIZED 3%		ANNUALIZED 7%	
	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
<i>Areas Considered for Exclusion</i>																
<i>UNIT 1: MAINE</i>																
Tribal lands	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Subtotal Unit 1</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>UNIT 2: MINNESOTA</i>																
Voyageurs National Park	\$41,100	\$41,100	\$45,900	\$45,900	\$53,000	\$53,000	\$1,080,000	\$1,080,000	\$981,000	\$981,000	\$874,000	\$874,000	\$66,000	\$66,000	\$82,500	\$82,500
Tribal Lands	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Subtotal Unit 2</i>	\$41,100	\$41,100	\$45,900	\$45,900	\$53,000	\$53,000	\$1,080,000	\$1,080,000	\$981,000	\$981,000	\$874,000	\$874,000	\$66,000	\$66,000	\$82,500	\$82,500
<i>UNIT 3: NORTHERN ROCKY MOUNTAINS</i>																
Glacier National Park	\$909,000	\$1,210,000	\$982,000	\$1,310,000	\$1,090,000	\$1,450,000	\$5,720,000	\$5,720,000	\$5,320,000	\$5,320,000	\$4,860,000	\$4,860,000	\$357,000	\$357,000	\$459,000	\$459,000
BLM: Butte Resource Area							\$227,000	\$227,000	\$208,000	\$208,000	\$186,000	\$186,000	\$14,000	\$14,000	\$17,600	\$17,600
<i>Subtotal Unit 3</i>	\$909,000	\$1,210,000	\$982,000	\$1,310,000	\$1,090,000	\$1,450,000	\$5,950,000	\$5,950,000	\$5,520,000	\$5,520,000	\$5,050,000	\$5,050,000	\$371,000	\$371,000	\$476,000	\$476,000
<i>UNIT 4: NORTH CASCADES</i>																
North Cascades National Park	\$141,000	\$141,000	\$151,000	\$151,000	\$164,000	\$164,000	\$531,000	\$531,000	\$462,000	\$462,000	\$391,000	\$391,000	\$31,000	\$31,000	\$36,900	\$36,900
Lake Chelan National Recreation Area							\$413,000	\$413,000	\$353,000	\$353,000	\$291,000	\$291,000	\$23,700	\$23,700	\$27,500	\$27,500
<i>Subtotal Unit 4</i>	\$141,000	\$141,000	\$151,000	\$151,000	\$164,000	\$164,000	\$944,000	\$944,000	\$815,000	\$815,000	\$682,000	\$682,000	\$54,800	\$54,800	\$64,400	\$64,400
SUBTOTAL AREAS CONSIDERED FOR EXCLUSION	\$1,090,000	\$1,390,000	\$1,180,000	\$1,510,000	\$1,300,000	\$1,670,000	\$7,970,000	\$7,970,000	\$7,320,000	\$7,320,000	\$6,600,000	\$6,600,000	\$492,000	\$492,000	\$623,000	\$623,000

APPENDIX F-5. DETAILED TRANSPORTATION, UTILITIES, AND MUNICIPAL ACTIVITIES IMPACTS

UNIT/SUBUNIT	PAST (UNDISCOUNTED)		PAST PRESENT VALUE 3%		PAST PRESENT VALUE 7%		FUTURE (UNDISCOUNTED)		FUTURE PRESENT VALUE 3%		FUTURE PRESENT VALUE 7%		ANNUALIZED 3%		ANNUALIZED 7%	
	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
Proposed Critical Habitat																
UNIT 1: MAINE																
National Park Service	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
U.S. Fish and Wildlife Service	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Maine Dept of Conservation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Maine Dept. of Inland Fish & Wildlife	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Baxter State Park Authority	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Private Timber Lands							\$3,710,000	\$6,610,000	\$2,840,000	\$5,070,000	\$2,100,000	\$3,750,000	\$191,000	\$340,000	\$198,000	\$354,000
Conservation NGO	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown Landowner							\$13,000,000	\$23,200,000	\$9,960,000	\$17,800,000	\$7,370,000	\$13,100,000	\$669,000	\$1,190,000	\$695,000	\$1,240,000
Subtotal Unit 1	-	-	-	-	-	-	\$16,700,000	\$29,800,000	\$12,800,000	\$22,800,000	\$9,470,000	\$16,900,000	\$860,000	\$1,530,000	\$894,000	\$1,590,000
UNIT 2: MINNESOTA																
Superior National Forest	-	-	-	-	-	-	\$3,720,000	\$5,750,000	\$2,710,000	\$4,150,000	\$1,880,000	\$2,830,000	\$182,000	\$279,000	\$177,000	\$267,000
Minnesota Dept. of Natural Resources	-	-	-	-	-	-	\$2,360,000	\$3,700,000	\$1,700,000	\$2,650,000	\$1,160,000	\$1,770,000	\$114,000	\$178,000	\$109,000	\$167,000
Private Timber Lands	-	-	-	-	-	-	\$19,000	\$24,000	\$14,200	\$18,000	\$10,500	\$13,300	\$953	\$1,210	\$990	\$1,260
Private Mining Lands	-	-	-	-	-	-	\$9,480	\$9,480	\$7,260	\$7,260	\$5,370	\$5,370	\$488	\$488	\$507	\$507
Unknown Landowner	-	-	-	-	-	-	\$5,910,000	\$8,150,000	\$4,650,000	\$6,280,000	\$3,590,000	\$4,700,000	\$313,000	\$422,000	\$339,000	\$444,000
Subtotal Unit 2	-	-	-	-	-	-	\$12,000,000	\$17,600,000	\$9,090,000	\$13,100,000	\$6,640,000	\$9,320,000	\$611,000	\$881,000	\$627,000	\$880,000
UNIT 3: NORTHERN ROCKY MOUNTAINS																
U.S. Fish and Wildlife Service	-	-	-	-	-	-	\$14,300	\$19,500	\$10,900	\$14,900	\$8,090	\$11,100	\$735	\$1,000	\$763	\$1,040
U.S. Bureau of Reclamation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
U.S. Bureau of Land Management	-	-	-	-	-	-	\$10,100	\$13,800	\$7,760	\$10,600	\$6,100	\$7,840	\$521	\$712	\$576	\$740
Montana Dept. of Natural Resources	-	-	-	-	-	-	\$118,000	\$162,000	\$90,200	\$124,000	\$66,700	\$91,700	\$6,060	\$8,340	\$6,300	\$8,660
Montana Fish, Wildlife, and Parks	-	-	-	-	-	-	\$2,280,000	\$2,290,000	\$2,280,000	\$2,280,000	\$2,270,000	\$2,280,000	\$153,000	\$153,000	\$215,000	\$215,000
Montana University System	-	-	-	-	-	-	\$221,000	\$306,000	\$170,000	\$235,000	\$126,000	\$174,000	\$11,400	\$15,800	\$11,900	\$16,400
Idaho Dept. of Land	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Municipal/City Government	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Private Timber Lands	-	-	-	-	-	-	\$61,000	\$84,300	\$46,700	\$64,600	\$34,600	\$47,800	\$3,140	\$4,340	\$3,260	\$4,510
Conservation NGO	-	-	-	-	-	-	\$75,800	\$105,000	\$58,100	\$80,100	\$43,000	\$59,300	\$3,900	\$5,380	\$4,060	\$5,590
Unknown Landowner	-	-	-	-	-	-	\$3,390,000	\$4,680,000	\$2,600,000	\$3,580,000	\$1,920,000	\$2,650,000	\$175,000	\$241,000	\$182,000	\$250,000
Subtotal Unit 3	-	-	-	-	-	-	\$6,180,000	\$7,650,000	\$5,260,000	\$6,390,000	\$4,480,000	\$5,320,000	\$354,000	\$430,000	\$423,000	\$502,000
UNIT 4: NORTH CASCADES																
Washington Dept of Fish and Wildlife	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Washington Dept of Natural Resources	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown Private Landowners	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal Unit 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SUBTOTAL AREAS PROPOSED FOR DESIGNATION	-	-	-	-	-	-	\$34,900,000	\$55,100,000	\$27,100,000	\$42,300,000	\$20,600,000	\$31,500,000	\$1,820,000	\$2,840,000	\$1,940,000	\$2,980,000

UNIT/SUBUNIT	PAST (UNDISCOUNTED)		PAST PRESENT VALUE 3%		PAST PRESENT VALUE 7%		FUTURE (UNDISCOUNTED)		FUTURE PRESENT VALUE 3%		FUTURE PRESENT VALUE 7%		ANNUALIZED 3%		ANNUALIZED 7%	
	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
<i>Areas Considered for Exclusion</i>																
<i>UNIT 1: MAINE</i>																
Tribal lands	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Subtotal Unit 1</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>UNIT 2: MINNESOTA</i>																
Voyageurs National Park	-	-	-	-	-	-	\$80	\$80	\$61	\$61	\$45	\$45	\$4	\$4	\$4	\$4
Tribal Lands	-	-	-	-	-	-	\$25,700	\$25,700	\$19,700	\$19,700	\$14,600	\$14,600	\$1,330	\$1,330	\$1,380	\$1,380
<i>Subtotal Unit 2</i>	-	-	-	-	-	-	<i>\$25,800</i>	<i>\$25,800</i>	<i>\$19,800</i>	<i>\$19,800</i>	<i>\$14,600</i>	<i>\$14,600</i>	<i>\$1,330</i>	<i>\$1,330</i>	<i>\$1,380</i>	<i>\$1,380</i>
<i>UNIT 3: NORTHERN ROCKY MOUNTAINS</i>																
Glacier National Park	-	-	-	-	-	-	\$670,000	\$923,000	\$514,000	\$707,000	\$380,000	\$523,000	\$34,500	\$47,500	\$35,900	\$49,400
BLM: Butte Resource Area	-	-	-	-	-	-	\$10,100	\$13,800	\$7,760	\$10,600	\$5,740	\$7,840	\$521	\$712	\$542	\$740
<i>Subtotal Unit 3</i>	-	-	-	-	-	-	<i>\$680,000</i>	<i>\$936,000</i>	<i>\$521,000</i>	<i>\$717,000</i>	<i>\$386,000</i>	<i>\$531,000</i>	<i>\$35,000</i>	<i>\$48,200</i>	<i>\$36,400</i>	<i>\$50,100</i>
<i>UNIT 4: NORTH CASCADES</i>																
North Cascades National Park	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lake Chelan National Recreation Area	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Subtotal Unit 4</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SUBTOTAL AREAS CONSIDERED FOR EXCLUSION	-	-	-	-	-	-	\$706,000	\$962,000	\$541,000	\$737,000	\$400,000	\$545,000	\$36,400	\$49,600	\$37,800	\$51,500

APPENDIX F-6. DETAILED MINING IMPACTS

UNIT/SUBUNIT	PAST (UNDISCOUNTED)		PAST PRESENT VALUE 3%		PAST PRESENT VALUE 7%		FUTURE (UNDISCOUNTED)		FUTURE PRESENT VALUE 3%		FUTURE PRESENT VALUE 7%		ANNUALIZED 3%		ANNUALIZED 7%	
	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
<i>Proposed Critical Habitat</i>																
UNIT 1: MAINE																
National Park Service	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
U.S. Fish and Wildlife Service	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Maine Dept of Conservation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Maine Dept. of Inland Fish & Wildlife	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Baxter State Park Authority	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Private Timber Lands	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Conservation NGO	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown Landowner	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal Unit 1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
UNIT 2: MINNESOTA																
Superior National Forest	\$85,000	\$140,000	\$90,000	\$156,000	\$97,400	\$180,000	\$430,000	\$430,000	\$418,000	\$418,000	\$403,000	\$403,000	\$28,100	\$28,100	\$38,000	\$38,000
Minnesota Dept. of Natural Resources	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Private Timber Lands	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Private Mining Lands	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown Landowner	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal Unit 2	\$85,000	\$140,000	\$90,000	\$156,000	\$97,400	\$180,000	\$430,000	\$430,000	\$418,000	\$418,000	\$403,000	\$403,000	\$28,100	\$28,100	\$38,000	\$38,000
UNIT 3: NORTHERN ROCKY MOUNTAINS																
U.S. Fish and Wildlife Service	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
U.S. Bureau of Reclamation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
U.S. Bureau of Land Management	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Montana Dept. of Natural Resources	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Montana Fish, Wildlife, and Parks	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Montana University System	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Idaho Dept. of Land	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Municipal/City Government	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Private Timber Lands	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Conservation NGO	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown landowner	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal Unit 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
UNIT 4: NORTH CASCADES																
Washington Dept of Fish and Wildlife	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Washington Dept of Natural Resources	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown Private Landowners	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal Unit 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SUBTOTAL AREAS PROPOSED FOR DESIGNATION	\$85,000	\$140,000	\$90,000	\$156,000	\$97,400	\$180,000	\$430,000	\$430,000	\$418,000	\$418,000	\$403,000	\$403,000	\$28,100	\$28,100	\$38,000	\$38,000

UNIT/SUBUNIT	PAST (UNDISCOUNTED)		PAST PRESENT VALUE 3%		PAST PRESENT VALUE 7%		FUTURE (UNDISCOUNTED)		FUTURE PRESENT VALUE 3%		FUTURE PRESENT VALUE 7%		ANNUALIZED 3%		ANNUALIZED 7%	
	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
<i>Areas Considered for Exclusion</i>																
<i>UNIT 1: MAINE</i>																
Tribal lands	\$13,300	\$13,300	\$13,600	\$13,600	\$14,200	\$14,200	\$92,800	\$2,190,000	\$90,100	\$1,070,000	\$86,800	\$811,000	\$6,050	\$71,700	\$8,200	\$76,600
Subtotal Unit 1	\$13,300	\$13,300	\$13,600	\$13,600	\$14,200	\$14,200	\$92,800	\$2,190,000	\$90,100	\$1,070,000	\$86,800	\$811,000	\$6,050	\$71,700	\$8,200	\$76,600
<i>UNIT 2: MINNESOTA</i>																
Voyageurs National Park	-	-	-	-	-	-	\$1,200,000	\$2,100,000	\$926,000	\$1,610,000	\$694,000	\$1,200,000	\$62,300	\$109,000	\$65,500	\$114,000
Tribal Lands	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal Unit 2	-	-	-	-	-	-	\$1,200,000	\$2,100,000	\$926,000	\$1,610,000	\$694,000	\$1,200,000	\$62,300	\$109,000	\$65,500	\$114,000
<i>UNIT 3: NORTHERN ROCKY MOUNTAINS</i>																
Glacier National Park	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BLM: Butte Resource Area	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal Unit 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>UNIT 4: NORTH CASCADES</i>																
North Cascades National Park	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lake Chelan National Recreation Area	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal Unit 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SUBTOTAL AREAS CONSIDERED FOR EXCLUSION	\$13,300	\$13,300	\$13,600	\$13,600	\$14,200	\$14,200	\$1,290,000	\$4,280,000	\$1,020,000	\$2,680,000	\$781,000	\$2,010,000	\$68,300	\$180,000	\$73,700	\$190,000

APPENDIX F-8. DETAILED ADMINISTRATIVE CONSULTATION COSTS

UNIT/SUBUNIT	PAST (UNDISCOUNTED)		PAST PRESENT VALUE 3%		PAST PRESENT VALUE 7%		FUTURE (UNDISCOUNTED)		FUTURE PRESENT VALUE 3%		FUTURE PRESENT VALUE 7%		ANNUALIZED 3%		ANNUALIZED 7%	
	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
Proposed Critical Habitat																
UNIT 1: MAINE																
National Park Service	-	-	-	-	-	-	\$19,500	\$19,500	\$14,500	\$14,500	\$10,300	\$10,300	\$975	\$975	\$975	\$975
U.S. Fish and Wildlife Service	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Maine Dept of Conservation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Maine Dept. of Inland Fish & Wildlife	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Baxter State Park Authority	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Private Timber Lands	-	-	-	-	-	-	\$273,000	\$273,000	\$203,000	\$203,000	\$145,000	\$145,000	\$13,700	\$13,700	\$13,700	\$13,700
Conservation NGO	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown Landowner	-	-	-	-	-	-	\$956,000	\$956,000	\$711,000	\$711,000	\$506,000	\$506,000	\$47,800	\$47,800	\$47,800	\$47,800
Subtotal Unit 1	-	-	-	-	-	-	\$1,250,000	\$1,250,000	\$928,000	\$928,000	\$661,000	\$661,000	\$62,400	\$62,400	\$62,400	\$62,400
UNIT 2: MINNESOTA																
Superior National Forest	\$481,000	\$481,000	\$518,000	\$518,000	\$573,000	\$573,000	\$2,350,000	\$2,350,000	\$1,750,000	\$1,750,000	\$1,250,000	\$1,250,000	\$118,000	\$118,000	\$118,000	\$118,000
Minnesota Dept. of Natural Resources	\$68,000	\$68,000	\$73,300	\$73,300	\$81,100	\$81,100	\$822,000	\$822,000	\$611,000	\$611,000	\$435,000	\$435,000	\$41,100	\$41,100	\$41,100	\$41,100
Private Timber Lands	-	-	-	-	-	-	\$19,500	\$19,500	\$14,500	\$14,500	\$10,300	\$10,300	\$975	\$975	\$975	\$975
Private Mining Lands	\$67,500	\$67,500	\$72,800	\$72,800	\$80,500	\$80,500	\$19,500	\$19,500	\$14,500	\$14,500	\$10,300	\$10,300	\$975	\$975	\$975	\$975
Unknown Landowner	\$66,500	\$66,500	\$71,700	\$71,700	\$79,300	\$79,300	\$2,420,000	\$2,420,000	\$1,800,000	\$1,800,000	\$1,280,000	\$1,280,000	\$121,000	\$121,000	\$121,000	\$121,000
Subtotal Unit 2	\$683,000	\$683,000	\$736,000	\$736,000	\$814,000	\$814,000	\$5,630,000	\$5,630,000	\$4,190,000	\$4,190,000	\$2,980,000	\$2,980,000	\$282,000	\$282,000	\$282,000	\$282,000
UNIT 3: NORTHERN ROCKY MOUNTAINS																
U.S. Fish and Wildlife Service	-	-	-	-	-	-	\$19,500	\$19,500	\$14,500	\$14,500	\$10,300	\$10,300	\$975	\$975	\$975	\$975
U.S. Bureau of Reclamation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
U.S. Bureau of Land Management	\$68,000	\$68,000	\$73,300	\$73,300	\$81,100	\$81,100	\$19,500	\$19,500	\$14,500	\$14,500	\$10,300	\$10,300	\$975	\$975	\$975	\$975
Montana Dept. of Natural Resources	-	-	-	-	-	-	\$38,000	\$38,000	\$28,300	\$28,300	\$20,100	\$20,100	\$1,900	\$1,900	\$1,900	\$1,900
Montana Fish, Wildlife, and Parks	-	-	-	-	-	-	\$19,500	\$19,500	\$14,500	\$14,500	\$10,300	\$10,300	\$975	\$975	\$975	\$975
Montana University System	-	-	-	-	-	-	\$152,000	\$152,000	\$113,000	\$113,000	\$80,500	\$80,500	\$7,600	\$7,600	\$7,600	\$7,600
Idaho Dept. of Land	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Municipal/City Government	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Private Timber Lands	\$67,000	\$67,000	\$72,200	\$72,200	\$79,900	\$79,900	\$306,000	\$306,000	\$228,000	\$228,000	\$162,000	\$162,000	\$15,300	\$15,300	\$15,300	\$15,300
Conservation NGO	-	-	-	-	-	-	\$38,000	\$38,000	\$28,300	\$28,300	\$20,100	\$20,100	\$1,900	\$1,900	\$1,900	\$1,900
Unknown landowner	-	-	-	-	-	-	\$1,560,000	\$1,560,000	\$1,160,000	\$1,160,000	\$826,000	\$826,000	\$78,000	\$78,000	\$78,000	\$78,000
Subtotal Unit 3	\$135,000	\$135,000	\$146,000	\$146,000	\$161,000	\$161,000	\$2,150,000	\$2,150,000	\$1,600,000	\$1,600,000	\$1,140,000	\$1,140,000	\$106,000	\$106,000	\$106,000	\$106,000
UNIT 4: NORTH CASCADES																
Washington Dept of Fish and Wildlife	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Washington Dept of Natural Resources	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unknown Private Landowners	\$9,500	\$9,500	\$10,200	\$10,200	\$11,300	\$11,300	-	-	-	-	-	-	-	-	-	-
Subtotal Unit 4	\$9,500	\$9,500	\$10,200	\$10,200	\$11,300	\$11,300	-	-	-	-	-	-	-	-	-	-
SUBTOTAL AREAS PROPOSED FOR DESIGNATION	\$827,000	\$827,000	\$892,000	\$892,000	\$986,000	\$986,000	\$9,030,000	\$9,030,000	\$6,720,000	\$6,720,000	\$4,780,000	\$4,780,000	\$452,000	\$452,000	\$452,000	\$452,000

UNIT/SUBUNIT	PAST (UNDISCOUNTED)		PAST PRESENT VALUE 3%		PAST PRESENT VALUE 7%		FUTURE (UNDISCOUNTED)		FUTURE PRESENT VALUE 3%		FUTURE PRESENT VALUE 7%		ANNUALIZED 3%		ANNUALIZED 7%	
	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
Areas Considered for Exclusion																
UNIT 1: MAINE																
Tribal lands	\$47,500	\$47,500	\$51,200	\$51,200	\$56,600	\$56,600	\$190,000	\$190,000	\$141,000	\$141,000	\$101,000	\$101,000	\$9,500	\$9,500	\$9,500	\$9,500
Subtotal Unit 1	\$47,500	\$47,500	\$51,200	\$51,200	\$56,600	\$56,600	\$190,000	\$190,000	\$141,000	\$141,000	\$101,000	\$101,000	\$9,500	\$9,500	\$9,500	\$9,500
UNIT 2: MINNESOTA																
Voyageurs National Park	\$19,000	\$19,000	\$20,500	\$20,500	\$22,700	\$22,700	\$19,500	\$19,500	\$14,500	\$14,500	\$10,300	\$10,300	\$975	\$975	\$975	\$975
Tribal Lands	\$85,500	\$85,500	\$92,200	\$92,200	\$102,000	\$102,000	\$304,000	\$304,000	\$226,000	\$226,000	\$161,000	\$161,000	\$15,200	\$15,200	\$15,200	\$15,200
Subtotal Unit 2	\$105,000	\$105,000	\$113,000	\$113,000	\$125,000	\$125,000	\$324,000	\$324,000	\$241,000	\$241,000	\$171,000	\$171,000	\$16,200	\$16,200	\$16,200	\$16,200
UNIT 3: NORTHERN ROCKY MOUNTAINS																
Glacier National Park	\$48,500	\$48,500	\$52,286	\$52,300	\$57,800	\$57,800	\$325,000	\$325,000	\$241,000	\$241,000	\$172,000	\$172,000	\$16,200	\$16,200	\$16,200	\$16,200
BLM: Butte Resource Area	-	-	-	-	-	-	\$19,500	\$19,500	\$14,500	\$14,500	\$10,300	\$10,300	\$975	\$975	\$975	\$975
Subtotal Unit 3	\$48,500	\$48,500	\$52,286	\$52,300	\$57,800	\$57,800	\$344,000	\$344,000	\$256,000	\$256,000	\$182,000	\$182,000	\$17,200	\$17,200	\$17,200	\$17,200
UNIT 4: NORTH CASCADES																
North Cascades National Park	-	-	-	-	-	-	\$19,500	\$19,500	\$14,500	\$14,500	\$10,300	\$10,300	\$975	\$975	\$975	\$975
Lake Chelan National Recreation Area	-	-	-	-	-	-	\$19,500	\$19,500	\$14,500	\$14,500	\$10,300	\$10,300	\$975	\$975	\$975	\$975
Subtotal Unit 4	-	-	-	-	-	-	\$39,000	\$39,000	\$29,000	\$29,000	\$20,700	\$20,700	\$1,950	\$1,950	\$1,950	\$1,950
SUBTOTAL AREAS CONSIDERED FOR EXCLUSION	\$201,000	\$201,000	\$216,000	\$216,000	\$239,000	\$239,000	\$897,000	\$897,000	\$667,000	\$667,000	\$475,000	\$475,000	\$44,800	\$44,800	\$44,800	\$44,800