UNITED STATES DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE
WILDLIFE SERVICES

ENVIRONMENTAL ASSESSMENT

Management of Beaver Damage Within the State of Maine

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INTRODUCTION

The United States Department of Agriculture (USDA) is authorized and directed by law to protect American agriculture and other resources from damage associated with wildlife. The statutory authority for the United States Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services (WS) program comes from the Animal Damage Control Act of March 2, 1931, as amended (7 U.S.C. 426-426c; 46 Stat. 1468) and the Rural Development, Agriculture and Related Agencies Appropriation Act of 1988. WS activities are conducted in cooperation with other federal, state and local agencies, and private organizations and individuals.

Wildlife damage management or control, is defined as the alleviation of damage or other problems caused by or related to the presence of wildlife. It is an integral component of wildlife management (Leopold 1933, The Wildlife Society 1990, Berryman 1991). Wildlife Services' program uses an Integrated Wildlife Management (IWM) approach (sometimes referred to as Integrated Pest Management or IPM) in which a combination of methods may be used or recommended to reduce wildlife damage. IWM is described in Chapter 1, 1-7 of the Animal Damage Control Program Final Environmental Impact Statement (FEIS),(U.S. Dept. Agri. 1997). These methods include the alteration of cultural practices as well as habitat and behavioral modification to prevent damage. The control of wildlife damage may also require that the offending animal(s) be removed or that populations of the offending species be reduced through lethal methods. Potential environmental impacts resulting from the application of various wildlife damage reduction techniques are evaluated in this environmental assessment.

WS is a cooperatively funded and service oriented program. Before any operational wildlife damage management is conducted, *Agreements for Control* or *WS Work Plans* must be completed by WS and the land owner/administrator. WS cooperates with private property owners and managers and with appropriate land and wildlife management agencies, as requested, with the goal of effectively and efficiently resolving wildlife damage problems in compliance with all applicable federal, state, and local laws and Memorandums of Understanding (MOUs) between WS and other agencies. WS's mission is to "provide leadership in wildlife damage management in the protection of America's agricultural, industrial and natural resources, and to safeguard public health and safety." This is accomplished through:

A) training of wildlife damage management professionals;
B) development and improvement of strategies to reduce economic losses and threats to humans from wildlife;
C) collection, evaluation, and dissemination of management information;
D) cooperative wildlife damage management programs;
E) informing and educating the public on how to reduce wildlife damage and;
F) providing data and a source for limited-use management materials and equipment, including pesticides (USDA 1989).

According to the Animal and Plant Health Inspection Service procedures implementing the National Environmental Policy Act (NEPA), individual control actions may be categorically excluded (7 C.F.R. 372.5(c), 60 Fed. Reg. 6,000, 6,003 (1995). In order to evaluate and

determine if there may be any potentially significant or cumulative impacts from the proposed control program, WS has decided to prepare this environmental assessment (EA). This environmental assessment documents the analysis of the potential environmental effects of the proposed activities in the State of Maine. This analysis relies mainly on existing data contained in published documents, primarily the Animal Damage Control Program Final Environmental Impact Statement (U.S. Dept. Agri. 1997) to which this EA is tiered.

These WS activities will be undertaken in compliance with relevant laws, regulations, policies, orders, and procedures, including the Endangered Species Act. Notice of Availability of this document will be made, consistent with the Agency's NEPA procedures in order to allow interested parties the opportunity to obtain and review this document and comment on the proposed management activities.

NEED FOR ACTIONS

Beaver Management in Maine

Beaver, *Castor canadensis*, have existed in Maine for many centuries. Its population exhibits a pattern of growth and exploitation common to many states and Canadian provinces. When the Federal Lacey Act was implemented, prohibiting interstate shipment of untagged furs, illegal exploitation of beaver declined which increased the statewide population. Since 1986, an estimated population between 45,890 and 67,950 animals has remained stable (Hilton 1986).

From 1979 through 1997, the Maine Department of Inland Fisheries and Wildlife (MDIFW) reported that furbearer harvests for beaver ranged from 12,152 to 19,209. The 1996-1997 take of 16,640 was the second highest harvest recorded. The average take is approximately 10,000 animals per year. The high take was due, in part, to an increase in spring pelt prices. Spring prices for beaver pelts averaged $35, substantially above the average of $19 per pelt (G. Matula Jr 1997).

Prior to 1992, nuisance beaver problems were addressed by the landowner or the MDIFW. Game wardens were once equipped with dynamite and would remove beaver dams or relocate nuisance beaver from a problem site. When the use of dynamite was restricted by the MDIFW, live trapping and relocation of nuisance beaver increased. Game wardens were responsible for assessing beaver complaints and, with the help of wildlife biologists, reaching a satisfactory resolution of problems. As the number of complaints increased, the impact on populations became more significant and a means of avoiding the destruction of wetlands as well as the beaver resource was necessary. Coincidentally, enforcement and other responsibilities of the Warden Service prevented them from adequately addressing nuisance beaver problems. The MDIFW then developed a system of mostly uncompensated agents who would remove beaver dams and relocate beaver from nuisance sites. Due to the overwhelming number of complaints many of these agents were unable to answer problems promptly due to personal time constraints. Efforts were then redirected towards working with landowners to prevent problems with more effort directed at wetland management and control of water levels, rather than the destruction of beaver flowages or the beaver themselves. With wetland management in mind, a Cooperative

Beaver Management Program (CBMP) was developed by WS in 1992. This program was initially instituted in Central and Eastern Maine with two part-time employees. Due to an increasing number of problems and landowner complaints in northern Maine, one USDA employee was assigned to that area in 1994 to begin a pilot program on timber land holdings which are managed for landowners. Techniques such as live capture and relocation, water level control barrier fences, and partial removal of dams were used to balance the needs of the land owner and wetland dependent wildlife.

Water level control devices, also known as "beaver bafflers" or "beaver deceivers", were usually constructed in front of roadside culverts. Perforated Schedule 20 drain pipe, which is commonly used in leach fields and septic systems, is installed through a 6x6 mesh "v" shape fence with the "v" pointing outward from the culvert extending approximately 15' upstream. This allows beaver to build a dam along the fencing while the pipes allow water to drain through the dam maintaining a predetermined water level.

The pilot program proved to be very successful with requests for assistance handled faster and more efficiently than before. As landowners became more accepting of the new techniques being used to alleviate the problems on their property, Game Wardens and Regional Biologists were relieved of responding to nuisance beaver complaints allowing them to focus on more important responsibilities.

Current WS Beaver Damage Management Program

Today, there are nine USDA employees (Wildlife Specialists) assigned to work in eleven of Maines' sixteen counties. They cover approximately 84 percent of the 17.7 million acres of forest land in Maine. Beaver complaints from land managers, government agencies, municipalities, and area residents are reported to USDA Wildlife Specialists. WS employees evaluate sites and implement corrective actions if significant amounts of damage or flooding is reported. The greater the reported damage, the faster the complaint is answered. Approximately 1,900 problems were responded to by WS between October 1997 and September 1998 .

Wildlife Specialists work involves live capture and relocation of beaver that plug roadside culverts causing flood damage to timberlands, crops and roadways. Flooded culverts may also cause health and safety hazards to the public. These hazards include well contamination from the bacteria commonly associated with beaver flowages and drivers of vehicles may be endangered trying to pass through a flooded roadway. Barrier fences are constructed with drain pipes installed at a level that allows utilization of the roadbed while preserving the associated wetlands, leaving the existing beaver. These devices are also installed at sites where beaver are removed to help control problems that may occur when the area is repopulated. Occasionally, beaver dams are removed to improve trout habitat or spawning access to brooks.

Impacts of Beaver Activity

There are several environmental benefits derived from beaver. Such benefits include wetland habitat for many species of animals and plants, reduced soil erosion and downstream sedimentation, water for irrigation, fire control, livestock or wildlife during drought, and recreational or educational opportunities (Grasse and Putnam 1955, Woodward 1983). Coupled with these benefits, beaver also have detrimental impacts. In many cases, the detrimental impacts far outweigh the benefits (Grasse and Putnam 1955, Woodward et al. 1985, Novak 1987).

In Maine, negative impacts such as girdling and cutting of ornamental and shade trees, flooding of pastures, cropland, residential areas and timberlands, damming of culverts and bridges causing flooding and erosion of roadways and railroad beds, reducing the quality of trout habitat, and contaminating water supplies with *Giardia lamblia* are of great concerns for local agencies, timber and other industries, as well as to the general public.

The most obvious and widespread damage caused by beaver is the flooding of timber roads. Between October 1, 1993 and September 30, 1998, $686,261 (Table 1) of economic loss related to roads (structures) was reported by WS (Maine WS program, FY 93 - 98 Annual Tables). This estimate of economic loss is based on the costs of materials, labor and equipment associated with repair and replacement of washed out roadbeds, including culvert and bridge replacements. During the same time period, an estimated $69,700 (Table 1) economic loss related to the timber industry and agriculture caused by beaver was reported to WS (Maine WS program, FY 93 - 98 Annual Tables). This estimate is relatively low since the 17.7 million acres of land covers almost 90 percent of the total land area (19.8 million acres). Ninety-six percent of the forested land (17.7 million acres) is classified as commercial timberland, 2 percent is unproductive and 2 percent is classified as reserved or urban (Griffith and Alerich 1995).

Table 1. Economic Losses From Beaver Damages In 1993 - 1998

BEAVER DAMAGE IN MAINE REPORTED BY WS
FY 93-98

CATEGORY	SUB-CATEGORY	BEAVER
Agriculture	Commercial Forestry & Nursery	56500.00
	Field Crops	1700.00
Natural Resources	Forestry	11500.00
	Other Natural Resources	0.00
Property	Equipment	0.00
	Landscaping	0.00
	Structures	686261.00
	Other Property	1000.00
COMBINED TOTAL:		**$756,961**
Human Health & Safety	Human Health & Safety	83500.00
TOTAL BEAVER DAMAGE FOR FY 93-98		**$840,461**

Proposed Action

The proposed action is to continue the current Integrated Damage Management (IDM) program to reduce damage caused by beaver using a holistic management approach integrating combinations of nonlethal and lethal damage control methods. When appropriate, physical exclusion and/or habitat management methods would be recommended and utilized. Beaver dams would be modified or removed either by using hand tools or by mechanical means such a pulp loader to achieve desired results. Live capture and relocation is routinely used to remove nuisance beaver from sites where large quantities of damage has occurred. The beaver are usually moved to sites where wetlands need establishing or where they are able live without being a nuisance to landowners. Lethal control would only be used as necessary to prevent or correct beaver damage after nonlethal methods are considered and used as appropriate. Lethal control techniques such as body-gripping traps, snares or shooting may be used to capture and remove problem beaver. Because WS follows a precedence set by State policy, nonlethal control is antecedent to any lethal control methods. Technical assistance in the form of written information, recommendations, demonstrations, and training in the use of lethal and nonlethal damage control methods would also be provided.

Decision to be Made

- Should WS continue the current Beaver Damage Management Program?
- If not, should WS attempt to implement one of the alternatives to the current program as described in the EA?
- Would the proposed action have significant impacts on the quality of the human environment requiring preparation of an EIS?

Scope Of This Environmental Assessment Analysis

Actions Analyzed. This EA evaluates beaver damage management by WS to protect agricultural resources, property, human health and safety, and natural resources on private land or public facilities within the State wherever such management is requested from the WS program.

Period for Which this EA is Valid. This EA will remain valid until WS determines that new needs for action or new alternatives having different environmental effects must be analyzed. At that time, this analysis and document will be reviewed and revised as necessary. This EA will be reviewed each year to ensure that it is complete and still appropriate to the scope of the State beaver damage management activities.

Site Specificity. This EA analyzes potential impacts of WS's beaver damage management activities that will occur or could occur at private property sites or at public facilities within the State of Maine. Because the proposed action is to continue the current program, and because the current program's goal and responsibility is to provide service when requested

within the constraints of available funding and personnel, it is conceivable that beaver damage management activity by WS could occur anywhere in the state. Thus, this EA analyzes the potential impacts of such efforts wherever and whenever they might occur as part of the current program. The EA emphasizes significant issues as they relate to specific areas whenever possible. However, the issues that pertain to the various types of beaver damage and resulting management are the same, for the most part, wherever they occur, and are treated as such. The standard WS Decision Model (Slate et al. 1992) and WS Directive 2.105 is the routine thought process that is the site-specific procedure for determining methods and strategies to use or recommend for individual actions conducted by WS in the State (See USDA 1997, Chapter 2 and Appendix N for a more complete description of the WS Decision Model and examples of its application). Decisions made using this thought process will be in accordance with any mitigation measures and standard operating procedures described herein and adopted or established as part of the decision.

Affected Environment

The areas of the proposed action include state and interstate highways, gravel roads, railroads and their right-of-ways where beaver would impound wetlands. These areas would also include property in or adjacent to subdivisions, business and industrial parks, sewage treatment facilities, and urban areas where beaver impound water and gnaw or fell trees. Additionally, affected areas include timberlands, croplands, and pastures that experience financial losses from beaver flooding or gnawing. Occasionally, action may also be taken to maintain water flows in rivers and streams where dams are impeding the upstream migration of trout, salmon or smelt. The proposed action could occur on private or public properties within the State of Maine.

COMPLIANCE WITH SPECIFIC FEDERAL LAWS

National Historic Preservation Act (NHPA) of 1966 as amended

The National Historic Preservation Act (NHPA) of 1966, and its implementing regulations (36 CFR 800), requires federal agencies to: 1) determine whether activities they propose constitute "undertakings" that can result in changes in the character or use of historic properties and, 2) if so, to evaluate the effects of such undertakings on such historic resources and consult with the State Historic Preservation Office regarding the value and management of specific cultural, archaeological and historic resources, and 3) consult with appropriate American Indian Tribes to determine whether they have concerns for traditional cultural properties in areas of these federal undertakings. WS actions on tribal lands are only conducted at the tribe’s request and under signed agreement; thus, the tribes have control over any potential conflict with cultural resources on tribal properties. WS activities as described under the proposed action do not cause ground disturbances nor do they otherwise have the potential to significantly affect visual, audible, or atmospheric elements of historic properties and are thus not undertakings as defined by the NHPA. Beaver damage management could benefit historic properties if such properties were being damaged by beaver. In those cases, the officials responsible for management of such properties would make the request and would have decision-making authority over the

methods to be used. WS has determined beaver damage management actions are not undertakings as defined by the NHPA because such actions do not have the potential to result in changes in the character or use of historic properties. A copy of this EA is being provided to each American Indian tribe in the State to allow them opportunity to express any concerns that might need to be addressed prior to a decision.

Environmental Justice and Executive Order 12898 - *"Federal Actions to Address Environmental Justice in Minority Populations and Low_Income Populations."*

Executive Order 12898, entitled, "Federal Actions to Address Environmental Justice in Minority Populations and Low_Income Populations" promotes the fair treatment of people of all races, income levels and cultures with respect to the development, implementation and enforcement of environmental laws, regulations and policies. Environmental justice is the pursuit of equal justice and protection under the law for all environmental statutes and regulations without discrimination based on race, ethnicity, or socioeconomic status. It is a priority within APHIS and WS. Executive Order 12898 requires Federal agencies to make environmental justice part of their mission, and to identify and address disproportionately high and adverse human health and environmental effects of Federal programs, policies and activities on minority and low_income persons or populations. APHIS implements Executive Order 12898 principally through its compliance with NEPA. All WS activities are evaluated for their impact on the human environment and compliance with Executive Order 12898. WS personnel use only legal, effective, and environmentally safe wildlife damage management methods, tools, and approaches. It is not anticipated that the proposed action would result in any adverse or disproportionate environmental impacts to minority and low_income persons or populations.

ISSUES CONSIDERED

Issues considered are concerns of the public and/or of professional communities about potential environmental problems that might occur from a proposed federal action. Such issues must be considered in the NEPA process. Issues relating to the management of wildlife damage were raised during the scoping process in preparing the programmatic FEIS and were considered in the preparation of this EA. These issues are fully evaluated within the FEIS, which analyzed data specific to the Maine WS program.

Following are issues that have been identified as areas of concern requiring consideration in this EA.

1. Effects on Wildlife Populations - Beaver, Nontarget species and Threatened and Endangered Species (T&E Species) - NEPA requires federal agencies to determine whether their actions have a "significant impact on the quality of human environment". A declining population of a resident wildlife species does not necessarily equate to a "significant impact" as defined by NEPA if the decline is collectively condoned or desired by the people that live in the affected human

population. It is reasonable and proper to rely on the representative form of government within a State as the established mechanism for determining the "collective" desires or endorsements of the people of a State. WS abides by this philosophy and defers to the collective desires of the people of the State of Maine by complying with State law, Title 12 MRSA that governs the take or removal of resident wildlife. Although the analysis herein indicates beaver populations are not being impacted to the point of causing decline, if at some point in the future they are, then such a decline would not constitute a "significant" impact as defined by NEPA so long as the actions that cause the decline are in accordance with State law, and concomitantly, with the collective desires of the people of the State of Maine.

Beaver

Some persons are concerned whether the proposed action or any of the alternatives would result in the loss of local beaver populations or could have a cumulative adverse impact on regional or statewide beaver populations.

Nontarget species and Threatened and Endangered Species (T&E Species)

A common concern among members of the public and wildlife professionals, including WS personnel, is the impact of beaver damage control methods and activities on nontarget species, particularly T&E species. WS' standard operating procedures include measures intended to mitigate or reduce the effects of beaver damage management on nontarget species populations.

Nontarget species taken by WS in Maine are recorded as nontarget (i.e., they were not listed as target species on the agreement and were taken unintentionally during efforts to take target species). Nontarget animals killed by WS during FY 1997 beaver damage management activities included one river otter, *Lutra canadensis*. In other years, no more than just a few nontarget species were taken and impacts to these species would be considered light.

Special efforts are made to avoid jeopardizing T&E species through biological evaluations of potential effects and the establishment of special restrictions or mitigation measures.

2. Humaneness of Control Techniques - The issue of humanness, as it relates to the killing or capturing of wildlife is an important but very complex concept that can be interpreted in a variety of ways. Humaneness is a person's perception of harm or pain inflicted on an animal, and people may perceive the humanness of the action differently. Animal welfare organizations are concerned that some methods used to manage wildlife damage expose animals to unnecessary pain and suffering. Research suggests that with some methods, such as restraint in leg hold traps, changes in the blood chemistry of trapped animals indicate "stress". Blood measurements indicated similar changes in foxes that had been chased by dogs for about five minutes as those restrained in traps (USDA 1997). However, such research has not yet progressed to the development of objective, quantitative measurements of pain or stress for use in evaluating humanness.

The decision-making process involves tradeoffs between managing damage and the aspect of humanness. The challenge in coping with this issue is how to achieve the least amount of animal suffering with the constraints imposed by current technology, yet provide sufficient beaver management to resolve problems.

WS has improved the selectivity of management devices through research and development such as pan tension devices for traps and breakaway snares. Research is continuing to bring new findings and products into practical use. Until such time as new findings and products are found to be practical, a certain amount of alleged animal suffering will occur if beaver management objectives are to be met in those situations where nonlethal control methods are not practical.

WS personnel in Maine are experienced and professional in their use of management tools. Every effort is made to ensure control methods are applied as humanely as possible within the constraints of current technology.

3. Effects of Beaver Dam Removal on Wetland Wildlife Habitat - Beavers build dams primarily in smaller riverine wetlands (intermittent and perennial streams and creeks). Their dams obstruct the normal flow of water and typically change the preexisting wetlands' hydrology from flowing or circulating waters to slower, deeper, more expansive waters that accumulate bottom sediment; the depth of the bottom sediment depends on the length of time an area is covered by water and the amount of suspended sediment in the water. Beaver dams, in time, can establish new, but different wetlands. The Corps' and EPA's regulatory definition of a wetland (40 CFR 232.2) is:

> *"Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."*

The preexisting habitat and the altered habitat have different ecological values to the fish and wildlife native to the area. Some species will abound with the addition of a beaver dam while others will diminish. For example, some species of darters listed as federally endangered require fast moving waters over gravel or cobble beds which beaver dams can eliminate, thus reducing the habitat's value for these species. In general, it has been found that wildlife habitat values decline around bottomland beaver impoundments in the Southeast because the hardwoods are killed by flooding and mast production declines (A. Dunaway, WS, pers. comm. 1998). On the other hand, beaver dams can potentially be beneficial to some species of wildlife such as river otter and waterfowl when it becomes an established wetland. Since a potential exists for beaver damage management to impact wildlife habitat, this is being considered as an issue.

If a beaver dam is not removed and water is allowed to stand, hydric soils and hydrophytic vegetation eventually form. This process can take anywhere from several months to years depending on preexisting conditions (J. Myers, OCC, pers. comm. 1998). Hydric soils are those soils that are saturated, flooded, or ponded long enough during the growing season to develop

anaerobic conditions in the upper part. In general, hydric soils form much easier where wetlands have preexisted (J. Myers, OCC, pers. comm. 1998). Hydrophytic vegetation includes those plants that grow in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content (J. Myers, OCC, pers.comm. 1998). If these conditions are met, then a wetland has developed that will have different wildlife habitat values than an area that has been more recently impounded by beaver dam activity.

The intent of most dam removal operations is not to drain old established wetlands. With few exceptions, requests from public and private individuals and entities that WS receive involve dam removal to return an area back to its preexisting condition within a few years after the dam was created. If the area does not have hydric soils, it usually takes many years for them to develop and a wetland to become established; this often takes greater than 5 years as recognized by the Swampbuster provisions of USDA. Most beaver dam removal by WS is allowed under exemptions stated in 33 CFR parts 323 and 330 of Section 404 of the Clean Water Act or parts 3821 and 3822 of the Food Security Act.

The following information explains Section 404 exemptions and conditions that pertain to the removal of beaver dams:

33CFR 323 - Permits for Discharges of Dredged or Fill Material into Waters of the United States. This regulation provides guidance to determine whether certain activities require permits under Section 404.

Part 323.4 Discharges not requiring permits. This section establishes exemptions for discharging certain types of fill into water of the United States without a permit. Certain minor drainage activities connected with normal farming, ranching, and silviculture activities where they have been established do not require a permit as long as these drainages do not include the immediate or gradual conversion of a wetland (ie. beaver ponds greater than 5 years old) to a non-wetland. Specifically part (a)(1)(iii)(C)(i) states, *"..fill material incidental to connecting upland drainage facilities* [e.g., drainage ditches] *to waters of the United States, adequate to effect the removal of excess soil moisture from upland croplands..."*. This indicates that beaver dams that block ditches, canals, or other structures designed to drain water from upland crop fields can be removed without a permit.

Moreover, (a)(1)(iii)(C)(iv) states the following types of activities do not require a permit *"The discharges of dredged or fill materials incidental to the emergency removal of sandbars, gravel bars, or other similar blockages which are formed during flood flows or other events, where such blockages close or constrict previously existing drainage ways and, if not promptly removed, would result in damage to or loss of existing crops or would impair or prevent the plowing, seeding, harvesting or cultivating of crops on land in established use for crop production. Such removal does not include enlarging or extending the*

dimensions of, or changing the bottom elevations of, the affected drainage way as it existed prior to the formation of the blockage. Removal must be accomplished within one year of discovery of such blockages in order to be eligible for exemption."; this allows the removal of beaver dams in natural streams to restore drainage of agricultural lands within one year of discovery.

Part 323.4 (a)(2) allows *"Maintenance, including emergency reconstruction of recently damaged parts, of currently serviceable structures such as dikes, dams, levees, groins, riprap, breakwaters, causeways, bridge abutments or approaches, and transportation structures. Maintenance does not include any modification that changes the character, scope, or size of the original fill design. Emergency reconstruction must occur within a reasonable period of time after damage occurs in order to qualify for this exemption."*; this allows beaver dams to be removed without a permit where they have resulted in damage to roads, culverts, bridges or levees if it is done in a reasonable amount of time.

However, the removal of some beaver dams can trigger certain portions of Section 404 that require landowners to obtain permits from the Corps. WS personnel determine the proper course of action upon inspecting a beaver dam impoundment.

In every dam removal situation, WS employees comsult with State biologists or game wardens as stated in Sec.1.38 MRSA 480-Q, sub-21, an act to allow authorized removal of a beaver dam without a permit. It is enacted to read:

Removal of Beaver dams. Removal of a beaver dam as authorized by a game warden, as long as:

A. Efforts are made to minimize erosion of soil and fill material from disturbed areas into a protected natural resource;

B. Efforts are made to minimize alteration of undisturbed portions of a wetland or water body; and

C. Wheeled or tracked equipment is operated in the water only for the purpose of crossing a water body to facilitate removal of the beaver dam. Where practicable, wheeled or tracked equipment may cross a water body only on a rock, gravel or ledge bottom.

4. Effects of The Beaver Management on Public Safety - A formal risk assessment of WS' methods, including almost all of those used for beaver damage management in Maine, concluded low risks to humans (USDA 1997, Appendix P). Two specific methods are not addressed in this EA: the use of explosives to remove beaver dams and the use of EPA registered toxicants. These two specific methods are currently not being used by ME WS employees. However, if in the future ME WS determines there is a need to use either of the above described methods, their potential impacts and uses will be evaluated and analyzed in a supplement pursuant to NEPA.

5. Esthetics and Conflicts - There are numerous philosophical, esthetic and personal values for some people who enjoy seeing beaver. Some individual members or groups of wildlife species habituate and learn to live in close proximity to humans. Some people in these situations develop emotional attitudes toward such animals that result in aesthetic enjoyment. In addition, some people consider individual wild animals as "pets," or exhibit affection toward these animals. If WS were to take the beaver out of a particular site, it would be quite upsetting to someone who is watching the beaver daily or feels that they are their beaver.

To prevent a conflict such as this, WS would consult the landowner and use as many alternative methods as possible prior to removal of the beaver from the problem site.

Trappers or other special interest groups may have a conflict with WS live trapping and relocating or even killing beaver from roadside sites. Trappers consider these sites easy access. WS may post a list of activities performed (i.e. number of live capture or euthanized animals) at each site and one for beaver relocation sites in MDIFW Regional offices as needed.

ISSUES NOT CONSIDERED IN DETAIL WITH RATIONALE

1. WS's Impact on Biodiversity - No WS management program in Maine is conducted to eradicate a native wildlife population. WS operates in accordance with international, federal, and State laws and regulations enacted to ensure species viability. Any reduction of a local population or group would be temporary because immigration from adjacent areas or reproduction would soon replace the animals removed. The impacts of the current WS Program on biodiversity are not significant nationwide or in Maine (USDA 1997).

2. Wildlife Damage Should Be An Accepted Loss -- a Threshold of Loss Should Be Reached Before Providing Beaver Damage Management Services - WS is aware of concerns that federal wildlife damage management should not be allowed until economic losses become unacceptable. Although some loss of resources to wildlife can be expected and tolerated, WS has the legal direction to respond to requests for wildlife damage management, and it is Program policy to aid each requester to minimize losses.

In a ruling for Southern Utah Wilderness Alliance, et al. vs. Hugh Thompson, Forest Supervisor for the Dixie NF, et al., the United States District Court of Utah denied plaintiffs' motion for preliminary injunction. In part, the court found that a forest supervisor need only show that damage from predators is threatened to establish a need for wildlife damage management (Civil No. 92-C-0052A January 20, 1993). Thus, there is precedent for conducting beaver damage management when damage has not yet occurred but is only threatened.

3. No Wildlife Damage Management at Taxpayer Expense, Wildlife Damage Management Should Be Fee Based -WS is aware of concerns that wildlife damage management should not be provided at the expense of the taxpayer or that it should be fee based. WS was established by Congress as the agency responsible for providing wildlife damage management to the people of the United States. Funding for WS beaver damage management comes from a variety of sources in addition to federal appropriations. Such nonfederal sources include funds from local

governments (county or city), private corporations and individual private citizens which are all applied toward program operations. Federal, State, and local officials have decided that wildlife damage management needs to be conducted and have allocated funds for these activities. Additionally, wildlife damage management is an appropriate sphere of activity for government programs, since wildlife management is a governmental responsibility. A commonly voiced argument for publicly funded wildlife damage management is that the public should bear the responsibility for damage to private property caused by "publicly-owned" wildlife.

4. Reintroduction of Eastern Timber Wolf - The Eastern Timber Wolf (*Canus latrans)* is a known predator of beaver. Its reintroduction to Maine is outside of the scope of this EA and WS' jurisdiction. The authority to approve reintroduction of the Eastern Timber Wolf to Maine, is the responsibility of management agencies such as MDIFW and/or the U. S. Fish and Wildlife Service.

5. Endangered Species Listing of Canada Lynx - The U S Fish and Wildlife Service listed the Canada Lynx *(Lynx canadensis)* as an Endangered Species in Maine in 2000. The USFWS, Enhancement Office, Old Town, ME was contacted regarding our program activities in Maine as part of the process for working in areas where Canada Lynx may exist. A letter was prepared and submitted to them for their concurrence regarding our discussion. They felt our field activities for beaver control will not adversely affect Canada Lynx.

METHODS AND ALTERNATIVES INCLUDING THE PROPOSED ACTION

Alternatives were developed for consideration using the ADC Decision Model as described in Chapter 2 (pages 20-35), Appendix J (Methods of Control), Appendix N (Examples of ADC Decision Model), and Appendix P (Risk Assessment of Wildlife Damage Control Methods Used by the USDA Wildlife Services Program) of the Animal Damage Control Program Final Environmental Impact Statement (FEIS) (U.S. Dept. Agri. 1997).

Methods Considered - Appendix J of the FEIS describes methods currently used by the WS program. Some of these methods were considered due to their known or potential effectiveness in managing beaver caused damage. A listing of methods considered in this EA follows:

1. Physical Exclusion - This method restricts beaver access and may include the use of sheathing on trees/shrubs or barriers on culverts. Sheathing may consist of hardware cloth, metal flashing or other material which is placed around trees or shrubs to prevent gnawing or girdling by beaver. Barriers to restrict access to road culverts can be constructed of wire mesh or fencing and secured to the culverts. These barriers prevent construction of beaver dams inside of culverts.

2. Habitat Management - The removal of beaver dams to alleviate damage caused by flooding can be achieved by using hand tools or by mechanical means such as a pulp loader. Water impounded by beaver may also be controlled to some extent by placing drain tubes or water levelers in dams.

3. Live Capture and Relocation - This method allows for the population to be maintained. Live trapping and relocating problem beaver is routinely conducted with Hancock live traps. This method usually takes precedence over lethal trapping because Maines' Wildlife Management Policy currently requires that all other options be considered before lethal control. Once the problem beaver is live trapped, it is relocated to sites where wetlands may be established to promote waterfowl populations or to sites where it will not become a nuisance to the landowner.

4. Population Reduction (Lethal) - Lethal methods may include leg hold traps, quick-kill or Conibear traps, snares, and shooting.

ALTERNATIVES CONSIDERED INCLUDING THE PROPOSED ACTION

The No Action alternative is a procedural NEPA requirement (40 CFR 1502), is a viable and reasonable alternative that could be selected, and serves as a baseline for comparison with the other alternatives. The No Action alternative, as defined here, is consistent with the Council on Environmental Quality's (CEQ's) definition (CEQ 1981).

1. Continue the Current Federal Beaver Damage Management Program/Integrated Damage Management (The Proposed Action/No Action) - The ***proposed action*** is to continue the current Integrated Damage Management (IDM) program to reduce damage caused by beaver using a holistic management approach integrating combinations of nonlethal and lethal damage control methods as described above in the methods considered When appropriate, physical exclusion and/or habitat management methods would be recommended and utilized. Beaver dams would be modified or removed either by using hand tools or by mechanical means such a pulp loader to achieve desired results. Live capture and relocation is routinely used to remove nuisance beaver from sites where large quantities of damage has occurred. The beaver are usually moved to sites where wetlands need establishing or where they are able live without being a nuisance to landowners. Lethal control would only be used as necessary to prevent or correct beaver damage after nonlethal methods are considered or used as appropriate. Lethal control techniques such as body-gripping traps, snares or shooting may be used to capture and remove problem beaver. Because WS follows a precedence set by State agencies, nonlethal control is antecedent to any lethal control methods. Technical assistance in the form of written information, recommendations, demonstrations, and training in the use of lethal and nonlethal damage control methods would also be provided.

2. No Federal Action - This alternative would consist of no federal involvement for beaver damage management in Maine. Neither direct operational management nor technical assistance would be provided from WS. Information on future developments in nonlethal and lethal management techniques that culminate from WS's research branch would not be available to State agencies, producers or resource owners. It would be left up to the resource owners to conduct beaver damage management under this option. This alternative would not allow for dams to be removed or breached by WS.

3. Technical Assistance Only - This alternative would not allow WS to conduct operational beaver damage management in Maine. WS would only provide technical assistance and make

recommendations when requested. However, producers, State agency personnel, or others could conduct beaver damage management activities including the use of traps, snares, shooting, and any nonlethal methods they deem effective. This alternative would not allow for dams to be removed or breached by WS.

4. Nonlethal Control Only - WS would only utilize nonlethal damage control methods which could include physical exclusion, habitat management, live trapping with Hancock traps or snares and relocation. This alternative would allow for dams to be removed or breached by WS.

5. Nonlethal Control Methods Employed Prior to the Use of Lethal Control - This alternative would not allow the use of lethal methods by WS as described under the proposed action until nonlethal methods had been attempted and implemented to relieve damage caused by beaver and found to be ineffective or inadequate. Resource owners or managers would still have the option of implementing their own nonlethal and lethal control measures and WS would continue to recommend them where appropriate, but no preventative lethal control by WS would be allowed. This alternative would allow for dams to be removed or breached by WS.

6. Lethal Control Only - Consideration would be given to the use of lethal techniques only. Leghold traps, Conibear traps, snares, and shooting would be utilized by WS to lethally remove problem beaver in all sites at all times. This alternative would not allow for dams to be removed or breached by WS.

ALTERNATIVES CONSIDERED BUT NOT ANALYZED IN DETAIL WITH RATIONALE

1. Compensation for Beaver Damage Losses - Compensation would require the establishment of a system to reimburse resource owners for damages. This alternative was eliminated from further analysis because no federal or state laws currently exist to authorize such action. Under such an alternative, WS would not provide any direct control or technical assistance. Aside from lack of legal authority, analysis of this alternative in the FEIS indicates that the concept has many drawbacks (USDA 1997).

- It would require larger expenditures of money and manpower to investigate and validate all losses and to determine and administer appropriate compensation.

- It would be difficult, if not impossible, to assess and confirm losses in a timely manner for all requests, and therefore, many losses could not be verified and uncompensated. Additionally, compensation would most likely be below full market value of the resource.

- Compensation would give little incentive to resource owners to limit damage with beaver damage management strategies such as improved barriers.

- Not all resource owners would rely completely on a compensation program and Beaver Damage management activities including lethal control would likely continue as permitted by state law.

Based on data collected on damage prevented in other programs, compensation could be expected to cost 5-6 times as much as the current program cost. (J. Heisterberg, WS, pers. comm. 1998)

2. Eradication and Long-term Population Suppression - An eradication alternative would direct all WS Program efforts toward elimination of beaver in entire cooperating counties or larger defined areas in Maine.

In Maine, the eradication of beaver is not a desired goal of State agencies, although these species may be taken liberally by the general public with the appropriate permits in areas where they are causing damage. Some landowners would prefer that some species such as beaver be eradicated. However, eradication as a general objective for beaver damage management will not be considered by WS in detail because:

- WS opposes eradication of any native wildlife species;
- State agencies oppose eradication of any native Maine wildlife species;
- The eradication of a native species or a local population would be extremely difficult, if not impossible to accomplish, and cost-prohibitive in most situations; and
- Eradication is not acceptable to most members of the public.

Suppression would direct WS Program efforts toward managed reduction of certain problem populations or groups. When a large number of requests for wildlife damage management are generated from a localized area, WS would consider suppression of the local population or groups of the offending species, if appropriate. However, it is not realistic, practical, or allowable under present WS policy to consider large-scale population suppression as the basis of the WS program. Typically, WS activities in Maine are conducted on a small portion of the area inhabited by beavers.

3. Reproduction Control - A review of research evaluating chemically induced and surgically induced reproductive inhibition as a method for controlling nuisance beaver populations is contained in Novak (1987). Although these methods were found to be effective in reducing beaver reproduction by up to 50%, the methods were not found to be practical or were too expensive for large-scale application. At present, no chemical reproductive inhibitors are legal for use on any of the species covered by this EA. For this reason, these methods will not be considered further by WS.

4. Biological Control - The only biological control that has been tried for managing beavers is the introduction of alligators (Wade and Ramsey 1986). Although alligators can and do sometimes

prey on beaver, they cannot be relied on to reduce numbers to the point that damage no longer occurs. Alligators could not be introduced in Maine because they could not survive the climate. Introducing them could also present hazards to people and pets. For these reasons, this method will not be considered further by WS.

MITIGATION AND STANDARD OPERATING PROCEDURES (SOPs) FOR WILDLIFE DAMAGE MANAGEMENT TECHNIQUES

1. Mitigation in SOPs - Mitigation measures are any features of an action that serve to prevent, reduce, or compensate for impacts that otherwise might result from that action. The current WS Program, nationwide and in Maine, uses many such mitigation measures and these are discussed in detail in Chapter 5 of the FEIS (USDA 1997). Some key mitigating measures pertinent to the proposed action and alternatives that are incorporated into WS's SOPs include the following:

- The WS Decision Model, which is designed to identify effective wildlife damage management strategies and their impacts, is consistently used.

- Nontarget animals captured in leg hold traps or snares are released unless it is determined by WS Specialists that they will not survive and it cannot be done safely.

- Reasonable and prudent alternatives and measures are established through consultation with USFWS and implemented to avoid adverse impacts to T&E species.

Some additional mitigating factors specific to the current program include the following:

- Management actions are directed toward localized populations or groups of target beaver populations or individual offending members of that species. Generalized population suppression across Maine will not be conducted as it is not an allowable option under current State policy.

- Although hazards to the public from beaver management damage devices and activities are low according to a formal risk assessment (USDA 1997, Appendix P), hazards to the public and their pets are even further reduced by the fact that beaver damage management activities are primarily conducted on private or other properties in Maine where public access is highly restricted or denied.

ENVIRONMENTAL CONSEQUENCES

This section provides information needed for making informed decisions in selecting the appropriate alternative for meeting the purpose of the proposed action. The section analyzes the environmental consequences of each alternative in relation to the issues identified for detailed analysis. This section analyzes the environmental consequences of each alternative in comparison with the proposed action to determine if the real or potential impacts would be greater, lesser, or

the same. Therefore, the proposed action or current program alternative serves as the baseline for the analysis and the comparison of expected impacts among the alternatives. The background and baseline information presented in the analysis of the current program alternative thus also applies to the analysis of each of the other alternatives.

The following resource values within the State are not expected to be significantly impacted by any of the alternatives analyzed: soils, geology, minerals, water quality/quantity, flood plains, wetlands, visual resources, air quality, prime and unique farmlands, aquatic resources, timber, and range. These resources will not be analyzed further.

Cumulative Impacts: Discussed in relationship to each of the potentially affected species analyzed in this section.

Irreversible and Irretrievable Commitments of Resources: Other than minor uses of fuels for motor vehicles and other materials, there are no irreversible or irretrievable commitments of resources.

Impacts on sites or resources protected under the National Historic Preservation Act: WS beaver damage management actions are not undertakings that could adversely affect historic resources.

Environmental Consequences for Issues Analyzed in Detail

1. EFFECTS ON WILDLIFE POPULATIONS - NEPA requires federal agencies to determine whether their actions have a "significant impact on the quality of the human environment." A declining population of a resident wildlife species does not necessarily equate to a "significant impact" as defined by NEPA if the decline is collectively condoned or desired by the people that live in the affected human population. It is reasonable and proper to rely on the representative form of government within a state as the established mechanism for determining the "collective" desires or endorsements of the people of a state. WS abides by this philosophy and defers to the collective desires of the people of the State of Maine by complying with State laws and regulations that govern the take or removal of resident wildlife. Although the analysis herein indicates wildlife populations are not being impacted to the point of causing a decline, if at some point in the future they are, then such a decline would not constitute a "significant" impact as defined by NEPA so long as the actions that cause the decline are in accordance with State law, and concomitantly, with the collective desires of the people of the State.

Alternative 1 - Integrated Damage Management - *The Proposed Action/No Action* - To adequately determine the impacts that this alternative would have on target species (beaver), nontarget species, threatened and endangered species, their populations need to be analyzed. The authority for management of resident wildlife species has traditionally been a responsibility left to the states. MDIFW is the State agency with management responsibility over animals classified by Title 12 MRSA, Chapter 702 as protected furbearers. MDIFW provided statistics on population trends and take, but was unable to provide any definitive estimates of population sizes for purposes of the following analyses on impacts to the population. Therefore, WS used the best

available information to produce reasonable estimates. MDIFW provided trend information for these species, though, and commented on the validity of the estimates.

Beaver Population Analysis - To discuss the impacts of various environmental constraints and external factors on beaver populations and density, it is essential to understand the basic mechanisms that play a role in the beaver's response to constraints and actions. This wildlife species is often characterized by biologists and managers as having the unique ability to modify its environment to create habitat to meet its own needs. Beaver are a major damage-causing species as documented by WS in Maine and caused more than $700,000 in reported and/or verified damage to property and agriculture between 1993 & 1998. Beaver damage management is therefore the major focus of WS Beaver Damage Management efforts in Maine. Beavers occur mostly in family groups that are comprised of 2 adult parents with 2-6 offspring from the current or previous breeding season (Novak 1987). Average family group size has been documented as ranging from 3.0 to 9.2 (Novak 1987).

The professional opinion of a wildlife biologist at MDIFW (H. Hilton pers. comm. 1998) suggests that the present beaver population in Maine is approximately 53,200 and has a trend of being stable. In FY 97, WS killed 56 beaver and live trapped and relocated 675 (The survival rate for live trapped and relocated beaver is unknown) which represents a total of 1.3% of the total beaver population in the state. WS killed about 7% of the problem beaver trapped in 1997 which amounts to less than .1% of the State's beaver population. The annual take during the 1996-97 statewide beaver trapping season was 16,640, which is 31% of the State's population.

WS relocates such large numbers of beaver under the direction of MDIFW. Title 12 MRSA states that the Bureau of Resource Management in Maine must "*manage wildlife resources in the State for their preservation, protection, enhancement and use*". .

This data clearly shows that the cumulative take appears to be far beneath the level that would begin to cause a decline in the population. The cumulative impact that WS has on the beaver population is therefore, considered to be of extremely low impact. MDIFW biologists have concurred with this conclusion (H. Hilton pers. comm. 1999).

Nontarget Species Population Analysis - WS' primary focus of nontarget species are muskrat, mink and otter because they are more susceptible to being caught in beaver sets due to the fact that they require the same habitat as beaver. Though, WS has caught only 3 nontarget otter between 1993 and 1998, we must look at the impacts that Beaver Damage Management may have on each species population (Table 2).

Muskrat Information and Impact Analysis - Muskrats, *Ondatra zibethica*, are considered abundant throughout Maine. Their population is stable at 371,200. They can be found in marshes, ponds, sloughs, lakes, ditches, streams and rivers (Boutin and Birkenholz 1987). They are highly prolific and produce 3-4 litters per year that average 5-8 young per litter (Wade and Ramsey 1986) which makes them relatively immune to over harvest.

State harvest rates for muskrats are unknown since trappers are not required to have their pelts tagged (H. Hilton pers. comm. 1999). No muskrats were caught unintentionally by WS between 1993 and 1998, while conducting beaver damage management. If there is an unintentional take of muskrats in the future, it would probably be such a small percentage of the population that it would not have a great impact on the population. Any muskrats taken by WS would be reported to MDIFW for inclusion in their analysis of take, which is considered when they structure their trapping regulations. Any nontarget muskrats caught would have a very low cumulative impact on the Maine muskrat population (H. Hilton pers. comm. 1997).

Mink Information and Impact Analysis - The mink (*Mustela vison*), population range is approximately 76,700 in Maine. They den along streams and lakes. On average, they may produce 2-6 young per year. Occasionally, they may have as many as 10 young (Wade and Ramsey 1986)**.**

During the State's 1996-97 trapping season, 1,365 mink were harvested. About 1% of the population was harvested by private trappers. Between 1993 and 1998 no mink were caught accidentally during beaver damage management activities.

Mink are at risk of being caught by WS as a nontarget species because of their habitat. Any nontarget mink caught would have a very low cumulative impact on the Maine mink population (H. Hilton pers. comm. 1997).

Otter Information and Impact Analysis - River otter, like mink dwell along streams and lake borders. They usually produce two young per year but may have as little as one or as many as five (Wade and Ramsey 1986). Their population is estimated at 21,530 (MDIFW Research and Management Report 1997).

Over a six year period, (1993-98), of conducting beaver damage management, WS caught three otter. Two in 1996 and one in 1997. This averages less than one otter per year taken unintentionally. Approximately 6% (1,237) of the State's otter were taken during Maine's 1996-97 fur harvest season by private trappers. The take by WS represents less than .01% of the total population. This is considered to be of no significant impact on the otter population in Maine. MDIFW concurs with this conclusion (H. Hilton pers. comm. 1997).

Table 2. Number of nontarget animals taken by WS during FY 93 - 98

NUMBER OF NONTARGET SPECIES TAKEN DURING BEAVER MANAGEMENT PROGRAM BY ME WILDLIFE SERVICES BETWEEN FY 93 - 98		
FISCAL YEAR	NUMBER TAKEN	NONTARGET SPECIES
FY93	0	
FY94	0	
FY95	0	
FY96	2	river otter
FY97	1	river otter
FY98	0	

Threatened and Endangered Species - WS follows mitigation measurements that serve to avoid adverse impacts on T&E species. The nationwide WS program engaged in formal consultation with the USFWS pursuant to Section 7 the Endangered Species Act and received a Biological Opinion in 1992 (see USDA FEIS 1997, appendix F and P). The 1992 Biological Opinion covered WS's use of all methods of take used in beaver damage management except, it did not cover the potential effects of beaver dam removal on listed species. To address these other concerns, WS prepared and submitted a Biological Assessment of the potential impacts of Beaver Damage Management activities on T&E species in Maine to the USFWS and MDIFW. WS abides by the reasonable and prudent alternatives and measures established as a result of these consultations. Reasonable and prudent measures are the recommendations to be followed to reduce the amount of incidental take of the species in question. For the full list of the 1992 Biological Opinion see the ADC FEIS, Appendix F (USDA 1997).

WS determined that State T&E species that could potentially be negatively impacted by Beaver Damage Management are the bald eagle (*Haliaeetus leucocephalus*) and peregrine falcon *(Falco peregrinus*).

The Reasonable and Prudent Alternatives and mitigation measures and their terms from the Biological Opinion (USDA 1997, Appendix F) for bald eagles are as follows:

- WS personnel will contact either the local MDIFW office or the appropriate USFWS regional or field office to determine nest and roost locations for bald eagles.

- The appropriate USFWS office shall be notified within five days of the finding of any dead or injured bald eagle. Cause of death, injury or illness, if known, would be provided to those offices.

- If a bald eagle is incidentally taken from the population, use of the control method will be halted immediately and WS will reinitiate consultation.

- When bald eagles are in the immediate vicinity of a proposed wildlife damage management sites, WS personnel will conduct daily checks for carcasses or trapped individuals.

Potential impacts on other T&E species in Maine have been assessed and no adverse impacts are likely to occur from WS actions. USFWS and MDIFW have concurred that WS Beaver Damage Management activities are not likely to adversely affect T&E species in Maine.

Alternative 2 - No Federal Action - Under this alternative, WS would have no impact on wildlife populations (target, nontarget and threatened and endangered species) in Maine. However, MDIFW would probably still provide some level of direct control assistance with beaver damage management but without federal assistance. Also, private efforts to reduce or prevent damage might increase, which could result in increased impacts on wildlife populations. Impacts on target and nontarget could be the same, less or more than those of the proposed action depending on the level of effort expanded by MDIFW, and private persons. For the same reasons shown in the population impacts analysis it is highly unlikely that wildlife populations would be adversely affected by implementation of this alternative.

Alternative 3 - Technical Assistance only - Under this alternative, WS would have no impact on wildlife populations directly. Hypothetical risks would be the same as under Alternative 2, except that technical assistance given by WS would help in the proper selection and use of beaver management tools. MDIFW would probably provide some level of direct control assistance with beaver damage management but without federal direct control assistance. Private efforts to reduce or prevent damage could increase potential impacts to wildlife populations. It is highly unlikely that wildlife populations would be adversely affected by implementation of this alternative.

Alternative 4 - Nonlethal Control Only - Under this alternative, no preventive lethal control actions would be taken by WS. For many individual damage situations, this alternative would be similar to the current program because many producers have tried one or more nonlethal methods such as dam removal or barriers without success or have considered them and found them to be impractical in their particular situations prior to requesting WS' assistance. It is likely that private efforts at control would increase, leading to potentially similar impacts as described in Alternatives 2 and 3. Statewide wildlife populations would likely not be adversely affected by WS implementation of this alternative.

Alternative 5 - Nonlethal Control Methods Employed Prior to the Use of Lethal Control - No preventative lethal control actions would be taken by WS unless nonlethal control actions were not successful implemented. For many individual damage situations, this alternative would be similar to the current program because many producers have tried one or more nonlethal methods. Impacts and hypothetical risks of control methods on target and nontarget species under this alternative would probably be similar to the proposed action if resource owners accept WS' control activities and do not implement their own beaver damage management methods. If

landowners do not receive relief from damage in an acceptable amount of time, they may resort to implementing their own control methods resulting in similar impacts as Alternative 2.

Alternative 6 - Lethal Control Only - Under this alternative, WS would administer lethal control only. Every damage complaint provided with assistance would result in the lethal capture of beaver. If WS killed every beaver trapped in 1997, the beaver population would have been impacted approximately 1.3%. Therefore, it is highly unlikely that wildlife populations would be adversely affected by implementation of this alternative. This impact would be considered very low to the population but, lethal control would only result in short-term relief. Without installing water control structures and maintaining them, the problem will recur. Beaver naturally relocate into sites where others have been taken from and will rebuild dams, thus resulting in more damage unless some type of control structure is utilized.

HUMANNESS OF CONTROL TECHNIQUES

Alternative 1 - Integrated Damage Management - *The Proposed Action/No Action* - Under this alternative, methods viewed by some persons as inhumane would be employed. Despite SOPs designed to maximize humanness, the perceived stress and trauma associated with being held in leg hold traps, live traps or snares until the WS specialist arrives at the trap site to either release or euthanize the animal is unacceptable to some persons. In addition, these methods are used in "drown sets" where the animal drowns shortly after being caught which is also considered inhumane by some persons. Other Cooperative Beaver Damage Management methods used to take target animals including shooting and body-gripping taps (i.e., Conibears) result in a relatively humane death because the animals die instantly or within seconds to a few minutes (D. Noltes pers. comm.). In FY 97, almost all of the beaver taken in Maine by WS were captured with live-traps and snares and then relocated to new sites.

Alternative 2 - No Federal Action - Under this alternative, leg hold traps, live-traps, snares and quick kill traps would not be used by WS. Use of such methods by private individuals and state agencies would probably increase. This could result in less experienced persons implementing the use of traps and snares resulting in a possible increase in the capture and suffering of nontarget animals. It is hypothetically possible that frustration caused by the inability to reduce losses could lead to the use of illegal control techniques, such as illegal pesticides, which might result in increased animal suffering. Overall humaneness of control techniques could be similar or greater than the proposed action.

Alternative 3 - Technical Assistance Only - Impacts regarding this issue of humanness under this alternative would likely be similar to those under Alternative 2, except that technical assistance would lead to better training for the general public on the appropriate procedures for using different methods.

Alternative 4 - Nonlethal Control Only - Suffering by target and nontarget wildlife under this alternative may be perceived by some individuals to be less than under the proposed action since preventative lethal control activity by WS would not be allowed. Persons who perceive restraining animals in live traps for relocation as inhumane would likely not prefer this alternative,

similar to Alternatives 1 and 5. However, the use of quick-kill and leg hold traps and shooting by private and non-private individuals would probably increase if WS used only nonlethal control, resulting in similar impacts as Alternative 2.

Alternative 5 - Nonlethal Control Methods Employed Prior to the Use of Lethal Control - This alternative would result in similar suffering of target and nontarget wildlife as the proposed action. In sites where only structures are needed to sustain a favorable water level, beaver may be left or live trapped and relocated but, WS would not consider lethal control, resulting in potential impacts similar to Alternative 4.

Alternative 6 - Lethal Control Only - This alternative may result in similar, greater or less suffering for target and nontarget animals than the proposed action. The use of lethal control techniques such as conibears or drowning sets can be perceived by some, to cause beaver less suffering because of the short period of time they spend alive caught in a trap. Some people may perceive shooting as a relatively quick, instantaneous and humane death. Animals captured and restrained in snares and leg hold traps and then euthanized by firearms may be perceived by some individuals to have greater suffering than animals killed by shooting, conibears and drowning sets. Persons who feel that lethal control of any type is inhumane would likely not favor this alternative.

3. EFFECTS OF BEAVER DAM REMOVAL ON WETLAND WILDLIFE HABITAT

Alternative 1 - Integrated Damage Management - ***The Proposed Action /No Action*** - Under this alternative, dams on beaver impounded areas would be breached/removed by hand or breached/removed with heavy equipment for the purpose of returning streams, channels, dikes, culverts and irrigation canals to their original function. WS removes or breaches beaver dams when culverts or bridges are blocked and they have flooded areas such as roads, crops, merchantable timber, pastures and other types of property or resources that were not previously flooded. In FY 97, a total of 175 dams were removed to restore water flow through culverts and 649 were breached in Maine. Generally, a dam is breached to lower water levels to a predetermined level. Once this level is reached, water control structures are generally installed to maintain the wetland habitat. WS personnel receive and respond to most requests soon after affected resource owners discover damage.

Dams are removed in accordance with exemptions from permit requirements established by regulation or as allowed under NWPs granted under Section 404 of the Clean Water Act. WS' Wildlife Specialists consult with MDIFW Biologists regarding significant wetlands that might be effected by beaver dam removal. Thus, significant impacts on established wetland wildlife habitat are avoided.

Alternative 2 - No Federal Action - Under this alternative, needs for beaver dam removal would be met by private, state or local government entities. Some beaver impounded areas that WS would advise against draining might be drained under private or local government management, which could have adverse impacts on wetland habitats in limited circumstances.

Alternative 3 - Technical Assistance Only - Reduced effectiveness may cause many local governments or individuals to discontinue federally supervised beaver damage management programs. Beaver damage management needs would then be met by private individuals and local governments possibly having adverse impacts on wetland habitats similar to Alternative 2. Although, the impacts may be to a lesser degree since many individuals might act in accordance with advice given by WS.

Alternative 4 - Nonlethal Control Only - Under this alternative, removing and breaching dams along with live capture and installing water level control devices will have less impacts on wetlands than Alternatives 2 and 3 because trained WS personnel will conduct these procedures. The impacts on wetlands would be similar to the proposed action.

Alternative 5 - Nonlethal Control Methods Employed Prior to the Use of Lethal Control - Under this alternative, no lethal control would be used unless nonlethal control is employed first. Under this alternative, removing and breaching dams and installing water level control devices will have less impacts on wetlands than Alternatives 2 and 3 because trained WS personnel will conduct these procedures. The impacts on wetlands would be similar to the proposed action.

Alternative 6 - Lethal Control Only - WS would only lethally take beaver from damage sites. This alternative would not allow for dams to be removed or breached. Flooded areas would not be returned to their original state with the potential of causing substantial damage to roads, crops, merchantable timber, pastures, other types of property or resources. This alternative would be deemed ineffective by local governments individuals who would discontinue participating in the federally supervised beaver management program. Thus, the adverse impacts on wetland areas would be similar to Alternative 2.

4. EFFECTS OF THE BEAVER MANAGEMENT ON PUBLIC SAFETY

Alternative 1 - Integrated Damage Management - *The Proposed Action /No Action* - Some beaver management methods could pose risks where they are not used by professionals or properly trained individuals. Methods used in the Cooperative Beaver Management Program that could present risks are the use of firearms, body-gripping and live traps, and snares. However, no accidents resulting in harm to any persons have occurred under the current program.

WS may occasionally use firearms to dispatch beaver caught in traps. WS personnel are trained and given refresher courses to maintain awareness of firearm safety and handling as prescribed by WS policy. Therefore, no adverse impacts to public safety are expected from the use of firearms by WS in Maine.

WS may occasionally use body-gripping traps (e.g. Conibear), to lethally take beaver. Traps are strategically placed to minimize nontarget take and exposure to the public. Signs are posted to alert the public of their presence. In addition, body-gripping traps are restricted to water sets according to WS policy, which further reduces threats to public safety and nontarget take.

WS' preferred method of taking target beaver is through the use of live traps and snares. They are strategically placed to minimize nontarget take and exposure to the public. Signs are used to post properties where traps are set to alert the public of their presence.

ME WS' Cooperative Beaver Management Program does not currently use explosives to remove dams. Therefore the safety issues surrounding the use of explosives by WS does not currently exist in the State of Maine. Should such a technique be incorporated into the Cooperative Beaver Management Program (CBMP), WS personnel would attend a explosives training course as required by APHIS.

Under this alternative, the risk of adverse impacts to the public from beaver damage management methods would continue to be low as discussed. Risk to members of the public from use of firearms, body-gripping and live-traps, as well as snares to take beaver would remain low due to adherence to WS policies, mitigation measures, SOPs, and required safety precautions and training.

Alternative 2 - No Federal Action - There would be no potential for adverse impacts to humans from federal use of beaver management methods. However, State agencies and private individuals using a variety of beaver damage management methods could possibly increase the potential risks to public safety because of lack of training and knowledge of the proper use of such methods. Body-gripping and live traps can cause injuries to people who try to use them without proper training. Private people who use firearms to destroy nuisance beaver may be inadequately trained in safety and/or may not be held accountable for unsafe practices. Beaver control methods such as the illegal use of pesticides, explosives and traps may be used unsafely and improperly simply out of frustration by resource owners over the inability to reduce damage losses to a tolerable level. As an illustration, in 1997 a man was killed when he and another man set fire to a beaver lodge and quickly were overcome with smoke; the man suffered a heart attack while trying to escape.–The potential risks and effects on public safety would likely increase under this alternative, but not to the point that they would be substantial.

Alternative 3 - Technical Assistance Only - The effects of implementing this alternative on public safety would be similar to, but somewhat less than, Alternative 2. Many individuals might receive technical assistance from WS and may act in accordance with the safety advice given. If technical advise given by WS is not followed or obtained, and resource owners implement their own beaver management methods, the risks to the public could likely increase with potential effects similar to Alternative 2.

Alternative 4 - Nonlethal Control Only - There may be potential risks to the public's safety if one were to become entangled in a live trap or snare (used as a restraining device). However, no accidents resulting in harm to any persons have occurred under the current program. Live traps and snares are strategically placed to minimize nontarget take and exposure to the public. Signs are used to post properties where traps are set to alert the public of their presence. Using only nonlethal control may reduce effectiveness and might cause local governments and individuals to stop participating in the federally supervised Cooperative Beaver Management Program and result in similar impacts as described under Alternative 2. However, this would be less likely than under

Alternative 2 and 3 because some beaver management needs would be directly implemented by WS. Risk of adverse impacts to the public from the use of beaver management methods would be greater than the current program, but probably less than Alternatives 2 and 3.

Alternative 5 - Nonlethal Control Methods Employed Prior to the Use of Lethal Control - Under this Alternative, potential safety risks associated with WS implementing beaver management tools would be similar to Alternative 4 and the proposed action. If resource owners decide that this Alternative is ineffective, they may decide not to participate in the federally supervised beaver management programs, resulting in similar impacts as described under Alternative 2. However, this would be less likely than under Alternative 2 and 3 because some beaver management needs would be directly met by WS.

Alternative 6 - Lethal Control Only -
Under this Alternative, potential safety risks associated with WS implementing lethal beaver management tools would be similar the proposed action. Lethal methods used in beaver management that could present risks are the use of firearms, body-gripping traps and snares. If only lethal control were implemented, the same response to the program as in Alternatives 4 and 5 may occur. A lethal control only program may result in reduced effectiveness and might cause local governments and individuals to stop participating in the federally supervised Cooperative Beaver Management Program, resulting in similar impacts as Alternative 2.

5. ESTHETICS AND CONFLICTS

Alternative 1 - Integrated Damage Management - *The Proposed Program /No Action* - Some beaver control techniques may be disturbing to some individuals. Methods used in beaver management which may cause emotional upset include the use of firearms, body-gripping traps, leg hold traps, live traps and snares.

Any lethal methods used to reduce a population can be in conflict with public interest. Generally, lethal methods such as firearms and body-gripping traps are used as a last resort in Maine. WS tries to minimize the lethal take of problem beaver by using nonlethal methods prior to lethal control.

Some nonlethal methods like live trapping or snaring can also cause controversy. Some people may perceive a beaver being held in a live trap or a snare prior to relocation as inhumane to the animal.

Special interest groups such as trapping associations may have a conflict with WS moving beaver from roadside sites (considered “easy access”). Though nonlethal control poses some controversy, it is more accepted than using lethal control at these sites.

Almost all control methods used in beaver management can have an impact on public emotions. WS tries to address these issues by first using nonlethal methods such as installing water levelers, fencing, or live capture and relocation. Lethal control is then used if the other control methods are unsuccessful.

Alternative 2 - No Federal Action - This alternative would have an indirect impact on public emotions if there were no federal involvement for beaver management in Maine. Since direct operational management or technical assistance wouldn't be provided by WS, State agencies or private individuals may only use lethal methods as a quick solution. This would not provide for nonlethal methods to be used prior to lethal which may heighten public emotions. Esthetic conflicts under this alternative are likely to be greater than the proposed action.

Alternative 3 - Technical Assistance - Under this Alternative, less emotional impact on public bystanders would likely occur if resource owners accept WS technical advise than under Alternative 2, but not as great as the proposed action. As with Alternative 2, this alternative would indirectly impact public emotions and conflicts if WS technical advise is not taken or followed. State agencies or private individuals may employ their own beaver control methods increasing the potential of negative impacts to public emotions and conflicts. Some individuals may have very little tolerance for live trapping or relocating the problem beaver resulting in a potential increase in the number of offending animals being removed by lethal means.

Alternative 4 - Nonlethal Control Only - Using only nonlethal control at problem sites would likely be pleasing to most special interest groups. Water control devices and live capture and relocation would be the only methods implemented by WS. WS would not intentionally kill beaver using these methods, allowing the beaver population to be enjoyed by wildlife watchers. It is likely that persons beaver watching or sport trapping opportunities at a particular location may be reduced or eliminated by the relocation of problem beaver to new location sites. These people would not likely support this alternative. Impacts of this alternative would be less than the proposed action for those individuals that do not believe in the killing of beaver and would be similar to the proposed action for those individuals that believe that beaver should not be relocated or killed at anytime.

Alternative 5 - Nonlethal Control Methods Employed Prior to the Use of Lethal Control - Esthetic and conflicts under this alternative are likely to be to similar to the proposed action, but not as great as Alternatives 2 and 3. It is likely that persons beaver watching or sport trapping opportunities at a particular location may be reduced or eliminated by lethal removal or relocation of problem beaver to new location sites. These people would not likely support this alternative. Impacts of this alternative would be similar to the proposed action for those individuals that believe that beaver should not be relocated or killed at anytime. In some instances, private and public individuals may lose patience with nonlethal control methods being conducted prior to lethal control. In these instances, such individuals may conduct lethal control on their own, also causing conflicts with special interest groups, resulting in impacts similar to Alternative 2.

Alternative 6 - Lethal Control Only - This alternative would negatively impact some people more so than others. Impacts of this Alternative would be similar to the proposed action and Alternative 5 for those individuals that do not support the lethal removal of beaver at anytime. Killing any animal, not just beaver is controversial. Individuals who believe that killing any animal is unacceptable, will not approve of any beaver being killed by WS. It is likely that persons beaver

watching or sport trapping opportunities at a particular location may be reduced or eliminated by lethal removal of problem beaver. These people would not likely support this alternative.

Summary:

This section analyzed the environmental consequences of each issue as an alternative in comparison with the proposed action/no action to determine if the real or potential impacts are greater, lesser or the same. Table 3 briefly describes the range of impact affected on each issue.

Table 3. Alternative Impacts on Issues Compared.

ISSUES	ALTERN. 1	ALTERN. 2	ALTERN . 3	ALTERN . 4	ALTERN. 5	ALTERN. 6
Populations:						
Target Species	Low	Low to Moderate	Low to Moderate	Low to Moderate	Low to Moderate	Low to Moderate
Nontarget Species	Low	Low to Moderate	Low to Moderate	Low to Moderate	Low to Moderate	Low
T&E Species	Low	Low to Moderate	Low to Moderate	Low to Moderate	Low to Moderate	Low
Humaneness	Low to Moderate	Low to High	Low to High	Low to Moderate	Low to Moderate	Low to Moderate
Habitat: Wetland Wildlife	Low	Low to High	Low to Moderate	Low to Moderate	Low to Moderate	Low to Moderate
Public Safety	Low	Low to Moderate	Low	Low	Low	Low to Moderate
Esthetics and Conflicts	Low to High	Low to High	Low to High	Low to High	Low to High	Low to High

Key: Low = The real or potential impacts are lesser.
Moderate = The real or potential impacts stay the same.
High = The real or potential impacts are greater.

Cumulative Impacts

No significant cumulative environmental impacts are expected from any of the 6 alternatives. Under the Proposed Action and Alternative 5 and 6, the lethal removal of beavers would not have a significant impact on overall beaver populations in Maine, but some local reductions may occur. This is supported by the MDIFW, which is the agency with responsibility for

managing beavers in the State. No risk to public safety is expected when WS' services are provided and accepted by requesting individuals in Alternatives 1,3,4,5 and 6, since only trained and experienced wildlife biologists would conduct and recommend beaver damage management activities. There is a slight increased risk to public safety when beaver damage management activities are conducted by persons that reject WS assistance and recommendations in Alternatives 1, 3, 4, 5 and 6 and when no WS assistance is provided in Alternative 2. In all 6 Alternatives, however, it would not be to the point that the impacts would be significant. Although some persons will likely be opposed to WS' participation in beaver damage management activities to protect agricultural resources, property, human health and safety, and natural resources from beaver damage, the analysis in this EA indicates that WS Integrated beaver damage management program will not result in significant cumulative adverse impacts on the quality of the human environment.

CONSULTATIONS

The following individuals and organizations were consulted concerning the preparation of this EA. Their suggestions and concerns were considered in the analysis of the various alternatives considered.

Maine Cooperative Extension Service - Kathy Elliot

Maine Department of Transportation - Brian Pickard

Maine Department of Inland Fisheries and Wildlife - Henry Hilton

Maine Forest Service - James H Blanck

U.S. Army Corps of Engineers - Jay Clement

U.S. Fish and Wildlife Service - Ronald Joseph

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APPENDIX A

Response to Comments
to the
Environmental Assessment (EA) for

MANAGEMENT OF BEAVER DAMAGE WITHIN THE STATE OF MAINE

WS received seven comment letters from the public involvement process of the EA. NEPA requires that proper consideration be given to all reasonable points of view, particularly as they may relate to the issues being considered. It is important to consider and address concerns or criticisms that may arise. Appendix A is a summary of comments received from review of the public involvement process and pre-decisional EA.

Issue 1: The Eastern timber wolf, *Canis lupis lycdon*, is a natural predator of beaver. WS should consider encouraging the recovery of this species into Maine.

Program Response. The reintroduction of the Eastern timber wolf to Maine is outside the scope of this EA and WS' jurisdiction. The authority to approve reintroduction of the Eastern timber wolf to Maine is the responsibility of management agencies such as Maine Department of Inland Fisheries and Wildlife and/or the U.S. Fish and Wildlife Service.

Issue 2: Comments were received that water control devices are effective and the EA gave little consideration to water control devices.

Program Response: Several commentors were concerned that water control devices were not given adequate consideration for solving beaver damage problems. The EA addressed the use of water control devices. WS stated in the EA that water control devices could be used or recommended if appropriate. However, new information about the use of water control devices has been brought to our attention and this was considered in evaluating the proposed action.

From the comments received, it appears that there may be some confusion as to the consideration that WS will give to the use of water control devices in solving beaver damage conflicts. If a water control device (fence or pipe system) is consistent with the landowners objectives, will alleviate the damage, and if funding is available for installation, then WS would use or recommend their use. WS would also provide technical assistance to landowners who want to install these devices.

Water control devices (pond levelers) have been used for many years in Maine as well as other states, with varying degrees of success. Various types of beaver pond levelers have been described (Arner 1964, Laramie and Knowles 1985, Lisle 1996, NY State Dept. of Environmental Conservation (NYDEC) 1997, Roblee 1984) and installation of pond levelers can be effective in reducing flooding in certain situations (Minn. Dept. Nat. Res. 1994, Miller and Yarrow 1994) if properly maintained. Water control devices are generally of two basic types: pipe systems and fence systems. Pipe systems consist of a perforated pipe passing through the beaver dam and the upstream end of the pipe may be encased in wire mesh. There are numerous types of pipe systems, including the Clemson Pond Leveler (NYDEC 1997, Wood et al. 1994, Wood and Woodward 1992). Fence systems feature a fence erected in front of the culvert to prevent the beaver from blocking the culvert with debris (Lisle 1996, NYDEC 1997, B. Gotie and J. Lamindola, NYDEC, pers. commun., 2000). Some fence systems may have a pipe going from the fence to the culvert to allow water to flow since the fence may become clogged with debris (B. Gotie and J. Lamindola, NYDEC, pers. commun., 2000).

The "*Beaver Deceiver*"fence system is a relatively recent water control system that attempts to quiet, calm, and deepen the water around culverts and exclude beaver from a wide area around the upstream opening of the culvert (Lisle 1996). A critical part of the beaver deceiver strategy is to silence or prevent the sound of running water (S.

Lisle, Penobscot Nation, letter to J. Cromwell, WS, September 7, 2000). The beaver deceiver is a water control system that has been evolving since 1996 (S. Lisle, Penobscot Nation, letter to J. Cromwell, WS, September 7, 2000) and has been effective at controlling beaver flooding in some situations.

One benefit of water control devices is that the beaver pond or wetland area can be maintained or improved, along with the ecological and recreational benefits derived from these areas, while the damage from beaver flooding is alleviated or at least reduced. However, water control devices are not applicable or efficient in all damage situations. Landowners consider many factors in determining the course of action to resolve beaver damage problems. For example, landowners must consider the cost of control, the probability that the method will resolve the problem, the amount of maintenance required, and whether the method is consistent with objectives for the property (Nolte et al. 2000). Water control devices are most effective in specific types of terrains and sites, as described in Chapter 2, page 13, of the EA (NYDEC 1997, Wood et al. 1994). Water control devices have required frequent maintenance and may be costly to install and maintain (Jensen et al.1999, NYDEC 1997). Jensen et al.(1999) reported that the initial costs for a Clemson Beaver Pond Leveler and a Pitchfork Guard/Grate in the first year, including the costs of materials, installation, and maintenance, were $1,542 and $3,688, respectively. The cost of a Beaver Deceiver may range from $150 - $1,500, and an additional cost would be applied if pipes were needed at the site (S. Lisle, Penobscot Nation, letter to J. Cromwell, WS, September 7, 2000).

Nolte et al. (2000) also found that pond levelers placed in sites with high beaver activity without implementing local population control measures frequently failed. Ninety-five percent of the successful levelers in this study were at sites that had received some local population control measure either before, after, or before and after the leveler was installed (Nolte et al. 2000). Wood et al. (1994) also acknowledged that pond levelers do not negate the need for reduction of local beaver populations. Beaver may block the device or may build additional dams upstream or downstream, inhibiting the success or function of the device.

We know of several landowners that have WS installed water control devices on their property. Many are pleased with the results, while others will probably not consider using them again. Maine WS will continue to install water control devices on a case-by-case basis if the site is suitable for a water control structure. Many sites are unsuitable for installation of water control structures or have previously had structures installed which failed. Frequently, water levels must be maintained at levels that remain within normal stream channels to prevent water from softening roadways and rail beds.

Issue 4. The Penobscot Nation recommends Wildlife Services strictly use non-lethal control practices.

Program Response: This alternative would restrict and require Maine WS to conduct non-lethal damage management only. Non-lethal control will limit WS's ability to resolve various problems. WS is authorized to protect American agricultural and natural resources, property, and human health and safety (Animal Damage Control Act of March 2, 1931, as amended, 46 Stat. 1486; 7 U.S.C. 426-426c, Rural Development, Agriculture, and Related Agencies Appropriations Act of 1988, Public Law 100-102, Dec. 27, 1987. Stat. 1329-1331 (7U.S.C. 426c)). This recommendation would not allow for the timely application of a full range of integrated wildlife damage management techniques to resolve wildlife damage problems and may comprise damage resolution in some cases.

Currently, technical assistance and operational non-lethal and lethal damage management are provided in the context of an integrated wildlife damage management approach to most efficiently and effectively resolve damage problems, and the WS Decision Model (Slate et al. 1992) is used to help determine the best approach for resolving wildlife damage. The current Maine WS Program recognizes the importance of non-lethal methods as an important dimension of BMP and non-lethal methods are considered or used first in each damage management strategy, if applicable, as described in the Proposed Alternative. These non-lethal methods are promoted through program directives, literature and in personal consultations with affected resource owners. Protection of resources is Maine WS' objective, and WS is available to all who request assistance. Technical assistance and non-lethal control information will continue to be provided by WS to anyone that asks for the information.

Issue 5. The Penobscot Nation recommends that all "nuisance" beaver removed lethally by recreational trappers be reported.

Program Response: The implementation and monitoring of recreational trapping in Maine is outside the jurisdiction of WS legislative authority. Recreational trapping in Maine is conducted under the authority granted by the Maine Department of Inland Fisheries and Wildlife.

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DECISION AND
FINDING OF NO SIGNIFICANT IMPACT
FOR
MANAGEMENT OF BEAVER DAMAGE WITHIN THE STATE OF MAINE

The U.S. Department of Agriculture, Animal and Plant Health Inspection Service (USDA-APHIS), Wildlife Services (WS) program responds to requests for assistance from individuals, organizations and agencies experiencing damage caused by wildlife. Ordinarily, according to APHIS procedures implementing the National Environmental Policy Act (NEPA), individual wildlife damage management actions may be categorically excluded (7 CFR 372.5(c), 60 Fed. Reg. 6000-6003, 1995). To evaluate and determine if any potentially significant impacts to the human environment from WS' planned and proposed program would occur, an environmental assessment (EA) was prepared. The EA documents the need for beaver damage management in the State of Maine and assessed potential impacts of various alternatives for responding to damage problems. WS' proposed action is to implement an Integrated Damage Management (IDM) program on all land classes in Maine. Comments from the public involvement process were reviewed for substantial issues and alternatives which were considered in developing this decision.

The EA analyzes the potential environmental and social effects for resolving beaver damage related to the protection of agricultural and natural resources, property, and threats to public health and safety on private and public lands in Maine. The State of Maine has an area of 19.8 million acres; in Fiscal Year-99{(FY-99) October 1-September 30}, Maine WS had agreements to conduct beaver damage management on about 2,286 acres of the land area {Management Information System (MIS) 1999}. In FY-98 there were 908 beaver damage management projects conducted on properties covering an area of about 2,448 acres of the land area of Maine (MIS 1998). In FY-99 there were782 beaver damage management projects conducted on approximately 2,286 acres of the land area of Maine (MIS 1999).

WS is the Federal program authorized by law to reduce damage caused by wildlife (Animal Damage Control Act of March 2, 1931, as amended (46 Stat. 1486; 7 U.S.C. 426-426c) and the Rural Development, Agriculture, and Related Agencies Appropriations Act of 1988, Public Law 100-102, Dec. 27, 1987. Stat. 1329-1331 (7 U.S.C. 426c). Wildlife damage management is the alleviation of damage or other problems caused by or related to the presence of wildlife, and is recognized as an integral part of wildlife management (The Wildlife Society 1992). WS uses an Integrated Wildlife Damage Management (IWDM) approach, commonly known as Integrated Pest Management (WS Directive 2.105) in which a combination of methods may be used or recommended to reduce damage. WS wildlife damage management is not based on punishing offending animals but as one means of reducing damage and is used as part of the WS Decision Model (Slate et al. 1992, USDA 1997, WS Directive 2.201). The imminent threat of damage or loss of resources is often deemed sufficient for wildlife damage management actions to be initiated (U.S. District Court of Utah 1993). Resource management agencies and individuals have requested WS to conduct beaver damage management to protect agricultural and natural resources, property, and wildlife, including threatened and endangered (T&E) species in Maine. All Maine WS wildlife damage management is in compliance with relevant laws, regulations, policies, orders and procedures, including the Endangered Species Act of 1973 and Clean Water Act.

Maine WS consults and works with the Maine Department of Inland Fisheries and Wildlife (MDIFW), Maine Department of Agriculture (MDA), Maine Department of Transportation (MDOT), Maine Department of Forestry (MDOF), Maine Department of Environmental Protection (MDEP) and U.S. Army Corps of Engineers (USACE) to reduce wildlife damage. The MDIFW has the responsibility to manage all wildlife in Maine, including federally listed T&E species and migratory birds, which is a joint responsibility with the US Fish and Wildlife Service (USFWS). Memoranda of Understanding (MOUs) signed between APHIS-WS and the MDIFW and MDA clearly outline the responsibility, technical expertise and coordination between agencies. A Multi-agency Team with representatives and consultants from each of the aforementioned agencies convened to assess the impacts of WS beaver damage management in Maine. The MDIFW, MDA and MDOT, MDOF and USACE worked with Maine WS to determine whether the proposed action is in compliance with relevant management plans, laws, regulations, policies, orders, and procedures.

Consistency

Wildlife damage management conducted in Maine will be consistent with MOUs and policies of APHIS-WS, the MDIFW, MDA, MDOT, MDOF, MDEP, USFWS, USACE, and the EA. The agencies may, at times, restrict damage management that concerns public safety or resource values.

The analyses in the EA demonstrate that Alternative 1: 1) best addresses the issues identified in the EA, 2) provides safeguards for public health and safety, 3) provides WS the best opportunity to reduce damage while providing low impacts on non-target species, 4) balances the economic effects to agricultural and natural resources, and property, and 5) allows WS to meet its obligations to the MDIFW and other agencies or entities.

Monitoring

The Maine WS program will annually provide to the MDIFW the WS take of target and non-target animals to help insure the total statewide take (WS and other take) does not impact the viability of beaver populations as determined by the MDIFW. In addition, the EA will be reviewed each year to ensure that it and the analysis are sufficient.

	Conservative Beaver Population Estimate
Est. Population	53200
WS Kill FY-97	56
Private Take (MDIFW data)	16640
Total Kill	16696
WS Kill - % of Population	0.1%
Other Kill - % of Population	31.0%
Total Kill - % of Population	31.1%

The largest number of beaver removed by Maine WS to resolve damage problems in any year was 56 beaver in FY 97 (Table 1). However, the public involvement process for this EA resulted in an increased public awareness of Maine WS damage management assistance. As a result, there is a potential for increased requests for assistance with beaver damage problems and the potential requirement for the removal of a larger number of beaver.

As stated above, 56 beaver was the most beaver lethally removed by Maine WS in any previous year. The most likely anticipated WS kill in the next 12 months is 100 - 200 beaver, with a maximum anticipated WS kill of 3,000 beavers in subsequent years.

Based on research studies, USDA (1997, Table 4-2) stated that beaver populations could sustain an annual harvest rate of up to 30% without declining (Novak 1987). The largest number of beaver killed previously by Maine WS was 56 beaver in FY97 or .1% of the minimum estimated population (Table 1). Assuming a maximum WS kill of 3,000 beaver annually, the total kill of beaver would be only 6% of the estimated minimum beaver population of 53,200. Maine WS' highest take of beaver appears to have a minimal impact on the overall beaver population but, when added to the Private Take of 31%, reaches a level of 37%. This level of Total Kill would begin to cause a decline in the population if harvest is sustained at this level. However, it is likely that MDIFW would adjust the overall beaver season to reduce the overall kill as the initial statewide harvest exceeded management goals and thus WS' take has a low magnitude of impact.

Public Involvement

Issues related to the proposed action were initially developed by an interdisciplinary team involving the MDIFW, MDA, MDOF, MDOT, and USACE. This Multi-agency team refined the issues and identified preliminary alternatives. Due to interest in the Maine WS Program, the Multi-agency Team concurred that Maine WS include public involvement in this EA process. An invitation for public comment letter containing issues, objectives, preliminary alternatives, and a summary of the need for action, was sent to five individuals or organizations identified as interested in Maine WS

projects. Notice of the proposed action and invitation for public involvement was placed in one newspaper (Bangor Daily News) with circulation throughout Maine. There was a 30-day comment period for the public to provide input on the development of the EA. Initial comments from the public were documented from 4 letters or written comments. WS released a pre-decisional EA approximately 22 months after the initial public comment period. As noted in the initial public comment letter, the EA was sent to the 4 commentors and availability of the EA was advertized in the same newspaper, and there was a second 30-day comment period. No comment letters were received from the public after review of the pre-decisional EA. At the request of Tribal representatives, the second 30 day comment period was extended an additional 30 days for the Indian Tribes of Maine to allow tribes ample opportunity to comment. Three comment letters were receive from the Passamaquody, Maliseet and Penobscot Indian Nations during this extended 30-day comment period.

Major Issues

The EA describes the alternatives considered and evaluated using the identified issues. The following issues were identified as important to the scope of the analysis (40 CFR 1508.25).

- Effects on wildlife populations including non-target species and T&E species
- Humaneness of control techniques
- Effects of beaver dam removal on wetland wildlife habitat
- Effects of beaver management on public safety
- Esthetics and conflicts

Affected Environment

The areas of the proposed action includes town, state and interstate highways, private gravel roads, railroads and their right-of-ways where beaver activities could cause damage. These areas may also include property in or adjacent to subdivisions, business and industrial parks where beaver impound water, gnaw or fell trees. Additionally, affected areas would include timberlands, crop lands, and pastures that experience financial losses from beaver flooding or gnawing.

Alternatives That Were Fully Evaluated

The following Alternatives were developed by the Multi-agency Team to respond to the issues. Four additional alternatives were considered but not analyzed in detail. A detailed discussion of the effects of the Alternatives on the issues is described in the EA; below is a summary of the Alternatives.

- Alternative 1 - Fully Integrated Beaver Damage Management (The Proposed Action/No Action). This alternative would allow for technical assistance, non-lethal and lethal beaver damage management based on the needs of multiple resources (agricultural and natural resources, property, and public health and safety) and would be implemented following consultations with the MDIFW, other state and federal agencies or Tribes, as appropriate. This alternative would allow for a Maine WS program to protect multiple resources on all land classes at the request of the land management agency or individual if a Cooperative Agreement and/or Agreement for Control with Maine WS, as appropriate, are in place. Alternative 1 conforms to the MOUs between WS, the MDIFW and MDA that recognize the management of wildlife damage in Maine as an important way to achieve land and resource management objectives. Analysis of Alternative 1 showed a low level of impact for the target species, non-target species and T&E species.

- Alternative 2 - No WS Beaver Damage Management in Maine. This alternative would result in no assistance from WS in reducing beaver damage in Maine. WS would not provide technical assistance or operational damage management services. Alternative 2 was not selected because WS is charged by law and reaffirmed by a court decision to reduce damage caused by wildlife (U. S. District Court of Utah 1993). This alternative would not allow WS to meet its statutory responsibility for providing assistance or to reduce wildlife damage. In addition, Alternative 1 violates MOUs between APHIS-WS and the MDIFW and MDA whereby the MDIFW and MDA mutually recognize that management of wildlife damage in Maine is important and may involve wildlife damage management to achieve management objectives.

- Alternative 3 - Technical Assistance Only. Under this alternative, Maine WS would not conduct operational beaver damage management in Maine. The entire program would consist of only technical assistance and all operational beaver damage management by WS in Maine would be eliminated. Alternative 3 was not selected because it would not allow WS to: 1) respond to all requests, 2) monitor the implementation of producer used non-lethal methods, 3) assist the MDIFW or USFWS in meeting wildlife management objectives, 4) address all public health and safety requests, and 5) allow WS to assist with beaver damage as requested.

- Alternative 4 - Non-lethal Beaver Damage Management. This alternative would not allow the use of lethal methods by WS as described under the proposed action. Only non-lethal methods could be implemented by Maine WS to reduce damage caused by beaver. Alternative 4 was not selected because it would not allow WS to: (1) respond to all requests, (2) monitor the implementation of producer used non-lethal methods, (3) assist the MDIFW or USFWS in meeting wildlife management objectives, (4) address all public health and safety requests and (5) it would leave some of the public without a means to alleviate beaver damage.

- Alternative 5 - Non-lethal Methods Employed Prior to the Use of Lethal Beaver Damage Management. This alternative would not allow the use of lethal methods by WS as described under Alternative 1 until non-lethal methods had been attempted and implemented to relieve damage caused by beaver and found to be ineffective or inadequate. Alternative 5 was not selected because it would not allow WS to (1) respond to all requests, (2) monitor the implementation of producer used non-lethal methods; and (3) assist the MDIFW or USFWS in meeting wildlife management objectives.

- Alternative 6 - Only Lethal Beaver Damage Management. Under this alternative, only lethal operational damage management and technical assistance would be provided by WS. Alternative 6 was not selected because it would not allow WS to: 1) respond to all requests, 2) monitor the implementation of producer used non-lethal methods, and 3) assist the MDIFW or USFWS in meeting wildlife management objectives.

Alternatives Considered but not Analyzed in Detail are the Following:

Compensation for Wildlife Damage Losses. The Compensation Alternative would direct all Maine WS program efforts and resources to the verification of losses from beaver and providing monetary compensation. WS services would not include any direct damage management nor would technical assistance or non-lethal methods be provided. This alternative was eliminated from detailed analysis in USDA (1997) because of many disadvantages such as: (1) the alternative would require large expenditures of money and a large work force to investigate and validate all losses and to determine and administer appropriate compensation, (2) compensation would likely be below full market value and many losses could not be verified, (3) compensation would give little incentive to resource owners to limit damage through management strategies, (4) not all property owners/managers would rely completely on compensation and lethal control of beaver would most likely continue as permitted by state law, and (5) Congress has not appropriated funds to compensate for wildlife damage.

Bounties. Bounties or payment of funds for killing animals suspected of causing economic losses is not supported by the MDIFW and MDA. Maine WS concurs with these agencies because: (1) bounties are generally not effective in managing wildlife, (2) circumstances surrounding take of animals are largely unregulated, (3) no process exists to prohibit taking of animals from outside the damage management area for compensation purposes, and (4) Maine WS does not have the authority to establish a bounty program**.**

Eradication and Long-Term Population Suppression. The eradication and suppression alternative would direct all Maine WS program efforts' toward planned, total elimination or large-scale suppression of beaver. Eradication of beaver in Maine is not supported by the public, MDIFW or WS. WS operates according to international, federal, and state laws and regulations enacted to ensure species viability.

Suppression would direct Maine WS program efforts toward managed reduction of certain problem wildlife populations or groups. To consider large-scale population suppression as a goal of the Maine WS program is not realistic, practical

or allowable under present WS policy. In addition, Maine WS activities are expected to be conducted on only a small portion of the area where beaver damage occurs.

This alternative was not considered by Maine WS in detail because: (1) WS is opposed to the eradication or large scale suppression of any native wildlife species, (2) MDIFW opposes the eradication or large scale suppression of any native Maine wildlife species, (3) the eradication or large suppression of a native species would be extremely difficult, if not impossible to accomplish, (4) eradication or suppression would be cost prohibitive, and (5) eradication is not acceptable to most people.

Reproduction Control.

Under this alternative, beaver populations would be managed through sterilization or contraceptives. This alternative would implement the use of chemicals or surgical procedures to inhibit reproduction of beaver, and ultimately reduce population levels. Reduction of local populations would result from natural mortality combined with reduced fecundity. No beaver would be killed directly under this alternative; however, treated beaver would continue to cause damage. Populations of dispersing beaver would probably be unaffected.

Contraceptive measures for mammals can be grouped into four categories: surgical sterilization, oral contraception, hormone implantation, and immuno-contraception (the use of contraceptive vaccines). These techniques would require that beaver receive either single, multiple, or possibly daily treatment to successfully prevent conception. Chemical sterilants can be classified into one of three types: chemosterilants, immunocontraceptives, and temporary, short-term contraceptives. Chemosterilants have been suggested as a means to managing beaver populations (Davis 1961, Arner 1964). Several reproductive inhibitors have been proposed for use in beaver population reduction, including quinestrol (17-alpha-ethynyl-estradiol - 3-cyclopentylether) and mestranol (Gordon and Arner 1976, Wesley 1978). While chemosterilants have been shown to reduce beaver reproduction in controlled experiments, there are no practical, effective methods for distributing chemosterilants in a consistent way to wild, free-ranging beaver populations (Hill et al.1977, Wesley 1978).

As with chemical repellents and toxicants, a reproduction inhibitor could pose potential risks to non-target wildlife and the environment. Any material would have to be intensively tested and approved for use. Inhibition of reproduction may also affect behavior, physiological mechanisms, and colony integrity (Brooks et al. 1980). Additional research is needed before the environmental effects, and effects to populations and individual animals, from reproductive inhibitors are known. In addition, the use of chemosterilants or immunocontroceptives would be subject to approval by federal and state agencies. Currently, there are no chemical reproductive inhibitors registered to use for beaver damage management in the United States. Should a technique or chemical become registered and approved for use in Maine, it would be incorporated into the IDM Program in Maine.

This alternative was not considered in detail because: (1) it would take a number of years of implementation before the beaver population would decline and; therefore, damage would continue at the present unacceptable levels for a number of years; (2) surgical sterilization would have to be conducted by licensed veterinarians, would, therefore, be extremely expensive; (3) it is difficult to effectively live trap or chemically capture the number of beaver that would need to be sterilized in order to effect an eventual decline in the population; (4) no chemical or biological agents for contracepting beaver has been approved for use by state and federal regulatory authorities. Therefore, use of contraceptives at present is not realistic since there are no effective and legal methods.

Biological Control.

The only biological control that has been tried for managing beavers is the introduction of alligators (Wade and Ramsey 1986). Although alligators can and do sometimes prey on beaver, they cannot be relied on the reduce numbers to the point that damage no longer occurs. Alligators could not be introduced in Maine because they could not survive the climate. Introducing them could present hazards to people and pets. For these reasons, the method was not considered.

Finding of No Significant Impact

The analysis in the EA indicates that there will not be a significant impact, individually or cumulatively, on the quality of the human environment as a result of this proposed action. I agree with this conclusion and, therefore, find that an EIS need not be prepared. This determination is based on the following factors:

1. Beaver damage management, as conducted by WS in Maine, is not regional or national in scope.

2. The proposed action would pose minimal risk to public health and safety.

2. There are no unique characteristics such as park lands, prime farm lands, wetlands, wild and scenic areas, or ecologically critical areas that would be significantly affected.

4. The effects on the quality of the human environment are not highly controversial. Although there is some opposition to wildlife damage management, this action is not highly controversial in terms of size, nature or effect.

5. Based on the analysis documented in the EA and the accompanying administrative file, the effects of the proposed damage management program on the human environment would not be significant. The effects of the proposed activities are not highly uncertain and do not involve unique or unknown risks.

3. The proposed action would not establish a precedent for any future action with significant effects.

4. No significant cumulative effects were identified through this assessment. The number of beaver and muskrat taken by WS, when added to the total known other take of both species, falls well within allowable harvest levels.

8. The proposed activities would not affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places, nor would they likely cause any loss or destruction of significant scientific, cultural, or historical resources.

5. An informal consultation with the USFWS confirmed that the proposed action would not conceivably adversely affect any T&E species.

10. The proposed action would be in compliance with all federal, state, and local laws imposed for the protection of the environment.

Decision and Rationale

I have carefully reviewed the EA and the input from the public involvement process. I believe the issues identified in the EA are best addressed by selecting Alternative 1 (*Fully Integrated Beaver Damage Management (The Proposed* Action/No Action). Alternative 1 would provide the greatest effectiveness and selectivity of methods available, the best cost- effectiveness, and has the potential to even further reduce the current low level of risk to the public, pets and T&E species. WS will continue to use currently authorized wildlife damage management methods in compliance with all the applicable mitigation measures listed in the EA. Most comments identified from public involvement were minor and did not change the analysis. Therefore, it is my decision to implement the proposed action as described in the EA.

For additional information regarding this decision, please contact Edwin Butler, APHIS-WS, Capital West Business Center, 81 Leighton Road Suite 12, Augusta, Maine 04330.

Gary E. Larson, Regional Director
APHIS-WS Eastern Region

Date

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