

White Mountain National Forest



United States
Department of
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Forest Service

Eastern
Region



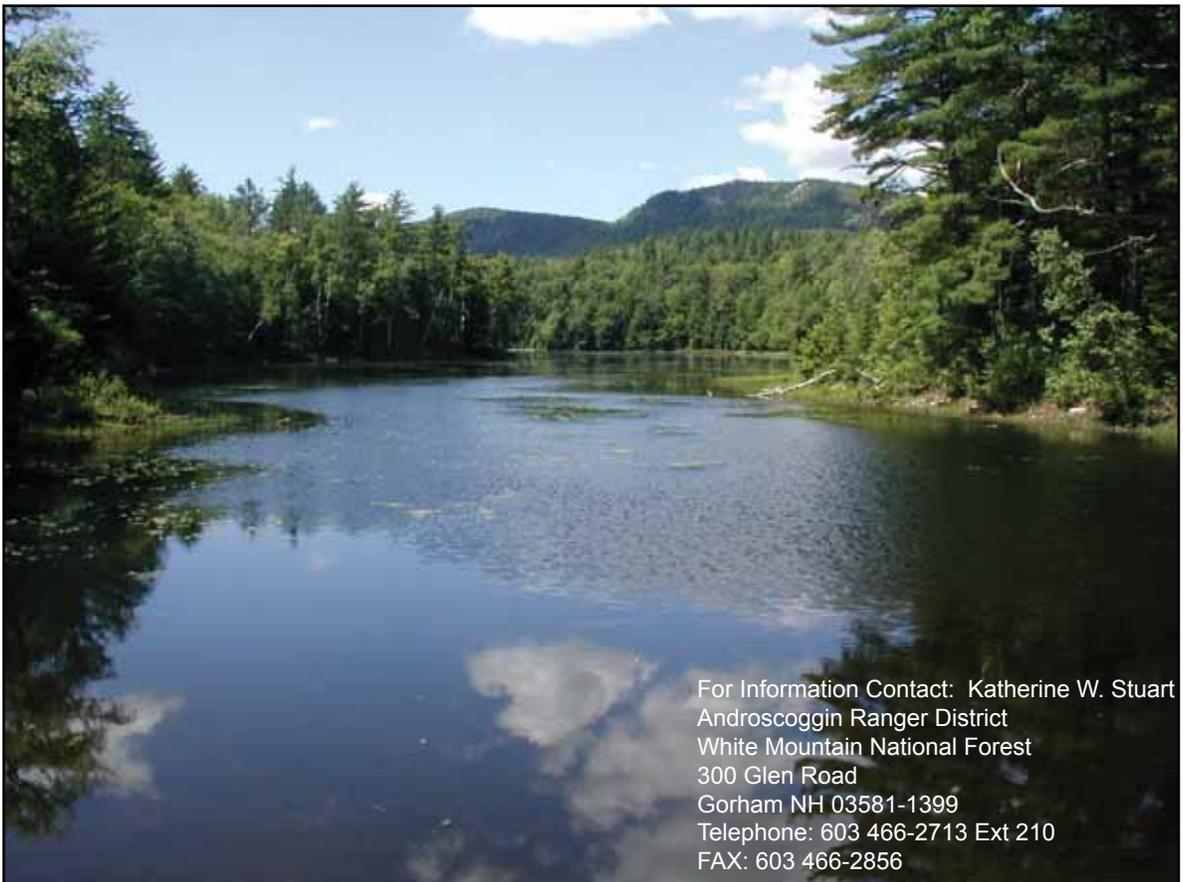
Patte Mill Brook Road & Broken Bridge Dam Project

Environmental Assessment

Town of Albany
Oxford County, ME

Androscoggin Ranger District

September 2009



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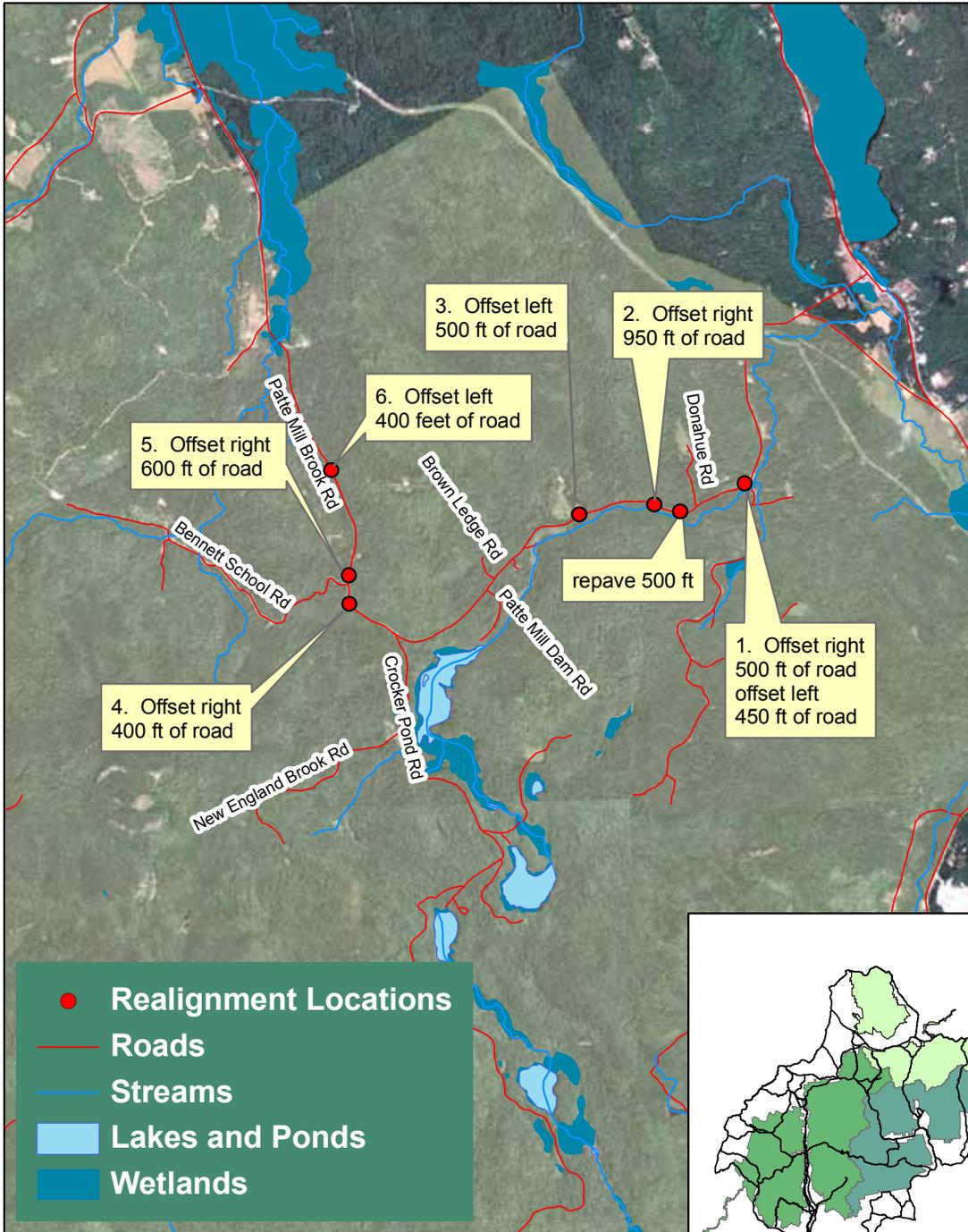


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Map 1. Patte Mill Brook Road Proposed Action.

Proposed Realignment Patte Mill Brook Road FSR-7



Chapter 1 – Purpose And Need

1.1 Introduction

The Forest Plan

The proposal presented in the following site-specific analysis has its roots in the White Mountain National Forest's Land and Resource Management Plan (USDA Forest Service 2005a), also known as the Forest Plan, approved in 2005 after several years of extensive environmental analysis and collaboration with the public. Thousands of people representing a variety of interests, sciences, and specialties joined in the effort by way of public meetings, discussions, document reviews and comments, and scientific study to create what is now our Forest Plan. The Plan is a programmatic framework which documents the agreed-upon balance of multiple uses that meet society's needs while protecting, restoring, and enhancing our natural resources.

The Forest Plan may be amended at any time. It guides our land management activities for about 15 years, when it will be revised again. Until then we will use the management framework of the Forest Plan to achieve our goals, objectives, and vision of the desired conditions for the White Mountain National Forest.

The analysis for this project is tiered to the Final Environmental Impact Statement (FEIS) and the Record of Decision (ROD) for the Forest Plan (USDA Forest Service 2005b and 2005c). Tiering is encouraged in implementing regulations and policy for the National Environmental Policy Act (40 CFR 1502.20, 1502.21; 36 CFR 220, FSH 22.31, 22.33).

It is used when information and analysis in those programmatic documents applies to this project-level analysis and can be incorporated by reference. This then eliminates repetitive discussion so that the analysis can remain focused on site-specific issues. Specifically, this analysis tiers to:

- The resource goals and objectives described in Chapter 1 of the Forest Plan;
- Forest-wide standards and guidelines in Chapter 2 of the Forest Plan;
- Management Area direction for MA 2.1, consisting of Purpose, Desired Condition of the Land, and Standards and Guidelines described in Chapter 3 of the Forest Plan; and
- Resource information and effects analyses in the FEIS.

Project Area

The Patte Mill Brook Road and Broken Bridge Dam project is located in Management Area (MA) 2.1, General Forest Management, which allows for a range of uses and activities including timber harvest, roads, motorized recreation such as snowmobiling, and developed areas such as campgrounds. MA 2.1 is described in the Forest Plan on pages 3-3 through 3-8.

The activities proposed for this project are primarily within compartment 328, with a small portion adjacent to compartment 326, in the Albany HMU of the White Mountain National Forest. The project area is located in the Township of Albany, Oxford County, Maine, within the Pleasant River and Crooked River watersheds.

Background

The actions analyzed in this document were originally scoped as part of the Four Ponds Integrated Resource Management Project. When funding became available under the American Recovery and Reinvestment Act (ARRA), they were separated from the larger project and submitted as being possible to accomplish within the Act's time constraints. The Patte Mill Brook Road and Broken Bridge Dam proposal have been approved for ARRA funding. This, and because of the close proximity of the two projects, made it reasonable for us to group them for the purposes of this EA, enabling us to properly evaluate the effects of both actions more rapidly and, if a decision is made to proceed, to implement them within the ARRA timeline.

1.2 Purpose of the Action and Need for Change

The purpose of this project is to manage habitat for aquatic species and to provide a safe and efficient transportation system. The need for change is identified by comparing the existing conditions on the ground with the desired conditions. Management activities are designed to either maintain existing desirable conditions or help move the land closer to those desired conditions.

Patte Mill Brook Road (see Map 1)

The Patte Mill Brook Road needs to be restored to its intended condition and realigned at six locations. Most work would require heavy maintenance, including a short section of asphalt replacement. Realignment of the road would provide safer driving conditions and increase viewing distance for oncoming traffic. It would also protect natural and heritage resources, because a portion of the road would be moved away from a wet area and an historic schoolhouse.

This work would restore the road to its original objective and operational maintenance level 4, which is typically a low-use road with slow driving speeds, a single lane with turnouts, and surfacing.

Broken Bridge Dam (see Map 2)

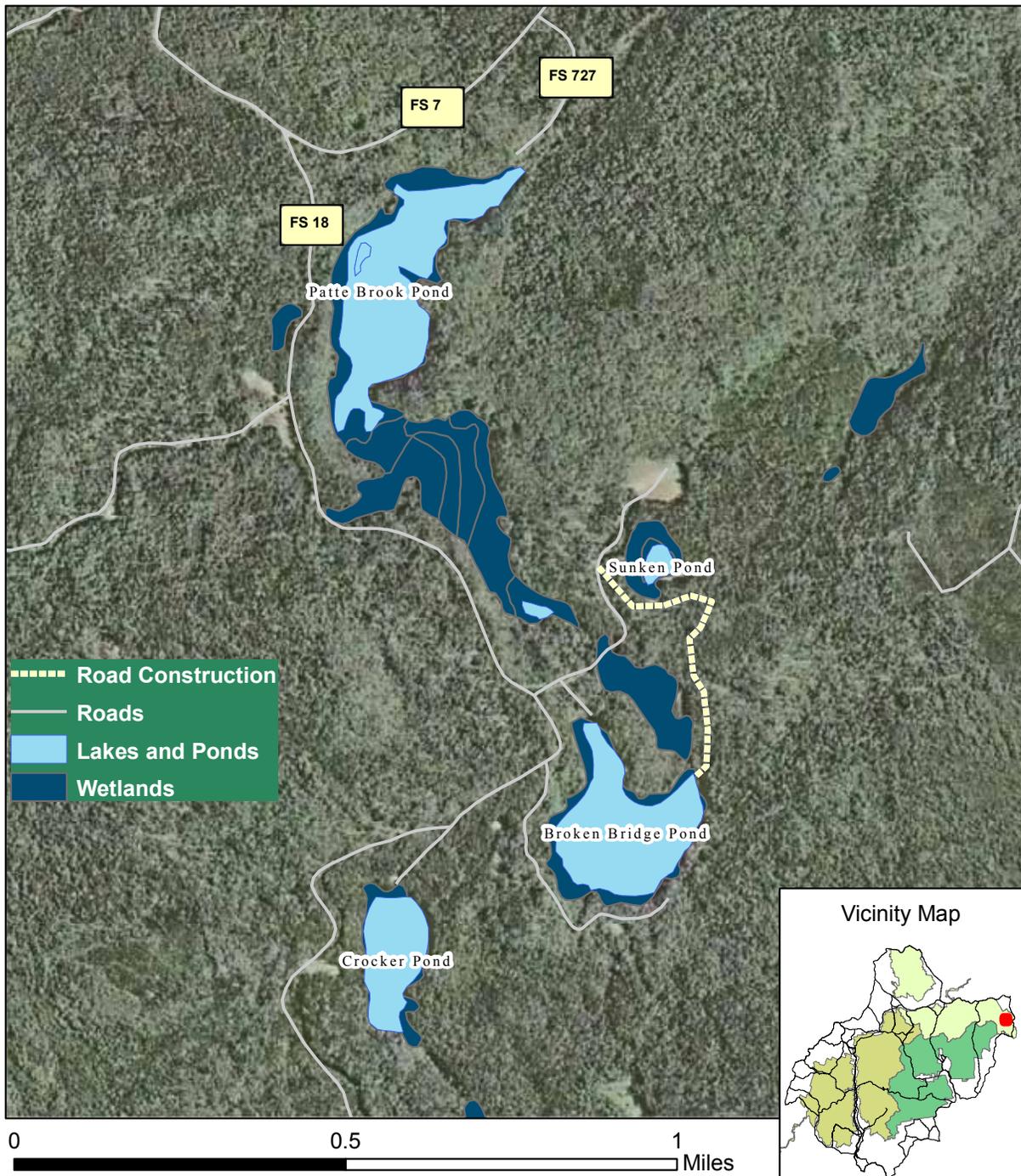
Broken Bridge Pond, covering approximately 25 acres and with depths ranging from five to twenty-five feet, was formed in 1958 when the Maine Department of Inland Fisheries and Wildlife constructed an earthen barrier dam and spillway. The pond is stocked annually with brook trout and is a popular recreational fishing area, managed cooperatively by the Forest Service and the State of Maine. In addition to containing the pond, the dam provides a barrier to competing warm-water fish species that occur in the drainage downstream.

Currently, trees are growing on the dam and the spillway is leaking. If the dam structure is not rebuilt, it will erode over time as tree roots and water compromise its integrity. It will no longer hold water or maintain sufficient water levels to support cold-water fisheries. Rebuilding the impoundment structure and spillway at the dam would maintain the high quality brook trout fishery in Broken Bridge Pond. Restoring the integrity of the dam also achieves two Forest Plan goals and objectives for aquatic habitats: providing a range of recreational fishing opportunities in a manner that will protect self-sustaining populations

Map 2. Broken Bridge Dam Proposed Action.



Proposed Road for Broken Bridge Pond Dam Reconstruction



of indigenous fish species and maintaining existing impoundment structures every 1–5 years to insure structural integrity and prevent downstream resource damage (Forest Plan, pp 1-15 to 1-16).

At present, there is no road to the Broken Bridge dam. Constructing an access road would allow transport of the equipment and materials necessary for rebuilding the dam and spillway, and would facilitate future repairs and long-term maintenance.

Figure 1. Broken Bridge Dam Site.



1.3 Public Involvement

Patte Mill Brook Road and Broken Bridge Dam project activities were first published on the quarterly Schedule of Proposed Actions (SOPA), July 2008, as part of the Four Ponds Project. The activities in this assessment were listed separately on the SOPA in July 2009.

On July 24, 2008, an open house was held at the Evans Notch Visitor's Center in Bethel, Maine, to seek public input into the design of the project proposals. Approximately 40 people attended this event and eight individuals who could not attend requested projects proposals via mail or e-mail.

We received 11 written or oral comments to the project proposals for the Four Ponds Integrated Management Project, but none were related to the Patte Mill Brook Road and Broken Bridge Dam proposed actions.

The activities proposed for the Patte Mill Brook Road and the Broken Bridge Dam were also included in the recent Four Ponds Integrated Resource Management

Project 30 Day Public Comment Package, dated April 2009, prepared by the Forest Service in compliance with the National Environmental Policy Act of 1969 (NEPA), the Appeals Reform Act of 1993 (ARA), and other relevant federal laws and regulations. The 30-Day Comment Package disclosed the Proposed Actions, known or likely issues, alternatives to the proposed actions, and a comparison of the alternatives.

Forest Service Appeal Regulations (36 CFR 215), dated 6/4/2003, direct us to “provide notice of the opportunity to comment on a proposed action implementing the land and resource management plan” for a 30-day period. The Four Ponds 30 Day Public Comment Package provided the opportunity to review the proposed activities for Broken Bridge Dam and the Patte Mill Brook Road and provide comments that might guide us in the completion of an analysis. Instructions on how to submit comments were provided in the document.

Two comments were submitted during the 30-day period that were broad in nature and not specific to the activities proposed here for Patte Mill Brook Road and Broken Bridge Dam. One of the comments did not approve of the process used for public involvement and the other comment opposed the entire Four Ponds Integrated Management Project.

Figure 2. Open House at Evans Notch Visitor Center.



1.4 Issues

Since the Forest Service has received no comments directly related to the proposed activities for Patte Mill Brook Road and Broken Bridge Dam, no issues were developed. All potential internal issues were resolved during the development of the proposed actions.

Chapter 2 – Alternatives

Because no issues were identified by the public or the interdisciplinary team directly related to the Patte Mill Brook Road and Broken Bridge Dam proposed activities, only two alternatives were analyzed in detail: the “no action” alternative and the proposed action.

2.1 Alternative 1 (No Action)

While this alternative does not meet the Purpose and Need for Action, it does provide a basis for analyzing the effects of conducting no management activities (no action) in the project area, and comparing these effects with alternatives that do propose management activities. This is required by regulations implementing the National Environmental Policy Act (NEPA).

Under this alternative, on-going maintenance activities on Patte Mill Brook Road would occur, but there would be no road realignments. Trees would continue to grow on the dam, the spillway would continue leaking, and the integrity of the dam would decline.

2.2 Alternative 2 (Proposed Action)

Patte Mill Brook Road

The White Mountain National Forest proposes realignment of the Patte Mill Brook Road (National Forest System Road — NFSR — 7) in six locations, totaling approximately 3,800 lineal feet. The sections of road would be offset up to a maximum of 42.2 feet from the existing centerline, with most of the realignments less than 20 feet from the existing centerlines (see Map 1).

From mile-post 0.8 to 4.3 of NFSR 7, approximately 3.5 miles would be restored to operational maintenance level 4 condition (gravel surface, single lane with intervisible turnouts). This would be accomplished through the removal and replacement of existing drainage structures as well as installation of additional structures, aquatic passage improvements on live streams, excavation and embankment, borrow, and geotextile placement to improve several sections of soft sub-grade, and aggregate resurfacing of the entire length. New and replacement installations of culverts would meet Forest Plan standards that accommodate bankfull discharges for stream flows. Approximately 500 feet of asphalt replacement would occur on a steep grade section to improve traction and minimize erosion of that section.

Broken Bridge Dam

A road approximately 2,500 feet in length would be constructed to allow access for the immediate restoration and long-term maintenance of the dam and spillway. The road construction would be within the same corridor used to construct the dam in 1958.

Restoring the dam would include replacing the dam and installing a new spillway with an outlet structure to allow water level regulation. During reconstruction, water levels in Broken Bridge Pond would be lowered approximately six feet and a coffer-dam constructed to keep water away from the berm and

spillway. Water flows to Patte Marsh would be maintained at all times during repairs. Sedimentation that has built up in front of the dam may need to be dredged and disposed of at an approved location.

Upon completion of work, the Broken Bridge Dam access road would be closed to motorized vehicles, with intermittent use allowed for administrative and other needs such as dam maintenance, wildlife opening maintenance and law enforcement. Ongoing basic custodial maintenance would be performed to keep damage to adjacent resources at an acceptable level and to keep the road available for future management activities.

The proposed action for the Patte Mill Brook Road and Broken Bridge Dam project is proactively designed to meet particular management goals while protecting resources. There are three types of protective measures integrated into the project design: Forest Plan standards and guidelines (Forest Plan, Chapters 2 and 3), State of Maine Best Management Practices, and project-specific design features.

Design Features

Non-Native Invasive Species

Forest Plan standards and guidelines

- Heavy equipment must be visibly free of seeds and plant parts prior to entering the project area. Cleaning should take place off-Forest unless an on-Forest cleaning site has been approved by a Forest Officer in advance (Forest Plan, Invasives, S-6, p 2-12).
- Before ground disturbance is initiated, control any weeds already existing in the project area (add “project-specific control” if applicable).
- Gravel and fill must come from weed-free sources. The Forest will be available to work with owners of local gravel sources to identify weed-free borrow material in their pits. The entire pit or fill area need not be identified as weed-free; material may be used that is not likely to contain invasive plants or seeds (Forest Plan, Invasives, S-4, p 2-11).
- Minimize soil disturbance to no more than needed to meet project objectives.
- Where project disturbance creates bare ground, consistent with project objectives, reestablish vegetation to prevent conditions to establish weeds. Use native seed where appropriate and feasible, and use certified weed-free or weed-seed free hay or straw where certified materials are reasonably available.

Water

- Effective, proven methods (e.g., silt fencing) to reduce concentrated runoff and erosion from construction activities must be used (Forest Plan, Water Resources, Soil & Water Conservation Practices, S-3, p 2-30).

- Where used, sediment traps must be maintained until disturbed sites and/or cut and fill slopes are stabilized (Forest Plan, Water Resources, Soil & Water Conservation Practices, S-4, p 2-30).
- All permanent new, redesigned, or reconstructed stream crossings and other instream structures must be designed and constructed to pass bank full flows, withstand expected flood flows, provide for the passage of sediment, bedload, and woody material, and allow free movement of resident aquatic life. (Forest Plan, Water Resources, Stream Crossings, G-3, p 2-31).
- Where construction activity occurs in intermittent or perennial watercourses, activities should be isolated from the streamflow or done during low flow periods to minimize turbidity and other effects (Forest Plan, Water Resources, Stream Crossings, G-7, p 2-31).
- Stream crossings should be installed using techniques to keep streambeds and banks intact (Forest Plan, Water Resources, Stream Crossings, G-8, p 2-31).
- The abandoned road bed should be scarified, roughened, reshaped, and seeded, ensuring banks are stabilized where the present road location encroaches on riparian areas along Patte Mill Brook.

Wildlife

- The vernal pool located at the eastern end of Patte Mill Brook Road project area adjacent to the overflow culvert for the large culvert on the East Branch of Pleasant River should be protected. Any design of an overflow culvert at this site should ensure that existing water levels in the vernal pool are maintained.
- Wetlands and seeps should be protected during project implementation. There would be a loss of one seep on the Patte Mill Brook Road where the road would be moved away from Patte Mill Brook.

Chapter 3 – Effects Analysis

3.0 Introduction

This chapter addresses the site-specific effects of the proposed activities on the resources in the Patte Mill Brook Road/Broken Bridge Dam project area. Field work, monitoring data, published science, and public input played a key role in this analysis. It is important to note that findings regarding potential effects may change from project to project depending on the land features, project proposals, new science, and results of public scoping. Each resource section includes:

- A description of Affected Environment.
- The relevant elements of each resource and how effects on those elements are measured.
- Analysis of Direct and Indirect Effects on the Resource (by alternative):
 - Direct Effects occur at the same place and time as the proposed activity.
 - Indirect Effects are later in time and/or farther removed in distance, but are still clearly a result of the proposed activity.
- Analysis of Cumulative Effects on the Resource (By alternative):
 - Cumulative Effects result from the incremental impact of the action when added to other past, present and reasonably foreseeable actions, regardless of which government agency or individual undertakes such other actions.

The Final Environmental Impact Statement (FEIS) prepared for the Forest Plan is the programmatic-level analysis for all resource discussions in this chapter and serves as the foundation for all project-level analysis. The proposed activities in Alternative 2 are typical management actions on the White Mountain National Forest, falling within the range of actions anticipated and included in the conclusions reached in the FEIS. This project-level analysis is tiered to the FEIS, and where it is appropriate to do so, the FEIS is incorporated by reference, with project information summarized here.

Past, Present, and Reasonably Foreseeable Future Actions

Cumulative effects analyses require consideration of past, present, and reasonably foreseeable future actions in the analysis area for each resource. The geographic area and the temporal scope for cumulative effects analyses are identified for each resource based on potential effects of this action in its site-specific context. The bounds are the same for some resources and different for others. In all cases, the rationale for the area and time period is noted in individual resource sections in this chapter. Activities and effects on private lands are considered when they are within the spatial and temporal cumulative effects analysis area.

Below are descriptions of actions considered in cumulative effects analyses in compartments associated with this project:

Compartment 326

Past (1999–Present)

- Farwell Mtn Management Project EA, May 2006
 - Clearcut and Patch Clearcut — 22 acres
 - Permanent Wildlife Openings — 3 acres
 - Permanent Wildlife Openings Expansion 3 acres
 - Seed Tree Cut — 20 acres
 - Shelterwood Prep Cut — 14 acres
 - Shelterwood Seed Cut — 20 acres
 - Group Selection Cut — 74 acres
 - Individual Tree and Group Selection Cut — 146 acres
 - 1 mile of Road Restoration Maintenance
 - 4 Log Landings Re-established
 - Ongoing maintenance of trails, road, and wildlife openings

Present

- Activities include ongoing maintenance of wildlife openings, roads, and trails.

Reasonably Foreseeable Actions (Within the next 10 years)

- Rx Burning and/or mechanical treatment — 20 acres
- 1.7 miles of Road Decommissioning,
- 0.5 mile of Road Decommissioning and rehabilitate (section of FR 756 near East Branch Pleasant River)
- Stabilize 0.25 mile of Old Mud City Road
- KV work associated with timber activities

Compartment 328

Past (1993–Present)

- Timber sale was completed 15 years ago, along with normal timber projects' work (i.e., road reconstruction, installing culverts, etc.)
- KV work associated with timber sale
- Ongoing maintenance of roads, trails, and wildlife openings

Present

- Activities include ongoing maintenance of trails, roads, and wildlife openings

Reasonable Foreseeable Actions (Within the next 10 years)

- Four Ponds Management Project (See Alternative 2 for acres and miles)
 - Timber harvesting

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- Under burning in open pine
- Permanent Wildlife Opening Expansion
- Snowmobile trail relocation
- KV work associated with the timber harvesting
- Ongoing maintenance of trails, roads, and permanent wildlife openings

3.1 Water Resources

Water Quantity

Affected Environment

This project takes place in the Crooked River (HUC 010600010101) and Pleasant River (HUC 010400020201) sub-watersheds. These watersheds were delineated into smaller sub-watersheds of first and second order perennial streams to analyze potential localized effects in closer detail.

The analysis area for direct and indirect effects on water quantity includes the sub-watersheds of Patte Mill Brook (3,646 acres) and the East Branch of the Pleasant River (3,335 acres) and was chosen because little or no effects would be expected outside these watersheds from the limited activities in this project. The analysis period is ten years from the project start date. This time period was selected because effects of construction would be expected to abate and disturbed areas would be expected to revegetate within this period.

The Broken Bridge dam reconstruction and the majority of the road work takes place in the Patte Mill Brook drainage, within the Crooked River sub-watershed. Perennial streams in this drainage include Patte Mill Brook, New England Brook, Harriman Brook and unnamed tributaries to Patte Mill Brook. Some of the road reconstruction takes place in the East Branch subwatershed. Perennial streams in this drainage include the East Branch of the Pleasant River and several unnamed tributaries to the East Branch.

Broken Bridge Pond is in the headwaters of Patte Mill Brook, and is approximately 25 acres with depths ranging from five to 25 feet. In 1958, the Maine Department of Inland Fisheries and Wildlife constructed an earthen barrier dam and spillway to reclaim the pond and establish a cold-water brook trout fishery.

The analysis area receives approximately 40 to 45 inches of precipitation each year, with an estimated 25 inches of runoff per year contributing to streamflow (ENSR, 2007).

Direct and Indirect Effects

Alternative 1

Under the no action alternative, road reconstruction would not occur and no changes to water quantity would be likely.

Not reconstructing Broken Bridge Dam would lead to continued dam leakage and potential dam failure caused by erosion and vegetation growth. This would decrease the depth and volume of Broken Bridge Pond. Water levels below the pond's outlet could be more variable due to reduced water storage in the pond, but this effect would likely be mitigated by water level controls on Patte Marsh.

Alternative 2

The 3.5 miles of road maintenance proposed in this alternative is unlikely to affect water quantity. Construction of turnouts and a 2,500 foot access road to Broken Bridge dam would result in approximately two acres of additional area

in roads. This area is equal to approximately 0.03 percent of the analysis area; therefore, runoff from impervious surfaces is unlikely to increase significantly.

Reconstructing Broken Bridge Dam would reduce leakage and prevent failure of this dam, allowing water levels in Broken Bridge Pond and the streams it drains into to remain similar to the conditions following construction of the dam in 1958.

Water Quality

Affected Environment

The analysis area for direct and indirect effects on water quality includes the sub-watersheds of Patte Mill Brook (3,646 acres) and the East Branch of the Pleasant River (3,335 acres), and the streams within these watersheds. This analysis area was chosen because little or no effects would be expected outside these watersheds from the limited activities in this project. The analysis period is ten years from the project start date. This time period was selected because effects of construction would be expected to abate and disturbed areas would be expected to revegetate within this period.

Water Quality Classification and Standards

The State of Maine designates waters on the White Mountain National Forest as outstanding natural resources, in which water quality must be protected and maintained under state anti-degradation provisions (State of Maine 2003). Aquatic life, dissolved oxygen, and bacteria should be at naturally occurring levels, and discharge of pollutants to these waters should not occur, with the exception of storm water discharges in compliance with state and local requirements, or as allowed under a discharge permit.

In accordance with the White Mountain National Forest Land and Resource Management Plan (Forest Plan), temporary and short-term degradation shall only be allowed after all practical means of minimizing such degradation are implemented (Forest Plan p 2-30). Site-specific standards and guidelines, Best Management Practices (BMPs), Soil and Water Conservation Practices, and other mitigations elsewhere in this EA which are designed to protect and maintain designated uses and prevent degradation would be used should the proposed alternative be selected.

Water Quality Status

The portion of Patte Mill Brook Road to be reconstructed runs along Patte Mill Brook from its confluence with Harriman Brook upstream to Patte Marsh. It then bends, crossing the watershed boundary to parallel a tributary to East Branch. The road is currently within 100 feet of Patte Mill Brook in two sections. In one of these sections, a steep, eroded, poorly vegetated bank was observed (Johnson 2009). This is a potential source of sediment and associated pollutants to Patte Mill Brook. Sediment from road runoff has been associated with contaminants such as petroleum products, de-icing salts, and metals (Boxall and Maltby 1995).

Patte Mill Brook Road also crosses several perennial and intermittent streams. Upon field review, five culverts were observed to be undersized and impeding

bankfull (channel forming) flows (Prout and Johnson 2009). This generally led to sedimentation on the upstream end of the culvert and scour on the downstream end of the culvert. Alterations such as channel widening, changes in slope (perched culverts), and changes in size of bed material were observed. (See 3.2 Riparian and Aquatic Habitats for the impacts of such changes on aquatic life.)

Water quality data are not available for Patte Mill Brook or the East Branch of the Pleasant River. No impairment of aquatic life, bacteria, or dissolved oxygen has been noted. Based on field inspection, sedimentation is localized near roads and culverts, but does not appear to have high turbidity or embeddedness that would indicate it is not meeting water quality standards.

Direct and Indirect Effects

Alternative 1

Under this alternative, water quality would be expected to continue along current trends. Sedimentation from the road, and channel alterations from undersized culverts, would be expected to continue, particularly in the case of high flow events. If Broken Bridge Dam fails at some point in the future, sediment and organic matter accumulated in Broken Bridge Pond would likely be washed downstream, potentially lowering water quality. Due to the presence of wetlands downstream, this change may be minimal in the context of the entire watershed.

Alternative 2

The proposed action would reduce sedimentation and bank damage on Patte Mill Brook by relocating the road at two locations where it is extremely close to the stream. This would meet Forest Plan guideline G-7 for Aquatic and Riparian Habitats which states, “Existing roads, facilities, campsites, or trails within 100 feet of perennial streams or ponds should be considered for relocation....” (Forest Plan p 2-25).

Replacing undersized culverts with those wider than bankfull width would improve water quality by reducing sedimentation, as well as improving channel morphology. This would also meet Forest Plan standard S-5 for Soil and Water Conservation Practices which states, “Permanent stream crossings must be designed to pass the bankfull discharge unimpeded.” (Forest Plan p 2-31)

Improvement of the road surface and drainage system for the proposed 3.5 mile road maintenance project would be expected to reduce sediment and other pollutant runoff from the road. There is some risk of short-term inputs of sediment or other materials related to construction in stream and riparian areas, particularly where work occurs in or near streams. Implementation of Soil and Water Conservation Practices and other Best Management Practices (Forest Plan p 2-30) should greatly limit the extent and duration of any such release.

Except in areas of road relocation and turnout construction, road work would occur within the footprint of the existing road. Relocation of 3,800 lineal feet of road would temporarily create a larger road footprint. Since the proposed action specifies that the abandoned road bed be scarified, roughened, reshaped, and seeded, reconstruction would not be expected to increase the impervious

area in the watershed. Construction of turnouts along the road would result in a maximum increase of 0.9 acres of compacted area, approximately 0.01 percent of the analysis area. Compacted, impervious areas can concentrate flow and increase sediment transport, which could result in sedimentation of streams.

Restoring Broken Bridge Dam would necessitate constructing 2,500 feet of access road (approximately 1.1 additional acres of road area), resulting in an additional increase in impervious area (0.02 percent of the analysis area). This road would be constructed within the corridor of the original access road, which is already somewhat disturbed. Since the road would be closed to motor vehicles except for intermittent administrative use, impacts from additional traffic should be small. Restoration of the dam would allow water quality in the pond and outlet streams to remain relatively unchanged.

The proposed alternative would result in an overall positive impact on water quality, primarily due to reduced sedimentation, countered by a slight negative impact due to increase in impervious surfaces.

Water Quantity and Water Quality

Cumulative Effects

The analysis area for cumulative effects on water resources is the Crooked River and Pleasant River watersheds. The analysis period for cumulative effects is ten years in the past and ten years from the present. This time period was chosen because effects of construction would be expected to abate and disturbed areas would be expected to revegetate within this period. Based on the nature and extent of the project, no effects would be expected to extend outside these watersheds.

Actions in the analysis area in the past ten years include manipulation of water levels on Patte Marsh and Broken Bridge Pond using a water control structure. A timber harvest began in 2006, with 296 acres harvested at various intensities. In association with this project, six acres of wildlife openings were maintained or created, four log landings were established, and one mile of road was maintained.

Reasonably foreseeable actions in the next ten years include a proposed vegetation management project on National Forest lands that would entail approximately 1,406 acres of harvesting at various intensities and 136 acres of prescribed burning. This would require creation of 20 to 30 log landings. Approximately 0.4 miles of new road construction, 5.3 miles of road reconstruction (upgrading old roads), 4.6 miles of road restoration (restoring old roads to former condition), and 2.2 miles of road decommissioning are foreseen in the next 10 years. Culvert replacements on New England Brook and tributaries to Harriman Brook are also proposed, in addition to one culvert removal. As part of future recreation projects, abandoning 0.9 miles of hiking trail, improving 0.3 miles of hiking trail, and relocating 1 mile of snowmobile trail are proposed. Addition of woody material to tributaries of Patte Mill Brook and East Branch are proposed to improve riparian condition.

Ongoing activities include maintenance of existing wildlife openings, roads, hiking and snowmobile trails, and campsites. Recreational uses such as fishing,

hiking, bicycling, cross country skiing, snowmobiling, driving for pleasure and camping are also ongoing. Manipulation of water levels on Patte Marsh would continue.

Alternative 1

Water quality and quantity would experience minimal effects beyond those described under Direct and Indirect Effects. Sedimentation from road traffic would continue to occur, as would alteration of channels and banks from under-sized culverts.

Alternative 2

Impervious areas such as roads, driveways, landings, trails, and buildings have the potential to affect water quantity and quality by increasing runoff, increasing erosion, and causing sediment and pollutants to enter streams. Research has indicated that watersheds with approximately 10 percent impervious surfaces have surface waters which are degraded and do not meet water quality standards (Morse and Kahl 2003). The incremental increase resulting from Alternative 2 would be unlikely to exceed this threshold, particularly since further road decommissioning is expected in the future. A reduction in sediment transport to streams would be expected from the combined effects of road and trail maintenance, road decommissioning, relocation of roads out of riparian areas, trail relocation or abandonment, and culvert replacement.

Past and future timber harvests and prescribed burning on the National Forest are not expected to have a significant effect on water yield or quality due to limitation of basal area removal and application of soil and water BMPs. Cumulative effects of wildlife opening creation and maintenance would be considered in conjunction with these vegetation management activities to ensure that sufficient vegetative cover remains in the watershed. The proposed addition of wood to streams in conjunction with these projects would be expected to improve water quality.

Recreational use may have impacts on water quality related to erosion of trails and stream banks. Past, present, and future actions would not be expected to significantly increase recreational use; therefore, impacts should remain at or near current levels. Operation of water control structures on Broken Bridge Pond and Patte Marsh would continue to have an important influence on water quantity in those water bodies as well as the Patte Mill Brook watershed.

Cumulative effects on water quantity and quality under the proposed action would be insignificant or show a slightly positive effect.

3.2 Riparian and Aquatic Habitats

Affected Environment

The project lies within two sub-watersheds (12 digit Hydrologic Unit Codes or HUC12) of the White Mountain National Forest: the Crooked River sub-watershed (HUC12 = 010600010101) and the Pleasant River sub-watershed (HUC12 = 010400020202). Broken Bridge Pond is a headwater pond of Patte Mill Brook, which flows into the Crooked River. The majority of the Patte Mill Brook Road reconstruction would occur within the Patte Mill Brook drainage area, paralleling Patte Mill Brook from the Patte Marsh impoundment downstream just past the mouth of Harriman Brook. A short segment of the Patte Mill Brook Road reconstruction lies within the headwaters of a small unnamed drainage of the East Branch of the Pleasant River. The analysis area for direct and indirect effects to this project will be the Patte Mill Brook watershed and the East Branch of the Pleasant River watershed. This analysis area was chosen because the effects such as sedimentation during construction would not be visible in the lower portions of the HUC12 subwatersheds. The timeframe for this analysis will be ten years into the future, as project implementation should be completed and all earth-disturbed areas should be revegetated or stabilized by that time.

The majority of small brooks in the project area are coldwater mountain streams. Patte Mill Brook is a mixture of warm and coldwater fishes. The Patte Marsh impoundment is home to many warmwater species such as pickerel and horn pout. The structure at Patte Marsh was created to permanently exaggerate marsh habitat conditions for a variety of wildlife such as waterfowl. The structure allows for the manipulation of water levels using a spillway. The brook originating from the marsh is also home to other warmwater species. As the brook flows under riparian forest shade and merges with other small coldwater brooks, it cools down, providing some areas of coldwater fish habitat.

Patte Mill Brook Road lies immediately adjacent to Patte Mill Brook in two locations and also crosses four unmapped perennial tributary streams. Crossings appear to prevent free movement of fish and other aquatic organisms, as culverts are narrower than bankfull width, and no natural substrate exists in the pipes. The importance of movement of aquatic life from Patte Mill Brook into these small feeder streams is ecologically uncertain. Although conflicts between the road and the brook have not become critical, improvements to meet new Forest Plan guidelines may prevent future issues.

Broken Bridge Pond however is a lake that provides deep coldwater habitats throughout the year. The pond has been stocked for decades and State of Maine biologists have found it has great potential for growing large brook trout in the absence of competitive species migrating in from Patte Marsh. The main stem of Patte Mill Brook above Patte Marsh is dominated by warmwater fish species and wildlife commonly associated with beaver dams. A fish barrier/impoundment was built, in part, to prevent warmwater competitors from degrading a popular brook trout fishing experience in Broken Bridge Pond.

Direct and Indirect Effects

Alternative 1

The effects of the no action alternative could range in severity. If “normal” flows are experienced, there may not be any more serious erosion or sedimentation from what is occurring today. Conversely, large precipitation events or snow-melt flows may result in wash outs of two sections of the road near Patte Mill Brook. In addition, road crossings of small tributaries may also fail, resulting in increased sedimentation downstream.

Fragmentation of aquatic communities would continue, although the overall impact of the impassable culverts in the sub-watershed is not well understood at this time. For the most part, wild trout populations are believed to occur upstream of these crossings, but it is uncertain whether they can be sustained without free movement into Patte Mill Brook and other coldwater habitats throughout the sub-watershed.

Broken Bridge Pond would continue to provide high quality brook trout fishing into the future if the dam does not fail. Once the dam deteriorates to a point where free fish movement is allowed, a more diverse fish community may develop in the pond, including pickerel, horn pout, and minnow species. Many of these species may have originally always used the pond before the dam was created. The management of Patte Marsh may have artificially enhanced numbers of these fish species, which may look for winter deepwater habitat or additional food in Broken Bridge Pond. Maine fish biologists have claimed that the high quality of the brook trout fishery is compromised when these other species move into the pond. Given that the dam is destined to fail in this alternative, we would see increased numbers of a variety of warmwater fish species in Broken Bridge Pond, and an eventual decline in the quality of the brook trout fishery.

Alternative 2

Movement of the Patte Mill Brook Road would nearly eliminate risk of severe erosion and sedimentation from road washouts along Patte Mill Brook. It would also reduce the risk of hazardous materials from entering the brook from vehicle accidents.

Increasing the size of culverts on unmapped perennial stream crossings would reduce the risk of road washouts during floods that could result in severe erosion and sedimentation. Larger culverts, meeting new Forest Plan guidelines, would provide for free movement of fish and aquatic life between these tributaries, Patte Mill Brook, and Harriman Brook.

Reconstruction of Broken Bridge Pond Dam would maintain the current isolation of the pond’s coldwater brook trout population from warmwater fish species migrating in from the Patte Marsh impoundment. Stocked brook trout would continue to grow at exceptional rates in Broken Bridge Pond, as competition and predation from species promoted in Patte Marsh is prevented. Operation of the Patte Marsh impoundment structure would continue to control the population levels of a variety of warmwater fish and wildlife species in the marsh.

Cumulative Effects

The analysis area for cumulative effects will consist of the Crooked River subwatershed (HUC12 = 010600010101) and the Pleasant River subwatershed (HUC12 = 010400020202). Broken Bridge Pond lies solely in the Crooked river subwatershed. The majority of the Patte Mill Brook Road lies within the Crooked River subwatershed also, but a short section on the west side of the road reconstruction occurs within the Pleasant River subwatershed. The cumulative effects of past, current, and foreseeable actions will be analyzed ten years into the future. It was assumed that within ten years all aspects of the proposed project would be implemented and that any earth-disturbed areas would be revegetated or stabilized.

Actions in the analysis area in the past ten years include manipulation of water levels on Patte Marsh and Broken Bridge Pond using a water control structure. A timber harvest began in 2006, with 296 acres harvested at various intensities. In association with this project, six acres of wildlife openings were maintained or created, four log landings were established, and one mile of road was maintained.

Reasonably foreseeable actions in the next ten years include a proposed vegetation management project on National Forest lands that would entail approximately 1,406 acres of harvesting at various intensities and 136 acres of prescribed burning. This would require creation of 20 to 30 log landings. Approximately 0.4 miles of new road construction, 5.3 miles of road reconstruction (upgrading old roads), 4.6 miles of road restoration (restoring old roads to former condition), and 2.2 miles of road decommissioning are foreseen in the next 10 years. Culvert replacements on New England Brook and tributaries to Harriman Brook are also proposed, in addition to one culvert removal. As part of future recreation projects, abandoning 0.9 miles of hiking trail, improving 0.3 miles of hiking trail, and relocating 1 mile of snowmobile trail are proposed. Addition of woody material to tributaries of Patte Mill Brook and East Branch are proposed to improve riparian condition. In addition, the Maine Department of Inland Fisheries and Wildlife typically stocks 400–500 six-to 8-inch brook trout in Broken Bridge Pond.

Ongoing activities include maintenance of existing wildlife openings, roads, hiking and snowmobile trails, and campsites. Recreational uses such as fishing, hiking, bicycling, cross-country skiing, snowmobiling, driving for pleasure, and camping are also ongoing. Manipulation of water levels on Patte Marsh would continue.

Alternative 1

Cumulative effects from not enlarging culverts on Patte Mill Brook Road, Harriman Brook Road, and New England Brook Road in the next ten years are not well understood, as the crossings have been in place for many years. Movement of fish throughout the watershed is more restricted in this alternative, but risk of local population extinction is possible in extreme drought conditions. Intense flooding in the watershed could lead to failure of undersized culverts, resulting in excessive erosion and sedimentation. The flood-induced loss of cul-

verts would allow some inter-mixing of localized wild brook trout populations as barriers are temporarily absent.

Effects from the no action alternative on Broken Bridge Pond may not differ from conditions found at this time. Effects that differ from the current condition most likely would be weather-dependent. Extreme temperatures and ice conditions may ultimately determine the longevity of the current impoundment structure/fish barrier. None of the other actions would affect whether or when the structure fails. Continued stocking of brook trout in the pond may become less successful in providing a high quality trout fishery after a dam failure. Continued operation of the Patte Marsh water control structure may influence numbers of migrating warmwater fish into Broken Bridge Pond after a dam failure.

Alternative 2

The cumulative effect of reconstructing the Patte Mill Brook road and implementing all of the culvert proposals listed above would minimize the risk of flood-induced erosion and sedimentation. At the same time, movement of wild brook trout would not be impeded and stream habitats could be repopulated after any extreme droughts occurred.

The cumulative effect of reconstructing the structure at Broken Bridge Pond would result in continued success of brook trout plantings in the pond, and maintenance of a high quality brook trout fishery. Warmwater fish populations would be limited by habitat in Patte Marsh and controlled by continued maintenance of the Patte Marsh water control structure.

3.3 Soils

Affected Environment

The analysis area has soils common to the rest of White Mountain National Forest: poorly to well-drained fine sandy loam or sandy loam on average. The analysis area is a mix of northern hardwood and softwood Ecological Land Types (ELTs).

Desired soil conditions are considered here with respect to processes that affect long-term soil productivity (soil erosion, soil displacement, soil compaction, soil cover, and nutrient cycling). The 2005 Final Environmental Impact Statement (FEIS) states that soil productivity, as defined by the Forest Service, is the inherent capacity of the soil to support the growth of specified plants, plant communities, or sequences of plant communities. Soil productivity may be expressed in a variety of ways, including volume, weight/unit/area/year, percent plant cover, or other measures of biomass accumulation (FSH 2509.18). A productive soil is able to help support a healthy and growing forest. Soil may also play a role in buffering the impacts of other environmental concerns, such as changes in stream chemistry, which may originate from acid deposition.

The desired soil conditions are tiered to the Forest Plan standards and guidelines and the Forest Service Soil Quality Standards (SQS) (FSH, Supplement R9 RO 2509.18-2005-1). Implementation of SQS and relevant BMPs to all phases of the project would ensure that long-term soil productivity is maintained in this area. With a road or trail, the main emphasis is on protecting the soil productivity adjacent to the road or trail site. Soil erosion may occur along steeper sections of the road during wet periods, affecting adjacent soil. This soil erosion can affect soil productivity by loss of organic matter that harbors nutrients and helps maintain soil aeration; it can also lead to stream sedimentation. Some of the soils in the analysis area are rated as having a high surface soil erosion hazard relative to other soils on the Forest (Forest Plan). This rating is for conditions without forest cover or any mitigation measures. However, the 2005 FEIS notes that “research findings and on-the-ground experience for all [soil] hazard classes confirm that accelerated soil erosion due to roads and trails can be reduced — and its effects on streams largely eliminated — by timely application of well-known best management practices.” (FEIS, p 3-29) The State of Maine recently published monitoring data supporting the conclusion that properly applied BMPs will mitigate effects from soil erosion (Maine Department of Conservation, Maine Forest Service, 2005; Maine Forestry Best Management Practices Use and Effectiveness, 2001–2003, 2005). Roads are a concern for soil erosion because they may expose mineral soil (Patric, 1976).

Direct and Indirect Effects

The analysis area for direct and indirect effects on soil productivity is compartments 326 and 328 in the Albany HMU. This area was selected because there will not be any effects outside the project area. The analysis area lies within the Crooked River and Pleasant River Watersheds. The temporal scope for the analysis of direct and indirect effects is the life of the project, because the soil disturbance will occur over that amount of time.

Alternative 1

Under this alternative, impacts to soil productivity would not extend beyond those that occur in nature. No new road construction would occur.

Alternative 2

This alternative proposes approximately 3.5 miles of road reconstruction on Patte Mill Brook Road. An area approximately 40 feet from the road could be affected during road reconstruction in areas of realignment, but most work would occur within the existing footprint of the road. Of the six locations where the road would be realigned (see Map 1), location 1 would realign the road through mature pine habitat to straighten it and move it away from Patte Mill Brook. At location 2, the road would be moved approximately 20 feet to the north in a mature pine stand. There is one wet seep that would be affected in this section of road realignment. At location 3, a short section of road would be realigned approximately 20 feet to the south in a mature mixedwood stand. Locations 4 and 5 are small sections of realignment where the road would be moved approximately 30 feet to the north. This area is ledgy mixedwood habitat.

Reconstruction would also consist of widening the road to provide more turn-outs. This, and the realignments, would require blading, busting of ledge, and cut and fill of slopes. The old road alignments no longer needed would be restored to regain soil productivity. As long as this road exists, soil under the road would be detrimentally impacted by compaction. While the new road segments are constructed, soil would be compacted, graded, or sloped by workers for up to six feet out from the new road on either side. This would expose the previously protected soil to rainfall, and the top, organic rich layer of soil could more easily erode away from the site, decreasing soil productivity. However, following Forest Plan direction and BMPs related to surface erosion control at trail sites, timing the construction activities, and controlling trail drainage should effectively rehabilitate the temporarily disturbed area, preventing soil erosion and protecting the soil adjacent to the construction site.

Field review of this proposal showed there would be a 3.5-mile long and 20-foot wide path of new soil disturbance having detrimental results on soil productivity. At Site 3, a short section of road would be realigned approximately 20 feet to the south in a mature mixedwood stand.

This alternative would also construct 2,500 feet of new road to Broken Bridge Dam as access for rebuilding the dam. The road construction would be within the same corridor used to construct the dam in 1958. Most of the road footprint is still evident on the landscape. After the project is completed, this road would be maintained as a maintenance level one road, normally closed to motorized vehicles. Intermittent use for administrative and other needs such as wildlife opening maintenance or law enforcement would be allowed. Level one roads are open and suitable for non-motorized use such as hiking and mountain biking. Basic custodial maintenance would be performed to keep damage to adjacent resources at an acceptable level and to perpetuate the road to facilitate future management activities.

Building this new road would require blading and cut and fill of slopes. As long as the road exists, soil under the road is detrimentally impacted by compaction.

While the new road is being constructed, soil would be compacted, graded, or sloped by workers for up to 6 feet out from the new road on either side. This would expose the previously protected soil to rainfall, and the top, organic rich layer of soil could more easily erode away from the site, decreasing soil productivity. Following Forest Plan direction and BMPs related to surface erosion control at road sites, timing the construction activities, and controlling road drainage should effectively rehabilitate the temporarily disturbed area, preventing soil erosion and protecting the soil adjacent to the construction site.

Field review of this proposal showed that, at minimum, there would be a 2,500 foot long by 20 foot wide path of new soil disturbance having detrimental results on soil productivity. Also, because this project would be a design build process, a soil scientist would be available if necessary during construction to help mitigate potential wet and unstable soils should they occur.

Finally, this alternative proposes to restore the dam at Broken Bridge Pond, including replacement of the earthen dam with a new earthen dam and installing a new concrete spillway with an outlet structure to allow water level regulation. BMPs would be followed to protect adjacent soil and the stream from sedimentation.

This alternative has a greater impact to soils than the no action alternative.

Cumulative Effects

The analysis area for cumulative effects on soil productivity is compartments 326 and 328. This scale is not so large that it spatially dilutes the cumulative sum of effects on soil resources, nor is it so small that it fails to identify and consider use and potential use on both National Forest and private lands relative to the proposed project.

The temporal scope for cumulative effects on soil productivity is ten years in the past and ten years beyond the proposed action. These periods were chosen to consider present effects on soil resources resulting from any past soil-disturbing actions, to allow time for the proposed activities to occur and be completed, and to consider any other foreseeable soil-disturbing activities. This timeframe allows consideration of multiple uses, and provides enough time for the expected recovery of soils from erosion and compaction resulting from road building. Evidence of erosion and compaction beyond the expected timeframe would imply that the soil is not recovering as expected, and effects from this and future activities could be additive and cumulative.

Within the cumulative effects analysis area, there is an ongoing timber harvest (Farwell Mountain), and a timber harvest (Four Ponds) is planned over the next ten years on National Forest lands. These would include prescribed burning, road decommissioning, snowmobile trail relocation, and road restoration. No other projects are anticipated within this area during this timeframe. The Forest classified roads, recreation trails, and permanent wildlife openings in the cumulative effects analysis area would continue to be maintained and used for public and administrative access.

Alternative 1

This alternative proposes no action. There would continue to be localized erosion related to ongoing maintenance of Forest roads, recreation trails, and private roads, and timber harvest on public and private lands.

Alternative 2

The cumulative effects area totals approximately 3,051 acres, with privately-owned lands within it totaling approximately 30 acres or 1.0 percent of the project area. The project would result in a permanent increase in the amount of the analysis area that has disturbed soils. This alternative would result in soil disturbance on approximately 9.6 acres, or 0.3 percent of the 3,051-acre analysis area.

The alternative would cause 1.2 acres of permanent cumulative effects from soil erosion and compaction severe enough to be detrimental, and not within the soil disturbance limits established by the Soil Quality Standards for the Eastern Region of the Forest Service (FSH, Supplement R9 RO 2509.18-2005-1, Section 2.2), as well as the scope of effects anticipated and analyzed in the 2005 FEIS (pp 3-29 to 3-36). The cumulative effects from other activities taking place in compartments 326 and 328 are not of concern from a soil perspective for this project because the road is being improved upon, correcting soil erosion issues, as opposed to extending the length of the road or doing away with the road altogether.

3.4 Recreation

Affected Environment

Developed recreation resources within or adjacent to the Patte Mill Brook Road and Broken Bridge Pond Dam project area include three hiking trails, a US Forest Service managed campground, multiple water recreation sites, several snowmobile trails, a self-guided auto tour, and roads used for various recreation activities. In addition to the activities associated with these resources — such as hiking, camping, picnicking, swimming, boating, snowmobiling and driving for pleasure — the area is also popular for fishing, hunting, and wildlife watching. Nordic skiing and snowshoeing, dog sledding, and mountain biking also occur to some extent in the area.

Crocker Pond Campground

Crocker Pond Campground is a seven site campground located in the vicinity of the project area on the shore of the pond for which it is named. The site is open from mid-May to mid-October each year and is managed by the US Forest Service on a first-come first-served basis. There is direct water access though there is no developed boat ramp on the 9.5 acre pond. Access to the campground is via a dead-end road (Crocker Pond Rd./FR 18) which begins on the Patte Mill Brook Road.

Snowmobile Trails

A total of four snowmobile trails exist in the vicinity of the project area. The Patte Brook Snowmobile Trail provides an east-west travel route and coincides with the Patte Mill Brook Road for most of its length. The Crocker Pond Snowmobile Trail provides a link to the Patte Brook Snowmobile Trail from areas to the south. It follows Crocker Pond Road for most of its length. The Crocker Pond Campground Spur is a short (1,400 foot) trail that connects the Crocker Pond Snowmobile Trail to the Crocker Pond Campground and the east shore of the pond. The Sunken Pond Bypass Snowmobile Trail provides an alternate route for snowmobile traffic when timber harvest activities use the Crocker Pond or Patte Brook Mill roads.

Hiking Trails

The Albany Notch Trail leaves Crocker Pond Road 0.6 miles from its junction with Patte Mill Brook Road. Following the trail south for 0.6 miles one reaches a junction with the Albany Mountain Trail. This trail accesses the attractive summit of Albany Mountain and then descends to the Albany Notch Trail providing a 3-mile loop. The Albany Brook Trail leaves the Crocker Pond Campground and provides a one mile route along the western shore of Crocker Pond before reaching Round Pond.

Patte Brook Auto Tour

The self-guided Patte Brook Auto Tour winds through four miles of National Forest. It begins at a kiosk located at the junction of the Patte Mill Brook and Patte Dam roads and has 11 stops that highlight the history, natural resources,

and multiple use management of the land. Each stop has a numbered marker and most have a turnout for cars.

Developed Water Recreation Sites

In addition to the water access provided at Crocker Pond Campground, Patte Dam Road provides access to a dam and car-top launch for the 45-acre Patte Marsh. The Crocker Pond Spur C (FR62A) leaves Crocker Pond Road and provides access to a boat launch for those visiting the 25-acre Broken Bridge Pond.

Direct and Indirect Effects

The analysis area for direct and indirect effects on recreation is defined as the Patte Mill Brook Road and Broken Bridge Dam project area. The timeframe is the actual duration of the Patte Mill Brook Road and Broken Bridge Dam Project, expected to be approximately one field season. This area and duration were selected because the direct and indirect effects on recreation activities are primarily related to the reconstruction operations and will essentially cease when those activities are complete.

Alternative 1

Under this alternative, impacts to recreation are limited to those that would occur naturally. The Patte Mill Brook Road would continue to be maintained to the current standard and as a result there would be no significant effects to area recreational resources or access. Trees located on the Broken Bridge Dam would continue to grow and their root systems would continue to compromise the integrity of the earthen dam. Water would continue leaking through the spillway and the resulting erosion would further deteriorate the dam. The water level in Broken Bridge Pond would eventually drop as a result and the coldwater fishing opportunities would likely disappear as the pond depth decreases and warm water species from Patte Marsh gain access and out-compete the current residents.

Alternative 2

This alternative proposes approximately 3.5 miles of road reconstruction on Patte Mill Brook Road. There are six locations where the road would be realigned, but most work would occur within the existing footprint of the road. Additional turnouts would be added that would provide additional opportunities for slow-moving visitors following the Auto Tour to yield to faster moving through traffic, thereby increasing public safety. New turnouts may also provide an opportunity for the future development of additional stops on the Auto Tour. Realignment would also protect natural and heritage resources, as the road would be moved away from a wet area and an historic schoolhouse. Reconstruction of the road would allow the Forest Service to continue providing a valued recreation opportunity for driving for pleasure and meet a Forest Plan goal for developed recreation:

Developed recreation will provide a variety of quality campground, day use and other roadside recreation opportunities where the natural forest setting is an important part of the visitor's experience, while ensuring the balanced protection of social and natural re-sources. (Forest Plan p 1-13).

Realigning the road would improve the curve alignment to provide safer driving conditions and increased site viewing distance for oncoming traffic. This positive effect on the safety of vehicle traffic would also benefit the snowmobile traffic that occurs on the Patte Brook Snowmobile Trail during the winter.

Road reconstruction may have a temporary detrimental effect on recreational access during project implementation. Some sites may be inaccessible for short periods as road reconstruction activities prevent safe access for the public.

While heavy equipment is employed on the project there may also be detrimental impacts on the experience of Forest visitors, especially those seeking to follow the Auto Tour. The project area is typified by the Roaded Natural ROS (Recreation Opportunity Spectrum) Class where there are moderate evidences of the sights and sounds of human activity (FEIS p H-3). The sound of the equipment may be discernible at many of the recreation sites in the surrounding area and may be inconsistent with visitor expectations.

The analysis area is frequently used by hunters and watchers of wildlife. During project implementation these opportunities will be affected by the reconstruction operations. The proposed activities would not directly or indirectly affect winter motorized opportunities as reconstruction operations will take place during the snow-free months.

These impediments to recreation and the effects on visitor experience will be temporary in nature and do not constitute a significant effect.

This alternative will also build 2,500 feet of new road to Broken Bridge Dam. The road would be maintained as a maintenance level one road after the project is completed, meaning it would normally to be closed to motorized vehicles except for intermittent use for administrative and other needs such as wildlife opening maintenance and law enforcement. Basic custodial maintenance is performed to keep damage to adjacent resources at an acceptable level and to perpetuate the road to facilitate future management activities. Level one roads are open and suitable for non-motorized uses. This road will provide non-motorized public access to the dam where fishing from shore will be possible.

Once the road is complete, the dam would be rebuilt to maintain current water levels. The reconstruction of the dam would allow the recreation opportunity for fishing for cold-water species to persist. Visitors wishing to fish would continue to have the choice between angling for warmwater species below the dam and coldwater species above.

Cumulative Effects

The analysis area for cumulative effects on recreation is defined as the Albany HMU. This scale is not so large that it spatially dilutes the cumulative sum of effects on recreation resources, nor is it so small that it fails to identify and consider use and potential use on both National Forest and private lands relative to the proposed project. The timeframe is 10 years into the past, the present including ongoing activities, and 10 years into the future; 1999–2019. This time frame was chosen because it is a reasonable length of time for measuring past effects and for projecting upcoming projects.

Past management projects which have affected recreation in the analysis area include the Lombard Pond Snowmobile Trail Relocation and the Farwell Mountain Vegetation Management Project. The former directly enhanced recreation opportunities in the area by relocating a section of the Crocker Pond Snowmobile Trail to provide for safer and more consistent riding conditions. The Farwell Mountain project had a minimal effect on recreation due to the project activities' distance from recreation facilities and trails. Wildlife habitat benefits associated with the vegetation management project have increased opportunities for hunting and wildlife viewing. Other than these enhancements, the effects on recreation from timber harvesting largely ceased when the harvest operations ended.

Additionally, there have been timber harvest activities on private lands adjacent to the Forest including the Mason Tract, which was recently acquired for inclusion in the National Forest System. This piece of newly-acquired land hosts the trailhead for the Miles Notch and Haystack Notch trails. Prior to acquisition the area around the trailhead was harvested and the corridor for the two trails became undefined. Upon completion of harvest activities, the Forest Service reestablished a marked route through the affected area of these two low-use trails. There are no other developed recreation resources on the private lands in the analysis area.

Ongoing and future projects in the analysis area which could have a cumulative effect on recreation include the basic maintenance of existing developed recreation resources and the proposed activities associated with the Four Ponds Integrated Resource Management Project. These proposed activities include the management of dispersed and developed campsites; management of snowmobile and hiking trails; stream restoration; and vegetation management.

Under the Four Ponds project's proposed actions, three dispersed roadside campsites would be relocated to suitable areas or better defined to address resource and social issues. One of these sites is currently located directly adjacent to the water access on Patte Marsh and visitor conflicts have arisen as a result. One dispersed campsite would be constructed in proximity to the boat access for Broken Bridge Pond to relocate the existing overnight use from the small parking area and thereby eliminate conflicts between day and overnight visitors. At Crocker Pond Campground, the project proposes to construct two new campsites, incorporate one existing dispersed campsite into the campground system and improve parking at three campsites.

Proposed actions for the Four Ponds project that address trail management include both hiking and snowmobile trails. The Albany Notch Trail has been plagued by flooding from the resident beavers, and the proposal is to abandon the section of trail through the notch. Instead, through traffic would be routed over Albany Mountain. The project also includes a proposal to improve 0.3 miles of the Albany Brook Trail from the trailhead along the western shore of Crocker Pond to meet universal accessibility standards. Relocations of the Crocker Pond and Sunken Pond Bypass snowmobile trails are also proposed to address safety and resource concerns.

Wildlife, aquatic, and riparian habitat improvement projects are included in the Four Ponds project as well. Some of the activities proposed are solely for

habitat improvement such as the addition of woody debris into streams to create pool habitat; others, such as timber harvest, serve the dual purposes of habitat improvement and timber stand improvement. These actions have indirect beneficial effects on opportunities for fishing, hunting and wildlife viewing.

No other projects are anticipated within this cumulative effects analysis area during this timeframe. The Forest classified roads, trails, campsites, and water access in the area would continue to be maintained and used for public and administrative access.

Alternative 1

This Alternative proposes no action. Recreation opportunities would be maintained in the analysis area, though the opportunities for fishing for coldwater species will likely decrease after the Broken Bridge Pond Dam fails. Opportunities for boating would also likely decrease as result of dropping water levels.

Alternative 2

Under the proposed action there will be beneficial cumulative effects on fishing opportunities for Forest visitors. The Broken Bridge Dam would be reconstructed, thereby allowing a high quality coldwater fishery to be maintained. Shore fishing opportunities would increase as a result of the associated road construction and removal of trees from the dam. The management activities proposed in the Four Ponds project would improve aquatic habitat and an increase in opportunities for fishing will result.

The reconstruction of the Patte Mill Brook Road would have a beneficial cumulative effect on the Forest's system of winter motorized trails. Like the Lombard Pond snowmobile trail relocation and snowmobile trail-related actions proposed in the Four Ponds Project, the safety of the greater trail network would be improved.

The new road to the Broken Bridge Pond dam would be available for non-motorized traffic after the dam reconstruction is complete. When paired with the proposed improvements to the Albany Brook Trail and the relocation of camping activity at the Broken Bridge Pond and Patte Marsh boat access points, there would be a positive cumulative effect on access to recreation resources in the analysis area.

3.5 Non-Native Invasive Plants

Introduction

Non-native invasive species (NNIS) pose a serious threat to plant and animal community health and diversity. Because exotic species, by definition, have been transplanted outside their original range, they often lack natural controls (e.g., disease, predators, parasites, or climate), allowing them to out-compete and eventually replace more sensitive native species. Not only do they compete with native species for resources, but they also cause loss of habitat and food for wildlife, alter soil structure and chemistry, alter fire regimes and plant succession, serve as reservoirs for pathogens, and hybridize with natives to compromise local genetic diversity. Once NNIS become established, they are extremely difficult to eradicate, and the resulting change in community plant composition can alter ecosystem dynamics and functions over time. With any management activity that requires the use of heavy equipment brought in from off-site, disturbs the soil, or increases sunlight exposure to the ground, there is a risk of transporting and spreading NNIS to or from the project area.

Under Executive Order 13112 (February 3, 1999), Federal agencies whose actions may affect the status of invasive species shall not authorize, fund, or carry out actions that are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species.

Existing Condition

Populations of *Phalaris arundinacea* (reed canary grass) occur in scattered patches along Patte Mill Brook Road (2007 unpublished WMNF report). There are no other known populations of NNIS in the project area.

Determination of Risk

Forest Service Manual 2080.44.6 outlines the responsibilities of Forest Service line officers to determine the risk of NNIS introduction or spread as part of the NEPA process for proposed actions. Risk assessments are to be completed for any ground disturbing activities (FSM 2081.03). For projects having moderate to high risk of introducing or spreading non-native invasive plants (as determined by project risk assessments), the project decision document must identify specific control measures that should be undertaken during project implementation to reduce the potential environmental effects of NNIS (FSM 2081.03-1). The overall risk rating assigned to the Patte Mill Brook Road portion of the project is “Moderate” (NNIS Risk Assessment, project record) due to the presence of reed canary grass. The overall risk rating assigned to the Broken Bridge Pond Dam and access road portion of this project is “None” (NNIS Risk Assessment, project record) as there are no NNIS present.

Affected Environment

The analysis area for direct and indirect effects for NNIS is the project area because that is where the proposed action will take place. The temporal scope

is the time period when the proposed projects are implemented because that is when NNIS could be affected. The analysis area for cumulative effects to NNIS would be the stands adjacent to the Patte Mill Brook Road and Broken Bridge access road and dam where habitat conditions may be affected by timber harvest. The temporal scope for the cumulative effects analysis is ten years because that is the expected duration of the Forest Plan, and therefore the time in which many actions are foreseeable.

Projects that have occurred on WMNF land in the cumulative effects analysis area in the past ten years include harvest in stands adjacent to the Patte Mill Brook Road in the Farwell timber sale and routine maintenance of Patte Mill Brook Road itself. Future projects on WMNF land in the cumulative effects analysis area include harvest of some stands along Patte Mill Brook Road and Broken Bridge Pond Dam access road from the proposed Four Ponds timber sale and routine maintenance of the Patte Mill Brook road and Broken Bridge Pond dam.

Direct and Indirect Effects

Alternative 1

There would be no effects to NNIS as existing conditions would not change along the Patte Mill Brook Road or adjacent to the Broken Bridge Pond access road and dam. Ongoing road maintenance could increase the risk of increasing NNIS as there is an established NNIS species in the project area. but the incorporation of the Forest Plan standards and guidelines reduces this risk.

Alternative 2

The risk of increasing NNIS is possible as there is an established NNIS species in the project area; however, the incorporation of the Forest Plan standards and guidelines reduces this risk.

Reconstruction work along the Patte Mill Brook Road and at Broken Bridge Pond dam and access road could introduce or spread new populations of NNIS. Implementing the 2005 NNIS Forest Plan standards and guidelines (Forest Plan, pp 2-11 and 2-12) reduces but does not eliminate the possibility of introducing new populations of NNIS in newly disturbed habitat.

Post-project monitoring of the area disturbed by this project should be implemented to detect the expansion of known infestations or the colonization of the site by NNIS not currently known to occur. Existing patches of reed canary grass along the Patte Mill Brook Road will be controlled.

Cumulative Effects

No infestations or individual occurrences of NNIS were located in the analysis area, with the exception of scattered patches of reed canary grass along Patte Mill Brook Road. Even by incorporating Forest Plan standards and guidelines and controlling the known populations of reed canary grass, there is a risk of introducing NNIS from past, present, and future activities. Post-project monitoring, as well as incorporating Forest Plan standards and guidelines, reduces this risk.

3.6 Vegetation — Timber

Affected Environment

The current forest cover types along Patte Mill Brook Road and surrounding Broken Bridge Dam Pond is a mosaic of spruce-fir, hemlock, northern hardwoods, aspen-paper birch, and oak-pine. This patchwork of vegetation is a result of landforms, soils, plant succession, disturbances, and forest management practices. Recent disturbances within forested stands have been predominantly human-caused and are mostly associated with timber harvest; however, natural disturbances (i.e., wind, insects, disease, fire) have also occurred within stands.

This area has been actively managed for wood products for over 100 years due to its capability to regenerate and produce high quality trees. Logging has played an important role in the White Mountains since the 19th century, and knowledge of past harvesting practices helps us understand how the present vegetative conditions developed. Many of the stands are even-aged, second growth stands that originated from a series of cuts occurring from the late 1880s to the early 1900s. Though many are even-aged, there is diversity in terms of age and structure due to past management practices. There is no documentation or evidence that these areas were ever or are now considered prime farmland.

Direct and Indirect Effects

The temporal scope for direct and indirect effects is up to two years after the proposed activities occur on the ground. This time period was chosen because it represents the length of time for a stand to be certified as regenerated.

Alternative 1

The forested landscape would remain unchanged. No trees or vegetation would be cut nor vegetation disturbed from road reconstruction and construction.

Alternative 2

Road reconstruction and curve widening along the Patte Mill Brook road would result in the removal or trimming of vegetation and trees at relocation sites. The direct and indirect effects would be that a small percentage of land would be taken out of forest production and would cause a lack of opportunity to produce forest products in the future.

The road proposed for construction to the Broken Bridge Dam is an existing skid trail with a defined road prism. Construction would have little effect on existing trees and vegetation and would consist of trimming tree limbs and removing some young trees along the road edge to accommodate construction equipment.

Once construction of the dam is completed, the roadway would be closed, and within several years would be re-vegetated with native grasses, and shrubs.

Cumulative Effects

There are some cumulative impacts to vegetation from construction and reconstruction of the two roadways; however, the amount of timber harvested is minimal in relation to the harvest activities proposed in the proposed Four Ponds Integrated Resource Project.

3.7 Wildlife

Introduction

The WMNF Forest Plan (p 1-21) includes habitat composition and age class objectives designed to provide a diversity of habitats across the Forest. Meeting the goal of providing a variety of habitats should result in sufficient habitat of all types to support all native and desired non-native wildlife and plant species on the WMNF.

Existing Condition

Patte Mill Brook Road

Habitat along Patte Mill Brook Road consists of a mixture of mature northern hardwoods, hemlock, and oak-pine, intermixed with small wetlands, vernal pools, and seeps. Portions of the East Branch of the Pleasant River and Patte Mill Brook flow just to the south of the Patte Mill Brook Road.

Broken Bridge Pond

Broken Bridge Pond is approximately 25 acres, with depths ranging from five to 25 feet. The pond is stocked annually with brook trout and is a popular recreational fishing area. Broken Bridge Pond is surrounded by mature oak and pine. The proposed access road passes through mature oak-pine and mixed-wood habitat.

Affected Environment

The analysis area for direct and indirect effects to wildlife and habitat is the project area because that is where the proposed action will take place. The temporal scope is the time period when the proposed projects are implemented because that is when wildlife species and habitat could be affected. The analysis area for cumulative effects to wildlife would be the stands adjacent to the Patte Mill Brook Road and the Broken Bridge access road and dam where habitat conditions may be affected by road construction/reconstruction. The temporal scope for the cumulative effects analysis is 10 years because that is the expected duration of the Forest Plan and therefore the time in which many actions are foreseeable.

Projects that have occurred on WMNF land in the cumulative effects analysis area in the past ten years include harvest in stands adjacent to Patte Mill Brook Road in the Farwell timber sale and routine maintenance of Patte Mill Brook Road itself. Future projects on WMNF land in the cumulative effects analysis area include harvest of some stands along the Patte Mill Brook Road and Broken Bridge Pond Dam access road from the proposed Four Ponds timber sale, and routine maintenance of Patte Mill Brook Road and Broken Bridge Pond Dam.

Direct and Indirect Effects

Alternative 1

There would be no effects to wildlife and their associated habitats, as existing habitat conditions would not change adjacent to Patte Mill Brook Road or Broken Bridge Pond Dam and access road.

Over time, there could a loss of brook trout habitat in Broken Bridge Pond if the dam failed and water levels decreased in the pond, allowing warmwater fish species to move into the pond from downstream.

Alternative 2

The proposed action was developed primarily to address the need to reconstruct the Patte Mill Brook Road and Broken Bridge Pond Dam. Reconstruction of the dam would maintain the existing water levels in Broken Bridge Pond, thus maintaining quality habitat for brook trout and other aquatic species that currently inhabit the pond. The proposed work along the Patte Mill Brook Road and Broken Bridge Pond Dam and its access road would result in some minor disturbance to existing vegetation. Some wildlife may be temporarily displaced from the project area during project implementation. Overall, existing habitat conditions would not change and there would be no long-term effects to wildlife.

There would be a loss of a small seep and associated vegetation at the location 2 road realignment along Patte Mill Brook Road in order to move the road away from Patte Mill Brook (see map in Biological Evaluation, project record). This is not an enriched seep and does not have any of the rare plants associated with enriched seeps (C. Mattrick pers. comm. 7/27/2009). Moving the road away from Patte Mill Brook would protect aquatic species by reducing the potential for sedimentation into the brook from the road.

Cumulative Effects

Ongoing road and dam maintenance would maintain existing habitat conditions along the Patte Mill Brook Road and at Broken Bridge Pond dam. Road maintenance would favor some wildlife species, such as bats that forage along open corridors, while dam maintenance would maintain Broken Bridge Pond at its current water levels and prevent warmwater fish species from moving into the pond from downstream.

In the long term, there should be no increased disturbance to wildlife from increased human presence in the area from past or future projects. The access road to Broken Bridge Pond Dam would be gated and human use along Patte Mill Brook Road should not change.

Past and future timber harvests in the analysis area have resulted or could result in a partial opening of the canopy along the roads. Wildlife species favoring mature habitat would continue to use forested habitat along the road and adjacent to Broken Bridge Pond.

Overall, effects from past, on-going, and future activities within the analysis area would be minimal. Since direct and indirect effects from the proposed action also are expected to be minimal, cumulative effects would be very limited.

Federal Threatened and Endangered Species (TES) and Regional Forester Sensitive Species (RFSS)

Affected Environment

A Biological Evaluation (BE) for Federally Threatened and Endangered Species and Regional Forester Sensitive Species was completed on September 14, 2009 for the Proposed Action (BE, project file). The process used and the sources examined to determine potential occurrence of TES or RFSS presence are listed in the BE. The Forest Plan uses the best available science to evaluate TES and RFSS and species viability. Information gathered during the species viability analysis was used in updating the WMNF RFSS list (USDA Forest Service 2006b). The BE for this project tiers to and incorporates by reference information on species viability (USDA Forest Service 2005b, Appendix F; USDA Forest Service 2005d) and TES/RFSS used during Forest Plan revision including the Biological Evaluation of the White Mountain National Forest Land and Resource Management Plan Revision (USDA Forest Service 2005b, Appendix G).

The general habitat condition of the project area was determined from field reviews by Forest personnel in 2008 and 2009 (unpublished WMNF reports).

Animals

There are no known occurrences of TES or RFSS at or near Patte Brook Road, the proposed access route to the dam or Broken Bridge Pond dam. No surveys for wildlife species of concern were conducted specific to this project. Forest-wide and regional survey efforts have not detected any TEP species or RFSS in or near the project area.

Plants

In 2008 and 2009 botanical surveys were conducted adjacent to the Patte Brook Road and in areas surrounding Broken Bridge Pond dam and access road (unpublished WMNF data). No TES or RFSS were detected within 40 feet of the Patte Brook Road, the proposed access route to the dam or Broken Bridge Pond dam.

Species Considered and Evaluated in the Project Area

Based on a pre-field and field review, there is potential for three RFSS to occur in the project area and be impacted by the proposed action:

- Eastern small-footed myotis (*Myotis leibii*) – Regional Forester Sensitive Species
- Northern bog lemming (*Synaptomys borealis sphagnicola*) – Regional Forester Sensitive Species
- Autumn coralroot (*Corallorhiza odontorhiza*) – Regional Forester Sensitive Species

Effects

There are no TES in the project area so there would be no effects to federally listed species from the Proposed Action. The BE discusses direct, indirect, and cumulative effects to RFSS species or their habitat that may occur in the project area.

Effects Determination and Rationale –Regional Forester Sensitive Species (RFSS)

Eastern Small-footed myotis

Effects Determination

Based on a review of available information, it is my determination that the Proposed Action may impact individuals but would not likely cause a trend toward federal listing or loss of viability for eastern small-footed myotis.

Rationale

- 1) Most literature indicates that eastern small-footed myotis roost under rocks, in cracks and crevices in rocky outcrops and on talus slopes, and in buildings. The likelihood that individual bats are roosting in trees in the project area is low.
- 2) Buildings in the project area would not be affected by the proposed action.
- 3) Forest Plan standards and guidelines (USFS 2005a) will help ensure that forest habitat in the project area will remain suitable for small-footed myotis roosting.
- 4) The maintenance of the existing roads, trails, and openings in or near the project area would ensure they continue to provide potential foraging habitat for bats.

Northern Bog Lemming

Effects Determination

Based on a review of available information, it is my determination that the Proposed Action may impact individuals but would not likely cause a trend toward federal listing or loss of viability for the northern bog lemming.

Rationale

- 1) Northern bog lemmings are considered extremely rare in New England. The likelihood of an individual occurring in the project area or cumulative effects analysis area is considered low.
- 2) Forest Plan standards and guidelines protect riparian habitats (Forest Plan 2-24 to 2-26) on the WMNF, minimizing the risk of disturbing an individual animal or associated habitat. A small seep would be impacted by realignment of the second section of the Patte Mill Road .
- 3) Treatments should not reduce the overall quality of existing suitable habitat.

**Autumn Coral
Root**

Effects Determination

Based on a review of available information, it is my determination that the Proposed Action may impact individuals but would not likely cause a trend toward federal listing or loss of viability for *Corallorhiza odontorhiza*.

Rationale

- 1) *Corallorhiza odontorhiza* is rare despite apparently extensive habitat, so the potential for it to occur in the project area is low.
- 2) The proposed tree removal would be in a small area and would only reduce habitat suitability in a small area.

3.8 Cultural Resources

Affected Environment

The proposed projects involve the reconstruction of roads which have served as access to the historic uses of the area. Prehistoric occupations of western Maine and northern New Hampshire date to as early as 11,500 years before present, while historic Euro-American use of the area began in the late 1600s.

Historic cellar holes, farmsteads, mills, and rock alignments dot the landscape, and Patte Mill Brook road weaves among these features. Segments of planned realignment were surveyed by paraprofessionals and field checked by the Forest archaeologist. The existing road passes close to an historic schoolhouse and there is a linear rock feature near one of the proposed realignments.

The proposed access road to the Broken Bridge Dam was surveyed by paraprofessionals, with six shovel tests excavated along the planned route. No cultural resources were encountered. The Broken Bridge Dam is of earthen construction, built in 1958, and the integrity of its design and construction have been compromised (see Chapter 1, Purpose and Need).

Direct and Indirect Effects

The analysis area for direct and indirect effects is the project area because the potential for impacts to cultural resources is limited to the areas adjacent to where activities will occur. The timeframe for the analysis is the life of the project, probably two years, because the potential for direct and indirect effects to these resources also is limited to when the actions are taking place.

Alternative 1

This alternative would result in no change to the existing condition. Patte Mill Brook Road would remain adjacent to the historic schoolhouse, possibly affecting the structure. The historic Broken Bridge Dam would eventually be lost due to degradation and erosion.

Alternative 2

The Patte Mill road realignments do not exceed 43 feet from existing centerlines: thus the risk of impacting prehistoric sites is considered negligible. One road realignment was designed to increase the distance between the road and an historic schoolhouse, resulting in a positive effect to this cultural resource. A second realignment segment was redesigned to avoid impacts to a linear rock feature. The proposed action would result in a lessening of impacts to the schoolhouse and no adverse effects to other historic features in the project area.

Road construction for the Broken Bridge Dam phase of the project follows an existing skid trail and does not impact any historic or archaeological sites. This alternative would reconstruct the earthen dam using the existing dirt, and reconstruct the spillway with concrete. Restoration of the dam would ensure the continuation of the original dam function and re-establish the integrity of the structure in its original location.

Cumulative Effects

The analysis area for cumulative effects is the project area, because the potential for impacts to cultural resources is limited to the areas adjacent to where activities will occur. The timeframe for analysis is 10 years past and future to allow consideration of recently completed or proposed activities that could affect the same area.

The only past, present, or reasonably foreseeable actions in the analysis area and timeframe are activities associated with the proposed Four Ponds project and on-going maintenance of roads, trails, openings, and recreation sites. Activities in the Four Ponds project are being designed to avoid impacts to all known cultural resources. Maintenance activities occur on already disturbed sites.

Alternatives 1-2

No negative cumulative effects are foreseen from the proposed action because no adverse impacts to cultural resources are expected from any past, on-going, or future actions in the analysis area.

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