White Mountain National Forest

United States Department of Agriculture

Forest Service

Eastern Region

Radio Improvement Project

Towns of Livermore and Wentworth Grafton County, NH and Beans Purchase, Kilkenny, and Milan Coos County, NH

Environmental Assessment

March 2015

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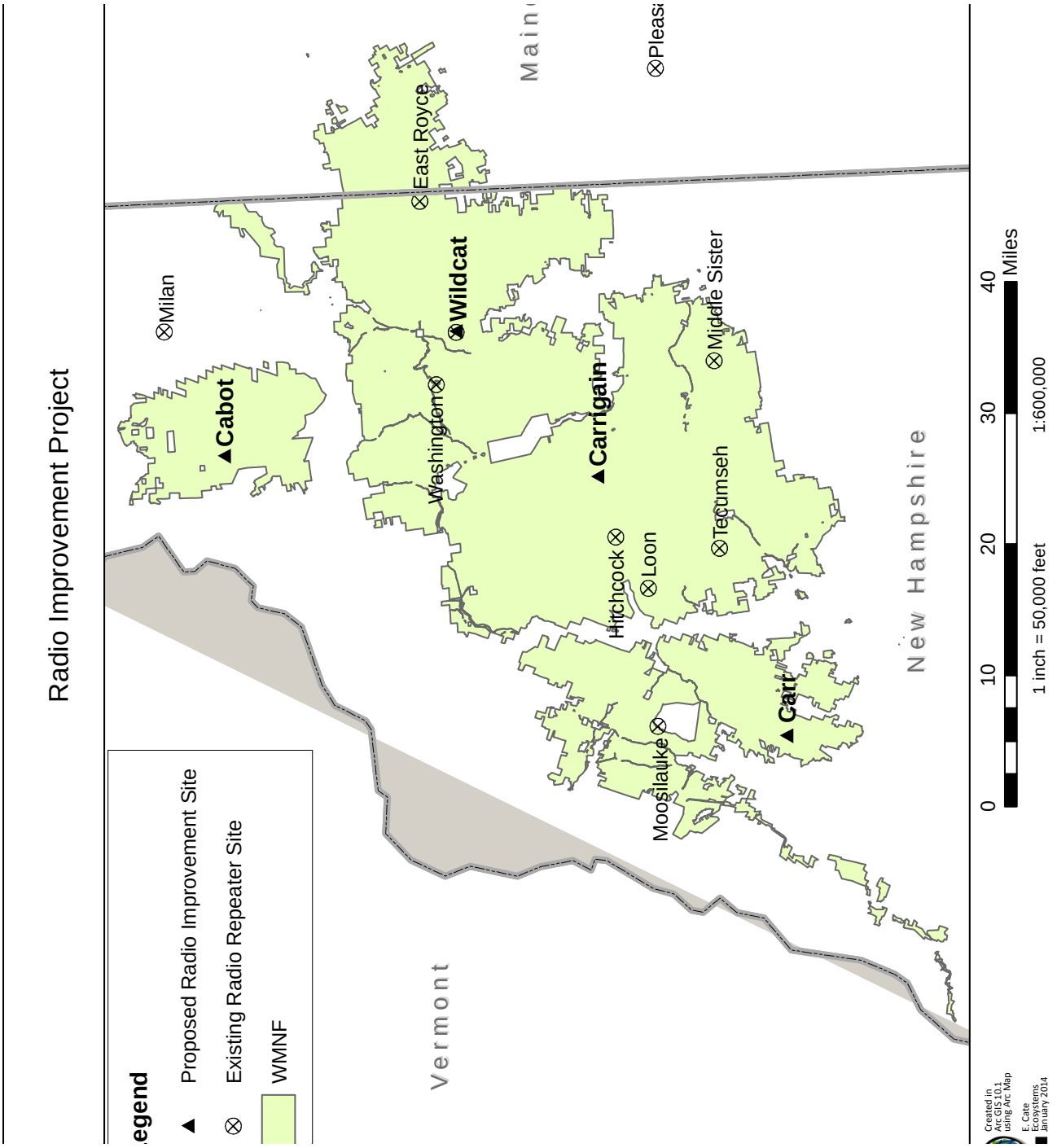
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Chapter 1 – Project Background

The White Mountain National Forest (WMNF) is proposing an administrative project to address a Forest safety issue concerning hand held radio coverage. This is a Forest-wide project with the proposed action focused on five summits: Carr Mountain, Mount Carrigain, Mount Cabot, Wildcat Mountain, and Milan Hill in the towns of Wentworth, Livermore, Kilkenny, Beans Purchase, and Milan, NH, respectively (see map, page iii). The Radio Improvement Project is designed to increase employee and public safety by enhancing on-Forest communications through the expansion of the existing Forest radio system. Chapters 1 and 2 of this document provide background information, public involvement, issues, and detailed descriptions of the Proposed Action and alternatives considered for the project. The effects of alternatives analyzed in detail, including the Proposed Action, on the Forest radio system, recreation, scenery, wildlife and plants, including Federal Threatened, Endangered, and Proposed Species (TEPS) and Regional Forester Sensitive Species (RFSS), soils and water, roadless, and heritage resources are described in Chapter 3.

Current Condition

The WMNF is administered by the Supervisor's Office (SO) in Campton, NH and three Ranger Districts. The Pemigewasset (Pemi) Ranger District Office is co-located with the SO in the Forest Headquarters (FHQ) in Campton, NH; the Androscoggin (Andro) Ranger District Office is located in Gorham, NH; and the Saco Ranger District Office is located in Conway, NH. The Forest radio system consists of ten stand-alone Very High Frequency repeaters spread across the Forest. The system is for administrative use only; it does not support commercial use. There is no dispatch center or other communications system in place on the Forest.

In October 2012, the Chief Information Office (CIO) conducted a review of the WMNF radio system (USDA-FS-CIO 2012). The review was requested by the Forest Supervisor as a result of concerns raised by employees about areas without radio coverage on the Forest. Concerns focused on areas of regular use where there are frequent search and rescue efforts, high recreation use, timber harvest activity, and Forest responsibility for management of the Appalachian National Scenic Trail (ANST) outside the Forest boundary. The review provides a detailed summary of the existing WMNF radio system, coverage findings, current issues, recommendations, and cost estimates for improvements.

User input verifies what computer generated Radio Frequency coverage models indicate, that the system is performing as designed. However, there are several large areas with little to no coverage (see map, page 6).

Continuity of Operations (COOP)

There is another project currently being implemented that will provide the FHQ with Forest-wide communication ability for COOP. However, no other office is able to monitor Forest-wide communications or send out critical communications Forest-wide. The CIO's review indicates that there is an opportunity to provide the Andro office with access to the complete Forest radio system by relocating the Wildcat Mountain radio antenna to the summit of Wildcat Mountain and upgrading the radio equipment.

Summary of the Proposed Action

The WMNF Land and Resource Management Plan's (also called the "Forest Plan") goals, objectives, standards and guidelines provide resource management direction for the WMNF (USDA-FS 2005a). Applicable Forest Plan goals, objectives and standards and guidelines were used to design the Radio Improvement Project. The proposed action for the Radio Improvement Project is described in detail in Chapter 2. In summary, this project proposes to enhance the existing Forest radio system by establishing three new radio repeater sites on or near the summits of Carr Mountain, Mount Carrigain, and Mount Cabot, relocating one existing radio antenna from a location near the summit of Wildcat Mountain to the actual summit of Wildcat Mountain and upgrading the radio equipment, and discontinuing one existing site on Milan Hill.

The proposal for the new sites includes two components, a repeater shelter and a helicopter landing zone.

The project was designed to minimize adverse effects to scenic quality from newly cleared areas, protect cultural resources, limit effects to Forest visitors recreating in the project area, and minimize negative effects to wildlife to the degree possible, while achieving the desired level of radio coverage across the Forest.

All proposed project activities would be undertaken within the scope of the Forest Plan's standards and guidelines. The project would likely be implemented within the next 5 years.

The Proposed Action and alternatives for the Radio Improvement Project, as well as the

analysis of their effects described in this document, are confined in scope to the area of the WMNF within which they are contained. Neither the environmental analysis, nor the actual decision document, will apply to or set precedent for any area outside of this project.

Tiering to the Forest Plan

The analysis for this project is tiered to the Final Environmental Impact Statement (FEIS) and Record of Decision (ROD) for the WMNF Land and Resource Management Plan (USDA-FS 2005b). Tiering is described in Forest Service Handbook (FSH) 1909.15 as a process of summarizing and incorporating by reference from other environmental documents of broader scope to eliminate repetitive discussions of the same issues and to focus the actual issues ready for decision (USDA-FS 2010).

The Forest Plan is the "principal tool for preserving, protecting, and managing the resources that comprise the WMNF, while at the same time making those resources available to the public for a variety of uses" (USDA-FS 2005b). The Forest Plan is a programmatic document which sets management direction for the WMNF through the establishment of short term and long-range goals and objectives. It also prescribes the standards and practices used to achieve these goals and objectives, along with guidelines for monitoring and evaluating the effectiveness of our actions.

About the Radio Improvement Project Area

The Radio Improvement Project project area is made up of five sets of areas spatially separated across the general WMNF area. Four are located on Carr Mountain, Mount Carrigain, Mount Cabot, and Wildcat Mountain. The project area in each of these locations is limited to the area of any proposed activities, plus a 200' buffer around these areas. The project also proposes to remove Forest radio equipment from the state owned fire tower on Milan Hill.

Purpose of and Need for this Project

The WMNF Health and Safety Plan serves as the primary guidance for the Safety Program on the Forest and builds upon our current safety policy, awareness, and culture. To achieve our safety goals, such as providing a safe work environment to employees, volunteers, and cooperators, safety must be integrated into all programs and be the highest priority in all that we do. The Forest Leadership Team identified improving the Forest communications system as one of the primary Safety Emphasis Items for 2014

(USDA-FS 2014).

Radios provide a means of communication where landline or cellular phone use is not an option. They also provide the ability to share information with a lot of people simultaneously, which is often a daily necessity. Having reliable communications to send and receive information during normal operations and during emergencies is vital to employee safety and the safety of the visiting public during emergencies. Due to the complex topography of the WMNF and the current radio system design, there are several large areas on the Forest that have little to no radio coverage. Some of these areas are where there are frequent search and rescue (SAR) efforts, high recreation use, timber harvest activity, and Forest responsibility for management of the ANST outside the Forest boundary. The lack of reliable communications is a significant safety hazard for people working in and visiting these areas.

In addition to coverage gaps, Forest-wide communication ability is limited. There is another project currently being implemented that will provide the FHQ with Forest-wide communication ability for COOP. However, no other office is able to monitor Forest-wide communications or send out critical communications Forest-wide, which can include alerts on approaching extreme weather, pertinent and immediate threats that require action, or other essential announcements (e.g., SAR in progress).

Thus, there is a need to improve the existing radio system to provide more reliable communications and a safer environment for employees and the public, especially in times of emergency.

CIO Recommendations

The CIO radio system review resulted in a set of recommendations that included establishing new radio repeater sites on Carr Mountain, Mount Carrigain, and Mount Cabot, relocating the Wildcat Mountain repeater to the summit of Wildcat Mountain, and discontinuing the Milan Hill site. In addition, in order to allow the Andro office to access the complete Forest radio system for COOP, the Wildcat site would be upgraded to a remote base station. This combination of actions would result in filling the majority of coverage gaps with the least amount of changes to the existing system and the lowest number of new repeater sites (USDA-FS-CIO 2012).

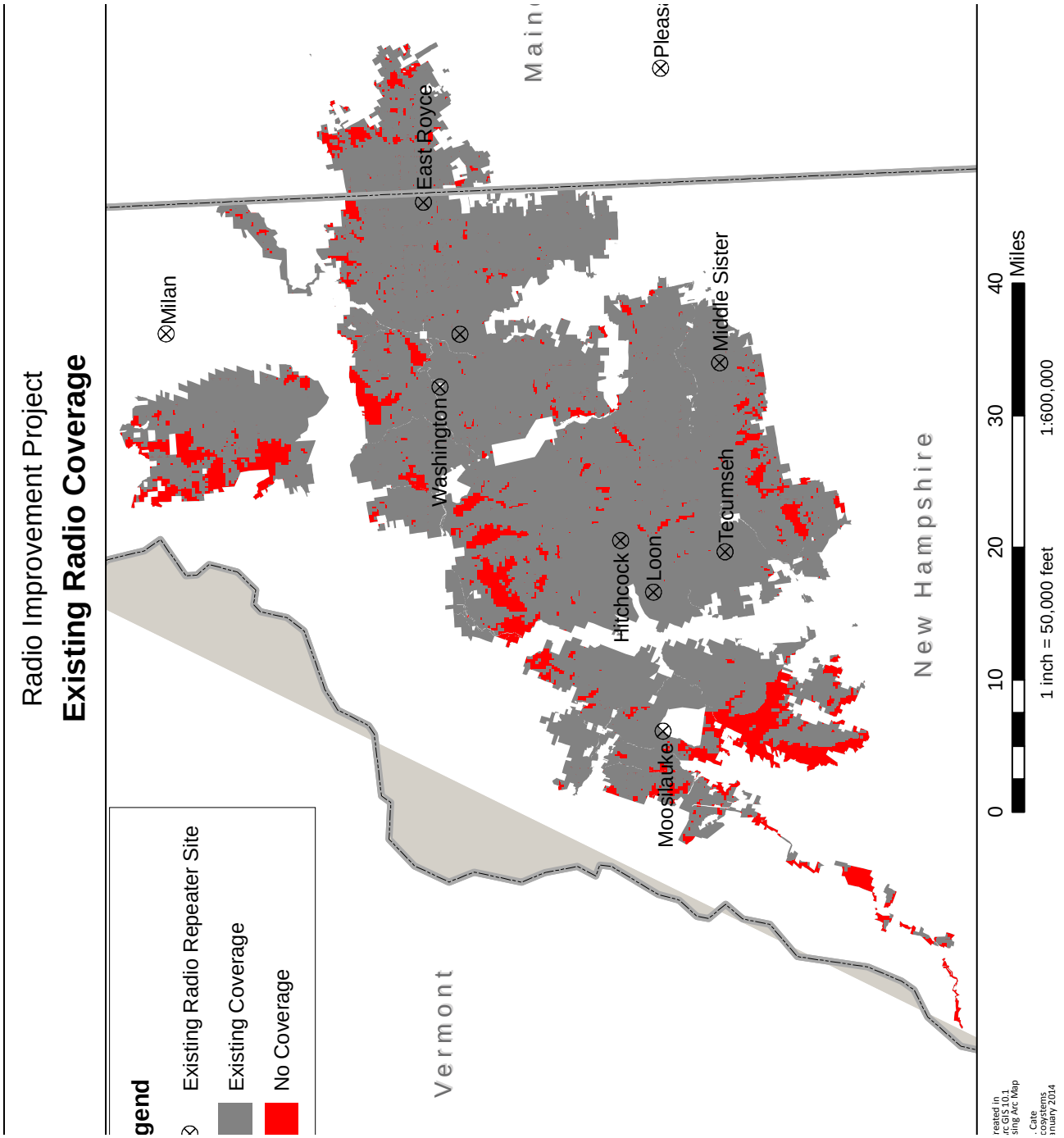
Public Involvement

This project was listed in the WMNF Schedule of Proposed Actions (SOPA) beginning on January 1, 2014. A scoping report for this project was published and the public scoping period was conducted in February, 2014. Notification of the availability of this report was sent out on February 3, 2014 to individuals from state, private, and government groups, as well as everyone who responded to this project from the SOPA.

Comments from six individuals were received in response to scoping. All comments received in response to scoping were analyzed and used to refine the proposed action, identify the issues and develop a modified proposal for this project. Original scoping comments are in the project record.

On August 6, 2014, a legal notice for the 30-Day Comment Report was published in the *New Hampshire Union Leader*. Notification of this report was sent to six commentors as well as other individuals who requested project notification but had not commented during initial scoping. Six individuals provided comments during this period. The original comments are located in the project record and Forest Service responses are located in Appendix D of the EA.

Additional information on the Forest Service National Environmental Policy Act (NEPA) Process and where this project is in that process can be found at the end of this document.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No Coverage
Milan
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Washington
Hitchcock
Loon
Tecumseh
Middle Sister
Moosilauke
Vermont
New Hampshire
0
10
20
30
40
Miles
1 inch = 50,000 feet
1:600,000

Chapter 2 – Proposed Action, Issues and Alternatives

This section of the environmental analysis:

- Describes the issues identified for this project, which arose through the interdisciplinary and public scoping processes
- Shows how the Forest Service used these issues to develop alternatives to the proposed action
- Provides detailed descriptions of the alternatives analyzed in Chapter 3 and information on alternatives that were considered but not analyzed in detail

Development of Issues and Alternatives

Public scoping brought forth ideas, suggestions, and important information used in developing this project. Some commentors were concerned with visual and recreational effects of the proposed activities. One commentor had concerns with the kind of technology being proposed for implementation. One commentor questioned if the benefits of the increase in radio coverage would outweigh the effects to the project area and had concerns that the proposed clearings and new structures would detract from the character of the area. One commentor did not think it was necessary to create new clearings for helicopter landing zones (HLZ). All public scoping comments were considered during project refinement and development of alternatives to the proposed action.

An issue is a point of debate, dispute, or disagreement regarding anticipated effects of implementing the proposed action. Issues were identified by the interdisciplinary team (IDT) from comments received in response to project scoping. Some issues were identified as being conjectural, outside the scope of the project or already decided by law or regulation (see project record). Mitigation measures either already exist (in Best Management Practices, Forest Plan Standards and Guidelines or other established protocols) or have been developed to respond to other concerns. The remaining issues were used to develop alternatives to the proposed action.

Issues Used to Develop Alternatives

Two issues were used to develop alternatives to the proposed action.

Issue 1

The proposed activities would detract from the scenic integrity and recreation experience in these areas.

Several commentors expressed concerns that the new structures and clearings would have a substantial negeative effect on the scenic integrity and recreational experience on Carr Mountain, Mount Carrigain, and Mount Cabot.

Alternative 3 was developed to address this issue. Indicators for this issue in the analysis are the number of shelters installed and the acres of vegetation cleared.

Issue 2

Creating a new clearing to allow a helicopter to land is not a necessity.

Some commentors expressed that the repeaters could be installed and maintained without having landing zones nearby.

Alternative 3 was developed to address this issue. The indicator for this issue in the analysis is the number of helicopter landing zones created.

Alternatives Considered in Detail

The following three alternatives were analyzed in detail by the IDT:

Alternative 1 – No Action

This alternative proposes no changes to the Forest radio system at this time. Large areas without radio coverage would still exist and radio communication ability in these areas would continue to be absent. The FHQ would still have Forest-wide communications ability, but there wouldn't be a second office with that ability to act as a backup. Ongoing repair and maintenance of the existing radio system would continue.

While this alternative would not meet the "need for action", analysis of "no action" provides a baseline from which to compare the effects of the action alternatives.

Alternative 2 – Proposed Action

The Proposed Action is the same as the proposal described in the initial public scoping document, with additional details. The Proposed Action was designed to improve safety by addressing concerns regarding the Forest radio system and areas with no radio coverage that exist on the Forest.

A radio repeater site consists of a shelter, with an antenna and power source, and the radio equipment, which is installed inside the shelter. The Standard shelter is approximately 6′ wide by 6′deep by 8′ tall with antenna mast heights that can vary from 20′ to 52′. The Micro shelter is 38″ wide by 45″ deep by 67″ tall with an antenna mast height limited to 20′. Appropriate antenna mast height is determined by the desired level of coverage and site specific characteristics. The standard power source is a pair of solar panels mounted to the shelter and batteries that are housed inside the shelter. The shelters have built in anchoring systems so no excavation or foundations are necessary for installation. (See project record for more detailed information.)

There are tradeoffs to installing one type of shelter over the other. The Micro shelter has several limitations that would preclude its use in some situations.

Micro Shelter	**Standard Shelter**
Less expensive	More expensive
Smaller overall footprint	Larger overall footprint
Limited storage capacity	Large storage capacity
Limited antenna mast height of 20′	Maximum antenna mast height of 52′
More susceptible to vandalism	Less susceptible to vandalism
Maintain from outside	Maintain from inside (emergency shelter for technician)

Shelters are delivered to remote sites by helicopter using long-line transport techniques. A 30′ diameter (maximum) clearing is needed to safely deliver the shelter. The actual size of the clearing is dependent on site specific characteristics and requirements for safe operations. In the long term, the clearing would be allowed to revegetate though any vegetation that blocks the antenna or solar panels, brushes against the equipment, or blocks access to the shelter would be cut back.

If vehicular access to within a reasonable distance of the new radio repeater location is not present, an HLZ would be created. The HLZ would be located within a reasonable distance to the new repeater location. The installation crew would have to travel from the HLZ to the site while carrying tools and any replacement equipment. Also, in most cases, the helicopter would have to stand by for the majority of the time that the installation crew travels to the site, installs the shelter, and travels back to the helicopter, which would increase costs due to long travel times. For these reasons and considering that most potential new repeater sites on the White Mountain National Forest (WMNF) would occur on high summits with the only access being steep hiking trails, "a reasonable distance" is considered to be within approximately one mile of the shelter site. (See Radio System effects analysis in Chapter 3 for more details.)

The HLZ also would be utilized for site maintenance in the future and to service the site in the case of an emergency. The helicopter used to deliver the shelter for installation would be larger than the helicopter used for maintenance and therefore would have different HLZ size requirements for safe operations. The "Type 2" installation helicopter requires a 100′ diameter clearing and the typical "Type 3" maintenance helicopter re-

quires a 75′ diameter clearing. The area would have to be relatively flat and be cleared down to brush level. The actual landing footprint, "landing pad", of the helicopter, an approximately 20′ x 20′ square in the center of the clearing, would be cleared to ground level (no soil disturbance) to create an obstacle free area for the helicopter to set down (NWCG 2013). (See the Project Record for more details.)

In summary, an HLZ would be created for any new radio repeater site that does not have vehicular access within approximately one mile of the site. The HLZ would be located within one mile of the new repeater location. The HLZ would initially be created as a 100′ diameter clearing in order to accommodate the helicopter used for the shelter installation. The HLZ would be maintained as an approximately 75′ diameter clearing in order to accommodate the helicopter used for future maintenance (See Appendix A – Mitigation Measures and Design Features).

Of the proposed locations for new radio repeater sites, Carr Mountain, Mount Carrigain, and Mount Cabot would include the creation of HLZs. The Wildcat Mountain site does not require the use of helicopter for installation or future maintenance, so no HLZ is proposed.

The IDT visited each site in the fall of 2013, except Mount Cabot which was visited on June 2, 2014. The IDT chose locations for the shelters and HLZs to achieve the purpose and need for the project while minimizing effects to resources to the extent possible. Due to the physics of radio communication systems, the repeaters would have to be located on or very near the summits of each peak in order to achieve the desired level of coverage. These would be remote sites so housing the repeaters in strong and secure shelters is also of high importance. This results in relatively little flexibility in the placement of the repeater and type of shelter proposed for each site. Potential locations for helicopter landings zones were identified in the field and discussed at length by the IDT. The final proposed locations for HLZs were chosen to minimize effects to resources to the extent possible, while still being within "reasonable distance" of the repeater.

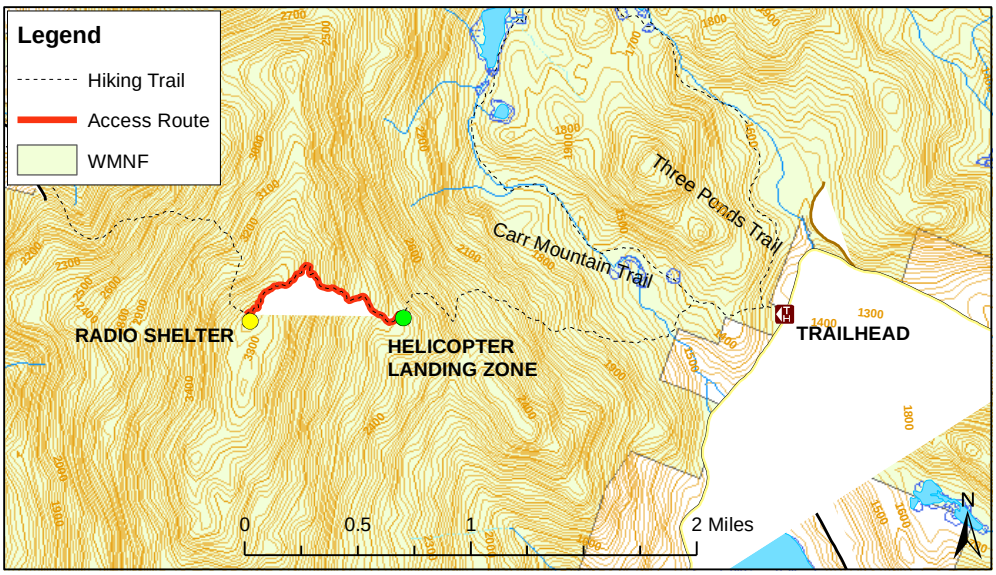
Site-specific Details

The proposed action for this project consists of a set of actions for each of the following locations: Carr Mountain, Mount Carrigain, Mount Cabot, and Wildcat Mountain. Each set of actions addresses four items: type of radio shelter (Standard versus Micro), placement of radio shelter, placement of HLZ, if needed, and resulting access. Also included are the activities associated with discontinuing the Milan Hill repeater site.

The clearing sizes stated here are in feet and indicate the maximum diameter of a circular clearing. Actual clearing size would be dependent on site specific factors and requirements for safe operations, but would not exceed the sizes stated here.

This project proposes the following activities:

Carr Mountain



- Install a Standard radio shelter to assure sufficient antenna mast height (~30′) to achieve the desired level of coverage and to minimize the potential for destructive vandalism.

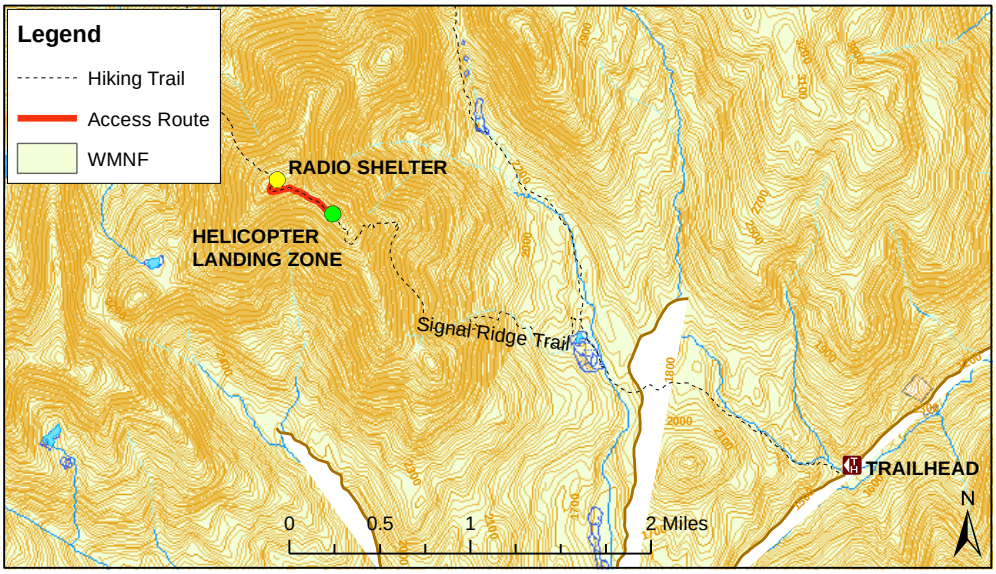
- Place the shelter directly on the summit of Carr Mountain. The summit is an exposed ledge knob with four large concrete tower footings and a staircase embedded into the ledge. The shelter would be placed in the existing opening between the tower footings. No tree clearing and no effect to the tower footings is expected.

- Create an HLZ adjacent to the Carr Mountain Trail approximately 1.0 mile down from the summit. The area is currently forested and would have to be cleared. The resulting 100′ clearing would be directly adjacent to the trail. The maintained 75′ clearing could incorporate a forested buffer between the trail and the clearing.

- Access Route, HLZ to summit: Begin on the Carr Mountain Trail near the HLZ; Follow for approximately 1.0 mile to the summit of Carr Mountain:

    - Total: Approximately 1.0 mile and 780′ of elevation gain

Mount Carrigain



- Install a Micro radio shelter to allow the unit to be moved and installed underneath the existing observation tower.

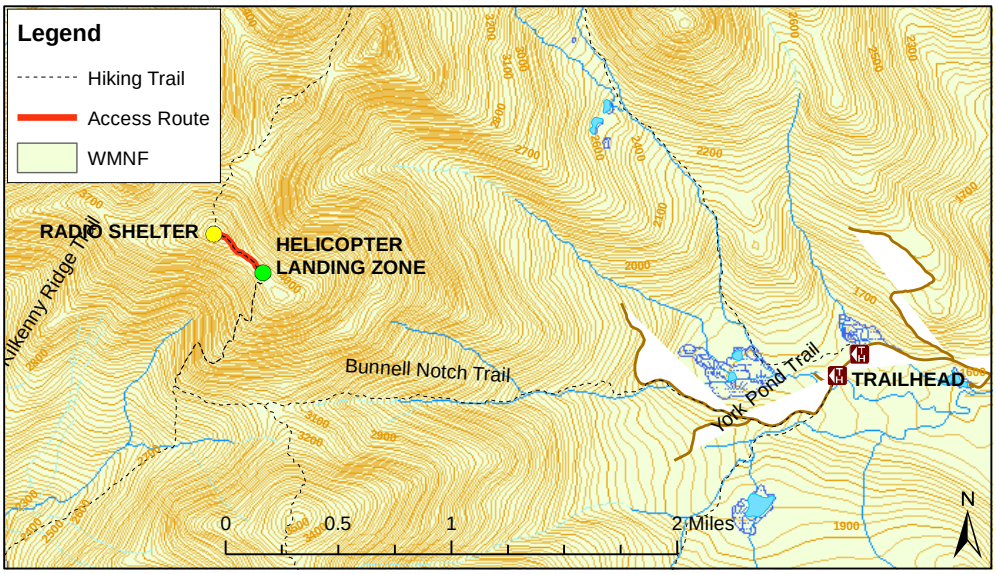
- Place the shelter directly on the summit of Mount Carrigain underneath the existing observation tower. The shelter would be set down in the existing clearing adjacent to the observation tower. No tree clearing is expected. The shelter would be manually moved and installed underneath the observation tower. The mast and antenna (~15′) would be mounted to the top of the tower and attached to the shelter by a cable. The solar panels would be mounted on a separate structure and installed in close proximity to the shelter where it would receive adequate sun exposure. The solar panels would be attached to the shelter with a cable that would be buried or pinned down to avoid creating a safety hazard.

- Create an HLZ centered on the Signal Ridge Trail, on Signal Ridge, approximately 0.5 miles down from the summit. Most of the area is currently forested and would have to be cleared. The resulting 100′ clearing would be centered on the trail, as would the maintained 75′ clearing.

- Access Route, HLZ to summit: Begin on the Signal Ridge Trail near HLZ; Follow for approximately 0.5 miles to the summit of Mount Carrigain:

    - Total: Approximately 0.5 miles and 260′ of elevation gain

Mount Cabot



- Install a Standard radio shelter to assure sufficient antenna mast height (~40′) to achieve the desired coverage and to minimize the potential for destructive vandalism.

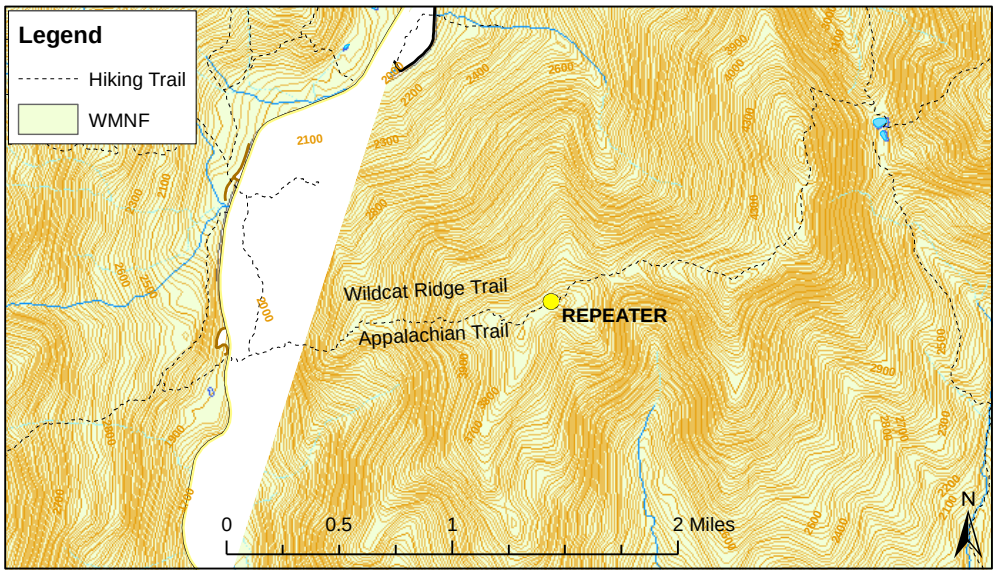
- Place the shelter approximately 130′ south/south-east of the true summit. The area is south facing, relatively open, and approximately 8-10 feet below the elevation of the true summit. This location is in close proximity to the Kilkenny Ridge Trail, though the site could incorporate a small forested buffer between the trail and the clearing. To achieve the 30′ clearing, minimal tree cutting of mostly dead or dying balsam firs would need to occur.

- Create an HLZ centered on the Kilkenny Ridge Trail, approximately 0.3 miles south-east from the summit. This is the site where a fire tower once stood. It is now an approximately 25′ diameter clearing of exposed bedrock surrounded by dense fir forest. The historic Mount Cabot Cabin is another 100′ down the trail. The ground drops off to the north-east and south-west and follows a relatively flat grade on the ridgeline to the north-west and south-east. A landing pad would need to be constructed due to the bedrock being insufficiently uniform to land a helicopter directly on the ground. The HLZ and landing pad would be designed to accommodate a Type 3 Helicopter only. Because this site requires constructing a permanent structure, it is most appropriate to design it for its primary use. A Type 2 Helicopter would be used only once, during installation of the new shelter; The Type 2 would still be used to deliver the shelter, but would not be able to land nearby, so the crew

would need to be shuttled to the summit in a separate Type 3. The result would be an approximately 15′ square wooden landing platform, centered in the existing clearing, astride the Kilkenny Ridge Trail, and anchored to the bedrock (NWCG 2013, Chapter 8). The landing pad could incorporate design elements to accommodate hikers visiting the area, such as steps on to and off of the pad and a safety railing. Because this HLZ is designed for a Type 3 Helicopter only, the resulting clearing would not exceed 75′ in diameter.

- Access Route, HLZ to summit: Begin on the Kilkenny Ridge Trail near HLZ; Follow for approximately 0.3 miles to the summit of Mount Cabot:
    - Total: Approximately 0.3 miles and 100′ of elevation gain

Wildcat Mountain



A radio repeater site is currently operating on Wildcat Mountain in a ski patrol building just below the summit. Coverage is limited with the existing layout.

- Keep the radio equipment in the ski patrol building. The equipment would be isolated by constructing a separate room in the existing building; the size of the room would have to be sufficient to house the equipment necessary to upgrade the site to a remote base station (approximately 6 foot square). To increase coverage, the mast and antenna (~15′) would be mounted to the top of the observation tower which is located at the summit of Wildcat Mountain. The antenna would be attached to the repeater with a cable. The cable would be run aboveground and placed to minimize

the potential for damage to the cable, creating a safety hazard and being seen by visitors, particularly those hiking the Appalachian National Scenic Trail (ANST). No tree clearing is expected.

- A helicopter would not be needed to accomplish this action. All necessary materials, equipment and crew would be transported to the site via alternative methods of transportation commonly used for work done by the Wildcat Ski Area (e.g., chairlift, gondola, Snowcat [winter], Muskeg [summer]). No additional clearing is necessary.
- Discontinue the existing Wildcat Mountain repeater and upgrade the equipment to create a remote base station, allowing the Androscoggin Ranger Office (Andro) to have Forest-wide radio communication ability.

Milan Hill

Included in the proposed action for this project is to discontinue the existing Milan Hill radio site. Currently, the repeater is housed in a small shelter inside an existing fire tower (owned by the state) with the antenna attached to the exterior of the fire tower. The proposed action would simply remove the equipment, leaving the tower in place.

Forest Plan Consistency

The Forest Plan states the WMNF standards and guidelines. A *standard* is a course of action that must be followed to achieve management goals and objectives, and can only be changed through an amendment to the Plan. A *guideline* also is a required course of action, but permits operational flexibility to respond to variations in conditions. Guidelines can be modified or not implemented, but the rationale for doing so must be documented in a project-level analysis and designed decision. (USDA-FS 2005a, p. 2-3.)

The Proposed Action would be consistent with all Forest Plan standards except one Forest-wide standard designed to protect Bicknell's thrush habitat (USDA-FS 2005a, p. 2-16):

S-1: Projects must not result in a net decrease of suitable Bicknell's thrush habitat.

Generally speaking, dense softwood stands above 2800 feet elevation are suitable Bicknell's thrush habitat. Suitable habitat can change based on latitude, elevation, and site conditions, so suitability should be reviewed site-specifically by a wildlife biologist if potentially suitable habitat will be affected by a project. All proposed repeater locations

in this alternative are in or adjacent to suitable Bicknell's thrush habitat based on field review.

New repeater shelters must be placed in a clearing 30 feet in diameter to allow for safe placement by a helicopter. The repeater shelter location at the Mount Cabot site would need to be cleared; all other shelters would be placed in existing openings. The entire summit of Mount Cabot is suitable Bicknell's thrush habitat so about 0.02 acres of suitable habitat would be lost when this clearing is created. In the long term, the clearing would be allowed to revegetate though any vegetation that blocks the antenna or solar panels, brushes against the equipment, or blocks access to the shelter would be cut back.

In the Proposed Action, the creation of HLZs near the Mount Carrigain and Mount Cabot sites would clear approximately 0.3 acres of suitable Bicknell's thrush habitat and maintain most of it in an open, unsuitable condition for the foreseeable future. A suitable site for the helicopter landing zone near Carr Mountain was identified that is outside of suitable Bicknell's thrush habitat.

An interdisciplinary team made up of specialists representing resources that may be affected by the project helped to develop the proposed action. The IDT explored alternative project designs that would minimize effects to Bicknell's thrush habitat, such as placing some sites in existing openings and the Carr Mountain landing zone outside suitable habitat. While effects were reduced, the team could not find a way to avoid effects to habitat entirely and still install repeaters in locations that would address identified deficiencies in coverage, so implementation of the Proposed Action would require a Forest Plan amendment.

Therefore the following site-specific Forest Plan amendment is proposed as part of this alternative (italics indicate proposed amendment text):

S-1: Projects must not result in a net decrease of suitable Bicknell's thrush habitat. ***The radio shelter site and associated helicopter landing site at Mount Cabot and helicopter landing site near Mount Carrigain are the only allowed exceptions to this standard.***

The Proposed Action would be consistent with all Forest Plan guidelines except one Forest-wide guideline related to scenic integrity objectives (USDA-FS 2005a, p. 2-26):

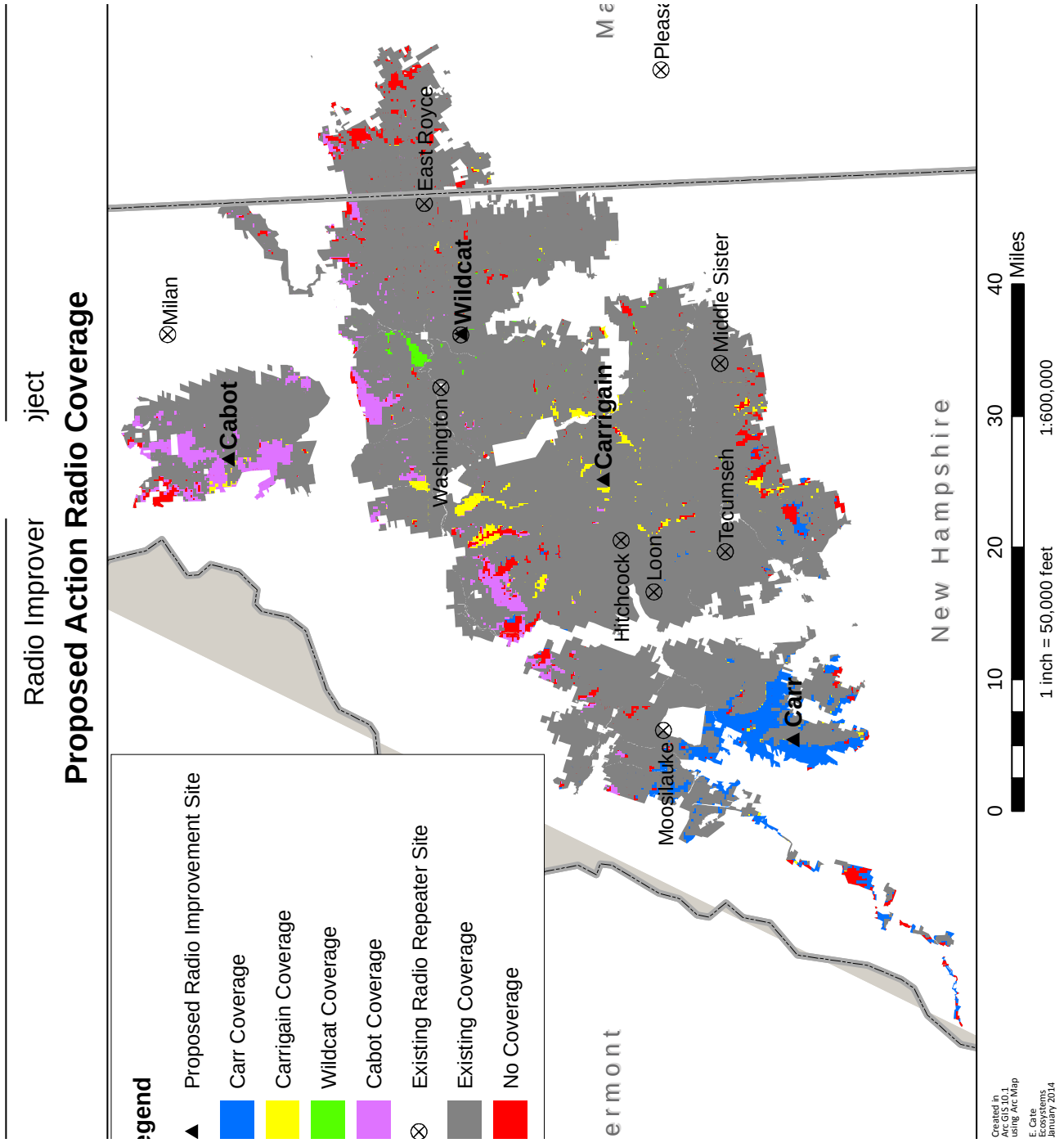
G-1: All management activities should meet or exceed Scenic Integrity Objectives established for the Forest through the Scenery Management System (SMS)

outlined in *Agricultural Handbook 701, Landscape Aesthetics – A Handbook for Scenery Management*

The Scenic Integrity Objective (SIO) for the area around all shelter sites and helicopter landing zones as proposed is "High". The definition of the High SIO states that things should "appear unaltered… appear intact… [and] deviations may be present but must repeat the form, line, color, texture and pattern common to the landscape character so completely and at such scale that they are not evident (USDA-FS 1995, p. 2-4)." Neither of the two action alternatives would be consistent with the guideline for Carr, Carrigain and Cabot. The new clearings, shelters, solar arrays, and masts would not fit within the landscape character of the environments they are proposed for and therefore would not meet the scenic integrity objective. At Wildcat Mountain, structures already exist. The Alternatives would result in the radio mast moving from a ski building to a nearby tower, both of which are visible from scenic viewpoints. Therefore consistency with the SIO will not change as a result.

Therefore the following site-specific rationale for not implementing this guideline is proposed as part of this alternative:

The IDT explored alternative project designs intended to minimize effects to scenery, such as placing some sites in existing openings so as not to create new openings, installing the smaller Micro-shelter at Mount Carrigain, and requiring mitigation measures such as paint color and mast materials that would best blend in to the existing environment. In recognition of cultural and historic context, the proposed actions would not be creating the first human-made features at these locations: large concrete tower footings and a concrete staircase exist on Carr Mountain, an observation tower exists on Mount Carrigain, and a cabin, outbuilding, and old fire tower clearing (with remnants of footings and rebar) exists on Mount Cabot. While effects were reduced, the team could not find a way to make the project consistent with a High SIO and still install repeaters in locations that would address identified deficiencies in coverage and the resultant safety issue. Therefore, this guideline could not be met while still achieving the purpose and need of the project.


Radio Improver
oject
Proposed Action Radio Coverage
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Proposed Radio Improvement Site
Carr Coverage
Carrigain Coverage
Wildcat Coverage
Cabot Coverage
Existing Radio Repeater Site
Existing Coverage
No Coverage
Milan
Cabot
East Royce
Wildcat
Washington
Carrigain
Hitchcock
Loon
Middle Sister
Tecumseh
Moosilauke
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20
30
40
Miles
1 inch = 50,000 feet
1:600,000
Created in Arc GIS 10.1 using Arc Map
E. Cate Ecosystems January 2014

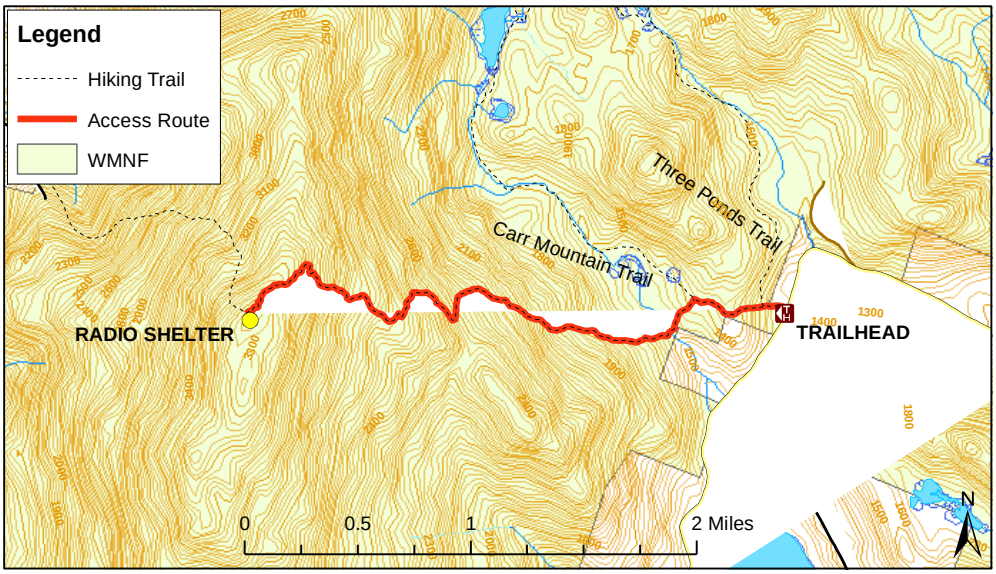
Alternative 3

This alternative was developed to address public comments regarding, 1) the effect of the Proposed Action on the scenic integrity and recreation experience in the project area; and 2) the need for the creation of helicopter landing zones within reasonable distance of the proposed new repeater locations.

In this alternative, radio equipment would be added or altered as described in Alternative 2, but all activities included in Alternative 2 that involve the creation of new HLZs are eliminated. Specifically:

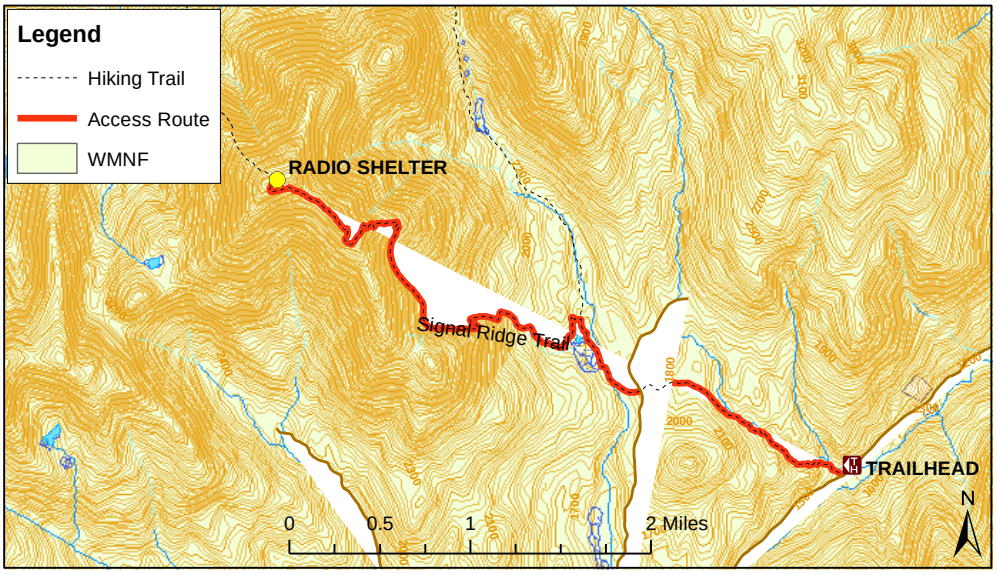
- The clearing of new HLZs on Carr Mountain, Mount Carrigain, and Mount Cabot would be dropped.
- A helicopter would still be used to deliver the shelters to the shelter locations during installation.
- A helicopter could still be used to deliver materials to the shelter locations during future maintenance and repair activities.
- The shelter installation crew would need to access the shelter locations by trail from the nearest trailheads to perform the on-the-ground activities of the installation and the
- Radio technicians would need to hike to the shelter locations from the nearest trailheads to perform all future maintenance and repair activities.

Carr Mountain



- Shelter and equipment to be installed as described in Alternative 2.
- Access Route, trailhead to summit: Begin at the Three Ponds Trail trailhead; Follow for approximately 0.5 miles to the junction with the Carr Mountain Trail; Follow the Carr Mountain Trail for approximately 2.7 miles to the summit of Carr Mountain:
    - Total: Approximately 3.2 miles and 2,160'of elevation gain

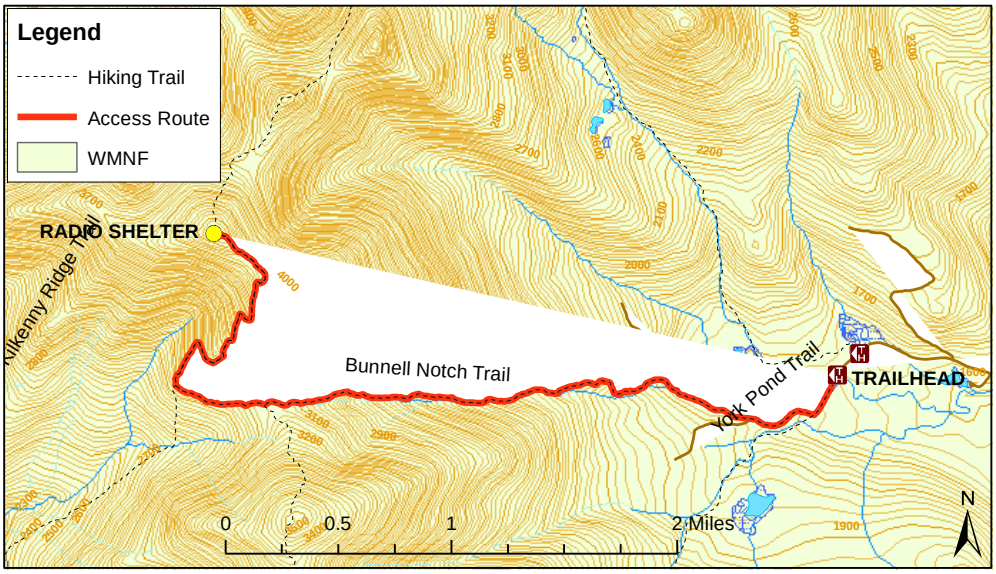
Mount Carrigain



- Shelter and equipment to be installed as described in Alternative 2.

- Access Route, trailhead to summit: Begin at the Signal Ridge Trail trailhead; Follow for approximately 5.1 miles to the summit of Mount Carrigain:
    - Total: Approximately 5.1 miles and 3,280′ of elevation gain

Mount Cabot



- Shelter and equipment to be installed as described in Alternative 2.
- Access Route, trailhead to summit: Begin at the York Pond Trail trailhead; Follow for approximately 0.2 miles to the junction with the Bunnell Notch Trail; Follow the Bunnell Notch Trail for approximately 3.1 miles to the junction with the Kilkenny Ridge Trail; Follow the Kilkenny Ridge Trail for approximately 1.2 miles to the summit of Mount Cabot:
    - Total: Approximately 4.5 miles and 2,480′ of elevation gain

Wildcat and Milan

- Same proposal as described in Alternative 2.

Forest Plan Consistency

As in the Proposed Action, Alternative 3 would be consistent with all Forest Plan standards except one Forest-wide standard designed to protect Bicknell's thrush habitat (USDA-FS 2005a, p. 2-16):

S-1: Projects must not result in a net decrease of suitable Bicknell's thrush habitat.

All proposed repeater locations in this alternative are in or adjacent to suitable Bicknell's thrush habitat based on field review.

New repeater shelters must be placed in a clearing 30 feet in diameter to allow for safe placement by a helicopter. The repeater shelter location at the Mount Cabot site will need to be cleared; all other shelters are expected to be placed in existing openings. The entire summit of Mount Cabot is suitable Bicknell's thrush habitat so about 0.02 acres of suitable habitat will be lost when this clearing is created. In the long term, the clearing would be allowed to revegetate though any vegetation that blocks the antenna or solar panels, brushes against the equipment, or blocks access to the shelter would be cut back.

The IDT explored alternative project designs that would minimize effects to Bicknell's thrush habitat. Although the amount of habitat loss in this alternative would be so small as to be discountable, according to the Forest Plan projects must not result in a net decrease of suitable Bicknell's thrush habitat, so implementation of Alternative 3 would require a Forest Plan amendment.

Therefore the following site-specific Forest Plan amendment is proposed as part of this alternative (italics indicate proposed amendment text):

S-1: Projects must not result in a net decrease of suitable Bicknell's thrush habitat. *The radio shelter site at Mount Cabot is the only allowed exception to this standard.*

Alternative 3 would be consistent with all Forest Plan guidelines except one Forest-wide guideline related to scenic integrity objectives (USDA-FS 2005a, p. 2-26):

G-1: All management activities should meet or exceed Scenic Integrity Objectives established for the Forest through the Scenery Management System (SMS) outlined in *Agricultural Handbook 701, Landscape Aesthetics – A Handbook for Scenery Management*

The Scenic Integrity Objective (SIO) for the area around all shelter sites as proposed is "High". The definition of the High SIO states that things should "appear unaltered… appear intact… [and] deviations may be present but must repeat the form, line, color, texture and pattern common to the landscape character so completely and at such scale that they are not evident (USDA-FS 1995, p. 2-4)." Neither of the two action alternatives would be consistent with the guideline for Carr, Carrigain and Cabot. Under Alterantive

3, the new shelter clearing, shelters, solar arrays, and masts would not fit within the landscape character of the environments they are proposed for and therefore would not meet the scenic integrity objective. At Wildcat Mountain, structures already exist. The Alternatives would result in the radio mast moving from a ski building to a nearby tower, both of which are visible from scenic viewpoints. Therefore consistency with the SIO will not change as a result.

Therefore the following site-specific rationale for not implementing this guideline is proposed as part of this alternative:

The IDT explored alternative project designs intended to minimize effects to scenery, such as placing some sites in existing openings so as not to create new openings, installing the smaller Micro-shelter at Mount Carrigain, and requiring mitigation measures such as paint color and mast materials that would best blend in to the existing environment. In recognition of cultural and historic context, the proposed actions would not be creating the first human-made features at these locations: large concrete tower footings and a concrete staircase exist on Carr Mountain, an observation tower exists on Mount Carrigain, and a cabin, outbuilding, and old fire tower clearing (with remnants of footings and rebar) exist on Mount Cabot. While effects were reduced, the team could not find a way to make the project consistent with a High SIO and still install repeaters in locations that would address identified deficiencies in coverage and the resultant safety issue. Therefore, this guideline could not be met while still achieving the purpose and need of the project.

Comparison of Alternatives Regarding Issues and Purpose and Need of the Project

The action alternatives vary in how they address the main elements of the purpose and need for this project, as well as the identified issues. Table 2-1 summarizes how these elements are addressed by each alternative.

Table 2-1. Comparison of Alternatives Regarding Issues and Purpose and Need of the Project

	Purpose and Need		Issue 1		Issue 2
	Total WMNF Area with Radio Coverage	COOP Ability at Andro office	Recreation Experience and Scenic Integrity		HLZs
	percent		*number of shelters*	*acres of new openings*	*number of HLZs*
Alternative 1- No Action	88%	No	0	0	0
Alternative 2- Proposed Action	96%	Yes	3	0.48	3
Alternative 3	96%	Yes	3	0.02	0

Alternatives Considered but Eliminated from Further Study

In developing the proposed action, the IDT and responsible official discussed the project and considered several options. For the reasons provided below, the following was not analyzed in detail in the environmental assessment.

Do not continue to enhance the existing radio system; instead use satellite phones for communication where radios do not currently work.

A member of the public suggested that we consider the use of satellite phones as an alternative to radios. Radio systems are modern and dependable forms of communication. The radio system that currently exists on the Forest consists of ten stand-alone sites that incorporate modern repeater equipment, energy supply mechanisms, and new shelters. Where coverage is provided, functionality of the system fulfills the needs of the WMNF.

Such systems are commonly used today by many groups that depend on reliable communications such as police, fire, US military, Coast Guard, Homeland Security, and a wide variety of commercial businesses. The action alternatives were designed to augment the existing system which already provides coverage to 88% of the WMNF land base. In addition, satellite phones lack some functionality necessary for an effective Forest-wide field communication system on the WMNF. A critical function lacking is the ability to broadcast messages to multiple recipients simultaneously across large geographic areas. Much of the radio communications on the Forest pertain to coordinating crews, checking in throughout the day, and sending out important safety messages and warnings. Being able to broadcast to multiple radio users at one time is essential to daily effective, efficient, and safe work practices. Furthermore, satellite phone reception can be variable, especially under dense canopy cover and steep mountainous terrain like that of the WMNF. The action alternatives were designed to enhance the existing radio system by filling coverage gaps and upgrading equipment. If implemented, coverage gaps would be minimized, users would have a more comprehensive, reliable communications system to utilize, and the Andro district office would have the ability (along with the FHQ) to broadcast messages Forest-wide when necessary.

Consider other peaks as locations for the new repeaters.

Considering alternate peaks to those proposed was deemed outside the scope of this project. The proposed sites are located on some of the tallest peaks in the vicinity of each site. This allows just one repeater to give the maximum amount of coverage for the given area. Because of this, it would take multiple alternate sites to provide a similar extent of coverage that each of the proposed sites would provide.

Chapter 3 – Environmental Analysis

This section describes the direct, indirect, and cumulative effects on resources found in the Project Area resulting from Alternatives 1, 2, and 3. Analysis of effects to resources is summarized from detailed Specialist Reports that are located in the project record.

Project Area

The Radio Improvement Project project area is made up of five sets of areas spatially separated across the general White Mountain National Forest (WMNF) area. This area includes the summit areas of Carr Mountain, Mount Carrigain, Mount Cabot, and Wildcat Mountain, in the towns of Wentworth, Livermore, Kilkenny, and Beans Purchase, NH, respectively. The project area in each of these locations is limited to the area of proposed activities plus a 200' buffer around these areas (Table 3-1). The area of proposed activities is defined as the shelter site (shelter footprint and 30' diameter clearing) and, in the Proposed Action, the helicopter landing zone site (the helicopter touch-down footprint and the 100' diameter clearing). Including a 200' buffer around these areas as part of the Project Area accounts for any potential effects the proposed activities may have on adjacent areas. The project also proposes to remove Forest radio equipment from the fire tower on Milan Hill in Milan Hill State Park.

The project area falls within Management Areas 6.1- Semi-Primitive Recreation (Carr Mountain), 6.2- Semi-Primitive Non-Motorized Recreation (Mount Carrigain and Mount Cabot), 7.1- Alpine Ski Area (Wildcat Mountain), and 8.3- Appalachian National Scenic Trail (Wildcat Mountain) (USDA-FS 2005a). It does not contain any Congressionally-designated Wilderness Areas. Part of the project area, specifically that on Carr Mountain, Mount Carrigain, and Mount Cabot, falls within the lands that were part of the 2001 Roadless Area Conservation Rule. The project area does not contain any Congressionally-designated Wild and Scenic Rivers.

This project proposes to enhance the existing Forest radio system which consists of ten repeater sites spread across the Forest. The system is for administrative use only; it does not support commercial use. The proposal for the new sites considers two components, a repeater shelter and a helicopter landing zone (HLZ).

The project was designed to minimize adverse effects to scenic quality from newly cleared areas, protect cultural resources, limit effects to Forest visitors recreating in the project area, and minimize negative effects to wildlife to the degree possible while

achieving the desired level of radio coverage across the Forest.

Table 3-1. Radio Improvement Project project area (acres)

	Shelter[1]	Shelter Buffer	HLZ[2]	HLZ Buffer	Total
Carr	0.02	3.32	0.18	4.33	7.85
Carrigain	0.02	3.32	0.18	4.33	7.85
Cabot	0.02	3.32	0.10	4.00	7.44
Wildcat	0	0	0	0	0
Milan Hill	0	0	0	0	0
				Grand Total	*23.14*

[1]The Shelter clearing would be a 30' diameter circle (maximum)
[2]The Helicopter Landing Zone clearing would be a 100' diameter circle (maximum); except for the Mount Cabot HLZ which is limited to a 75' diameter circle

Effects Analysis

Although the current conditions in this relatively small project area were described broadly, covering all resources of concern, effects will be discussed by resource. The interdisciplinary team (IDT) for this project consisted of specialists in radio systems, recreation, scenery management, wildlife and botany, water and soils, inventoried roadless areas, and heritage resources. Those specialists reviewed the project on the ground and considered the best available information to evaluate potential effects from the alternatives on their resources. Each section below is a summary of a more detailed effects analysis, which is available in the project record. The rationale for identified analysis areas and timeframes, and all literature cited also are located in the project record.

Direct and indirect effects are those effects that result from implementation of the project. Cumulative effects are the combined effects of the direct or indirect effects with effects from past, ongoing, and known future actions in the identified timeframe and analysis area. All past, ongoing, and future actions within the various analysis areas used by specialists are listed in the project record.

Radio System

The affected environment for the Radio System analysis includes the entire extent of the WMNF, including where the Forest has management responsibility of the ANST. The radio system consists of the physical infrastructure on the ground as well as the radio coverage that infrastructure provides across the Forest. In order to fill the majority of existing gaps in radio coverage with the least amount of new sites, the 2012 Radio System Operational Assessment recommended enhancing the existing Forest radio

system by establishing three new radio repeater sites on or near the summits of Carr Mountain, Mount Carrigain, and Mount Cabot, relocating the antenna from an existing site near the summit of Wildcat Mountain to the actual summit of Wildcat Mountain, and discontinuing one existing site on Milan Hill (USDA-FS-CIO 2012).

The Forest radio system currently consists of ten stand-alone Very High Frequency repeaters spread across the Forest. The system is for administrative use only; it does not support commercial use. There is another project currently being implemented that will provide the Forest Headquarters (FHQ) with Forest-wide communication ability for Continuation of Operations (COOP). However, no other office is able to monitor Forest-wide communications or send out critical communications Forest-wide. The 2012 Radio System Operational Assessment indicates that there is an opportunity to provide the Androscoggin Ranger District Office (Andro) with access to the complete Forest radio system by relocating the antenna for the Wildcat Mountain repeater to the summit of Wildcat Mountain and installing an Ultra High Frequency Cross Band with Repeater.

Direct and Indirect Effects

The analysis area for direct and indirect effects on the Forest Radio System includes the entire extent of the WMNF, including where the Forest has management responsibility of the ANST, which is approximately 802,506 acres.

All radio coverage acres stated below are estimates based on modeling. General cost estimates for implementation of the Proposed Action are in Appendix B.

Alternative 1

Approximately 88% of the analysis area currently has radio coverage, leaving approximately 12% without coverage. (See Chapter 1 for a Map of Existing Coverage). Under the No Action alternative, no changes to the Forest radio system would occur at this time. Approximately 100,200 acres, including several large contiguous areas, without radio coverage would continue to exist. Staff working in these areas would continue to be at risk due to limited or absent communications.

There would be no additional cost associated with Alternative 1, ongoing repair and maintenance of the existing radio system would continue into the future. Annual maintenance is conducted on all existing repeaters and each site requires battery replacement every five years. Other maintenance and repair activities could include replacing coaxial cable or antennas, fixing or changing equipment, or frequency changes. It requires two radio technicians for five days to conduct a typical round of annual maintenance.

In addition, the Andro office would continue to have access only to its local repeaters, under Alternative 1, and would continue to lack the ability to access the complete Forest Radio System for COOP. Only the FHQ would have this ability through the Loon Mountain repeater site. If this site were to go down, no other office could act as a backup.

In summary, Alternative 1 has no additional effect on the WMNF Forest Radio System. It maintains a radio system with coverage gaps that pose a safety risk to staff working in these areas.

Alternative 2

Alternative 2, the proposed action, proposes to enhance the existing Forest radio system by establishing three new radio repeater sites on Carr Mountain, Mount Carrigain, and Mount Cabot, relocating the antenna from an existing site from a location near the summit of Wildcat Mountain to the actual summit of Wildcat Mountain, and discontinuing one existing site on Milan Hill. The set of actions would fill the majority of existing gaps in radio coverage with the least amount of new sites. The Proposed Action also includes installing an Ultra High Frequency Cross Band with Repeater at Wildcat Mountain to allow the Andro Office the ability to access all of the repeaters on the Forest for COOP.

Under the Proposed Action Alternative, the majority of existing coverage gaps would be filled. Only approximately 36,000 acres would still be without radio coverage under the new system. The remaining gaps would be small areas scattered across the Forest. The proposed action would provide WMNF staff with a comprehensive, reliable means of communication that would allow them to do their jobs efficiently and provide them with the safety mechanisms and support they need.

Alternative 2 would likely be implemented within five years and is dependent on availability of funds. The proposed action would include costs associated with installation of the new sites and the purchasing of the radio equipment (See Appendix B for general cost estimates). Once these new sites are created, they would receive annual maintenance and repair and the five year cycle battery replacement.

Alternative 2 would allow the Andro office the ability to access the complete Forest radio system for COOP by relocating and upgrading the Wildcat Mountain repeater site. Having such access would allow messages to be broadcast Forest-wide in the event of an emergency and also monitor Forest-wide communications for incoming calls for assistance or alerts during an emergency. Currently, the Loon Mountain Repeater is being upgraded to give the FHQ access to the complete system for COOP. With two offices having this ability, one could act as a backup for the other if either the Wildcat or Loon

repeater went down.

In order for the repeaters to be installed, maintained on a regular schedule, and accessed relatively immediately for unscheduled repairs, the WMNF is responsible for providing transportation for radio technicians to within "reasonable distance" of the repeater site. Access must be considered reasonable for the average person. There are no physical or medical requirements for either Forest Service radio technicians or available contractors, thus immediately available personnel may not possess the ability to hike or ride horses or mountain bikes long distance in mountainous terrain. Considering that most of the proposed repeater sites would occur on high summits with the only existing access being long, steep hiking trails, "reasonable distance" is considered to be within approximately one mile of the shelter site.

At Carr Mountain, Mount Carrigain, and Mount Cabot no transportation to within a reasonable distance of the repeater sites is currently available. There is a trail that leads to each location that supports hiking only (no motor vehicles or Off-Highway Recreational Vehicles are permitted). Thus, HLZs were proposed for installation in order to provide reasonable access. Sites for the HLZs at each location were identified based on suitable terrain, mitigation of effects to resources, and proximity to the repeater site. (See the Chapter 2 for maps and route information of access routes by alternative.)

Under the proposed action the percent of coverage in the analysis area would increase from approximately 88% to 96% and the total area without coverage would decrease from approximately 12% to 4%. (See Chapter 2 for a Map of Proposed Coverage).

In summary, Alternative 2 would have a benefit to the Forest radio system, radio coverage would increase from approximately 88% to 96% of the analysis area, leaving the only 4%, down from 12%, without coverage. Areas without coverage would be small and scattered across the Forest, meaning employees in the field would have a more consistent connection to assistance and important information than under Alternative 1. The additional annual maintenance and repair would require one additional day for two radio technicians and helicopter use at the three additional sites.

Alternative 3

Alternative 3 differs from the "No Action" alternative in that Alternative 1 does not propose any substantial changes to the existing Forest radio system, so only ongoing repair and maintenance efforts that are not part of the Radio Improvement Project decision would occur. Alternative 3 is the same as Alternative 2 except all activities included in the Alternative 2 that involve the creation and use of new HLZs are eliminated.

Because there is no change in the number, locations, or placement of the radio repeaters

in Alternative 3 versus Alternative 2, Alternative 3 would have the same effect on the extent of radio coverage across the analysis area and the Andro Office would be given the ability to access the entire system for COOP.

This alternative does not propose to clear HLZs. During installation of the new sites, helicopters would still be used to deliver shelters and equipment to the proposed locations, but would not be able to land nearby. As a result all personnel involved with on the ground aspects of the installations, and future maintenance and repairs, would have to get to the sites by some other means of transport.

Alternative 3 would fill the majority of existing coverage gaps with the least amount of new sites but without creating HLZs, there would be no reasonable access to the sites and therefore could not be installed, maintained, or repaired following regular procedures. Radio technicians that possessed the ability to do the arduous hiking required (up to ~5 miles, one-way, with an elevation gain of ~3,280') to access the proposed sites would need to be located and provided travel to the Forest. The technicians, whether Chief Information Office (CIO) employees or contractors, would need to not only possess the required physical ability to do the work, but also the necessary technical knowledge. In addition, extra personnel would likely be needed to aid in transporting equipment and supplies (e.g., safety equipment, batteries every 5 years).

The availability of technicians that possess these qualifications is unknown. Qualified technicians would need to be located and scheduled in advance to do the installations before the project could be implemented. The same would be necessary for all scheduled future maintenance. Of particular importance, is the availability of qualified technicians to respond to immediate threats to the repeaters or vital repairs when a repeater goes down. It would take time to locate qualified technicians and obligations at their home units may take priority over traveling to the WMNF when needed. In summary, the response time of unscheduled repairs could be much longer than with Alternative 2, potentially leaving a repeater down for an extended period of time and putting employees working in the coverage area at risk due to lack of radio communications.

Other effects of this aspect of Alternative 3 include a difference in cost from planning and logistics, providing travel and per diem for qualified technicians, the committing the additional personnel needed to assist in carrying equipment, and the increase in time it would take to complete any needed work at these sites.

The exception to the access issue under this alternative is the Wildcat Mountain site, which has other means of transportation to the repeater site. This site would not involve using a helicopter for installation or future maintenance and repairs. Therefore, under

Alternate 3, the Wildcat Mountain site would be implemented as described in Chapter 2. It would provide increased coverage and allow the Andro office the ability to access the complete Forest radio system for COOP.

In summary, Alternative 3 would increase radio coverage the same as Alternative 2. The sites that would not be provided reasonable access, Carr Mountain, Mount Carrigain, and Mount Cabot, could not be installed, maintained, or repaired following regular procedures. Because of unknown availability of qualified technicians (i.e., technicians able to do the hikes and complete the technical work), response time to essential emergency repeater repairs is unknown. Coverage could be down in that area for an extended period of time, introducing an aspect of unreliability into the system.

Cumulative Effects

The area for the Cumulative Effects Analysis (CEA) is the same as the Effects Analysis Area for Direct and Indirect effects. The time frame for the CEA is ten years in the past and continuous into the future. This allows for consideration of effects on the Forest Radio System resulting from any past actions, to allow time for all the proposed activities to occur and be completed, and to consider any other foreseeable activities that could have an effect while any short-term effects of the project are still evident.

Alternative 1

Under Alternative 1, the Forest Radio System would be expected to continue to provide the existing extent of radio coverage and require the ongoing type and level of maintenance and repair. Past actions, including the replacement and upgrade of several shelters with standard shelters like those proposed for this project, have made these sites less susceptible to damage, deterioration, and vandalism. The sites that had this upgrade include all the remote sites in the system, meaning these sites have no means of transportation to the repeater locations without the use of a helicopter (or if no helicopter was available, a long arduous hike). Before the shelters were upgraded all sites would only need to be visited, on average, once or twice a year for repairs. With the improvements in the shelter, needed repairs are likely to decrease. Upgrading the shelters increased the security and longevity of these sites, and thus the reliability of the Forest Radio System as a whole.

Ongoing repair and maintenance of the existing radio system would continue into the future. Annual maintenance is conducted on all existing repeaters, which requires helicopter use at four sites, a short hike at one site (~1 mile), a drive at three sites, and a ski chairlift at two sites. It requires two radio technicians five days to conduct a typical round of annual maintenance. Moreover, each site has battery replacement every five

years.

In addition, the Loon Mountain repeater upgrade, currently being implemented, will provide the FHQ with Forest-wide communication ability for COOP. However, no other office is able to monitor communications or send out critical communications Forestwide. If the Loon Mountain repeater goes down, there is no other office that could act as a backup.

No past, current, or future projects are expected to affect radio coverage and therefore, coverage would remain the same as for direct and indirect effects.

Alternative 2

Under Alternative 2, the Forest Radio System would provide additional radio coverage over the CEA area increasing the current coverage from 88% to 96% of the CEA area. Past actions, including the replacement and upgrade of the remote shelters have increased the security and longevity of these sites. The shelters proposed for installation in the proposed action are the Standard Shelter and Micro-shelter, described in Chapter 2 (except Wildcat, which will be inside an existing building), which will add to the system of radio sites that has low susceptibility to damage, deterioration, and vandalism, contributing to the reliability of the system as a whole.

Ongoing repair and maintenance of the existing radio system would continue into the future. The new radio sites would have the same type and level of maintenance and repair as do the existing repeaters. In total, future annual maintenance would require helicopter use at seven sites, a short hike at one site, a drive at three sites, and a ski chairlift at two sites. It would require two radio technicians six days to conduct a typical round of annual maintenance. Moreover, each site would have battery replacement every five years.

Alternative 2 would give the Andro office the ability to access the complete Forest radio system for COOP by relocating and upgrading the Wildcat Mountain repeater site. The cumulative effect of having two Forest offices able to access the entire radio system would be increased reliability and employee safety. If one office's connection to the system goes down, there would be another operating which can monitor and broadcast messages Forest-wide.

No past, current, or future projects are expected to affect radio coverage and therefore, coverage would remain the same as for direct and indirect effects.

Alternative 3

Assuming that qualified technicians could be found and scheduled for annual mainte-

nance and repairs, cumulative effects of Alternative 3 would be the same as those described for Alternative 2.

No past, current, or future projects are expected to affect radio coverage and therefore, coverage would remain the same as for direct and indirect effects.

Recreation

Recreation resources within and adjacent to the project area include hiking trails, including the Appalachian National Scenic Trail/Wildcat Ridge Trail on Wildcat Mountain, the Kilkenny Ridge trail on Mount Cabot, the Signal Ridge trail on Mount Carrigain, the Carr Mountain trail on Carr Mountain, Wildcat Ski Area, a lookout tower on the summit of Mount Carrigain, and Milan Hill State Park. Three of the five peaks (Carrigain, Wildcat D and Cabot) are over 4,000 feet in altitude and are thus popular destinations for "peak baggers" seeking to climb all 48 4,000 foot peaks in New Hampshire.

Table 3-2 provides a brief description, including use levels, of the trails within or immediately adjacent to the Project Area that have the potential to be affected, directly and/or indirectly, by the proposed Radio Improvement Project activities. Details are described by alternative in the Direct and Indirect Effects and Cumulative Effects sections following.

Table 3-2. Use levels and descriptions of Hiking Trails in the Radio Improvement Project Area

Trails within the effects analysis area	Use level during peak season[a]	WMNF Management Area (MA)	Associated repeater site
Signal Ridge Trail	Very High	6.2	Mount Carrigain
Carr Mountain Trail	Low	6.1	Carr Mountain
Wildcat Ridge Trail/ Appalachian Trail	Very High	7.1, 8.3	Wildcat D
Kilkenny Ridge Trail	Moderate	6.2	Mount Cabot

[a] Use level is people per day (ppd) during peak use (e.g. school vacation weeks, holiday weekends). Range of use levels is Low = 0-6 ppd; Moderate = 7-25 ppd; High = 26-50 ppd; Very High = 51+ ppd. Based on observations by WMNF recreation personnel.

Direct and Indirect Effects

The analysis area for direct and indirect effects on recreation resources includes the area of any proposed activities identified in the proposed action and a 200 foot buffer around those areas. This area was chosen because effects from the project would be expected to occur in the immediate vicinity of the proposed activities. The time frame for analysis of direct and indirect effects is five years. Most changes related to proposed activities would be expected to take effect during and soon after construction.

Alternative 1

Under Alternative 1, no action would be implemented. No new management activities would be initiated as a result of this proposal. There would be no clearing on or near any trails as a result of this project, no new structures, and no interruption of recreation use.

Alternative 2

Alternative 2 would have greater direct/indirect effects on the recreation resource and user experience than either Alternatives 1 or 3, as it proposes to create 3 HLZs astride or directly adjacent to trails. The direct/indirect effects are described for each site individually below.

At Carr Mountain the shelter would be located on open ledge between the concrete piers that formerly supported the Carr Mountain Fire tower. Though the installed shelter would be a surprise and a visual curiosity to some visitors, to others it would constitute a visual nuisance. This would be mitigated to some extent by choosing a paint color that best blends it into the existing environment. This location would be consistent with the Desired Condition of Management Area 6.1 which states "Signs of human use will be confined largely to trail corridors and areas around recreation facilities (USDA-FS 2005a, p. 3-19)." An HLZ would be cleared approximately one mile from the summit and adjacent to the Carr Mountain Trail. The HLZ would be cleared to be a 100′ diameter circle (about 0.2 acres) and subsequently maintained to a 75′ diameter circle. Given the low recreational use of this area it is not expected that the opening would receive other than very occasional, if any, use as a campsite. An increase in sunlight along the trail immediately adjacent to the HLZ would likely result in an increase in vegetative ingrowth in that area, which in turn would result in increased trail maintenance (brushing) needs on a short section (approximately 150′) of the Carr Mountain trail. When helicopters are in use in the area, during both installation and future maintenance, there would be a brief disruption to hikers as the HLZ and summit areas would need to be cleared for safe operations. A ground crew would need to hike in before the helicopter arrives to clear the area and conduct traffic control during shelter delivery to the summit and take-offs and

landings in the HLZ.

Mount Carrigain, a substantially wooded summit, has a Forest Service maintained steel framed observation tower for public use on its summit. According to the Appalachian Mountain Club's (AMC) White Mountain Guide (AMC 1992, p. 218), "Carrigain has one of the finest viewpoints in the White Mountains. The view from Signal Ridge (trail)….is also magnificent." The Proposed Action, in consideration of the scenic qualities of the peak, combined with the Very High use levels, would reduce visual effects to the site through the installation of a Micro shelter rather than the standard shelter being considered for Mounts Carr and Cabot. The Micro shelter is small enough to do be delivered by helicopter to the existing opening near the observation tower (no additional tree clearing is expected) and then dragged into place underneath the tower. The antenna would be mounted to the top of the observation tower and the solar panels would be affixed to a separate structure near the base of the tower, facing in a southerly direction, which would intrude on the visitor experience, but only to a limited extent because attention is generally focused here on the larger view to be had from the tower rather than on the immediate vicinity. The new structures would be a surprise and a visual curiosity to some visitors, to others they would constitute a visual nuisance. An HLZ would be cleared approximately 0.5 miles down the Signal Ridge trail. The HLZ would be cleared to be a 100′ diameter circle (about 0.2 acres) and subsequently maintained to a 75′ diameter circle. The opening would straddle the Signal Ridge trail. The opening, though relatively small, would be distinctly visible from the observation tower on the summit and also apparent to hikers on the Signal Ridge trail, which would bisect the opening. The HLZ's location on a ridgeline at approximately 4400′ altitude suggests that the opening wouldn't "soften" in appearance from the summit tower due to the harsh environmental conditions typically associated with ridgelines at that altitude. Its proximity to the trail, while likely providing an enhanced vista at that location, may also cause the location to become a camping destination. When helicopters are in use in the area, during both installation and future maintenance, there would be a brief disruption to hikers as the HLZ and summit area would need to be cleared for safe operations. A ground crew would need to hike in before the helicopter arrives to clear the areas and conduct traffic control during shelter delivery to the summit and take-offs and landings in the HLZ. This location would be consistent with the Desired Condition of Management Area 6.1 which states "Signs of human use will be confined largely to trail corridors and areas around recreation facilities (USDA-FS 2005a, p. 3-23)."

At Mount Cabot a standard sized shelter would be situated approximately 130′ SE of the mostly wooded summit of Mount Cabot, near the Kilkenny Ridge trail. Mount Cabot is

the northernmost of the "4,000 footers" and receives moderate use. There are no notable views in the vicinity of the summit of Cabot or the proposed shelter. Though the installed shelter would be a surprise and a visual curiosity to some visitors, to others it would constitute a visual nuisance. This would be mitigated to some extent by choosing a paint color that best blends it into the existing environment. The Proposed Action identifies an HLZ site astride the Kilkenny Ridge trail about 100' from the Cabot Cabin. This location is the site of a former fire tower, long since removed. The existing clearing at this location is about 25' in diameter and would be cleared to a total 75' diameter circle and subsequently maintained at that size. Because the site is ledgy and uneven, a permanent wooden landing platform about 15' x 15' would be constructed at the site. It is very likely that the platform would become a camping spot capable of accommodating several tents. Some may prefer it to the nearby cabin, or use it during high use periods when the cabin is full. When the HLZ is being used for helicopter landings and take-offs, a brief disruption of hiker traffic would occur where the trail passes through the opening. A ground crew would need to hike in before the helicopter arrives to clear any campers from the HLZ and conduct traffic control on the trail during take-offs and landings. This location would be consistent with the Desired Condition of Management Area 6.2 which states "Signs of human use will be confined largely to trail corridors and areas around recreation facilities (USDA-FS 2005a, p. 3-23)."

At Wildcat Mountain the bulk of the radio equipment proposed to be installed would be housed inside the existing ski patrol building. This equipment would replace older equipment housed in the same location and would be better enclosed within the patrol building. Solar panels to power the unit would continue to be mounted as they are now, on a mast attached to the Patrol building. The antenna and its supporting mast however, would move from the current location at the Patrol building to the observation platform located atop Wildcat "D" where it was located up until about 4 years ago. This observation platform, maintained by Wildcat Ski Area next to the Appalachian Trail, provides outstanding views, particularly to the west and southeast. The mast and antenna unit is a monopole design about 4 inches in diameter and approximately 20 feet in height. A coaxial cable would be installed to connect the antenna to the radio equipment in the Patrol building. The mast/antenna unit would be positioned at the NE corner of the observation platform where it would be back-grounded by the adjacent trees, minimizing effects on the view. The mast would be built with materials and colored to best blend with its background. To the extent possible, the cable would be installed so it would not be visible from the ANST. This would be accomplished by pulling the cable through the very thick, sub-krummholz type vegetation located to the west of the Appalachian Trail

where the cable would lay on the ground. The cable would be visible to the discerning eye in two locations: first, where it would leave the patrol building and cross a ledgy area before entering the woods, and second, as it left the woods adjacent to the observation platform to attach to the antenna. In both locations it would be run through conduit for protection from foot traffic and secured in a manner that would prevent it from becoming a tripping hazard. The Wildcat portion of the Radio Improvement Project is located in MA 7.1-Alpine Ski Areas. The Desired Condition for this Management Area states that "These areas will be highly developed... sights and sounds of human activity will be readily evident… [and] Facilities including parking lots, structures, and utilities will be evident, and are designed to be compatible with the values that make the area attractive to the users (USDA-FS 2005a, p. 3-31)." Although the project is in MA 7.1, the Appalachian National Scenic Trail, MA 8.3, runs along the edge of the MA 7.1 lands in this area and MA 7.1 Recreation Standard (S-1) states that "The recreation values of the Appalachian National Scenic Trail that runs along the upper boundary of the Wildcat Ski Area must be considered in management actions in the Wildcat Ski Area Management Area (USDA-FS 2005a, p. 3-33)". The Forest IDT for this project met together on June 9, 2014 with officials of both the ATC and Wildcat Ski Area and the design of this portion of the Project is a reflection of the consensus derived from that meeting, notes from previous field visit by specialists, and it's consistency with Forest Plan direction.

At Milan Hill State Park the removal of the repeater equipment for this site, which is enclosed within the existing fire tower facility there, would have no discernable effect on the recreation resource.

Alternative 3

The Direct and Indirect Effects for Alternative 3 for the Recreation Resource are the same as described in Alternative 2 with the exception of effects analyzed that relate to Helicopter Landing Zones (Carr, Carrigain and Cabot), which are not present in this alternative. The Radio Shelters and equipment would still be installed as described and delivered by helicopter, but the helicopter would not land. Technicians responsible for installing and maintaining the equipment would need to access the site by hiking trail (or in the case of the Wildcat site, ride the ski lift). This would create a very minor increase in foot traffic on the access trails – in the order of 6 person days per trail during the installation, and perhaps 1-2 person days per trail per year for maintenance activities afterwards.

Cumulative Effects

The analysis area for cumulative effects is the same as that for the direct and indirect ef-

fects analysis. The timeframe for this analysis is 5 years prior and 5 years after implementation.

Alternative 1

Under Alternative 1, recreation activity would be expected to continue along current trends. There would be no cumulative effects because there would be no direct or indirect effects to recreation from this alternative.

Alternative 2

Under Alternative 2, recreation activity would be expected to continue along current trends. As stated above, recreation users may create user-defined (bootleg) trails and campsites as they access the HLZ's on Cabot, Carr, and Carrigain and as they approach the Cabot shelter to investigate out of curiosity, potentially creating increased trail definition and maintenance needs into the future. Trails and facilities maintenance would continue on an annual basis.

Past actions include the rebuilding of the Wildcat "D" observation platform and the removal of an associated lattice type radio antenna. There are no known future actions planned or anticipated.

Alternative 3

The cumulative effects under Alternative 3 are the same as Alternative 2, except there would be no effects resulting from the HLZs. Creation of user-defined (bootleg) trails around the Cabot shelter may occur as recreation users investigate the site out of curiosity, potentially creating increased trail definition and maintenance needs into the future. Trails and facilities maintenance would continue on an annual basis.

Past and Future actions are the same as described in Cumulative Effects, Alternative 2, above.

Visuals

Each location was looked at from an outdoor recreationalists perspective because participating in outdoor pursuits is just about the only way one would see the proposed shelters, masts, solar arrays and the helicopter landing zones. Each location has several places from which it would be possible to view the summit area that would contain the radio shelter. No single superior viewpoint was selected for detailed analysis for this project: instead the view(s) given consideration were the sites and trails surrounding the radio shelters and the helicopter landing zones. These views provided the broadest range of direct viewing opportunity of the project area and beyond, while also representing the area of highest visitor use.

Distant superior viewpoints were not specifically analyzed because shelters would not typically be seen except for perhaps a mast or a reflection of the solar panel in the right lighting. The landing zones would also be very difficult to locate from distant view(s) as they are relatively small openings, surrounded by larger trees in most locations and scenarios.

Each site in the project area can be characterized as being encompassed by mountain tops and ridges and mountainsides that are a mosaic of color, form and texture. A blanket of softwood trees covers most of the highest elevations where the proposed actions would occur. The softwood blankets fall over the slopes and extend into the lower elevations where they become swaths of softwood trees, hardwood trees, or a mixture of the two. Other features include occasional granite outcrops interspersed throughout the upper elevations. The Wildcat project area is located within a designated alpine ski area and it is characterized by vertical built features and long deforested openings running down slope through bands of soft and hardwoods. The Carrigain Mountain project area has a historic fire tower.

On the ground observations were used to evaluate which of the proposed installations and openings may show themselves to observers. For a more in depth understanding of the process of scenery analysis, as well as how it relates to the Forest Plan, including a summary of its direction, please refer to the Scenery Management Process Document located within the project record.

Direct and Indirect Effects

The analysis area for the direct and indirect effects is the areas surrounding the proposed shelter locations and helicopter landing zones plus a 5 mile radius, because this is the zone within which the proposed activities would most apparently alter the scenery. The timeframe for effects is indefinite because this proposal includes permanent structures and permanent openings for helicopter landing zones near 3 of the locations (alternative dependent).

Alternative 1

Under Alternative 1 there would be no change from the present condition and therefore no visible change to the landscape within the project area, or no effects. Alternative 1 would be consistent with all scenery management direction in the Forest Plan.

Alternative 2 and 3

Views differ according to the viewpoint's position in the landscape, elevation, and proximity to the features, the Project Area's aspect of the slope, season and weather. From the analyzed views, the intensity of effects from proposed activities are a function of the

distance, size and shape of a new visible structure or opening, as well as their proximity to older visible openings and other features that attract the observer's attention.

Estimates of the visibility of a structure or landing zone (what is actually seen) from any near or distant viewing opportunity will always be less than that of the actual structure or opening when viewed at point blank range (even if only slightly). This is due to natural screening by topographic features as well as the leading edges of vegetation of the visible openings. Vegetation would provide additional visual screening when viewed from a distance and from angles. So the visibility of any feature would vary considerably depending on the topography, elevation of the viewpoint, and the slope position and aspect where the visible feature or opening is located.

Seasons play an intricate role in viewshed appearance and determining which of the features are visible and/or recognizable within it. Typically leaf-on conditions are assumed for analysis as that is when a majority of the observers have potential of viewing the project area. The Wildcat Mountain viewpoint, however, would be more active in the winter months. It should be noted that in the winter all features and openings can become more evident (unless on the ground and buried in snow). With low amounts of snow, edges and openings may become highlighted. The opposite effect happens when there are heavy snow loads as the features edges get blurred and softened in the coating and background sea of white; or even buried taking away the hard distinct edges and colors that attract the eye. Even without snow, shadow and texture may be accentuated without leaves on trees as limited color exists to blend the eye's focus.

Irregular or organic shapes lend themselves to blending into the context of the landscape better than those with rigid or hard lines. The shelter's features are architectural with hard edges and lines which may accentuate its appearance in the landscape in some conditions. The mast may be highlighted in certain lighting conditions or from some viewing angles as it breaks the skyline and does not fit the context of the natural environment.

These shelter features and cleared openings would be minimally noticeable or more likely not visible at all in normal conditions when viewed from outside of the 5 mile radius analysis area. Given that the solar arrays would be placed in open areas away from vegetation that could block the sun as well as the view of the unit and that the materials they are constructed from are naturally reflective, the possibility of reflectivity and/or the form standing out would be greater than for shelters. They could be noticed from some views beyond the immediate surroundings and from a distance if the right conditions exist for highlighting the features for viewing. The mast, in most cases, would be

the only man made feature visible from any given distance beyond the immediate surroundings due to its overall height.

The Scenic Integrity Objective (SIO) for all shelter sites and helicopter landing zones as proposed is "high". Neither of the two action alternatives would be consistent with Forest-wide Scenery Management G-1 in the Forest Plan (USDA-FS 2005a, p. 2-26). The Forest Plan states for an SIO of "high" that things "appear unaltered" and "appears intact". The plan states that "deviations may be present but must repeat the form, line, color, texture and pattern common to the landscape character so completely and at such scale that they are not evident." The shelters, solar arrays and masts would not fit in the environments they are proposed for and therefore would not meet the scenic integrity objective; but in fairness to cultural and historic context, they are also not the first human-made features added to these locations: concrete tower footings and a staircase exist on Carr Mountain, an observation tower exists on Mount Carrigain, a cabin and old fire tower clearing (with remnants of footings and rebar) exists on Mount Cabot, a developed alpine ski area, with structures, exists on Wildcat Mountain, and no changes would be made to the fire tower at Milan Hill.

The difference in effects to scenery between the two action alternatives would be directly related to the helicopter landing zones proposed and how much new open area would be visible from the trails and shelters. Alternative 2 proposes the greatest change to scenery overall as it contains the shelters built features and the openings of the landing zones. The overall reduction of openings in Alternative 3 would better blend into the existing context of the landscape than what would occur under Alternative 2.

At Carr Mountain, the shelter would be located in the middle of a rock outcrop surrounded by historic foundations; the shelter itself would be a focal point but only from very near proximity. It more than likely would not be visible from a distance due to the surrounding vegetation. However the same is not true for the solar array on top of the shelter and the height of the mast, which may be seen from outside of the immediate area and potentially beyond in the right conditions and from some viewpoints. The landing zone, due to its size and location more than likely would only be noticed by those hiking through the area. Distant views from places such as Stinson Mountain (the closest at nearly 5 miles away) would not be able to see such a small opening.

At Carrigain Mountain, the micro shelter will be under the existing tower and will not be of much consequence to most visitors. It will not be visible beyond the immediate area. The power cable from the solar array will be visible as it is run across the terrain. Snow will hide the cable and attachments in the winter but in all other seasons it will be

seen. The solar array may have some visibility from the Signal Ridge Trail. The historic tower is visible from some peaks to the south and depending on the solar array final height; the solar array may have some visibility also from those locations if conditions are right. The mast will most certainly be visible from any location that the fire tower is within site. The landing zone, due to its small size and location more than likely would only be noticed by those hiking through the area and from the fire tower. Distant view-points may see the change in texture and shape on the ridge due to reduced vegetation, but the area is relatively small.

At Mount Cabot, the shelter and associated features would be placed below the summit and buffered with foreground vegetation that would mask it from distant surrounding views from the south. It most likely would only be visible to those that hike up to it or from the Kilkenny Ridge trail and near the area known as the Horn. The mast may be visible beyond the immediate area and from the Horn and possibly more distant views given the right conditions. The landing zone would be a constructed feature on the Kilkenny Ridge Trail and therefore would be very apparent to hikers. Although on a rock outcrop, visibility from a distance would be masked by the dense foreground vegetation surrounding it.

At Wildcat Mountain, the radio equipment would be housed inside an existing structure so there would be no additional visual effects created by that part. The mast would be attached to the existing tower and would be visible by those visiting the tower and from the superior views of the Presidentials and surrounding area that can presently see the existing tower. The mast, depending on its final installed height may be more visible when the lighting is right to allow it to be highlighted or when it's covered with ice. The majority of the cable attaching the mast to the radio equipment would most likely only be partially visible for the first year or two and then would be covered in the surrounding indigenous plant material and snow during the winter months. Some of the cable would cross exposed rock and would always be in the open and visible. There would be no helicopter landing zone for this site.

At Milan Hill, the radio equipment is being removed from an existing fire tower. There will be no changes to the fire tower; therefore there are no additional visual effects.

Cumulative Effects

Alternative 1

There would be no cumulative effects to scenery under Alternative 1 because there would be no direct or indirect effects.

Alternative 2 and 3

No future installation activities are currently proposed in the analysis areas.

The only difference in cumulative effects among the two action alternatives is related to the intensity of the proposed activity. Alternative 3 does not have landing zones and therefore is less of a visual effect cumulatively.

Wildlife and Plants

A Biological Evaluation (BE) was prepared in accordance with direction provided in the United States Department of Agriculture Forest Service Manual 2672.42 and Section 7 of the Endangered Species Act. It addresses potential effects of the Radio Improvement Project and alternatives on federally threatened and endangered species (TES) and Regional Forester Sensitive Species (RFSS) that may occur within the project area. The BE also considers effects disclosed in the Biological Evaluation for the WMNF Final Environmental Impact Statement (FEIS) (USDA-FS 2005b) when determining site-specific effects of the Proposed Action and alternatives. Information from the project BE is summarized here. The complete BE is available in the project record.

Activities are proposed at or near the summits of Mt. Cabot, Carr Mountain, Mt. Carrigain, and Wildcat Mountain. All of these sites include typical high elevation montane vegetation, primarily balsam fir and red spruce, with other species (e.g. mountain ash, birch species) and snags scattered among the conifers. Discontinuing the Milan Hill site would involve removing the radio equipment from an existing fire tower, leaving the tower in place; this action would have no effect on wildlife or plants.

From a vegetation standpoint, habitat exists for most high elevation species, including Bicknell's thrush, magnolia warbler, moose, and American marten. However, recreation activity at most locations may provide a higher level of human disturbance not found at random sites in the same habitat.

All species listed under the federal Endangered Species Act or designated by the Regional Forester as sensitive species for the WMNF were considered for evaluation of effects in this project (See the BE, Appendix A in the Project Record). A separate Wildlife – Plants report, to analyze for species not covered by the BE, was deemed unnecessary because no substantial effect to other species is likely and the species included in BE were the best indicators to analyze for any effects the project may have on this resource area. Note that no Federally listed species are known to occur within the Project Area although suitable habitat may exist.

The following species were carried forward based on a review of available information for further effects analysis and rationale behind those decisions:

COMMON NAME	SCIENTIFIC NAME	STATUS
Canada Lynx	*Lynx canadensis*	Threatened
Northern long-eared bat	*Myotis septentrionalis*	Proposed Endangered
Little brown bat	*Myotis lucifugus*	RFSS
Bicknell's Thrush	*Catharus bicknelli*	RFSS

All other species in the BE either did not have suitable habitat present within the project area and/or the project would not effect the species or species' suitable habitat (See the BE, Appendix A in the Project Record).

The analysis area for effects to Canada lynx are Lynx Analysis Units (LAUs) where the proposed new radio repeater sites would occur. LAUs are mapped areas on the WMNF that are considered to be sufficient in size and habitat quality to potentially support a lynx. Utilizing LAUs as analysis areas will allow consideration of the effects on a single lynx's potential home range and is consistent with how most projects on the WMNF evaluate effects to lynx. This includes LAU 1 (Mt. Cabot), LAU 4 (Wildcat Mountain), and LAU 9 (Mt. Carrigain). Carr Mountain is too far south and west from lynx source populations to be considered habitat.

For northern long-eared bat and little brown bat, the analysis area for effects includes the repeater installation site plus any associated HLZs for all four sites. This area differs for each site based on the distance of the HLZ to the repeater location and the various terrain and vegetation at each site. Because a design feature that restricts tree cutting to the fall/winter would essentially eliminate direct effects from tree cutting (because bats would not be present then), the only other direct or indirect effects would result from the actual helicopter use or their landings, which are fairly small in scope.

The analysis area for effects to Bicknell's thrush includes the coarsely mapped Bicknell's habitat for each mountain. This mapped habitat is based on an elevation-latitude model that predicts potential Bicknell's thrush habitat on the WMNF at a landscape scale. Using the area of potential habitat around each mountain allows for consideration of multiple Bicknell's thrush potential territories. (See BE in the project record for additional information and maps.)

The temporal scope for all species considered in the BE is 2009 through 2025. The project as proposed should be implemented in less than one year per site but this time frame allows consideration of past effects as well as effects from maintenance operations

through the estimated life of the current Forest Plan.

Direct, Indirect, and Cumulative Effects

Alternative 1

Canada Lynx

There would be no direct or indirect effect on Canada lynx habitat as no vegetation cutting or disturbance from installation or maintenance would occur. Habitat would remain essentially unchanged. The three LAUs used for effects analysis would continue to undergo minor vegetation changes through maintenance of wildlife openings, roads and trails. Winter recreation activities such as snowmobiling, skiing, snowshoeing and winter hiking would continue to compact travel routes and potentially provide access to competitive predators such as bobcat and coyote. However, no change in the amount of these uses is expected. No cumulative effects would occur to lynx because there would be no direct or indirect effects.

Northern Long-Eared Bat and Little Brown Bat

There would be no effects to the northern long-eared bat and little brown bat under this alternative. Habitat would be maintained and no additional disturbance would be introduced. White Nose Syndrome (WNS) may continue to reduce some bat populations on the WMNF; any remaining bats would most likely occupy roosting habitat lower in elevation in more suitable tree species compared to the Project Area.

Bicknell's Thrush

Bicknell's thrush habitat would be maintained as it currently exists at all four sites. A few trees within Bicknell's thrush habitat may be cut during routine trail maintenance. However, this would have no measurable effect on any individuals or their habitat suitability. The Forest Plan standard of no net loss of habitat would be met.

Alternative 2 and 3

Canada Lynx

The only confirmed reproductive (and therefore more likely resident) Canada lynx in NH have been reported from northern New Hampshire, outside the WMNF. A track recently identified as a lynx occurred west of Interstate 93, outside of any of the LAUs in question. To date there is no evidence of lynx reproducing on the WMNF. No evidence of lynx has been documented from any site in the Project Area. Therefore there would be no effect to Canada lynx from either alternative. Alternatives 2 and 3 would result in minor changes to snowshoe hare habitat, but these would be so minor as to be discountable. A design feature to keep the vegetation at least 2 feet tall with the HLZs (outside of

the touch down area) would maintain suitable habitat. The Proposed Action and Alternative 3 would be very small in scope when considering an animal with as large a home range as a lynx. Lynx habitat would be maintained in both alternatives.

Northern Long-Eared Bat and Little Brown Bat

There would be no effect to the northern long-eared bat and little brown bat from either alternative. Northern long-eared bats and little brown bats have been documented on the WMNF; suitable habitat is present within the project area. A design feature limiting tree cutting to the period when most bats are hibernating (November 1 to March 31) eliminates the possibility of direct effects. The amount of tree removal proposed in this project for the Mount Cabot shelters (both alternatives) and HLZs (Alternative 2) would not alter suitable habitat enough to cause a noticeable change in bat populations. Disturbance from the helicopter operations (either during installation or in outyear maintenance operations) would create a short-term negative effect. It is presumed that this level of disturbance would be tolerated by roosting bats unless the helicopter was in very close range (perhaps within 100 feet). The likelihood of a bat being in this small zone is so small as to be discountable. White-nose syndrome is the greatest threat to these species. No correlation between this disease and proposed activities exists. Therefore implementation of Alternative 2 or 3 would not jeopardize the continued existence of northern long-eared bats or destroy or adversely modify proposed critical habitat.

Bicknell's Thrush

The WMNF has a single standard specific to Bicknell's thrush:

S-1 Projects must not result in a net decrease of suitable Bicknell's thrush habitat.

An IDT made up of specialists representing resources that may be affected by the project helped to develop the proposed action. The IDT explored alternative project designs that would minimize effects to Bicknell's thrush habitat, such as placing some sites in existing openings and the Carr Mountain landing zone outside suitable habitat. While effects were reduced, the team could not find a way to avoid effects to habitat entirely and still install repeaters in locations that would address identified deficiencies in coverage, so implementation of the Proposed Action or Alternative 3 would require a Forest Plan amendment (described in Chapter 2).

New repeater shelters must be placed in a clearing 30 feet in diameter (maximum) to allow for safe placement by a helicopter. The repeater shelter location at the Mount Cabot

site would need to be cleared in both alternatives; all other shelters would be placed in existing openings. The entire summit of Mount Cabot is suitable Bicknell's thrush habitat so about 0.02 acres of suitable habitat would be lost if this clearing were created. In the long term, the clearing would be allowed to revegetate though any vegetation that blocks the antenna or solar panels, brushes against the equipment, or blocks access to the shelter would be cut back.

In the Proposed Action, the creation of HLZs near the Mount Carrigain and Mount Cabot sites would clear approximately 0.3 acres of suitable Bicknell's thrush habitat and maintain most of it in an open, unsuitable condition for the foreseeable future. A suitable site for the HLZ near Carr Mountain was identified that is outside of suitable Bicknell's thrush habitat.

Based on review of the best available science, it was determined that the Proposed Action and Alternative 3 may effect individual Bicknell's thrush but would not likely cause a trend toward federal listing or loss of viability. Suitable habitat is present at all four sites and Bicknell's thrush individuals have been documented at three of the four sites. Habitat losses would be minor or discountable, making up only a fraction of one percent of the total habitat around each site. Effects from helicopter operations and installation would be short-term, but could displace a Bicknell's thrush if it occurred during the breeding season (May 15-August 1).

Summary of Effects on Bicknell's Thrush by Alternative

	Alternative 1	Alternative 2	Alternative 3
Carr Mountain	No effect	No effect to habitat. No effects to birds if operations fall outside May 15-Aug1, otherwise some disturbance effects at repeater location.	Same as Proposed Action
Mount Cabot	No effect	Minor loss of habitat. No effects to birds if operations fall outside May 15-Aug1, otherwise disturbance effects at repeater location and HLZ.	Discountable loss of habitat = no effect. Disturbance effects at repeater location the same as Proposed Action.
Mount Carrigain	No effect	Same as Mt. Cabot	No effect to habitat. No effects to birds if operations fall outside May 15-Aug1, otherwise some disturbance effects at repeater location.
Wildcat Mountain	No effect	No effect to habitat. Minor additional disturbance from installation if it occurs during breeding season.	Same as Proposed Action

Water and Soils

The analysis area for water and soil resources includes the Carr, Carrigain, Cabot, and Wildcat locations and is limited to the footprint of the repeater shelter, the shelter clearing area, the footprint of the HLZ, and a 200' buffer around each of these areas. This area was chosen because any effects from the project are expected to be concentrated in the immediate vicinity of the proposed activities and dissipate within 200' of the effected area. The time frame for analysis is five years. The project also proposes to remove Forest radio equipment from the fire tower on Milan Hill, leaving the fire tower in place. No effect to water and soil resources would occur from the proposed action; therefore this site was not analyzed in detail.

No perennial streams, waterbodies, wetlands, or floodplains are present within the project area. The analysis area is made up of Mountain-top Ecological Land Types (ELTs) 2 and 8. These ELTs are characterized as bouldary to very bouldary soils, common to high summits of the WMNF. The soils are typically rapidly to very rapidly permeable sandy loams, one to three feet deep to bedrock. Sections of the project area have exposed bedrock and ledge. The complete analysis of the effects of the Radio Improvement Project on water and soil resources is available in the project record. The findings of that analysis are summarized here.

Direct, Indirect, and Cumulative Effects

Alternative 1

Alternative 1 would have no direct, indirect, or cumulative effects on water and soil resources within the analysis area because there would be no ground disturbing activities, thus soil resources would be expected to continue on current trends into the future. There are no perennial water resources within the project area. Any ephemeral or intermittent waterbodies would be expected to continue on current trends into the future.

Alternative 2 and 3

The shelters at Carr Mountain and Mount Carrigain would be placed in existing openings on exposed bedrock. No additional clearing would be needed at the repeater locations for these sites, as the existing openings are large enough to accommodate the shelters as well as achieve safe helicopter operations for shelter drop-off. As a result, there would be no effects on soil or water resources in these areas.

The shelter site on Mount Cabot and the HLZs, in Alternative 2, on Mount Cabot, Carr Mountain, and Mount Carrigain would require new clearings be created. The shelter site on Mount Cabot is already relatively clear, though some trees would need to be cut to create the required 30' clearing. No soil disturbance would be necessary for the creation of the clearings and the installation of the shelter. Within the shelter clearing all trees would be cut flush with the ground, roots and small brush would remain intact, mitigating against potential soil erosion from newly exposed soils in the small area to be cleared. The shelter itself would sit above the ground, requiring no foundation or excavation. Within the HLZ clearings, in Alternative 2, all vegetation would be cut no shorter than two feet in height to maintain ground cover, with the exception of the actual touch down area in the center (an approximate 20' x 20' square). On Mount Carrigain the touch down area in the HLZ would be exposed bedrock. Mount Cabot would have a platform built above the existing rock outcrop due to the uneven terrain. On Carr Mountain the touchdown area would have all trees cut flush with the ground; roots and small brush would remain intact, mitigating against soil erosion from newly exposed soils. Therefore, no effect of soil erosion should occur on any of the sites from the proposed activities. In addition, any soil compaction resulting from the proposed activities would be surficial and ephemeral, and therefore discountable, due to the low frequency and intensity of use during installation and the future maintenance and repair at these locations and the design of equipment being installed (e.g., no foundation/excavation needed for shelters). Therefore, there would be no loss in soil productivity.

There are no perennial waterbodies in the project area. The proposed action would not

increase impervious surfaces in the project area, as the shelters would sit above the ground allowing precipitation to enter the soil below. Therefore, no decrease in water quality or quantity would be expected.

In summary, there would be no direct, indirect, or cumulative effects on soil and water resources from Alternative 2 or Alternative 3.

Heritage

The WMNF has surveyed in and near the current project area between 1977 and 1996 in an effort to inventory historic and archaeological sites. During these surveys three historic and no prehistoric sites were recorded. Surveys conducted in 2013 and 2014 for this project identified no new historic sites and no new prehistoric sites. The three historic sites are all former fire lookout tower stations: FS Site No. 4-177 (state No. 27-GR-2254) at Carr Mountain, FS Site No. 5-075 (state No.27-GR-2142) at Mount Carrigain, and FS Site No. 2-047 (state No. 27-CO-2047) at Mount Cabot.

In compliance with the National Historic Preservation Act, measures to identify and protect cultural sites in areas of the proposed activities were undertaken by the WMNF Heritage Program. The analysis area for cultural resources is the five project sites, all less than half an acre in size. Cultural sites beyond the project area boundary would not be affected. The complete analysis of the effects of the Radio Improvement Project on Heritage Resources is available in the project record. The findings of that analysis are summarized here.

Direct, Indirect, and Cumulative Effects

Alternative 1

Alternative 1 would have no direct, indirect, or cumulative effects on Heritage Resources within the analysis area because there would be no change to the historic resources present in the area and no ground disturbing activities.

Alternative 2 and 3

Under both Alternative 2 and 3, archaeological sites potentially eligible for the National Register of Historic Places, based on their ability to contribute information important to the study of history, are present. Project design and mitigation measures (see Appendix A) would ensure that all known existing features at Site 4-177 (27-GR-2254) Carr Mountain, Site 5-075 (27-CA-2142) Mount Carrigain, and Site 2-047 (27-CO-2047) Mount Cabot would be avoided by project activities. Therefore, there would be no adverse effect from project activity of either Alternative 2 or 3. Since there would be no direct or indirect effects from the project, there would be no cumulative effects.

Roadless/Wilderness Character

A document providing an explanation and brief history of roadless area inventories, including the connection between these inventories and the Forest Plan, is in the project record. Information from that document is incorporated by reference into this analysis and not repeated here.

Radio Improvement project activities would occur in the Kilkenny, Pemigewasset, and South Carr inventoried roadless areas and adjacent to the Wild River inventory area. Activities would occur in areas included in the Roadless Area Conservation Rule inventory (USDA-FS 2001) and areas in the inventory that was completed during the most recent Forest Plan revision (USDA-FS 2005b, Appendix C). Maps showing the location of each proposed activity in relation to inventory areas are available in the Roadless/Wilderness Character report in the project record.

Existing infrastructure, use, and values associated with these inventoried areas are described in Appendix C to the Forest Plan revision FEIS (USDA-FS 2005b).

All activities proposed as part of the Radio Improvement project are consistent with the RACR because the rule allows cutting of trees incidental to other management activities (USDA-FS 2001, p. 2-7).

A detailed analysis of the effects of the Radio Improvement Project on the ability of Plan inventory areas to meet roadless area inventory criteria (FSH 1909.12 chapter 70, section 71) and wilderness capability characteristics (FSH 1909.12 chapter 70, section 72.1) is available in the project record. The findings of that analysis are summarized here.

Direct, Indirect, and Cumulative Effects

Alternative 1

Alternative 1 would have no direct, indirect, or cumulative effects on the roadless or Wilderness characteristics of the analysis area because there would be no new structures or clearing of vegetation.

Alternative 2

Alternative 2 includes installing new structures in all four of the Plan inventory areas, using helicopters in or adjacent to all four areas, and clearing vegetation in three of the areas. Alternative 2 would have a slight negative effect on the appearance of the Kilkenny, Pemigewasset, South Carr Mountain, and Wild River Plan inventory areas and visitor experience in these areas. For reasons explained in the Roadless/Wilderness Character report in the project record, direct, indirect, and cumulative effects from the proposed activities would not affect any area's potential to be included in future inventories

or its future eligibility as potential wilderness.

Alternative 3

Alternative 3 includes installing the same new structures in all four of the Plan inventory areas. Vegetation clearing would only occur in the Kilkenny area. Helicopter use would be less in the Kilkenny, Pemigewasset, and South Carr Mountain areas than in Alternative 2. Alternative 3 would have less of an effect on the appearance of the Kilkenny, Pemigewasset, and South Carr Mountain Plan inventory areas and visitor experience in these areas than Alternative 2. Effects to the Wild River inventory area would be the same in both alternatives. For reasons explained in the Roadless/Wilderness Character report in the project record, direct, indirect, and cumulative effects from Alternative 3 would not affect any area's potential to be included in future inventories or its future eligibility as potential wilderness.

Where this Project is in the Forest Service NEPA Process

NEPA is the Forest Service decision-making process. An acronym for the National Environmental Policy Act of 1969, NEPA provides opportunities for interested parties to give their ideas and opinions about resource management. This input is important in helping us identify resource needs, which will shape the alternatives evaluated and lead to the formation of a decision.

This form shows the steps of the NEPA process, and where the attached proposal is in that process.

___ **Step One - Need for a Project**

The Forest Service or some other entity may identify the need for a project.
YOU may bring the need for a project to the attention of the Forest Service.

___ **Step Two - Develop Project Proposal**

Forest Service or a project proponent develops detailed, site-specific proposal
YOU may be a proponent or ***YOU*** can share input and ideas

___ **Step Three - Scoping (Public Input)**

Forest Service solicits public input on the site-specific proposal to define the scope of environmental analysis and range of alternatives to be considered ***YOU*** provided site-specific input: suggest issues, alternatives, mitigation measures

___ **Step Four - Develop Range of Alternatives**

Forest Service identifies issues and develops alternative ways to achieve the goal
YOU suggested alternatives to the proposed action during the scoping process

___ **Step Five - Environmental Analysis**

Forest Service performed analysis of environmental effects based on ***YOUR*** input

___ **Step Six – Formal Public Comment Period**

Forest Service solicits formal public comment (30-Day Comment Period) ***YOU*** are notified of the decision if you commented

➡ **Step Seven – Draft Decision; Objection Period**

Forest Service proposes to implement one of the alternatives; publishes draft decision and sends it to ***YOU*** if you commented

___ **Step Eight – Objection Period**

Forest Service allows public 45 days following legal notice of draft decision to object; ***YOU*** may file an objection if you submitted specific written comments during a public involvement period

___ **Step Nine – Decision and Implementation**

Once any objections are addressed, Forest Service issues a final decision and implements the project ***YOU*** may contribute labor, equipment, or funding to implement the project

___ **Step Ten - Monitor and Evaluate**

Forest Service monitors and evaluates project results
YOU provide feedback on the project to the Forest Service

Appendix A – Mitigation Measures and Design Features

Mitigation Measures and Design Features are often developed by resource specialists to eliminate, reduce or control a potentially adverse effect of a proposed activity. The following Mitigation Measures and Design Features are required as part of implementation of this project:

Heritage

- At Carr Mountain, hang hazard flagging and place safety cones on top of the tower footings during implementation to improve the visibility
- At Mount Carrigain, hang hazard flagging on the observation tower during implementation to improve the visibility
- Ballast for shelters must be brought in from offsite; do not use local rock

Aviation

- Follow Interagency Helicopter Operations Guide regulations and implement a project aviation safety plan (including marking the shelter drop location with an "X", identifying any heritage items on maps, and conducting a pre-implementation helicopter operations briefing)(NWCG 2013)
- The landing pads for Carr and Carrigain, a 20' x 20' square in the center of the helicopter landing zone, will be cleared to ground level, leaving roots and small brush in place, without soil disturbance

Visuals/Recreation

- All new structures will be looked at independently when choosing materials/paint colors for installation in order to make selections that blend into the existing environment (natural or man-made)
- Where site specific characteristics allow, leave a forested buffer between new clearings and trails
- The landing pad at Mount Cabot could incorporate steps on to and off of the platform and a removable safety railing to be installed when not in use as a landing pad
- The cable from the antenna to the repeater on Wildcat Mountain will be placed to minimize the potential for damage to the cable, creating a safety hazard, and being

seen from the Appalachian National Scenic Trail

Wildlife

- Do not cut vegetation lower than 2′ in height in the helicopter landing zones (outside of the 20′ x 20′ touch down area in the center)
- Tree cutting will be limited to the period when most bats are hibernating (November 1 to March 31)
- Attempt to avoid helicopter use during Bicknell's thrush breeding season (May 1 through mid-August)

Radio System

- The room constructed to house the repeater equipment at Wildcat Mountain will be no smaller than 6′ square. The room will be locked and unavailable for other uses, including storage and housing other equipment (aside from the existing Mount Washington Observatory equipment)

Appendix B – General Cost Estimates for the Action Alternatives

Reported costs are estimates based on the best available information. The listed items are the major components associated with the action alternatives. Additional costs would accrue from Forest Service and CIO project planning and implementation. Note that helicopter lift expenses would be greatly lessened if multiple sites were installed at once.

Carr Mountain

Standard Shelter (Pepro 6'x6'x8')	$62,000
Contractor helicopter lift (shelter installation)	$7,800
30' mast	$7,800
Batteries	$3,400
Solar Panels	$2,700
Repeater	$10,000
Transmission system for repeater	$7,500
Estimated Total	***$101,200***

Mount Cabot

Standard Shelter (Pepro 6'x6'x8')	$62,000
Contractor helicopter lift (shelter installation)	$7,800
40' mast	$8,100
Batteries	$3,400
Solar Panels	$2,700
Repeater	$10,000
Transmission system for repeater	$7,500
Estimated Total	***$101,500***

Mount Carrigain

Micro Shelter (38"x45"x67")	$31,000
Contractor helicopter lift (shelter installation)	$7,800
Batteries	$3,400
Solar Panels	$2,700
Repeater	$10,000
Transmission system for repeater	$7,500
Estimated Total	**$62,400**

Wildcat Mountain

Construction- materials/transportation/labor	$2,500
Batteries	$3,400
Solar Panels	$2,700
Base Station with Tone Remote Control	$8,000
Transmission system for Base Station	$2,000
Cross band with Repeater	$18,000
Transmission system for repeater	$7,500
Estimated Total	**$44,100**

Appendix C – Preparers

Interdisciplinary Team Members

Erica Roberts	Interdisciplinary Team Leader Water and Soils Radio Systems
Stacy Lemieux	NEPA Advisor Roadless/Wilderness
Joe Gill	Recreation
Ken Allen	Landscape Architect
Leighlan Prout	Wildlife
Dan Sperduto	Botany
Jonathan Ruhan	Heritage
Chase Marshall	Aviation
Warren Stiles (CIO)	Radio Systems

Extended Support

Cristin Bailey	Recreation
Jeff Lane	Recreation
John Marunowski	Recreation
Tim Cochran (CIO)	Radio Systems
Cliff Guntly (CIO)	Radio Systems

Appendix D – Response to Comments

All comments were reviewed and sorted. "Substantive comments," those that offer a concern with a factual basis that may have bearing on the decision being made, are included in this appendix. Comments that express a personal value or opinion, are outside the scope of the analysis, lack specificity to support a change in the analysis, are not included in this appendix but are in the project record.

Comments were summarized and similar comments were combined. Original comments are located in the project record.

Purpose and Need

Comment: Multiple commenters do not agree with the need for this project. Two comments focused on what they consider to be the low percentage, eight percent, of the Forest that would be provided cover and the relatively low use of some of this area. Others focused on this as well as the fact that some areas will still be without coverage and people will still be allowed to recreate in these areas.

Response: Radio communication gaps were identified as a high safety concern by staff regularly working in the field and the Forest Leadership Team. The WMNF places a high priority on the safety of our staff and visitors to the Forest and consequently safety related projects will be ranked high on the priority list for analysis, funding, and implementation. The new repeaters would increase coverage from 88% to 96% of the WMNF. Some of the areas that would be provided with coverage are moderately to highly used areas that receive general forest management, including timber harvest activities. Other areas are relatively lightly used areas where timber harvest does not occur. Though some areas are considered lightly used, there is still a potential for emergency situations to arise, from the use of trails or forest management activities, where reliable radio communications would be critical for requesting support or conducting a search and rescue. Data on the number of emergency situations is not readily available and was not necessary to conduct the effects analyses for this project.

Staff working in areas without coverage, now and in the future, are at risk of getting into a situation where emergency assistance is needed and they are not able to get that assistance. Some assistance may be essential for accomplishing their work, while other assistance may be critical for health and safety of staff or the visiting public. Measures are in place for staff working in areas without communications, which can include leaving detailed itineraries, not working alone, taking a SPOT device (a GPS personal tracker), and doing additional check-ins where communications are available through the day. Although these are good measures to take when working in areas without communications, there is still the inherent safety risk of needing assistance when there is no way of requesting it. Providing radio

coverage to these areas would resolve that safety risk. The Forest will continue to work on improving the protection of the safety of people in remaining areas without communications into the future.

Environmental Effects versus Benefit

Comment: Several commenters do not consider the benefit of increased radio coverage to outweigh the environmental effects of establishing the new repeater sites.

Response: An interdisciplinary team (IDT) of resource specialists explored project designs that would minimize effects to resources. Based on public comment Alternative 3 was developed to eliminate effects from helicopter landing zones. Effects were limited as much as possible by the proposed location of shelters and landing pads in the proposed action, and reduced further in Alternative 3. However the team could not find a way to entirely avoid effects to Bicknell's Thrush habitat and meet all the Scenic Integrity Objective guidelines and still install repeaters in locations that would address identified deficiencies in coverage. As presented in the Environmental Assessment (EA) and project record, it was found that these effects would be minor or discountable when considered in the landscape context.

If either action alternative is selected, the Draft Decision Notice will explain the Responsible Official's rationale for accepting the potential effects from implementing that alternative.

Project Costs

Comment: Several commenters expressed opposition to the monetary cost of the proposed repeater sites. The comments stated that the funds could be better used in other projects that better benefit the general public rather than a few people on the WMNF.

Response: The cost of the proposed repeater sites was estimated for this analysis (see Appendix B of the EA). The Responsible Official will weigh these costs, along with the identified effects, and decide whether the benefits of the project are worth the estimated financial and environmental costs. The rationale for the decision will be described in the Draft Decision Notice. The funds most likely to be used to install new shelters and maintain repeaters if this project is approved are specifically identified for management of agency communication equipment or management of administrative facilities. If this project is not implemented, those funds would go to similar projects on other Forests or to management of other facilities on the WMNF. Implementation would be dependent on where the sites were ranked on the CIO's project priority list and availability of funds. Implementation and maintenance costs would be kept to a minimum by coordinating helicopter use for multiple sites while on site, when possible.

Forest Plan Amendment

Comment: Multiple commenters expressed concern with amending the Forest Plan to allow a loss of Bicknell's Thrush habitat from vegetation clearing. Two comments focused on clearing for helicopter landing zones, indicating it would set a bad precedent and is unnecessary when crews could hike to the sites. One addressed the project as a whole, opposing any negative consequences to wildlife habitat in general and Bicknell's Thrush habitat specifically.

Response: As the Forest Plan standard indicates, the WMNF places a high priority on conserving suitable habitat for the Bicknell's thrush. We also place a high priority on protecting the safety of our employees and visiting public. As discussed in Chapter 2 of the EA, these two priorities are in conflict on this project. While the interdisciplinary team worked to find shelter and helicopter landing zone locations outside of Bicknell's thrush habitat, that was not always possible.

The Biological Evaluation analyzed the potential for all alternatives to affect Bicknell's thrush habitat and individuals. As described in that document, shelter and land zone sites were selected to minimize loss of Bicknell's thrush habitat as much as possible. The alternative with the greatest effect (Alternative 2) would result in the loss of less than 1 acre of suitable habitat total. When considered in context of there being more than 150,000 acres of modeled Bicknell's thrush habitat available on the WMNF, this project should have no effect on the viability of the Forest's population. Habitat losses would be minor or discountable, making up only a fraction of one percent of the total habitat around each site.

Based on internal concerns and public comments during the scoping period, Alternative 3 was developed to analyze the effects of installing the radio shelters without creating helicopter landing zones. Alternative 3 allows the responsible official to understand whether and how reducing effects to habitat for this species would affect our ability to meet the purpose and need for the project. If either action alternative is selected, the Draft Decision Notice will explain the Responsible Official's rationale for accepting the potential effects to Bicknell's thrush habitat.

Inventoried Roadless Areas

Comment: A commenter opposes the creation of helicopter landing zones for the Carr Mountain, Mt. Carrigain, and Mt. Cabot sites. One reason for their opposition to landing zones is that they "(a)ll are in IRAs where human impact is mostly restricted to trails and trail signs."

Response: As disclosed in the project record, identifying and evaluating areas with roadless characteristics is a way to determine which National Forest lands meet the baseline criteria of size and condition to be considered for possible wilderness study or recommendation. This inventory and evaluation process can have two results: either lands are recommended to Congress for designation as wilderness consistent with the Wilderness Act of 1964, or lands are placed into other management area allocations

to meet other purposes. During the most recent Forest Plan revision, the area surrounding Mt. Carrigain was evaluated, not recommended for designation as wilderness, and allocated to MA 6.2 (Semi-Primitive Non-motorized Recreation).

After a roadless area inventory and wilderness suitability evaluation is completed, subsequent project-level analyses evaluate the potential for a project to impact the roadless characteristics and wilderness capability of an area. In areas that were not recommended for wilderness study or designation, effects to these characteristics are allowed as long as they are properly analyzed and disclosed through project-level environmental documentation. The potential for creation, use, and maintenance of helicopter landing zones to affect roadless characteristics and wilderness capability is addressed in Chapter 3 of the EA and in the Roadless/Wilderness Characteristics specialist's report.

In addition to many miles of hiking trail, the Pemigewasset Inventoried Roadless Area identified during the most recent Forest Plan revision includes three AMC huts, six shelters and tent platform sites, almost 10 miles of improved road, several miles of snowmobile trail, several recent timber sales, and the popular Franconia Falls day use area (Forest Plan FEIS, Appendix B), so signs of human use are varied and distributed around the inventoried area. Implementation of either Alternative 2 or 3 would increase human presence in the area, but would not affect the area's potential to be included in future inventories or its future eligibility as potential wilderness.

Wilderness

Comment: "If the top of Carrigain is in Pemi Wilderness, How can you legally justify adding a non-confirming structure? Especially when less-obtrusive structures have been removed from Wilderness; If the top of Carrigain is not in Pemi Wilderness, How can you justify putting such a nonconforming structure that is easily seen from the adjacent Wilderness? Isn't that against the whole purpose of Wilderness?"

Response: The summit of Mt. Carrigain is not in the Pemigewasset Wilderness. The existing fire tower, under which the radio shelter would be placed and on which the mast would be attached, is currently visible from within the wilderness area.

The Congressional Research Service summarized the various statutory provisions on prohibited and permitted uses within wilderness areas in a 2011 report to Congress (Gorte 2011). In it the appropriateness of limiting activities outside of designated wilderness is summarized as follows:

The Wilderness Act is silent on the issue of buffer zones around wilderness areas to protect the designated areas. However, language in subsequent wilderness bills has prohibited buffer zones restricting uses and activities on federal lands around the wilderness areas. The first explicit language was enacted in 1980 in P.L. 96-550; § 105 states:

> Congress does not intend that the designation of wilderness areas … lead to the creation of protective perimeters or buffer zones around each wilderness area. The fact that nonwilderness activities or uses can be seen or heard from areas within the wilderness shall not, of itself, preclude such activities or uses up to the boundary of the wilderness area.

Virtually identical language has been included in 30 other wilderness statutes enacted since 1980.

While this explicit language was not part of the NH Wilderness Act of 1984, which established the Pemigewasset Wilderness, the regular inclusion of this language in bills designating wilderness areas, including other areas on the WMNF, indicates that management standards for wilderness apply only in designated wilderness areas, not surrounding lands.

The Forest Service Manual (FSM) provides direction on how to manage resources consistent with applicable laws and regulations. FSM 2320.3 states (emphasis added):

> Because wilderness does not exist in a vacuum, consider activities on both sides of wilderness boundaries during planning and articulate management goals and the blending of diverse resources in forest plans. *Do not maintain buffer strips of undeveloped wildland to provide an informal extension of wilderness.* Do not maintain internal buffer zones that degrade wilderness values. Use the Recreation Opportunity Spectrum (FSM 2310) as a tool to plan adjacent land management.

The installation of the new shelter and associated mast and solar panels on Mt. Carrigain would be consistent with Forest Plan direction, including that for managing wilderness areas, Recreation Opportunity Spectrum, and the appropriate management area (MA 6.2).

Design and Installation

Comment: Some commentors questioned if the visual and environmental effects of installing the repeaters on the true summits and having the antennas extend above the canopy could be mitigated by installing the repeaters in already open areas, off the true summits, and not extending the antennas above the canopy. One commentor focused on the Mount Cabot site, suggesting that the repeater should not be located on the wooded summit, but in the already open area near the cabin or former fire tower footings, and that the landing zone could be constructed near or on the old fire tower footings and double as a viewing platform.

Response: On each peak, the antenna must have a clear line of sight in all directions (antenna height would be kept to minimum) in order to provide the optimal level of coverage. Therefore, it is a necessity for implementation that the repeater be installed on or near the true summit and the antenna extend above the canopy in all directions.

For the Mount Cabot site, installing the repeater in the already open area near the cabin or former fire tower site would be too far below the summit to achieve the optimal level of coverage. Alternative 2 proposes that the HLZ be installed at the location of the former fire tower. If implemented, designing the structure to act as a viewing or tent platform as well as a landing pad would be considered.

The repeater and HLZ cannot be co-located. Once the shelter for the repeater is delivered and installed, the cleared area would not be sufficiently large enough to land the helicopter. Therefore, if a location is the proposed site for the repeater, it cannot also be the proposed site of the HLZ (e.g., Carr Mountain former fire tower location).

Alternative 3

Comment: Several commenters provided additional remarks on the costs and benefits of implementing Alternative 3 over Alternative 2. One comment stated that it would be likely that physically fit technicians could be found that would be able to make the hikes under Alternative 3 and that the cost of bringing in such technicians from another Forest would be negligible when compared to the costs of helicopter usage, plus the expense of having advance crews go up on foot to prepare for the helicopter landings. In addition, the commentor stated that under either Alternative 2 or 3 any of the repeaters could be down for an extended period of time either due to waiting for a helicopter to be available or waiting for a qualified technician to be available.

Response: The availability of radio technicians, needed to install and maintain the repeaters, that would be able to accomplish the arduous hikes associated with implementing Alternative 3 is uncertain. One can assume that such technicians could be readily found and made available when needed on the WMNF, but having this as a requirement introduces an element of uncertainty that would not be present under Alternative 2. WMNF staff time would be needed to work with the CIO in locating a qualified technician and arranging travel. WMNF Staff would also need to be available as field support during future repair and maintenance when necessary. Under Alternative 2, helicopter availability would be an inherent uncertainty, especially during fire season when helicopters are in high demand. In addition, field crews would need to maintain the HLZs and confirm they are ready for use before each time a helicopter is used. Both Alternatives would have staff time commitments and a level of uncertainty which will be considered during the decision making process.

Without conducting a thorough cost analysis with many assumptions, the cost differential between Alternative 2 and 3 is unknown. Although the cost associated with Alternative 2 includes the cost of using a helicopter for annual maintenance, it is also designed to have streamlined installation and maintenance where the proposed sites that require helicopter use could all be visited in one or two days by local radio technicians. Under Alternative 3, only one site could be visited per day (per qualified technician) due to the time it would take to travel to each site. This could require an extended stay, with its

associated costs, and scheduling complications for the qualified technician, or technicians, tasked with doing the work as well as any support staff the Forest would supply. In addition, helicopters would likely still be needed to sling load in any heavy items during both maintenance and repair (e.g., batteries, equipment, tools, etc.). Both action alternatives would have costs associated with them that will be considered during the decision making process.

Satellite Phones

Comment: Several commenters believe that satellite phones would satisfy our purpose and need and should be considered as an alternative to enhancing the Forest's existing radio system.

Response: The use of satellite phones was considered but not analyzed in detail. The staff at the CIO are considered the experts in communications on National Forest System lands. The CIO was consulted on the use of satellite phones over enhancing our existing radio system and advised that enhancing the radio system was the best approach to address the current communication gaps on the Forest.

As described in the EA, a critical function lacking in satellite phones is the ability to broadcast messages to multiple recipients simultaneously across large geographic areas. In addition to this functionality being essential for efficiency in many work situations in the field, it increases the opportunity for other staff nearby to hear and respond to a call for assistance. When a message is sent on a local repeater, that message is received by everyone in the field, offices, or vehicles in the local vicinity. Requests for support are often not life threatening but rather help is needed to address an issue in the field such as an equipment malfunction or information request from the public. Having a network of people receiving the message increases the probably that someone local can assist in an efficient manner. When the situation is life threatening, such as a search and rescue, the ability to broadcast to multiple recipients is indispensable for coordinating crews that are spread out in the field and keeping crews informed on the status of the mission, including what has been accomplished and what needs to be done next.

Satellite phone coverage and reliability in the WMNF terrain is also an issue with this technology. There is consensus with the CIO and available information that satellite phone reception would likely be unreliable if applied in the WMNF. Deep valleys and heavy forest canopy typically block the signal so a call cannot be made. If a user has good visibility of the sky and is not near tall terrain, calls would likely go through. However, field going staff are often not working in such areas and potentially could not reach such an area to call for help when necessary. It has been observed in similar terrain that even in areas where calls go through, calls of any significant length are often dropped when satellites pass out of coverage. On the WMNF, other satellite dependent devices have shown this type of behavior when used in the field. Both handheld GPS units and SPOT devices (personal trackers) have shown limited functionality in deep valleys and under dense canopy.

Handheld radios have proven to be an effective means of communication where coverage is provided. The proposed locations for the new repeater sites were developed from a review conducting by the CIO on the current Forest radio system. Current and proposed coverage was modeled and, if implemented, either of the action alternatives would decrease the radio communication coverage gap from 12% to 4%. (The review can be found in the project record).

Signal Ridge

Comment: Once commenter expressed concern with the potential for increased degradation on Signal Ridge due to clearing of vegetation and likely increase of foot traffic off trail.

Response: As disclosed in the project record, only the center 20' by 20' of the helicopter landing zone (HLZ) would need to be cleared to ground level for safe helicopter operations. The majority of the proposed HLZ location is already open and free of vegetation, therefore little, if any, of the existing vegetation would need to be cut to ground level. Outside of this area, stumps and vegetation under approximately 2 feet in height would be left in place, which would discourage most people from wandering off of the trail, mitigating the potential for continued degradation of the area from increased foot traffic. In addition, the Signal Ridge Trail would bisect the mostly flat opening and the view to be had from the trail wouldn't likely be any better or worse in any other part of the opening. Also, the close proximity (within sight) of the observation tower at the summit should tend to draw people through the opening towards their reward at the tower.

Comment: Several commentors expressed that Signal Ridge is a unique and special place for recreation and scenic values and the effects of the project would be unacceptable.

Response: As Forest Plan guidelines indicate, the WMNF places a high priority on meeting the Scenic Integrity Objectives on the Forest. Safety of our staff and the public visiting the Forest is also of high priority. Chapter 2 of the EA describes where these two priorities are in conflict on this project. Based on public comment Alternative 3 was developed to eliminate effects from helicopter landing zones. Effects were limited as much as possible by the proposed location of shelters and landing pads in the proposed action, and reduced further in Alternative 3. However the team could not find a way to avoid effects to scenery entirely.

The scenery management report analyzed the potential for all alternatives to affect the scenic value of the proposed areas. Neither of the two action alternatives would be consistent with the scenic integrity guideline, G-1, which states, "All management activities should meet or exceed Scenic Integrity Objectives established for the Forest through the Scenery Management System (SMS) outlined in Agricultural Handbook 701, Landscape Aesthetics – A Handbook for Scenery Management." The Scenic Integrity Objective for all the areas is designated as "High" where things should "appear unaltered… appear

intact… [and] deviations may be present but must repeat the form, line, color, texture and pattern common to the landscape character so completely and at such scale that they are not evident (USDA-FS 1995, p. 2-4)."

Based on internal concerns and public comments during the scoping period, Alternative 3 was developed to analyze the effects of installing the radio shelters without creating helicopter landing zones. Alternative 3 allows the responsible official to understand whether and how reducing effects to scenery would affect our ability to meet the purpose and need for the project. If Alternative 2 is selected, the Draft Decision Notice and FONSI would explain why the responsible official decided the helicopter landing zones, and resulting effect to scenery, are necessary.

High Elevation Plant Communities

Comment: One commentor stated that the proposed clearing on Signal Ridge would take place at a high elevation where there are ecologically vibrant and necessary plant communities and that this area should be protected.

Response: The summits of the four mountains consist of either high-elevation balsam fir forest or high-elevation spruce-fir forest. These forests occur in mountainous regions of northeastern North America, where they are locally abundant at moderate to high elevations. The areas proposed for clearing to accommodate HLZs represent a very small fraction of the full extent of these communities on the WMNF and at each individual site. Effects to the integrity and function of these communities likely would be negligible due to the small areas that would be involved.

Krummholz and heath-krummholz communities occur on the steep slopes on the northeast side of Signal Ridge (black spruce-balsam fir krummholz, and Labrador tea heath-krummholz). These communities are more restricted in extent on the WMNF than the high elevation forest types, occurring at more than 40 exposed peaks or ridges above ~3,500 feet, including near treeline transitions to larger alpine zones. In places, the Signal Ridge trail runs along or through the upper edge of the krummholz or heath-krummholz communities near the steep slope-break.

At the proposed HLZ, the trail runs along a transition zone between krummholz (marked by trees less than 6 ft. tall, primarily on steep slope to the northeast) and the somewhat taller high-elevation balsam fir forest (trees taller than 6 feet, on gentler slopes to the southwest). A portion of the proposed HLZ would correspond to the current hardened trail-bed and would require no clearing; the remainder would involve cutting a small amount of mostly balsam fir trees. This would affect a small fraction of a percent of balsam fir that occurs on-site, and an even smaller percent across the entire WMNF. As such, negligible effects would be expected to the ecological integrity of the forest and krummholz communities along the ridge.

Search and Rescue

Comment: One commentor asked for more information on how the Forest radio system interacts with communications of NHFG, AMC, and others.

Response: The Forest radio system is for administrative uses only and therefore is not available for commercial use or use by other groups for their daily operations. The exception is during Search and Rescue operations (SAR), when other groups are granted access to the Forest radio system for SAR related communications. The Forest radios are capable of handling other group's (e.g., NHFG, AMC, State Police, Volunteer SAR groups, etc.) frequencies and the new repeaters would help eliminate holes in our coverage. Additionally, the Forest has recently acquired new radios that all have V-Tac as a bank, which is a bank of channels that was born post-9/11 so that agencies could go to a common channel and talk.

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