

2.0 Chapter 2: Alternatives Considered

2.1 Introduction

This chapter describes and compares the alternatives considered for the Cayuga Project. It includes a description and map of each alternative considered. This section also presents the alternatives in comparative form, sharply defining the differences between each alternative and providing a clear basis for choice among options by the decision-maker and the public. Some of the information used to compare the alternatives is based upon the design of each alternative, and some of the information is based upon the environmental, social and economic effects of implementing each alternative.

2.2 Alternative Development Process

Portions of this area have been analyzed in Opportunity Area analyses (OA) and environmental assessments (EA). Past analyses conducted within the project were the Clam Lake OA (1991), Halfway OA (1993), Spider OA (1991), Gates OA (1992), Morse OA (1990), and the Spruce Pine EA (1992). These OAs and EAs were all tiered to the 1986 Chequamegon National Forest Land and Resource Management Plan (Forest Plan).

The Great Divide District Ranger of the Chequamegon-Nicolet National Forest worked with the Interdisciplinary Team to identify the following criteria to design and evaluate the Cayuga Project Area.

Management Direction For The Cayuga Project Area: The Cayuga Project Area is located within Goal Areas 1 and 2 as identified within the Chequamegon Land and Resource Management Plan (Forest Plan). The Team reviewed the desired future conditions, goals, and standards and guidelines for each of the Goal Areas and identified the following direction for the project area:

- Manage 30% of aspen in the 0-20 age class within Goal Area 1 (Forest Plan IV-114)
- Improve wildlife and fish habitat (Forest Plan IV-78-80)
- Provide safe, high-quality recreational facilities and trails (Forest Plan IV-26-27)
- Improve timber growth on lands suitable and available for timber production while managing for multiple resources (e.g., visual quality, wildlife habitat, etc.) (Forest Plan IV-39-40)
- Protect the unique values and resources of the McCarthy Lakes and Cedar Research Natural Area (Forest Plan IV-92-93)
- Restore lakes and streams that have been disturbed by sedimentation (Forest Plan IV-69)

- Minimize and mitigate sedimentation to protect water quality (Forest Plan IV-69)
- Minimize and mitigate soil erosion and compaction that could decrease soil productivity (IV-69-75)
- Protect wetlands and riparian areas (Forest Plan IV-67-68)
- Emphasize optimum timber production with respect to site potential, cost efficiency, multiple use, and non-declining even-flow (Forest Plan IV-3).

2.3 Alternatives Considered in Detail

The Forest Service developed five alternatives, including the No Action and Proposed Action alternatives, in response to issues raised by the public. Each alternative is described in terms of:

- Timber Harvest and Silvicultural Treatments
- Road Management
- Recreation Site Management
- Visual Quality Management
- Control of Noxious weeds
- Fisheries and Wildlife Habitat Maintenance and Improvement
- Watershed Restoration
- Trail Management
- Management of Lands Adjacent to McCarthy Lake and Cedars Natural Area

A comparison of the important activities and tradeoffs between each alternative is displayed in Tables 2.5a-c.

2.3.1 Alternative 1: No Action

Under the No Action alternative, current management plans would continue to guide management of the project area. None of the proposed actions, such as timber harvests, planting, watershed restoration, recreational facility improvement, etc. would be implemented to accomplish project goals. There are ongoing permitted and approved uses on National Forest lands that would continue within the project area. These include, but aren't limited to:

- **Firewood cutting**--under the permitting regulations for the Chequamegon-Nicolet National Forest, firewood gathering by the public in designated areas would continue.

- **Transportation management**--All open inventoried and non-inventoried Forest Service roads within the project area would remain open. Existing road closure devices within the project area (e.g., berms, gates, rocks, etc.) would continue to be maintained.
- **Trail management**--Use of FR 1296 as a section of Snowmobile Trail 8 would continue. Annual maintenance would continue.
- **Parking facility**--A Special Use Permit for the continued use of the opening south of FR 1296 for a snowmobile parking area would be reissued.
- **Fire suppression**--All human- and natural-caused fires would be suppressed.
- **Recreation Facilities**--A hazard tree inspection would continue to be conducted on an annual basis. Trees that appear to be weak or rotted and are located near campsites and facilities would be removed individually.

2.3.2 Alternative 2: Proposed Action (in DEIS)

This alternative was designed to not only meet Forest Plan direction, but also to incorporate findings and new information (e.g. “Scientific Roundtable on Biological Diversity”, Forest Plan Revision process).

Implementation of these management activities would be expected to begin within 5 years. The Alternative Treatment Map can be found in Appendix A. Project Design Features and Mitigation measures specific to this alternative are described in detail in Appendix C.

Timber Harvest and Silvicultural Treatments (*see Appendix J, Stand Treatment Table, for a site-specific list of treatments by compartment and stand.*)

Approximately **5,414 acres** are proposed for timber harvest under Alternative 2. (This includes all harvest activities further described below.) This harvest would yield an estimated **23.0 million board feet** (MMBF) of timber volume. Stands would be grouped into several timber sales.

Even-aged thinnings are proposed on approximately **1,941 acres**. Of this total, about **1,331 acres** of mixed northern hardwoods would be thinned to promote the development and growth of mid-tolerant species like basswood and ash. Approximately **383 acres** of conifers would be thinned to promote the health and vigor of these stands, and to address recreation concerns. Approximately **220 acres** of aspen, and **7 acres** of paper birch, would be thinned to encourage conversion of these stands to longer-lived hardwoods or conifers.

Uneven-aged hardwood management would be implemented on approximately **2,140 acres** of northern hardwood stands through selection harvesting to develop multi-aged stands and favor shade-tolerant species like sugar maple.

The shelterwood system would be used to regenerate approximately **596 acres**. Shelterwood seed cutting is proposed on about **543 acres** to provide conditions favorable for natural or artificial regeneration. Under

planting of conifers would follow on some of these sites, while natural seeding of hardwoods or conifers would be encouraged on other sites. The residual trees would provide shade needed for the establishment of the new stand. On two sites, totaling about **53 acres**, the overstory trees remaining from a previous shelterwood seed cut would be removed to provide optimal growing conditions for the recently established saplings.

Approximately **737 acres** of mature and over-mature aspen stands would be clearcut and regenerated to aspen, relying on root-sprouting to quickly re-capture these sites.

Sites receiving a shelterwood seed cut (543 acres) would be scarified mechanically following harvest. This includes 449 acres of salmon blade scarification for natural regeneration, and 94 acres of Bracke scarification for planting.

On all areas where white pine or hemlock is being planted, we would protect the young seedlings from deer browsing by spraying the leader and top whorl of branches with a commercially available deer repellent. This would be done each fall for about five years, until the trees grow tall enough that deer can no longer reach the main leader.

Where planted seedlings are being overtopped by competing vegetation, release may become necessary. This is done by using brush saws or chain saws to cut competing vegetation within five feet of the planted seedling, thereby freeing up sunlight, moisture, and nutrients for the desired species. All planted sites would be evaluated and released from competition as needed.

Road Management

Under Alternative 2, approximately **12.6 miles** of new temporary roads would be constructed for the harvest and removal of timber. Native soils would be used for the driving surface. Minor drainage improvements would be made where needed. All temporary roads constructed would be decommissioned following timber harvesting to limit motorized access.

Road maintenance work, specifically needed for this project, would be performed on approximately **22.8 miles** of existing roads needed to access timber sale areas. In many cases only portions of these roads may need actual maintenance work, such as minor surface blading or spot gravelling in low spots of the roadbed. In some cases the road maintenance would include the entire length of road needed to access the timber harvest area.

A Transportation Analysis (referred to as the roads analysis hereafter) was completed for the Cayuga Project Area in February 2002. Under Alternative 2 approximately **6.5 miles** of existing system and non-system roads would be decommissioned within the project area.

In order to protect the unique values and resources within the McCarthy Lake and Cedars RNA, a short spur off FR 1333 would be closed. Information regarding the closure would be posted at the closure to notify the public.

Recreation Site Management

Under this alternative, approximately **25 acres** of jack pine and red pine within Day Lake Campground on the Jack Pine and Heron Circle Loops would be thinned to address safety concerns. In addition, approximately **88 acres** of red pine in the Paper Birch, Red Pine, Blueberry, and Musky Bay Loops would be thinned to improve air movement and screening between campsites. Harvest activities would be restricted to winter only. (These stands are included in the total acres of conifer thinnings identified earlier in this section.)

Visual Quality Management

Along County Highway GG there are approximately **297 acres** of mature and declining aspen stands. These stands would be treated with shelterwood cuts (**220 acres**) or thinnings (**77 acres**), to begin conversion of these stands to longer-lived species. Most of these stands would be converted to northern hardwoods, while some would be converted to conifers, according to site characteristics. (These stands are included in the total acres of shelterwood cuts and thinnings listed earlier in this section.)

To improve the aesthetics along the shorelines of Day Lake, East Twin Lake, and Spillerberg Lake, some declining aspen and birch stands would be gradually converted to white pine by various methods:

About **14 acres** of aspen on the west shore of Day Lake would receive a shelterwood seed cut to stimulate existing white pine seedlings.

One aspen stand (about **15 acres**) at East Twin Lake would receive a shelterwood cut followed by under planting of white pine. (These stands are included in the total acres of shelterwood cuts listed earlier in this section.)

Three shoreline stands at Day Lake and Spillerberg Lake, totaling about **53 acres**, would be under planted to white pine without disturbing the existing overstory.

Where the shelterwood system is prescribed to move a mixed aspen stand toward its hardwood or conifer component, the following modifications apply:

- The seed cut will retain as much overstory basal area as is normally kept in a hardwood thinning, 75 to 85 square feet per acre (Tubbs, 1977). This is to limit the quantity and vigor of aspen root sprout regeneration, and provide conditions where the more shade-tolerant species have the competitive advantage.
- The removal cut will be deferred, that is, the overstory will be left as a component of the new stand.

Thus, an aspen shelterwood cut will appear similar to a hardwood thinning, with a fully stocked residual stand. It is termed a “shelterwood” cut because the intent is to provide understory conditions favorable to the desired regeneration.

Where a thinning is prescribed to convert a mixed aspen stand, it is similar to the modified shelterwood just described, except that the residual basal area will be higher, 85 to 95 square feet per acre, and no scarification will follow. The denser canopy will more effectively control aspen root sprouting in stands heavily dominated by aspen.

Control of Noxious weeds

A biological control (flea beetle) (*Aphthona species*) would be released to control three small patches of Leafy Spurge (*Euphorbia esula*) that together total less than **1 acre**.

Fisheries and Wildlife Habitat Maintenance and Improvement

Approximately **35 acres** of aspen would be converted to conifers within 300 feet of Brush and McCarthy Creeks. The conversion from aspen to species less palatable to beaver would be achieved through a combination of partial cutting to remove the aspen and under planting of white pine or white spruce. (These stands are included in the total acres of aspen thinnings identified earlier in this section.)

Brush bundles would be constructed and placed along approximately **1,000 feet** of McCarthy Creek to help narrow and deepen the stream channel and reduce the impacts of sediment. Removal of fine debris and tag alder would be conducted by hand cutting along approximately **1.5 miles** of McCarthy Creek to improve the flow of the stream, reduce accumulated sediment deposits, promote grass cover, and stabilize the streambanks.

Restoration of approximately **85 acres** of upland openings to a grass/forbs/shrub condition would be accomplished through hand cutting, mowing, or burning of encroaching woody vegetation depending on the characteristics of each site. Periodic monitoring and maintenance of these openings would be done in the future.

Watershed Restoration

Under this alternative, existing culverts at **7 sites** would be replaced with culverts of larger diameter and greater length. These culverts would be installed at or slightly below streambed elevation to improve water quality and fish passage. These sites would include an unnamed tributary of Clam Lake at FR 195, and unnamed tributary to East Twin Lake at FR 195, an unnamed tributary to Brush Creek at FR 183, an unnamed tributary to Squaw Creek at FR 354, Brush Creek at FR 354, an unnamed tributary to the Bad River at FR 355, and an unnamed tributary on County Highway GG (see map in Appendix A). Each site would be designed with a 2:1 embankment ratio and rock armoring at each end of the culverts for erosion control. Additional erosion control measures would include re-vegetation of the sites with native or non-invasive seed, along with the application of weed-free mulch or straw matting and installation of silt fences that would be removed once re-vegetation occurs. In-stream work within Brush Creek and its tributaries would be completed before September 15th or after April 15th to protect trout spawning areas.

Trail Management

A parking facility for snowmobile trail users would be constructed on the south side of FR 1296. The parking lot would be approximately **1 acre** in size. In addition, relocation of approximately **.4 miles** of Snowmobile Trail 8 along a segment of County Highway GG (north) and FR 1296 to address safety concerns due to increased traffic would also be done.

Under the original proposal for this alternative, approximately **2.5 miles** of Snowmobile Trail 8 would have been rehabilitated, abandoned, and relocated. This proposed action was removed from the project analysis due to the need to immediately address public safety concerns. Those individuals who commented specifically on the proposed actions pertaining to the snowmobile trail relocation were contacted. The proposed actions for the relocation, rehabilitation and abandonment of the section of Snowmobile Trail 8 that crosses Brush Creek will be analyzed under a separate analysis.

Management of lands adjacent to the McCarthy Lake and Cedars Research Natural Area

Approximately **48 acres** of aspen within 3/4 mile of the McCarthy Lake and Cedars Research Natural Area (RNA) would be converted to hardwoods through the shelterwood method. (This stand is included in the total acres of shelterwood cuts identified earlier in this section.)

2.3.3 Alternative 3

This alternative was designed to address issues relative to the management of early successional species and management of closed-canopy northern hardwood forests. Alternative 3 places emphasis on following the Forest Plan direction for Goal Areas 1 and 2 as described in the Forest Plan on pages IV-106 and IV-117. Elements of the Forest Plan such as the Desired Future Condition (DFC), particularly in terms of the percentage of cover types, Forest-wide standards and guidelines (S&Gs), and public comments from the tribes and general public helped shape and develop this alternative.

These management activities would be expected to occur during the 5-year period following the signing of the decision document for this project. The Alternative Treatment map can be found in Appendix A. Detailed project Design Features and Mitigation measures specific to this alternative are described in Appendix C.

Timber Harvest and Silvicultural Treatments (*see Appendix J, Stand Treatment Table, for a site-specific list of treatments by compartment and stand.*)

Approximately **6,176 acres** are proposed for timber harvest under Alternative 3. (This includes all harvest activities further described below.) This harvest would yield an estimated **28.0 million board feet** (MMBF) of timber volume. Stands would be grouped into several timber sales.

Even-aged thinnings are proposed on approximately **1,627 acres**. Of this total, about **865 acres** of mixed northern hardwoods would be thinned to promote the development and growth of mid-tolerant species like

basswood and ash. Approximately **383 acres** of conifers would be thinned to promote the health and vigor of these stands, and to address recreation concerns. Approximately **351 acres** of aspen, and **28 acres** of paper birch, would be thinned to encourage conversion of these stands to longer-lived hardwoods or conifers.

Uneven-aged management would be implemented on approximately **2,892 acres** of northern hardwood stands. Of this total selection harvesting would be used on about **2,836 acres** to favor shade-tolerant species like sugar maple. Improvement cutting would be used on about **56 acres** to develop multi-aged stands and increase the health, growth, and quality of the remaining trees.

The shelterwood system would be used to regenerate approximately **250 acres**. Shelterwood seed cutting is proposed on about **197 acres** to provide conditions favorable for natural or artificial regeneration. Under planting of conifers would follow on some of these sites, while natural seeding of hardwoods or conifers would be encouraged on other sites. The residual trees would provide shade needed for the establishment of the new stand. On two sites, totaling about **53 acres**, the overstory trees remaining from a previous shelterwood seed cut would be removed to provide optimal growing conditions for the recently established saplings.

Approximately **1,381 acres** of mature and over-mature aspen stands would be clearcut and regenerated to aspen, relying on root sprouting to quickly re-capture these sites.

Sites receiving a shelterwood seed cut (197 acres) would be scarified mechanically following harvest. This includes 78 acres of scarification with a salmon blade for natural regeneration, and 119 acres of Bracke scarification for planting. In addition, two jack pine stands being clearcut (26 acres) would be disc trenched to facilitate full planting with red pine.

On all areas where white pine or hemlock is being planted, we would protect the young seedlings from deer browsing by spraying the leader and top whorl of branches with a commercially available deer repellent. This would be done each fall for about five years, until the trees grow tall enough that deer can no longer reach the main leader.

Where planted seedlings are being overtopped by competing vegetation, release may become necessary. This is done by using brush saws or chain saws to cut competing vegetation within five feet of the planted seedling, thereby freeing up sunlight, moisture, and nutrients for the desired species. All planted sites would be evaluated and released from competition as needed.

Road Management

Under Alternative 3, approximately **16.3 miles** of new temporary roads would be constructed for the harvest and removal of the timber. Native soils would be used for the driving surface. Minor drainage improvements would be made where needed. All temporary roads constructed would be decommissioned following timber harvest to

render them impassable by motorized vehicles. Based upon the opportunities identified in the roads analysis, approximately **5.7 miles** of inventoried and non-inventoried roads would be decommissioned within the Cayuga Project Area.

Road maintenance work would be performed on approximately **23.3 miles** of existing roads needed to access timber sale areas within the project area. In many cases only portions of these roads may need actual maintenance work, such as minor surface blading or spot gravelling in low spots of the roadbed. In some cases the road maintenance would include the entire length of road needed to access the timber harvest area.

In order to protect the unique values and resources within the McCarthy Lake and Cedars RNA, a short spur off FR 1333 would be closed. Information regarding the closure would be posted at the closure to notify the public.

Recreation Site Management

Under this alternative, approximately **25 acres** of jack pine and red pine within Day Lake Campground on the Jack Pine and Heron Circle Loops would be thinned to address safety concerns. In addition, approximately **88 acres** of red pine in the Paper Birch, Red Pine, Blueberry, and Musky Bay Loops would be thinned to improve air movement and screening between campsites. Harvest activities would be restricted to winter only. Mitigation measures have been identified in Appendix C for harvesting within the campground. (These stands are included in the total acres of conifer thinnings identified earlier in this section.)

Along the entrance road to Day Lake Boat Launch and Picnic Area, two stands of mature jack pine totaling approximately **26 acres** would be clearcut. Following harvest, these two stands would be planted with red pine.

Visual Quality Management

Along County Highway GG, approximately **203 acres** of mature and declining aspen stands would be treated with thinnings (**193 acres**), or shelterwood cuts (**10 acres**), to begin conversion of these stands to longer-lived species. Most of these stands would be converted to northern hardwoods, while some would be converted to conifers, according to site characteristics. (These stands are included in the total acres of shelterwood cuts and thinnings listed earlier in this section.)

To improve the aesthetics along the shorelines of Day Lake, East Twin Lake, and Spillerberg Lake, some declining aspen and birch stands would be gradually converted to white pine by various methods:

About **14 acres** on the west shore of Day Lake would receive a shelterwood seed cut to stimulate existing white pine seedlings.

About **62 acres** of aspen and paper birch (33 acres at Day, 14 acres at Spillerberg, and 15 acres at East Twin) would be converted to white pine through shelterwood cutting, followed by under planting of white pine. (These stands are included in the total acres of shelterwood cuts listed earlier in this section.)

Two shoreline stands at Day Lake, totaling about **29 acres**, would be underplanted without disturbing the existing overstory.

Where the shelterwood system is prescribed to move a mixed aspen stand toward its hardwood or conifer component, the following modifications apply:

- The seed cut will retain as much overstory basal area as is normally kept in a hardwood thinning, 75 to 85 square feet per acre (Tubbs, 1977). This is to limit the quantity and vigor of aspen root sprout regeneration, and provide conditions where the more shade-tolerant species have the competitive advantage.
- The removal cut will be deferred, that is, the overstory will be left as a component of the new stand.

Thus, an aspen shelterwood cut will appear similar to a hardwood thinning, with a fully stocked residual stand. It is termed a “shelterwood” cut because the intent is to provide understory conditions favorable to the desired regeneration.

Where a thinning is prescribed to convert a mixed aspen stand, it is similar to the modified shelterwood just described, except that the residual basal area will be higher, 85 to 95 square feet per acre, and no scarification will follow. The denser canopy will more effectively control aspen root sprouting in stands heavily dominated by aspen.

Control of Noxious weeds

Under this alternative, no treatment of leafy spurge along County Highway GG would be implemented.

Fisheries and Wildlife Habitat Maintenance and Improvement

The proposed projects and mitigation measures for fisheries habitat and water quality improvement would be the same as those proposed under Alternative 2, except that aspen conversion would be implemented on **13 acres** along McCarthy Creek.

Construction of approximately **16 acres** of openings within early successional forest types would be implemented. Mechanical methods (i.e. mowing, bulldozing, etc.) would be utilized to construct these openings. Approximately **126 acres** of existing wildlife openings would be maintained through mowing, brushing, hand cutting, or prescribed burning. Periodic monitoring and maintenance of these openings would be done in the future.

Watershed Restoration

Under this alternative, existing culverts at **6 sites** would be replaced with culverts of larger diameter and greater length. The new culverts would be installed at or slightly below streambed elevation to improve water quality

and fish passage. These sites would include an unnamed tributary of Clam Lake at FR 195, an unnamed tributary to East Twin Lake at FR 195, an unnamed tributary to Brush Creek at FR 183, an unnamed tributary to Squaw Creek at FR 354, Brush Creek at FR 354, and an unnamed tributary on County Highway GG. Each site will be designed with a 2:1 embankment ratio and rock armoring at each end of the culverts for erosion control.

Additional erosion control measures would include re-vegetation of the sites with native or non-invasive seed, along with the application of weed-free mulch or straw matting and installation of silt fences that would be removed once re-vegetation occurs. In-stream work within Brush Creek and its tributaries will be completed before September 15th or after April 15th to protect trout spawning areas.

The unnamed tributary to the Bad River at FR 355 would also be restored. This would involve removing the twin corrugated metal culverts and approximately 100 feet of FR 355 on either side of the stream. The road fill would be removed down to floodplain elevation for the approximate width of the floodplain. The stream channel bed and banks would be restored to a natural state, trees transplanted next to the stream where possible, the road sub-grade scarified for re-vegetation, prominent road features blended into the surrounding terrain, and access blocked with boulders, berms, and/or slash. Vehicle turnarounds would be provided on each side of the stream where the road dead-ends. The stream crossing would be re-stored by removing enough embankment material to obtain the natural stream channel and floodplain width and depth. Erosion control measures for the activities would include seeding with non-invasive species of grasses, applying weed-free straw mulch, installing erosion control mat adjacent to the stream banks, and installing silt fence that could be removed once the project area is stabilized and re-vegetated. This project would result in the restoration of 1 acre the floodplain.

Trail Management

The proposed actions and mitigation measures for trail management would be the same as those proposed under **Alternative 2** (for detailed description see Section 2.4.2).

Management of lands adjacent to the McCarthy Lake and Cedars Research Natural Area

Approximately 57 acres of aspen within 3/4 mile of the McCarthy Lake and Cedars Research Natural Area (RNA) would be converted to hardwoods by thinning. (These stands are included in the total acres of thinning identified earlier in this section.)

2.3.4 Alternative 4

This alternative was designed in response to the issues pertaining to forest fragmentation, the amount of timber harvest along County Hwy GG, and harvest activities near the McCarthy Lake and Cedars Research Natural Area (RNA).

These management activities would be expected to occur during the 5-year period following the signing of the decision document for this project. The Alternative Treatment Map can be found in Appendix A. Detailed project Design Features and Mitigation measures specific to this alternative are described in Appendix C.

Timber Harvest and Silvicultural Treatments (see Appendix J, Stand Treatment Table, for a site-specific list of treatments by compartment and stand.)

Approximately **4,880 acres** are proposed for timber harvest under Alternative 4. (This includes all harvest activities further described below.) This harvest would yield an estimated **20.0 million board feet** (MMBF) of timber volume. Stands would be grouped into several timber sales.

Even-aged thinnings are proposed on approximately **616 acres**. Of this total, about **179 acres** of mixed northern hardwoods would be thinned to promote the development and growth of mid-tolerant species like basswood and ash. Approximately **295 acres** of conifers would be thinned to promote the health and vigor of these stands, and to address recreation concerns. Approximately **142 acres** of aspen would be thinned to encourage conversion of these stands to longer-lived hardwoods or conifers.

Uneven-aged management would be implemented on approximately **3,676 acres** of northern hardwood stands. Selection harvesting would be used on about **2,710 acres** to favor shade-tolerant species like sugar maple. Improvement cutting would be used on about **966 acres** to develop multi-aged stands and increase the health, growth, and quality of the remaining trees.

The shelterwood system would be used to regenerate approximately **164 acres**. Of this total, shelterwood seed cutting is proposed on about **111 acres** to provide conditions favorable for natural or artificial regeneration. Under planting of conifers would follow on some of these sites, while natural seeding of hardwoods or conifers would be encouraged on other sites. The residual trees would provide shade needed for the establishment of the new stand. On two sites, totaling about **53 acres**, the overstory trees remaining from a previous shelterwood seed cut would be removed to provide optimal growing conditions for the recently established saplings.

Approximately **398 acres** of mature and over-mature aspen stands would be clearcut and regenerated to aspen, relying on root sprouting to quickly re-capture these sites.

Sites receiving a shelterwood seed cut (111 acres) would be scarified mechanically following harvest. This includes 70 acres of scarification with a salmon blade for natural regeneration, and 41 acres of Bracke scarification for planting. In addition, two jack pine stands being clearcut (26 acres) would be disc trenched to facilitate full planting with red pine.

On all areas where white pine or hemlock is being planted, we would protect the young seedlings from deer browsing by spraying the leader and top whorl of branches with a commercially available deer repellent.

This would be done each fall for about five years, until the trees grow tall enough that deer can no longer reach the main leader.

Where planted seedlings are being overtopped by competing vegetation, release may become necessary. This is

done by using brush saws or chain saws to cut competing vegetation within five feet of the planted seedling, thereby freeing up sunlight, moisture, and nutrients for the desired species. All planted sites would be evaluated and released from competition as needed.

Road Management

Under Alternative 4, approximately 10.5 miles of new temporary roads would be constructed for the harvest and removal of the timber. Native soils would be used for the driving surface. Minor drainage improvements would be made where needed. All temporary roads constructed would be decommissioned following timber harvest to render them impassable by motorized vehicles. Based upon the opportunities identified in the roads analysis for the Cayuga Project Area, approximately 11.4 miles of road would be decommissioned.

Road maintenance work would be performed on approximately 19.7 miles of existing roads needed to access timber sale areas within the project area. In many cases only portions of these roads may need actual maintenance work, such as minor surface blading or spot gravelling in low spots of the roadbed. In some cases the road maintenance would include the entire length of road needed to access the timber harvest area.

In order to protect the unique values and resources within the McCarthy Lake and Cedars RNA, a short spur off FR 1333 would be closed. Information regarding the closure would be posted at the closure to notify the public.

Recreation Site Management

Under this alternative, approximately 25 acres of jack pine and red pine within Day Lake Campground on the Jack Pine Circle and Heron Circle Loops would be thinned to address safety concerns. Harvest activities would be restricted to winter only. Mitigation measures have been identified in Appendix C for harvesting within the campground. (This stand is included in the total acres of conifer thinnings identified earlier in this section.)

Along the entrance road to Day Lake Boat Launch and Picnic Area, two stands of mature jack pine totaling approximately 26 acres would be clearcut. Following harvest, these two stands would be planted with red pine.

Visual Quality Management

Along County Highway GG, approximately 236 acres of mature and declining aspen stands would be treated with thinnings 105 acres or improvement cuts 131 acres to begin conversion of these stands to longer-lived species. Most of these stands would be converted to northern hardwoods, while some would be converted to conifers, according to site characteristics. (These stands are included in the total acres of thinnings listed earlier in this section.)

To improve the aesthetics along the shorelines of Day Lake and East Twin Lake, some declining aspen and birch stands would be gradually converted to white pine by various methods:

About 14 acres on the west shore of Day Lake would receive a shelterwood seed cut to stimulate existing white pine seedlings.

One aspen stand (about **15 acres**) at East Twin Lake would receive a shelterwood cut followed by under planting of white pine. (These stands are included in the total acres of shelterwood cuts listed earlier in this section.)

Three shoreline stands at Day Lake, totaling about **39 acres**, would be underplanted to white pine without disturbing the existing overstory.

Where the shelterwood system is prescribed to move a mixed aspen stand toward its hardwood or conifer component, the following modifications apply:

- The seed cut will retain as much overstory basal area as is normally kept in a hardwood thinning, 75 to 85 square feet per acre (Tubbs, 1977). This is to limit the quantity and vigor of aspen root sprout regeneration, and provide conditions where the more shade-tolerant species have the competitive advantage.
- The removal cut will be deferred, that is, the overstory will be left as a component of the new stand.

Thus, an aspen shelterwood cut will appear similar to a hardwood thinning, with a fully stocked residual stand. It is termed a “shelterwood” cut because the intent is to provide understory conditions favorable to the desired regeneration.

Where a thinning is prescribed to convert a mixed aspen stand, it is similar to the modified shelterwood just described, except that the residual basal area will be higher, 85 to 95 square feet per acre, and no scarification will follow. The denser canopy will more effectively control aspen root sprouting in stands heavily dominated by aspen.

Control of Noxious weeds

A biological control agent (beetle) would be released to control Leafy Spurge on three sites that cumulatively total **< 1 acre**.

Fisheries and Wildlife Habitat Maintenance and Improvement

The proposed projects and mitigation measures for fisheries habitat and water quality improvement would be the same as those proposed under Alternative 2, except that aspen conversion would be implemented on **22 acres** along Brush Creek.

Restoration of approximately **7 acres** of existing upland openings to a grass/forbs/shrub condition would be accomplished through hand cutting, mowing, brushing or burning of the encroaching woody vegetation, depending on the characteristics of each site. An additional **20 acres** would be maintained through prescribed burning. No new wildlife openings would be constructed. Periodic monitoring and maintenance of these openings would be done in the future.

Watershed Restoration

The proposed projects and mitigation measures would be the same as those proposed under Alternative 3.

Trail Management

The proposed actions and mitigation measures for trail management would be the same as those proposed under Alternatives 2 and 3.

2.3.5 Alternative 5: Agency Preferred Alternative

This alternative was designed to not only meet Forest Plan direction, but also to incorporate findings and new information (e.g. “Scientific Roundtable on Biological Diversity”, Forest Plan Revision process). It is a modification of Alternative 2 in that it proposes more aspen management and emphasizes uneven aged management of northern hardwoods.

Implementation of these management activities would be expected to begin within 5 years. The Alternative Treatment Map can be found in Appendix A. Project Design Features and Mitigation measures specific to this alternative are described in detail in Appendix C.

Timber Harvest and Silvicultural Treatments *(see Appendix J, Stand Treatment Table, for a site-specific list of treatments by compartment and stand.)*

Approximately **5,610 acres** are proposed for timber harvest under Alternative 5. (This includes all harvest activities further described below.) This harvest would yield an estimated **25.0 million board feet** (MMBF) of timber volume. Stands would be grouped into several timber sales.

Even-aged thinnings are proposed on approximately **1,359 acres**. Of this total, about **722 acres** of mixed northern hardwoods would be thinned to promote the development and growth of mid-tolerant species like basswood and ash. Approximately **383 acres** of conifers would be thinned to promote the health and vigor of these stands, and to address recreation concerns. Approximately **247 acres** of aspen, and **7 acres** of paper birch, would be thinned to encourage conversion of these stands to longer-lived hardwoods or conifers.

Uneven-aged hardwood management would be implemented on approximately **2,448 acres** of northern hardwood stands through selection harvesting to develop multi-aged stands and favor shade-tolerant species like sugar maple.

The shelterwood system would be used to regenerate approximately **490 acres**. Shelterwood seed cutting is proposed on about **437 acres** to provide conditions favorable for natural or artificial regeneration. Under planting of conifers would follow on some of these sites, while natural seeding of hardwoods or conifers would be encouraged on other sites. The residual trees would provide shade needed for the establishment of the new stand. On two sites, totaling about **53 acres**, the overstory trees remaining from a previous shelterwood seed cut would be removed to provide optimal growing conditions for the recently established saplings.

Approximately **1,010 acres** of mature and over-mature aspen stands would be clearcut and regenerated to aspen, relying on root-sprouting to quickly re-capture these sites.

About **147** acres of post harvest treatments would occur. They are identified in the activity column of the Stand Treatment Table in Appendix J. These treatments may include mechanical site prep for regeneration, hand planting, and plantation seedling release and protection.

Road Management

Under Alternative 5, approximately **14.0 miles** of new temporary roads would be constructed for the harvest and removal of timber. Native soils would be used for the driving surface. Minor drainage improvements would be made where needed. All temporary roads constructed would be decommissioned following timber harvesting to limit motorized access.

Road maintenance work, specifically needed for this project, would be performed on approximately **23.1 miles** of existing roads needed to access timber sale areas. In many cases only portions of these roads may need actual maintenance work, such as minor surface blading or spot gravelling in low spots of the roadbed. In some cases the road maintenance would include the entire length of road needed to access the timber harvest area.

A Transportation Analysis (referred to as the roads analysis hereafter) was completed for the Cayuga Project Area in February 2002. Under Alternative 5 approximately **11.4 miles** of existing system and non-system roads would be decommissioned within the project area.

In order to protect the unique values and resources within the McCarthy Lake and Cedars RNA, a short spur off FR 1333 would be closed. Information regarding the closure would be posted at the closure to notify the public.

Recreation Site Management

Under this alternative, approximately **25 acres** of jack pine and red pine within Day Lake Campground on the Jack Pine and Heron Circle Loops would be thinned to address safety concerns. In addition, approximately **88 acres** of red pine in the Paper Birch, Red Pine, Blueberry, and Musky Bay Loops would be thinned to improve air movement and screening between campsites. Harvest activities would be restricted to winter only. (These stands are included in the total acres of conifer thinnings identified earlier in this section.)

Visual Quality Management

Along County Highway GG there are approximately **258 acres** of mature and declining aspen stands. These stands would be treated with shelterwood cuts (**181 acres**) or thinnings (**77 acres**), to begin conversion of these stands to longer-lived species. Most of these stands would be converted to northern hardwoods, while some would be converted to conifers, according to site characteristics. (These stands are included in the total acres of shelterwood cuts and thinnings listed earlier in this section.)

To improve the aesthetics along the shorelines of Day Lake, East Twin Lake, and Spillerberg Lake, some

declining aspen and birch stands would be gradually converted to white pine by various methods:

About **14 acres** of aspen on the west shore of Day Lake would receive a shelterwood seed cut to stimulate existing white pine seedlings.

One aspen stand (about **15 acres**) at East Twin Lake would receive a shelterwood cut followed by under planting of white pine. (These stands are included in the total acres of shelterwood cuts listed earlier in this section.)

Three shoreline stands at Day Lake and Spillerberg Lake, totaling about **53 acres**, would be under planted to white pine without disturbing the existing over story.

Where the shelterwood system is prescribed to move a mixed aspen stand toward its hardwood or conifer component, the following modifications apply:

- The seed cut will retain as much overstory basal area as is normally kept in a hardwood thinning, 75 to 85 square feet per acre (Tubbs, 1977). This is to limit the quantity and vigor of aspen root sprout regeneration, and provide conditions where the more shade-tolerant species have the competitive advantage.
- The removal cut will be deferred, that is, the overstory will be left as a component of the new stand.

Thus, an aspen shelterwood cut will appear similar to a hardwood thinning, with a fully stocked residual stand. It is termed a “shelterwood” cut because the intent is to provide understory conditions favorable to the desired regeneration.

Where a thinning is prescribed to convert a mixed aspen stand, it is similar to the modified shelterwood just described, except that the residual basal area will be higher, 85 to 95 square feet per acre, and no scarification will follow. The denser canopy will more effectively control aspen root sprouting in stands heavily dominated by aspen.

An improvement cut, when used to move a mixed aspen stand toward its hardwood or conifer component, is similar to a thinning, but with a greater emphasis on creating small canopy gaps (25 to 40 feet wide) located to take advantage of existing northern hardwood seed sources or pockets of advance regeneration. These gaps result from the removal of individual mature trees or small groups of immature diseased or poor-quality trees. The long-range intent is to move the stand toward uneven-aged northern hardwood management.

Control of Noxious weeds

A biological control (flea beetle) (*Aphthona species*) would be released to control three small patches of Leafy Spurge (*Euphorbia esula*) that together total less than **1 acre**.

Fisheries and Wildlife Habitat Maintenance and Improvement

Approximately **35 acres** of aspen would be converted to conifers within 300 feet of Brush and McCarthy Creeks. The conversion from aspen to species less palatable to beaver would be achieved through a combination of partial cutting to remove the aspen and under planting of white pine or white spruce. (These stands are included in the total acres of aspen thinnings identified earlier in this section.)

Brush bundles would be constructed and placed along approximately **1,000 feet** of McCarthy Creek to help narrow and deepen the stream channel and reduce the impacts of sediment. Removal of fine debris and tag alder would be conducted by hand cutting along approximately **1.5 miles** of McCarthy Creek to improve the flow of the stream, reduce accumulated sediment deposits, promote grass cover, and stabilize the streambanks.

Restoration of approximately **85 acres** of upland openings to a grass/forbs/shrub condition would be accomplished through hand cutting, mowing, or burning of encroaching woody vegetation depending on the characteristics of each site. Periodic maintenance and monitoring of each opening would occur.

Watershed Restoration

Under this alternative, existing culverts at **6 sites** would be replaced with culverts of larger diameter and greater length. These culverts would be installed at or slightly below streambed elevation to improve water quality and fish passage. These sites would include an unnamed tributary of Clam Lake at FR 195, and unnamed tributary to East Twin Lake at FR 195, an unnamed tributary to Brush Creek at FR 183, an unnamed tributary to Squaw Creek at FR 354, Brush Creek at FR 354, and an unnamed tributary on County Highway GG (see map in Appendix A). Each site would be designed with a 2:1 embankment ratio and rock armoring at each end of the culverts for erosion control. Additional erosion control measures would include re-vegetation of the sites with native or non-invasive seed, along with the application of weed-free mulch or straw matting and installation of silt fences that would be removed once re-vegetation occurs. In-stream work within Brush Creek and its tributaries would be completed before September 15th or after April 15th to protect trout spawning areas.

The unnamed tributary to the Bad River at FR 355 would also be restored. This would involve removing the twin corrugated metal culverts and approximately 100 feet of FR 355 on either side of the stream.

The road fill would be removed down to floodplain elevation for the approximate width of the floodplain. The stream channel bed and banks would be restored to a natural state, trees transplanted next to the stream where possible, the road sub-grade scarified for re-vegetation, prominent road features blended into the surrounding terrain, and access blocked with boulders, berms, and/or slash. Vehicle turnarounds would be provided on each side of the stream, where the road ends. The stream crossing would be re-stored by removing enough embankment material to obtain the natural stream channel and floodplain width and depth. Erosion control measures for the activities would include seeding with non-invasive species of grasses, applying weed-free straw mulch, installing erosion control mat adjacent to the stream banks, and installing silt fence that could be removed

once the project area is stabilized and re-vegetated. This project would result in the restoration of 1 acre the floodplain.

Trail Management

A parking facility for snowmobile trail users would be constructed on the south side of FR 1296. The parking lot would be approximately 1 acre in size. In addition, relocation of approximately .4 miles of Snowmobile Trail 8 along a segment of County Highway GG (north) and FR 1296 to address safety concerns due to increased traffic would also be done.

2.4 Alternatives Considered but Eliminated from Detailed Study

Federal agencies are required by NEPA to rigorously explore and objectively evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14). Public comments received in response to the Proposed Action provided suggestions for alternative methods for achieving the purpose and need.

The alternatives developed and evaluated in this analysis considered public comments and methods to meet the purpose and need as described in Section 1.2. Therefore, no alternatives have been identified for elimination from detailed study. All five alternatives will be analyzed in this document.

2.5 Summary Comparison of Activities, the Predicted Achievement of the Project Objectives, and the Predicted Environmental Effects of All Alternatives

This section provides a summary of the effects of implementing each alternative. Information in the table is focused on activities and effects where different levels of effects or outputs can be distinguished quantitatively or qualitatively among alternatives.

Table 2.5a. Summary Comparison of activities proposed for all alternatives

Proposed Activity	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt 5
Commercial thinning of even-aged hardwoods (acres)	0	1,331	865	179	722
Commercial thinning of conifers to promote health and vigor (acres)	0	383	383	295	383
Selection harvest for uneven-aged management to develop multi-aged hardwood stands (acres)	0	2,140	2,836	2,710	2448
Improvement cut to move toward uneven-aged condition and increase growth and quality (acres)	0	0	56	966	313
Shelterwood seedtree harvest to obtain natural regeneration (acres)	0	543	197	111	437
Shelterwood removal of overstory to release established regeneration (acres)	0	53	53	53	53
Clearcut mature aspen to maintain aspen component (acres)	0	737	1,381	398	1010
Convert aspen stands to long-lived northern hardwoods or conifers:					
- To improve visual quality along Hwy GG (acres)	0	297	203	236	258
- To improve visual quality along lakeshores with developed recreation facilities (acres)	0	53	76	39	53
- To enhance value of McCarthy Lake and Cedars RNA (acres)	0	48	57	0	0
- To promote continuous-canopy northern hardwoods in large hardwood blocks(ac)	0	93	44	81	93

Proposed Activity	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt 5
- To release spruce component in mixed aspen-spruce stands (acres)	0	30	44	15	30
- To favor hardwood understory on optimal hardwood sites (acres)	0	52	0	89	24
-To promote longer-lived species along trout streams (acres)	0	35	13	22	35
-To restore upland-lowland transition areas to long-lived conifers	0	38	0	58	26
Temporary road construction for access to timber (miles)	0	12.6	16.3	10.5	14.0
Inventoried roads identified for decommissioning (miles)	0	6.5	5.7	11.4	11.4
Road maintenance of existing roads needed for access to timber (miles)	0	22.8	23.3	19.7	23.1
Thinning of red and jack pine to address public health and safety concerns and improve air flow within Day Lake Campground (acres)	0	113	113	25 (to address safety only)	113
Clearcut over-mature jackpine and plant red and white pine along road to Day Lake Boat Ramp and Picnic Area (acres)	0	0	26	26	26
Underplant white pine along shorelines of lakes with developed recreation facilities to enhance visual quality, without disturbing existing overstory (acres)	0	53	29	39	53
Control noxious weeds (no. sites)	0	3	0	3	3
Place brush bundles along McCarthy Creek (linear feet)	0	1,000	1,000	1,000	1,000

Proposed Activity	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt 5
Remove fine debris and tag alder along McCarthy Creek (miles)	0	1.5	1.5	1.5	1.5
Permanent upland opening maintenance (acres)	0	85	126	27	85
Construction of upland openings (acres)	0	0	16	0	0
Culvert replacement and road reshaping for watershed restoration (sites)	0	7	6	6	6
Culvert removal and stream channel and floodplain restoration (sites)	0	0	1	1	1
Construction of parking facility for snowmobilers ?	No	Yes	Yes	Yes	Yes
Relocation of a section of Snowmobile Trail 8 (miles)	0	0.4	0.4	0.4	0.4

Table 2.5b. Summary comparison of effects of all alternatives

Issue	Indicator	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt 5
Issue 1--Early Successional Management	1. Amount of aspen cover type in Goal Area 1	6314 ac 38.5%	6080 ac 37.1%	6119 ac 37.3%	6179 ac 37.7%	6108 ac 37.1%
	2. Amount of aspen cover type in Goal Area 2	2732 ac 20.3%	2320 ac 17.2%	2490 ac 18.5%	2327 ac 17.3%	2359 ac 17.5%
Issue 2--Wildlife Openings	1. Percentage of project area in managed openings	0%	0.3%	0.4%	0.1%	0.3%
	2. Acres of openings maintained	0	85	126	27	85
	3. Acres of new openings constructed	0	0	16	0	0
Issue 3--Vegetation Composition	1. Acres of aspen conversion to conifers or northern hardwoods through silvicultural activities.	0	646	437	540	519
	2. Percent of forest types in Goal Area 1: (Forest Plan DFC)					
	Aspen (35-65%)	38.5%	37.1%	37.3%	37.7%	37.1%
	Conifer (10-20%)	6.5%	7.0%	7.2%	6.8%	7.0%
	N. Hwd (49%)	27.1%	28.1%	27.6%	27.6%	27.6%
	3. Percent of forest types in Goal Area 2: (Forest Plan DFC)					
	Aspen (10-20%)	20.3%	17.2%	18.5%	17.3%	17.4%
Conifer (<48%)	6.8%	7.9%	7.3%	7.6%	7.9%	
N. Hwd (35---75%)	38.0%	39.9%	39.2%	40.2%	39.3%	

Table 2.5b, continued

Issue	Indicator	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt 5
Issue 4-- Fragmentation	Acres of interior habitat (% change)	10,028 (0%)	9,613 (4.1%)	8,977 (10.4%)	9,795 (2.3%)	9,234 (7.9%)
Issue 5--Access	Miles of roads available for public use and/or timber hauling	141.0	134.5	134.3	128.6	128.6
Issue 6--Water Quality	1. Cumulative sediment yield to affected streams above background	123 tons/yr	0 tons/yr	0 tons/yr	0 tons/yr	0 tons/yr
	2. Miles of instream habitat improvement	0	1.5 miles	1.5 miles	1.5 miles	1.5 miles
Issue 7--Noxious weeds	1. Number of flea beetle release sites	0	3 sites	0	3 sites	3 sites
Issue 8--Soils	1. Acres with potential for compaction and rutting	0	212 acres	244 acres	118 acres	232 acres
	2. Acres with potential for erosion and displacement	0	379 acres	538 acres	207 acres	437 acres
Issue 9-- Floodplains and Wetlands	1. Number of sites where floodplain is restored	0	0	1 site	1 site	1 site
Issue 10--Visual Quality	1. Acres treated to improve long-term visual quality objectives.	0	379 acres	308 acres	304 acres	340 acres
Issue 11-- Recreation Facilities and Trails	1. Miles of trail located on Forest Road 1296	0.4 mile	0 miles	0 miles	0 miles	0 miles
	2. Number of sites within area of management activities	0	46 sites	46 sites	12 sites	46 sites

Table 2.5b, continued

Issue	Indicator	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt 5
Issue 12--Social and Economic	1. Amount of volume generated from timber sales	0	23.0 mmbf	28.0 mmbf	20.0 mmbf	25.0 mmbf
	2. Payments to counties, at 25% of estimated gross timber sale receipts	\$0	\$226,124	\$272,036	\$193,192	\$239,732

Table 2.5c. Summary comparison of achievement of project objectives

Project Objectives	Indicator	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt 5
Objective 1	Aspen age class distribution in Goal Area 1:					
	1-20 years	14.7%	23.7%	29.4%	20.1%	27.0%
	21-40 years	26.5%	27.5%	27.4%	27.1%	27.4%
	41-60 years	18.7%	13.3%	12.0%	15.6%	13.0%
	61+ years	40.1%	35.5%	31.2%	37.1%	32.6%
Objective 2	Northern Hardwoods in Goal Area 2:					
	Even-aged	12.8%	22.1%	12.9%	12.1%	17.4%
	Uneven-aged	18.3%	37.1%	48.9%	48.8%	41.9%
Objective 3	1. Acres of continuous, unfragmented mature interior hardwood forest	5,301	5,209	4,933	5,259	5,142
	2. Acres of aspen converted to hardwood type to promote continuous, interior forest conditions	0	93	44	81	93

Project Objectives	Indicator					
		Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt 5
Objective 4	Acres converted to meet Visual Quality Objectives:					
	<u>Aspen type</u>	0	297	203	236	258
	Along Hwy GG	0	29	76	29	29
	Along lakeshores					
Objective 4	<u>All forest types</u>	0	53	29	39	53
	Underplant (no cut)					
Objective 5	Acres of upland openings managed for long-term goal of grass/forb/ shrub cover type	0	85	142	27	85
Objective 6	Acres converted from aspen to other species in the transition area between uplands and lowlands	0	38	0	58	26
Objective 7	1. Acres within Day Lake in hazardous conditions	25	0	0	0	0
	2. Acres managed for large trees to improve site conditions within Day Lake Campground	0	88	88	0	88
Objective 8	Acres of conversion from aspen adjacent to RNA	0	48	57	0	0
Objective 9	Motorized access points to RNA closed to the public	0	1	1	1	1
Objective 10	Number of acres of leafy spurge treated within project area	0	<1 acre	0	<1 acre	<1acre
Objective 11	Miles of instream habitat improvement	0	1.5	1.5	1.5	1.5

Project Objectives	Indicator					
		Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt 5
Objective 12	1. Number of road/stream crossings improved	0	7 sites	7sites	7 sites	7 sites
	2. Number of road/stream crossings where fish passage would be restored	0	2 sites	2 sites	2 sites	2 sites
	3. Acres floodplain or wetland restoration	0	0	1 acre	1 acre	1 acre
Objective 13	Acres of aspen converted to long-lived species through silvicultural activities within 300 feet of Brush and McCarthy Creek	0	35	13	22	35
Objective 14	Miles of trail located on town roads within the project area	1.6	1.2	1.2	1.2	1.2
Objective 15	Miles of decommissioned roads	0	6.5	5.7	11.4	11.4
Objective 16	1. Miles of temporary road construction	0	12.6	16.3	10.5	14.0
	2. Miles of maintenance of existing road for access to conduct resource management activities	0	22.8	23.3	19.7	23.1

2.6 Project Prescriptions, Design Features and Mitigation Measures

Project prescriptions are summarized for each stand in each alternative in the Stand Treatment Table located in Appendix J. The first column of the table provides the compartment and stand number. The second column identifies the current Forest Type present in the stand. The third column contains the total stand acres. The year of origin of the stand is in column 4. The Ecological Land Type Phase (ELTP), as described in the Soils section of Chapter 3 and 4 (3.3.8 and 4.3.8) is listed in column 5. The Vegetative Habitat Type (VHT) for each stand is listed in column 6. The prescribed silvicultural activity is listed in column 7. The acres within the stand proposed for treatment is listed in column 8. The Forest Type that the prescribed treatment should result in, in the future is listed in column 9 (Forest Type Goal). Finally, the design features or mitigation measures that are applicable to each stand are listed in column 10.

Design Features and Mitigation measures have been described in detail and are listed in Appendix C. These features or measures are an integrated part of each of the action alternatives and were developed in response to a specific need or issue identified during the analysis. They protect or enhance certain resources. The first column identifies the condition triggering the feature or mitigation, such as the presence of sensitive species in the timber stand. The 2nd column assigns an identifier to the feature or mitigation, such as E1, for sensitive species feature number 1. The third column gives a description of what the feature or measure entails. Sometimes a reference to where the feature or measure was derived from is also listed, such as the location in the Forest Plan. The remaining columns list the stands or areas where the feature or mitigation is applicable to, by alternative.