

**Habitat Management Plan
for
Three Rivers Wildlife Management Area
2018 - 2027**



Division of Fish and Wildlife
Bureau of Wildlife

1285 Fisher Ave.
Cortland, NY 13045

March 12, 2018



**Department of
Environmental
Conservation**

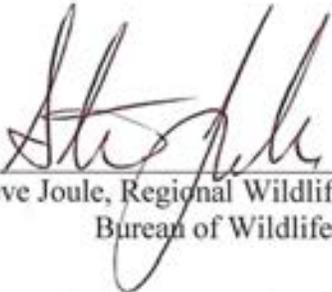
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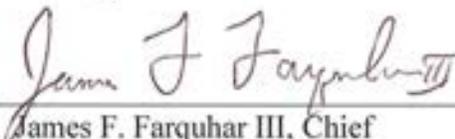
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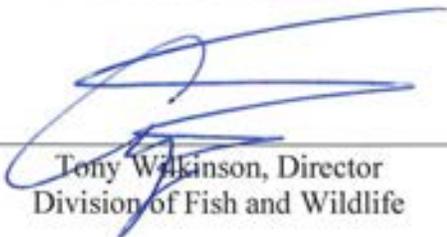
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SUMMARY

The area that is now Three Rivers Wildlife Management Area (WMA) was first settled by Europeans in the late 1700s through the 1800s. During that time, the original forests were cleared for farming and by the early 1900s the land was divided up amongst many landowners. According to a census, by 1880, 98.4% of Onondaga County was occupied by farms.¹ In 1941, with the onset of World War II, the U.S. War Department acquired about 6,500 acres from multiple landowners and utilized the property for manufacturing until 1944.

After the war, the War Assets Administration began the process of salvaging properties that were acquired during the war. As part of this process, the State of New York Conservation Department leased about half of the area under the Federal Burke-Wherry Bill for the purpose of wildlife restoration.² The area became known as Three Rivers Game Management Area—named for its proximity to the junction of the Seneca and Oneida Rivers, which join to form the Oswego River—and was managed as public hunting grounds by the Division of Fish and Game.

New York State then acquired the land in 1947 as a surplus property. During the 1950s, management focused on creating and maintaining habitat for rabbits, pheasants, and waterfowl. The area was also used for research and demonstration, particularly by the New York State College of Forestry. When the property was originally acquired, it was 2,513 acres in size.³ An additional 984 acres was added to the property through the Recreational Bond Act in the 1960s.⁴ Smaller acquisitions since 1970 have increased the size of the property to its present day total of 3,597 acres.

This WMA has been identified as a Bird Conservation Area (BCA).⁵ This designation can be attributed to the WMA's mixture of grassland, shrubland, wetland, and forest habitats that supports a diversity of early successional grassland and shrubland bird species. Three Rivers WMA has undergone a series of changes since its original acquisition as land uses of the property and the surrounding landscape have evolved, but it has always been an important area for migratory waterfowl and shorebirds, a host of breeding grassland species, and breeding amphibian species. The area continues to be popular place for people to hunt upland game birds like ruffed grouse, American woodcock, and wild turkey and the habitat improvement projects planned for the next ten years will help to increase habitat for game and non-game species alike.

Habitat management goals for Three Rivers WMA include:

- Maintain the WMA's intermediate and mature forested acreage at approximately 45% to continue to provide habitat diversity for forest species.

¹ Hutton, F.Z. and C.E. Rice. 1977. Soil Survey of Onondaga County, NY. USDA.

² Taormina, A.S. 1949. Basic Reconnaissance of the Habitats and Vertebrate Fauna of the Three Rivers Wildlife Management Area. M.S. Thesis. NY State College of Forestry at Syracuse University.

³ Three Rivers Wildlife Management Area Source Book. NYS DEC Cortland Sub-Office, 1285 Fisher Ave, Cortland, NY.

⁴ Three Rivers Wildlife Management Area Management Plan. 1970. NYS DEC, Division of Fish and Wildlife, Bureau of Wildlife, Region 3.

⁵ Information about the Bird Conservation Area available online at: <http://www.dec.ny.gov/animals/32035.html>.

- Manage approximately 10% of the WMA as young forest (18% of the total forested area) within the next ten years to improve habitat for American woodcock, ruffed grouse, and wild turkey.
- Manage 5% of the WMA as shrubland habitat to provide habitat for shrubland obligate species.
- Maintain the WMA's grassland at approximately 17% to continue to provide habitat diversity for grassland species.
- Maintain the remaining 23% of the WMA as wetlands, open water, and roads.
- Provide habitat for a variety of wildlife species and permit wildlife-dependent recreational uses compatible with wildlife.
- Establish a demonstration area to show types of forest and habitat management practices that are planned to be utilized on the WMA.

I. BACKGROUND AND INTRODUCTION

PURPOSE OF HABITAT MANAGEMENT PLANS

BACKGROUND

Active management of habitats to benefit wildlife populations is a fundamental concept of wildlife biology, and has been an important component of wildlife management in New York for decades. Beginning in 2015, NYS Department of Environmental Conservation (DEC) Division of Fish and Wildlife (DFW) initiated a holistic planning process for wildlife habitat management projects. Habitat Management Plans (HMPs) are being developed for WMAs and other properties administered by DFW Bureau of Wildlife, including select Multiple Use and Unique Areas. The goal of HMPs is to guide habitat management decision-making on those areas to benefit wildlife and facilitate wildlife-dependent recreation. HMPs guide management for a ten-year time period, after which the plans and progress on implementation will be assessed and HMPs will be modified as needed.

HMPs serve as the overarching guidance for habitat management on WMAs. These plans incorporate management recommendations from Unit Management Plans (UMPs), existing WMA habitat management guidelines, NY Natural Heritage Program's WMA Biodiversity Inventory Reports, Bird Conservation Area guidelines, and other documents available for individual WMAs.

SCOPE AND INTENT

Primary purposes of this document:

- Provide the overall context of the habitat on the WMA and identify the target species for management;

- Identify habitat goals for WMA-specific target species, contemplating juxtaposition of all habitat types to guide the conservation and management of sensitive or unique species or ecological communities;
- Identify acreage-specific habitat goals for the WMA to guide management actions;
- Provide specific habitat management prescriptions that incorporate accepted best management practices;
- Establish a forest management plan to meet and maintain acreage goals for various forest successional stages;
- Address management limitations such as access challenges (e.g., topography); and
- Provide the foundation for evaluating the effectiveness of habitat management.

Within the next five years, this HMP will be integrated into a comprehensive WMA Management Plan that will include management provisions for facilitating compatible wildlife-dependent recreation, access, and facility development and maintenance.

Definitions are provided in Appendix A.

The effects of climate change and the need to facilitate wildlife adaptation under expected future conditions will be incorporated into the habitat management planning process and will be included in any actions that are recommended in the HMPs. For example, these may include concerns about invasive species, anticipated changes in stream hydrology, and the desirability for maintaining connectedness on and permeability of the landscape for species range adjustments.

This plan and the habitat management it recommends will be in compliance with the State Environmental Quality Review Act (SEQRA), 6NYCRR Part 617. See Appendix B. The recommended habitat management also requires review and authorization under the Endangered Species Act (ESA), National Environmental Policy Act (NEPA), and State Historic Preservation Act (SHPA), prior to implementation.

WMA OVERVIEW

LOCATION

Three Rivers WMA is located in DEC Region 7, Town of Lysander, Onondaga County (Figure 1).

TOTAL AREA

3,597 acres

HABITAT INVENTORY

A habitat inventory of the WMA was completed in 2017 and is proposed to be updated every ten to fifteen years to document the existing acreage of each habitat type and to help determine the location and extent of future management actions. Table 1 summarizes the current acreage by habitat type and the desired acreage after management. Desired conditions were determined with

consideration of habitat requirements of targeted wildlife, current conditions on the WMA, and conditions in the surrounding landscape (see Landscape Context section below).

Table 1. Summary of current and desired habitat acreage on Three Rivers WMA.

| Habitat Type | Current Conditions | | | Desired Conditions | |
|--|--------------------|----------------|-------|--------------------|------------------------------|
| | Acres | Percent of WMA | Miles | Acres | Percent of WMA |
| Forest ^a | 1,880 | 52% | | 1,604 | ^b Decrease to 45% |
| Young forest | 77 | 2% | | 350 | Increase to 10% |
| Shrubland | 166 | 5% | | 169 | Slight increase, still at 5% |
| Grassland | 602 | 17% | | 602 | No change |
| Agricultural land | 87 | 2% | | 87 | No change |
| Wetland (natural) ^c | 468 | 13% | | 468 | No change |
| Wetland (impounded) ^c | 113 | 3% | | 113 | No change |
| Open water | 64 | 2% | | 64 | No change |
| Other (parking lot, utility ROW, developed facilities) | 67 | 2% | | 67 | No change |
| Roads | 73 | 2% | 14 | 73 | No change |
| Rivers and streams | | | 20 | | No change |
| Total Acres: | 3,597 | 100% | | 3,597 | |

^a Forest acreage includes all mature and intermediate age classes of natural forest, plantations, and forested wetlands. Young forest is reported separately. Definitions are provided in the Forest section of this plan.

^b The forest management proposed in this plan aims to replace poor quality forest, promote regeneration of native species, and establish a healthy mature forest for the future. See Landscape Context and Forest sections.

^c Wetland acreage does not include forested wetlands, since they are included in the Forest category.

ECOLOGICAL RESOURCES

Wildlife Overview:

Three Rivers WMA contains a mixture of intermediate and mature forest, grassland, wetland, and shrubland with some young forest. Wildlife present on the WMA is typical of these central New York cover types and includes:

- Beaver, mink, muskrat
- Bobolink, blue-winged warbler, northern harrier, bald eagle
- White-tailed deer, cottontail rabbit
- American woodcock, ruffed grouse, wild turkey
- Common ribbonsnake, Jefferson salamander, snapping turtle

Wildlife and Plant Species of Conservation Concern:

The following federal or state listed Endangered (E), Threatened (T), or Special Concern (SC) species and/or Species of Greatest Conservation Need (SGCN) may occur on the WMA (Table 2).⁶ SGCN listed below include species that have been documented on or within the vicinity of

⁶ The 2015 New York State Wildlife Action Plan identifies 366 Species of Greatest Conservation Need (SGCN) including 167 High Priority SGCN. Available online at <http://www.dec.ny.gov/animals/7179.html>.

the WMA that are likely to occur in suitable habitat on the WMA. Other SGCN may also be present on the WMA. Data sources include: the NY Natural Heritage Program, NY Breeding Bird Atlases,⁷ NY Reptile and Amphibian Atlas,⁸ DEC wildlife surveys and monitoring, and eBird.⁹

Table 2. Species of conservation concern that may be present on Three Rivers WMA, including state and federal Endangered (E) and Threatened (T) species, state Species of Special Concern (SC), High Priority SGCN (HP), and SGCN (x).

| Species Group | Species | Federal Status | NY Status | NY SGCN |
|---------------|-----------------------------|----------------|-----------|---------|
| Birds | American bittern | | SC | X |
| | American black duck | | | HP |
| | American kestrel | | | X |
| | American woodcock | | | X |
| | Bald eagle | | T | X |
| | Bay-breasted warbler | | | HP |
| | Black-billed cuckoo | | | X |
| | Black-crowned night-heron | | | X |
| | Black-throated blue warbler | | | X |
| | Blue-winged teal | | | X |
| | Blue-winged warbler | | | X |
| | Bobolink | | | HP |
| | Brown thrasher | | | HP |
| | Canada warbler | | | HP |
| | Cerulean warbler | | SC | X |
| | Common nighthawk | | SC | HP |
| | Common tern | | T | X |
| | Cooper's hawk | | SC | |
| | Eastern meadowlark | | | HP |
| | Eastern whip-poor-will | | SC | HP |
| | Golden-winged warbler | | SC | HP |
| | Grasshopper sparrow | | SC | HP |
| | Great egret | | | X |
| | Greater yellowlegs | | | X |
| | Henslow's sparrow | | T | HP |
| | Horned lark | | SC | HP |
| | Least bittern | | T | X |
| | Long-eared owl | | | X |
| | Louisiana waterthrush | | | X |
| | Northern goshawk | | SC | X |
| | Northern harrier | | T | X |
| | Northern pintail | | | X |
| | Olive-sided flycatcher | | | HP |
| Osprey | | | SC | |

⁷ Available online at <http://www.dec.ny.gov/animals/7312.html>.

⁸ Available online at <http://www.dec.ny.gov/animals/7140.html>.

⁹ Available online at <http://ebird.org/content/ebird/about/>. © Audubon and Cornell Lab of Ornithology.

Table 2. Continued

| Species Group | Species | Federal Status | NY Status | NY SGCN |
|-------------------------|---------------------------------------|----------------|-----------|---------|
| | Peregrine falcon | | E | X |
| | Pied-billed grebe | | T | X |
| | Prairie warbler | | | X |
| | Red-headed woodpecker | | SC | HP |
| | Red-shouldered hawk | | SC | X |
| | Ruffed grouse | | | X |
| | Rusty blackbird | | | HP |
| | Scarlet tanager | | | X |
| | Sedge wren | | T | HP |
| | Sharp-shinned hawk | | SC | |
| | Upland sandpiper | | T | HP |
| | Vesper sparrow | | SC | HP |
| | Wood thrush | | | X |
| | Yellow-breasted chat | | SC | HP |
| | | | | |
| Mammals | Eastern red bat | | | X |
| | Hoary bat | | | X |
| | Indiana bat (myotis) | E | E | HP |
| | Little brown bat (myotis) | | | HP |
| | Northern long-eared bat (myotis) | T | T | HP |
| | Silver-haired bat | | | X |
| | Small-footed bat (myotis) | | SC | X |
| | Tri-colored bat (eastern pipistrelle) | | | HP |
| | | | | |
| Amphibians and reptiles | Common ribbonsnake | | | HP |
| | Four-toed salamander | | | HP |
| | Jefferson salamander | | SC | |
| | Smooth greensnake | | | X |
| | Snapping turtle | | | X |
| | Wood turtle | | SC | HP |
| | | | | |
| Fish | None known | | | |
| | | | | |
| Invertebrates | None known | | | |
| | | | | |
| Plants | None known | | | |

Significant Ecological Communities:

The NY Natural Heritage Program has identified a rare and significant natural community at Three Rivers WMA. The state rank reflects the rarity within NY, ranging from S1, considered the rarest, to S5, considered stable; definitions are provided in Appendix A. The following

significant ecological community occurs on the WMA; community description is from *Ecological Communities of New York State, Second Edition*¹⁰ (Figure 2):

- **Silver maple-ash swamp (S2)** – a hardwood swamp that occurs along rivers, lakeshores, and in poorly-drained depressions.

Additional information about significant ecological communities is available in the Three Rivers WMA Biodiversity Inventory Final Report (1996) prepared by the NY Natural Heritage Program.

Special Management Zones:

Special Management Zones (SMZs) are areas adjacent to wetlands, perennial and intermittent streams, vernal pool depressions, spring seeps, ponds and lakes, recreational trails, and other land features requiring special consideration. SMZs on Three Rivers WMA include:

- 5 wetlands regulated by Article 24 of the Environmental Conservation Law and several additional wetlands shown on the National Wetlands Inventory (NWI; Figure 3). Each state-regulated wetland is protected by a buffer zone of 100 feet from the delineated wetland boundary, known as the adjacent area. There may be forestry prescriptions associated with forested wetlands and adjacent areas, and each management prescription will be reviewed individually for determination of impacts.
- 12 streams (a watercourse entirely within the WMA) or segments of streams (a stream that meanders in and out of the WMA). The highest stream classification is C.¹¹

Guidelines for habitat management projects within these areas are outlined in the Division of Lands and Forests *Rules for Establishment of Special Management Zones on State Forests and Wildlife Management Areas*.¹² Some habitat management activities may either be prohibited or restricted in order to protect these features. Any deviations from these guidelines will be addressed in the individual stand prescriptions.

LANDSCAPE CONTEXT

The goals of this HMP have been developed with consideration of surrounding landscape features, the availability of habitats, and other conservation lands adjacent to Three Rivers WMA (Figures 4 and 5). The landscape within a three-mile radius of the WMA is primarily privately-owned land including:

- Forest (23%)
- Agriculture (31% combining cultivated crops and hay)
- Early successional (6% combining grasslands and shrublands)
- Wetlands (22% combining open water, emergent and woody wetlands)
- Developed areas (18%)

¹⁰ Edinger, G. J., D. J. Evans, S. Gebauer, T. G. Howard, D. M. Hunt, and A. M. Olivero. 2014. Ecological Communities of New York State, Second Edition. New York Natural Heritage Program, NYS Department of Environmental Conservation, Albany, NY. Available online at <http://www.dec.ny.gov/animals/97703.html>.

¹¹ Information about stream classification is available online at <http://www.dec.ny.gov/permits/6042.html>.

¹² Available online at <http://www.dec.ny.gov/outdoor/104218.html>.

Within the area surrounding Three Rivers WMA are multiple government-owned properties including Canal Lands (282 acres), Peter Scott Swamp WMA (403 acres), DEC fishing access (19 acres), Town of Schroepfel Community Park (34 acres), Beaver Lake County Park (548 acres), Lysander Town Park (47 acres), Kimbrook Park (11 acres), and Community Park (40 acres).

The surrounding area is a mix of forest, agriculture, wetlands, and developed areas with only a minor component of early successional cover. Although some of the early successional habitat surrounding the WMA and on nearby public lands may be considered young forest, it is likely not managed and maintained as such. As part of DFW's Young Forest Initiative (YFI) on WMAs, future habitat management for Three Rivers WMA will enhance young forest habitat on the WMA. The YFI goal of creating and maintaining at least 10% of the forested area as young forest will provide managed and maintained young forest habitat that is currently lacking both within the WMA and the surrounding landscape.

County and town parks are managed for recreation and likely contain little or no young forest, and canal lands may incidentally have some young forest but are not managed for such habitat. Peter Scott Swamp WMA is predominantly a forested wetland property that is not included in the YFI program due to a lack of access to the forested areas. The fishing access site is managed by DEC Bureau of Fisheries as undeveloped access; it does not contain young forest and is not included in the YFI program. By creating and maintaining young forest at Three Rivers WMA, we will ensure the availability of habitat for young forest dependent species at the landscape level.

II. MANAGEMENT STRATEGIES BY HABITAT TYPE

DEC will continue active management of wildlife habitats on Three Rivers WMA to provide the following benefits:

- Maintain habitat characteristics that will benefit wildlife abundance and diversity within the New York landscape.
- Promote Best Management Practices for targeted wildlife and habitats.
- Provide opportunities for wildlife-dependent recreation such as trapping, hunting, and bird watching compatible with the ongoing habitat management practices and species management considerations.
- Improve habitat quality by reducing/eliminating invasive species.

FOREST

Forested acreage includes the following forest types:

Natural forest: naturally forested acres, including hardwoods and softwoods. Includes any upland forested acreage that is not young forest, i.e., pole stands, other intermediate forest age classes, mature forest, and old growth forest.

Plantation: planted forested acres, generally planted in rows dominated by one or two species.

Forested wetland: wetland acres where forest or shrub vegetation accounts for greater than 50% of hydrophytic vegetative cover and the soil or substrate is periodically saturated or covered with water.

Young forest: young or regenerating forested acres, which are typically aged 0-10 years since a disturbance or regeneration cut, depending upon the site conditions. May include both natural forest and plantations.

Young forest (forested wetland): young, regenerating forested wetland acres.



Aspen regeneration cut on Three Rivers WMA.

Photo: Bonnie Parton, DEC

Forest management on Three Rivers WMA incorporates an approach to create and/or maintain the diversity of forest age classes that are required to support a diversity of wildlife. In 2015, DEC launched the YFI to increase the amount of young forest on WMAs to benefit wildlife that require this transitional, disturbance-dependent habitat.¹³ One of the goals of the program is to create a minimum of 10% of the WMA's forested habitat as young forest habitat and maintain that level in perpetuity on each WMA included in the program.

MANAGEMENT OBJECTIVES

- Maintain the WMA's intermediate and mature forested acreage at approximately 45% (1,603 acres) to continue to provide habitat diversity for forest species.
- Increase young forest cover from 77 acres (4% of the total forested area) to 350 acres (18% of the total forested area; 10% of the WMA) over the next ten years to improve habitat for young forest-dependent species.
- Convert approximately 3 acres of existing forest into shrubland for the benefit of shrubland obligate species.

The long-term management direction for Three Rivers WMA is to substantially increase the early successional habitats on the property to improve habitat for American woodcock, ruffed grouse, wild turkey, and other young forest-dependent species. The proposed new young forest will be created through the conversion of intermediate and mature hardwood forest as well as some mature softwood plantations. Approximately one-third of the acres proposed for conversion to young forest will target aspen regeneration as the main component of the young forest. Young aspen stands provide much needed habitat for early successional species, particularly ruffed grouse. Young forest will mostly be created in patches distributed over the entire WMA. Combined with retained and healthy intermediate and mature forest stands, extensive grasslands, food plots, and shrublands distributed through the property, many species of songbirds, upland game birds, large and small mammals, reptiles, and amphibians will all be able to utilize the WMA to a greater extent.

¹³ Additional information about DEC's Young Forest Initiative and the YFI Strategic Plan is available online at <http://www.dec.ny.gov/outdoor/104218.html>.

DESCRIPTION OF EXISTING FOREST HABITAT AND TARGET SPECIES

As shown on Table 1, 54% of the total area of Three Rivers WMA is forested (1,957 acres). Of this habitat type, approximately 67% is natural forest, 6% is plantation, 23% is forested wetland, and 4% is young forest (Table 3). Compared to the surrounding landscape, Three Rivers WMA has more forested habitat (Figures 6 and 7).

Table 3. Summary of the acreage and dominant overstory species for each forest type present on Three Rivers WMA.

| Forest Type | Acres (as of 2017) | Desired Acres | Overstory species |
|--------------------------------------|---------------------------|----------------------|-------------------------------------|
| Natural forest (mature/intermediate) | 1,315 | 1,084 | Red maple, white ash, aspen |
| Plantation | 117 | 86 | White pine, red pine, Norway spruce |
| Forested wetland | 448 | 436 | Red maple, ash, aspen |
| Young forest | 54 | 316 | |
| Young forest (forested wetland) | 23 | 35 | |
| Total Forested Acres: | 1,957 | 1,957 | |

Three Rivers WMA includes several different soils series such as the Niagra-Canadaigua, Minoa-Lamson-Galen-Arkport, Massen-Madrid-Bombay and Williamson-Valois-Canaseraga series. Soils included in these series are typically very deep. Drainage is highly variable from very well to very poor and this variability directly effects the variability of the forest structure and regeneration potential.¹⁴

Target species for young forest include American woodcock, ruffed grouse and wild turkey. These species rely on a mixture of mature and young forest habitats and by providing such variety through timber management, we can create a landscape that meets the following requirements:

- American woodcock:
 - Singing/peenting ground – Open areas from 1 to >100 acres, usually in an abandoned field.
 - Daytime areas – Moist, rich soils with dense overhead cover of young alders, aspen or birch.
 - Nesting – Young, open, second growth woodlands.
 - Brood rearing – Similar to nesting except also including bare ground and dense ground cover.



American woodcock

Photo: Bonnie Parton, DEC

¹⁴ Soil classification information available from: US Department of Agriculture, Natural Resources Conservation Service. Available online at <http://www.nrcs.usda.gov/wps/portal/nrcs/surveylist/soils/survey/state/?stateId=NY>.

- Roosting – Open fields (minimum of 5 acres) and reverting farm fields.¹⁵
- Ruffed grouse:
 - Drumming areas – Downed trees surrounded by small diameter woody cover.
 - Foraging areas – Open areas with dense overhead cover of young forest with good mast production.
 - Nesting – Young, open forest stands or second growth woodlands.
 - Brood rearing – Herbaceous ground cover with high midstory stem density.^{16, 17}
- Wild turkey:
 - Foraging areas – Mast producing hardwood stands and open areas.
 - Nesting – Hardwood or mixed-forest, brushy areas, old fields, downed trees.
 - Roosting – Large stands of open-crowned, mature timber.
 - Brood rearing – Open riparian areas, forest openings, herbaceous cover.¹⁸

MANAGEMENT HISTORY

When DEC acquired the property in 1947, much of Three Rivers WMA was devoid of trees due to previous farming and the use of the property by the U.S. War Department. In 1950, a development plan was written for Three Rivers WMA to guide habitat management practices and provide quality habitat for various waterfowl, ruffed grouse, cottontail rabbits, pheasants and white-tailed deer.¹⁹ In addition to recommendations for grassland, agricultural and wetland habitats, the plan called for planting conifer trees for food and winter cover for wildlife and selective logging to improve the remaining forest stands. Between 1950 and 1962, over fifty thousand conifer trees and shrubs were planted across the property, however it wasn't until 1973 that the first sale of timber products was recorded (Tables 4 and 5).

Table 4. Summary of forest management previously conducted on Three Rivers WMA.

| Date of Sale | # of Sales | Acres Treated^a |
|---------------------|-------------------|----------------------------------|
| 1970-79 | 252 | |
| 1980-89 | 11 | |
| 1990-99 | 31 | 22 |
| 2000-09 | 8 | |
| 2010-17 | 11 | 168 |
| Total: | 313 | >190 |

^a Acres were not recorded for all local timber sales prior to 2010.

The acres treated column in Table 4 does not reflect the acreage from most of the smaller timber sales (generally sales valued at <\$10,000) due to the fact that acres were not recorded for all local sales prior to 2010. That is likely due to a combination of record keeping practices at the time, those sales treated small portions of larger forest stands, and most of the smaller timber

¹⁵ US Department of Agriculture, Natural Resources Conservation Service. 2010. American Woodcock: Habitat Best Management Practices for the Northeast by Scot J. Williamson. Wildlife Insight. Washington, DC.

¹⁶ Dessecker, D.R, G.W. Norman, and S.J. Williamson. 2006. Ruffed Grouse Conservation Plan. Association of Fish & Wildlife Agencies: Resident Game Bird Working Group. 94 pp.

¹⁷ Jones, B.C. et al. Habitat Management of Pennsylvania Ruffed Grouse. Pennsylvania Game Commission. 10 pp.

¹⁸ US Department of Agriculture, Natural Resources Conservation Service. 1999. Wild Turkey. Wildlife Habitat Management Institute. 12 pp.

¹⁹ Development Plan, Three Rivers Game Management Area. 1950. NYS DEC Cortland Sub-Office, Cortland, NY.

sales involved small volumes of forest products. A more in-depth discussion of the forest products sold from Three Rivers WMA follows in Table 5.

Table 5. Summary of forest products sold from Three Rivers WMA.

| Date of Sale | Hay (Acres) | Maple Taps | Firewood (cords) | Myrtle (sq. ft.) | Pulpwood (tons) | Cabin Logs/ Red Pine Poles | Sawtimber, Thousands of Board Feet (MBF) | Value (\$) ^a |
|---------------|-------------|------------|------------------|------------------|-----------------|----------------------------|--|-------------------------|
| 1970-79 | 14 | | 1,714 | | | 400 | | 4,885.50 |
| 1980-89 | | | 220 | | | | 3.3 | 1,826.54 |
| 1990-99 | | 154 | 312.2 | 15 | | | 126.8 | 17,660.60 |
| 2000-09 | | | 85 | | | | | 1,020.00 |
| 2010-17 | | | 2,482 | | 433 | | 694.1 | 68,427.00 |
| Totals | 14 | 154 | 4,813.2 | 15 | 433 | 400 | 824.2 | 93,819.64 |

^a Value has not been adjusted to reflect inflation.

The 1970s saw the largest number of timber sales in the recorded history, however those sales were almost exclusively firewood sold mostly between one to ten cords at a time. During that same time period there were two sales of cabin logs/red pine poles and two sales of hay. Since the 1970s, softwood (such as pine and spruce) has been sold as either sawtimber or pulpwood.

From 1980-89 the number of timber sales sharply dropped off with only an average of one or two sales each year (that average trend has continued up to the present day). Firewood was still the most common product sold, but this time period also saw the first recorded sale of sawtimber in 1989.

The 1990s saw the first significant sales of sawtimber. This is likely due to the fact that, since the property was largely devoid of trees when DEC acquired the property, it had taken those 40+ years for the acreage of forest and the age of the trees to increase to the point of being able to make a sawtimber harvest feasible. While other products such as maple taps (to harvest sap to make maple syrup) and myrtle were sold during this time, they appear to have been one-time sales that have not occurred before or since.

Due to limited staffing and a high demand for forest management on WMAs throughout Region 7, from 2000-09 there was very little harvesting at Three Rivers WMA. Only eight small sales were done to account for the 85 cords of firewood sold in that time period.

From 2010 to the present, there was one small sale of hay but the most significant trend is the increase in the amount of other forest products sold (firewood, pulpwood and sawtimber). The seven sales in this time period focused on removing specific hedgerows while reducing the heights of other hedgerows and increasing their widths. Additionally, ‘islands’ of trees were removed from specific grassland areas in order to improve that habitat for ground-nesting birds. Patch clear cuts in softwood plantations were also initiated in order to create young forest and to promote the regeneration of select softwood species.

IMPLEMENTATION PLAN AND ANTICIPATED SCHEDULE

The following management is proposed to reach the goals of 350 acres of young forest and 169 acres of shrubland within ten years. As part of these goals, 273 acres of new young forest and 3 acres of new shrubland will be created. In addition, 107 acres are also identified for intermediate treatments including thinning, mast tree release, and apple tree release. Achieving this proposed level of management is subject to: changing timber markets, concerns over rare, threatened, or endangered species, cultural/historical features on the property, wet ground conditions, or changes in levels of staff and funding support.

- **Management planned for 2018-2022** (Table 6, Figures 6-7):
 - **Stands A44 and B35:** These are pioneer hardwood stands with a mix of red maple, aspen, and white ash that will be patch clearcut to create young forest and to encourage the regeneration of aspen (30 acres).
 - **Stand B30:** This is a pioneer hardwood stand with a mix of red maple, aspen, and white ash that will be clearcut to create young forest and encourage the regeneration of aspen (6 acres).
 - **Stand E53:** This is a pioneer hardwood stand with a mix of red maple, white ash, and black cherry that will be patch clearcut to create young forest (5 acres).
 - **Stand E54:** This is a pioneer hardwood stand with a mix of white ash, red maple, and black cherry that will be clearcut to create shrubland habitat. Natural regeneration may be supplemented with planting if necessary (3 acres).
 - **Stands B40 and C39:** These are pioneer hardwood stands with a mix of red maple, white ash, and yellow birch that will be clearcut to create young forest (4 acres).
 - **Stands D39 and D44:** Stand D39 is a softwood plantation with a mix of red pine, scotch pine, and red maple and stand D44 is a red pine plantation. These plantations will be clearcut to create young forest. Supplemental plantings may be used to encourage regeneration of specific target species if natural regeneration is not sufficient (20 acres).
 - **Stands D43, E59, and E69:** These are pioneer hardwoods with a mix of yellow poplar, red maple, white ash, and black cherry as well as a northern hardwood-oak stand with a mix of red maple, red oak, and white pine. These stands will be seed tree cut to create young forest (32 acres).
 - **Stands C36 and C37:** Stand C36 is a white pine plantation with scattered black cherry and sugar maple, and stand C37 is a northern hardwood-white pine stand with a mix of white pine, red maple, and eastern hemlock. These stands will be shelterwood cut to encourage desirable regeneration. When desirable regeneration is sufficient, a secondary treatment will be to remove the overstory to create young forest (10 acres).
 - **Stands D45, D46, E45, and E46:** Stands D45 and E46 are northern hardwood-oak stands with a mix of red maple, red oak, yellow poplar, white ash, and some aspen. Stand D46 is a pioneer hardwood stand with a mix of red maple, yellow poplar, and white ash. Stand E45 is a northern hardwood stand with a mix of white ash, red maple, and black cherry. These stands will be thinned to remove low quality trees to give the higher quality trees more room to grow and maintain the health of the forest and to provide food sources for wildlife. The thinning will maintain the stands as intermediate-mature aged forest (51 acres).

- **Stands C64.2, D6.2 and D9.2:** These are seedling/sapling openings that were patch cut in 2015. A prescribed fire has been identified for these areas to reduce the duff layer, promote nutrient cycling, and promote the regeneration of native softwood species (13 acres).
- **Management planned for 2023-2027** (Table 7, Figures 6-7):
 - **Stand A37.1:** This is a seedling/sapling stand with a mix of red maple, aspen, and scattered apple trees. This stand will be forestry mowed to maintain young forest habitat and apple trees will be released to provide them with more sunlight so they can continue to produce apples for wildlife forage (4 acres).
 - **Stand A55.1:** This is a northern hardwood stand with a mix of white ash, aspen, and sugar maple that will be clearcut to create young forest (11 acres).
 - **Stands B22 and E34:** Stand B22 is a pioneer hardwood stand with a mix of white ash, red maple, and elm. Stand E34 is a softwood plantation with a mix of white pine, Norway spruce, and white ash. These stands will be clearcut to create young forest (6 acres).
 - **Stands B23, B24, B26, C55, and E35:** These are pioneer hardwoods with a mix of aspen, red maple, white ash, and some black cherry. These stands will be clearcut to create young forest and encourage the regeneration of aspen (22 acres).
 - **Stands D13 and E27:** These are pioneer hardwoods with a mix of red maple, white ash, and aspen. These stands will be patch clearcut to create young forest and encourage the regeneration of aspen (22 acres).
 - **Stands D16, E19, and E37:** These are pioneer hardwoods with a mix of red maple, yellow birch, American beech, white ash, and some sugar maple. These stands will be patch clearcut to create young forest (35 acres).
 - **Stands E18 and E70:** Stand E18 is northern hardwood with a mix of sugar maple, white ash, and red maple. Stand E70 is pioneer hardwood with a mix of red maple, bitternut hickory, and blue beech. These stands will be seed tree cut to create young forest (14 acres).
 - **Stands C13, C34, C54, and D3:** Stands C13, C54, and D3 are northern hardwood-white pine with a mix of white pine, red maple, white ash, black cherry, and white oak. Stand C34 is a white pine plantation with a mix of white pine, red maple, and black cherry. These stands will be shelterwood cut to encourage desirable regeneration. When desirable regeneration is sufficient, a secondary treatment will be to remove the overstory to create young forest (49 acres).
 - **Stands C9, C10, C12, C49, C51, D2, and E15:** Stand C9 is a softwood plantation with a mix of red pine, white pine, and red oak. Stands C10 and C12 are northern hardwood-oak stands with a mix of red oak, red maple, American beech, and yellow poplar. Stands C49, D2, and E15 are northern hardwoods with a mix of red maple, sugar maple, yellow poplar, basswood, yellow birch, black gum, and some aspen. Stand C51 is northern hardwood-white pine with a mix of red maple, black cherry, and white pine. These stands will be thinned to remove low quality trees to give the higher quality trees more room to grow and maintain the health of the forest. The thinning will maintain the stands as intermediate-mature aged forest (38 acres).

- **Stand C7:** This is a pioneer hardwood stand with a mix of red maple, white oak, and red oak. Oak trees will be released by removing surrounding competing trees to allow more room for growth and the potential to produce more mast for wildlife (4 acres).
- **Stand E36:** This is a pioneer hardwood stand with a mix of white ash, red maple, aspen, and apple trees. This stand will be clearcut to create young forest and release apple trees to provide them with more sunlight so they can continue to produce apples for wildlife forage (8 acres).

In Tables 6 and 7, the total acres of each stand is listed in the ‘Acres’ column. In this plan the entire area of each stand is planned to be treated unless otherwise noted under ‘Treatment Type’ column. For example, stand A44 has a total size of 21 acres but we only plan to treat 10 acres during this plan period.

Table 6. Forest management schedule for the first five-year period of this HMP (2018-2022).

| Stand | Acres | Size Class | Forest Type | | Management Direction | Treatment Type |
|-------|-------|------------------------------------|---|--|----------------------|--|
| | | | Current | Future | | |
| A44 | 21 | Pole Timber 6”-11” DBH | Natural Forest: Pioneer Hardwood | Natural Forest: Pioneer Hardwood Natural Forest: Seedling/Sapling | Even Aged | Aspen Regeneration Patch Clearcut (10 acres) |
| B30 | 6 | Pole Timber 6”-11” DBH | Natural Forest: Pioneer Hardwood | Natural Forest: Seedling/Sapling | Even Aged | Aspen Regeneration Clearcut |
| B35 | 27 | Small Sawtimber 12”-18” DBH | Natural Forest: Pioneer Hardwood | Natural Forest: Pioneer Hardwood Natural Forest: Seedling/Sapling | Even Aged | Aspen Regeneration Patch Clearcut (20 acres) |
| B40 | 2 | Pole Timber 6”-11” DBH | Natural Forest: Pioneer Hardwood | Natural Forest: Seedling/Sapling | Even Aged | Clearcut |
| C36 | 5 | Medium Sawtimber 19”-25” DBH | Plantation: White Pine | Natural Forest: Seedling/Sapling | Even Aged | Shelterwood |
| C37 | 5 | Small Sawtimber 12”-18” DBH | Natural Forest: Northern Hardwood-White Pine | Natural Forest: Seedling/Sapling | Even Aged | Shelterwood |
| C39 | 2 | Pole Timber 6”-11” DBH | Forested Wetland: Pioneer Hardwood | Forested Wetland: Seedling/Sapling | Even Aged | Clearcut |
| C64.2 | 2 | Seedling/ Sapling | Natural Forest Seedling/Sapling | Natural Forest Seedling/Sapling | Even Aged | Prescribed Fire |
| D6.2 | 3 | Seedling/ Sapling | Natural Forest Seedling/Sapling | Natural Forest Seedling/Sapling | Even Aged | Prescribed Fire |

Table 6. Continued

| Stand | Acres | Size Class | Forest Type | | Management Direction | Treatment Type |
|-------|-------|-----------------------------|--|--|----------------------|--------------------------|
| | | | Current | Future | | |
| D9.2 | 8 | Seedling/Sapling | Natural Forest Seedling/Sapling | Natural Forest Seedling/Sapling | Even Aged | Prescribed Fire |
| D39 | 17 | Pole Timber 6"-11" DBH | Plantation: Red Pine | Natural Forest: Seedling/Sapling | Even Aged | Clearcut |
| D43 | 6 | Small Sawtimber 12"-18" DBH | Natural Forest: Pioneer Hardwood | Natural Forest: Seedling/Sapling | Even Aged | Seed Tree |
| D44 | 3 | Small Sawtimber 12"-18" DBH | Plantation: Red Pine | Natural Forest: Seedling/Sapling | Even Aged | Clearcut |
| D45 | 8 | Small Sawtimber 12"-18" DBH | Natural Forest: Transition Hard (NH-Oak) | Natural Forest: Transition Hard (NH-Oak) | Uneven Aged | Thinning |
| D46 | 11 | Small Sawtimber 12"-18" DBH | Natural Forest: Pioneer Hardwood | Natural Forest: Pioneer Hardwood | Uneven Aged | Thinning |
| E45 | 24 | Small Sawtimber 12"-18" DBH | Natural Forest: Northern Hardwood | Natural Forest: Northern Hardwood | Uneven Aged | Thinning |
| E46 | 8 | Small Sawtimber 12"-18" DBH | Natural Forest: Transition Hard (NH-Oak) | Natural Forest: Transition Hard (NH-Oak) | Uneven Aged | Thinning |
| E53 | 10 | Small Sawtimber 12"-18" DBH | Natural Forest: Pioneer Hardwood | Natural Forest: Pioneer Hardwood Natural Forest: Seedling/Sapling | Even Aged | Patch Clearcut (5 acres) |
| E54 | 3 | Pole Timber 6"-11" DBH | Natural Forest: Pioneer Hardwood | Shrubland | Even Aged | Shrubland Conversion |
| E59 | 11 | Pole Timber 6"-11" DBH | Natural Forest: Transition Hard (NH-Oak) | Natural Forest: Seedling/Sapling | Uneven Aged | Seed Tree |
| E69 | 34 | Small Sawtimber 12"-18" DBH | Natural Forest: Pioneer Hardwood | Natural Forest: Pioneer Hardwood Natural Forest: Seedling/Sapling | Even Aged | Seed Tree (15 Acres) |

Table 7. Forest management schedule for the second five-year period of this HMP (2023-2027).

| Stand | Acres | Size Class | Forest Type | | Management Direction | Treatment Type |
|-------|-------|---------------------------------|---|---|----------------------|--------------------------------------|
| | | | Current | Future | | |
| A37.1 | 4 | Seedling/Sapling | Natural Forest: Seedling/Sapling | Natural Forest: Seedling/Sapling | Even Aged | Forestry Mow and Apple Release |
| A55.1 | 11 | Small Sawtimber 12"-18" DBH | Natural Forest: Northern Hardwood | Natural Forest: Seedling/Sapling | Even Aged | Clearcut |
| B22 | 2 | Pole Timber 6"-11" DBH | Forested Wetland: Pioneer Hardwood | Forested Wetland: Seedling/Sapling | Even Aged | Clearcut |
| B23 | 2 | Medium Sawtimber 19"-25" DBH | Natural Forest: Pioneer Hardwood | Natural Forest: Seedling/Sapling | Even Aged | Aspen Regeneration Clearcut |
| B24 | 5 | Small Sawtimber 12"-18" DBH | Natural Forest: Pioneer Hardwood | Natural Forest: Seedling/Sapling | Even Aged | Aspen Regeneration Clearcut |
| B26 | 4 | Pole Timber 6"-11" DBH | Natural Forest: Pioneer Hardwood | Natural Forest: Seedling/Sapling | Even Aged | Aspen Regeneration Clearcut |
| C7 | 4 | Pole Timber 6"-11" DBH | Natural Forest: Pioneer Hardwood | Natural Forest: Pioneer Hardwood | Even Aged | Mast Tree Release |
| C9 | 1 | Small Sawtimber 12"-18" DBH | Plantation: Red Pine-White Pine | Plantation: White Pine | Uneven Aged | Thinning |
| C10 | 2 | Small Sawtimber 12"-18" DBH | Natural Forest: Transition Hard (NH-Oak) | Natural Forest: Transition Hard (NH-Oak) | Uneven Aged | Thinning |
| C12 | 3 | Small Sawtimber 12"-18" DBH | Natural Forest: Transition Hard (NH-Oak) | Natural Forest: Transition Hard (NH-Oak) | Uneven Aged | Thinning |
| C13 | 6 | Small Sawtimber 12"-18" DBH | Natural Forest: Northern Hardwood – White Pine | Natural Forest: Seedling/Sapling | Even Aged | Shelterwood |
| C34 | 3 | Small Sawtimber 12"-18" DBH | Plantation: White Pine | Natural Forest: Seedling/Sapling | Even Aged | Shelterwood |
| C49 | 5 | Small Sawtimber 12"-18" DBH | Natural Forest: Northern Hardwood | Natural Forest: Northern Hardwood | Uneven Aged | Thinning |
| C51 | 6 | Pole Timber 6"-11" DBH | Natural Forest: Northern Hardwood – White Pine | Natural Forest: Northern Hardwood – White Pine | Uneven Aged | Thinning |
| C54 | 1 | Pole Timber 6"-11" DBH | Natural Forest: Northern Hardwood – White Pine | Natural Forest: Seedling/Sapling | Even Aged | Shelterwood |

Table 7. Continued

| Stand | Acres | Size Class | Forest Type | | Management Direction | Treatment Type |
|-------|-------|--------------------------------|---|---|----------------------|---|
| | | | Current | Future | | |
| C55 | 4 | Small Sawtimber 12"-18" DBH | Natural Forest: Pioneer Hardwood | Natural Forest: Seedling/Sapling | Even Aged | Aspen Regeneration Clearcut |
| D2 | 11 | Small Sawtimber 12"-18" DBH | Natural Forest: Northern Hardwood | Natural Forest: Northern Hardwood | Uneven Aged | Thinning |
| D3 | 39 | Small Sawtimber 12"-18" DBH | Natural Forest: Northern Hardwood – White Pine | Natural Forest: Seedling/Sapling | Even Aged | Shelterwood |
| D13 | 18 | Pole Timber 6"-11" DBH | Natural Forest: Pioneer Hardwood | Natural Forest: Pioneer Hardwood Natural Forest: Seedling/Sapling | Even Aged | Aspen Regeneration Patch Clearcut (10 acres) |
| D16 | 26 | Small Sawtimber 12"-18" DBH | Natural Forest: Pioneer Hardwood | Natural Forest: Pioneer Hardwood Natural Forest: Seedling/Sapling | Even Aged | Patch Clearcut (12 acres) |
| E15 | 10 | Small Sawtimber 12"-18" DBH | Natural Forest: Northern Hardwood | Natural Forest: Northern Hardwood | Uneven Aged | Thinning |
| E18 | 6 | Pole Timber 6"-11" DBH | Natural Forest: Northern Hardwood | Natural Forest: Seedling/Sapling | Even Aged | Seed Tree |
| E19 | 16 | Small Sawtimber 12"-18" DBH | Natural Forest: Pioneer Hardwood | Natural Forest: Pioneer Hardwood Natural Forest: Seedling/Sapling | Even Aged | Patch Clearcut (10 acres) |
| E27 | 25 | Pole Timber 6"-11" DBH | Natural Forest: Pioneer Hardwood | Natural Forest: Pioneer Hardwood Natural Forest: Seedling/Sapling | Even Aged | Aspen Regeneration Patch Clearcut (12 acres) |
| E34 | 4 | Small Sawtimber 12"-18" DBH | Plantation: White Pine - Spruce | Natural Forest: Seedling/Sapling | Even Aged | Clearcut |
| E35 | 7 | Pole Timber 6"-11" DBH | Natural Forest: Pioneer Hardwood | Natural Forest: Seedling/Sapling | Even Aged | Aspen Regeneration Clearcut |
| E36 | 8 | Pole Timber 6"-11" DBH | Natural Forest: Pioneer Hardwood | Natural Forest: Seedling/Sapling | Even Aged | Clearcut and Apple Tree Release |

Table 7. Continued

| Stand | Acres | Size Class | Forest Type | | Management Direction | Treatment Type |
|-------|-------|--------------------------------|---|---|----------------------|------------------------------|
| | | | Current | Future | | |
| E37 | 49 | Small Sawtimber 12"-18" DBH | Natural Forest: Pioneer Hardwood | Natural Forest: Pioneer Hardwood Natural Forest: Seedling/Sapling | Even Aged | Patch Clearcut (15 acres) |
| E70 | 8 | Small Sawtimber 12"-18" DBH | Forested Wetland: Pioneer Hardwood | Forested Wetland: Seedling/Sapling | Even Aged | Seed Tree |

Stand locations and planned management actions are also summarized in Figures 6 and 7. Specific forest stand descriptions and detailed management prescriptions will be prepared for each proposed forest management area prior to implementation (see template, Appendix C).

BEST MANAGEMENT PRACTICES

Forest management on all WMAs follows Best Management Practices to protect soil and water resources, promote quality wildlife habitat, and establish healthy forests (Table 8).

Table 8. Best Management Practices for forest management on WMAs.

| Resource | Guidance Document ²⁰ |
|---------------|--|
| Soils | <i>Rutting Guidelines for Timber Harvesting on Wildlife Management Areas</i> |
| Water quality | <i>NYS Forestry Best Management Practices for Water Quality</i> |
| Wildlife | <i>Retention Guidance on Wildlife Management Areas</i> |
| Plantations | <i>Plantation Management Guidance on Wildlife Management Areas</i> |

Wildlife Considerations:

Bald eagles have nested on the WMA for several years and forest plans will take their use into account. As per recommendations in the *Conservation Plan for Bald Eagle*, a buffer of 660 feet for forest management and a more restrictive 330-foot buffer for the specific breeding season will ensure no negative impact.²¹ Forest management as a whole on the WMA will likely increase many prey species that can be utilized by multiple birds of prey.

Grassland areas of the WMA have attracted a host of unique grassland-obligate breeders. These species breed and live within the large, open-area grasslands found on the WMA and many migrate out of the area for winter. Wintering raptors have been detected utilizing the grasslands in recent years. By electing to do most forest management in the winter when such grassland

²⁰ All guidance documents referenced here are available online at <http://www.dec.ny.gov/outdoor/104218.html>.

²¹ The Conservation Plan for Bald Eagle is available online at http://www.dec.ny.gov/docs/wildlife_pdf/nybaldeagleplan.pdf.

birds are neither nesting nor within the state, it ensures that forestry projects will not disturb or limit wildlife use of grasslands. Considerations will be made to avoid impacts to foraging winter raptors when possible.

The wetlands of Three Rivers WMA are also attractive to several species of concern such as American bittern, least bittern, and pied-billed grebe. These species are seasonally present in the area and with proper wetland buffers, water quality protections and seasonal limitations, forest management will not negatively affect such species or their habitats.

Whenever possible, timber management actions should avoid the peak wildlife reproduction period (April-August) to minimize any negative impacts. Winter timber harvest is the best scenario in most cases, but given some locations and management goals, summer or fall timber management may be used to achieve desired goals. Surveys for forest-dwelling bats, specifically northern long-eared bats, will be used to detect presence in treatment areas. If bats are determined to be on the site, cutting of brush and trees greater than three-inch diameter at breast height (DBH) would be limited to October 1-March 31 to avoid potential negative impacts. Indiana and tri-colored bats have been acoustically documented on the WMA, and the northeastern corner of the property falls within the protected buffer of known summer roosts for Indiana bats. By focusing forest management in winter months, following snag retention protocols, retaining a large percentage of the WMA in intermediate forest and surveying the treatment sites before summer work, any potential negative impact to Indiana and tri-colored bats can be avoided.

Forest Health Considerations:

In stands where native and non-native vegetation has been identified as interfering with desirable regeneration, additional treatments of that interfering vegetation may be required to promote desired regeneration. This could include both mechanical or chemical treatments.

Currently, major insect pests such as Asian Longhorn Beetle (ALB) or Emerald Ash Borer (EAB) are not known to occur on Three Rivers WMA. However, EAB is well established in the state, including Onondaga County, and its population continues to expand. The closest known occurrence of EAB is less than one mile from the WMA. It is highly likely that EAB will eventually become established on Three Rivers WMA. When that occurs, the plan will be amended to reflect that new development and any additional amendments (such as changing the implementation plan and anticipated schedule) will depend on the scope and severity of the infestation. Currently, managers do take into consideration the high likelihood of EAB infestation when preparing timber sales and generally tend to mark cutting most, if not all of the ash trees in a sale area when possible.

Pre- and Post-treatment Considerations:

Where invasive and other undesirable plant species are significantly abundant, pre-treatment mechanical cutting or herbicide application may be necessary. If it is determined that deer browse is intense enough to prevent regeneration of desired tree species, fencing of treatment areas may be necessary. Also, if it is concluded that post-treatment regeneration is inadequate, or that undesirable species are dominating the area and suppressing regeneration, the stand may have to be treated again. This may include mechanical and/or chemical control of undesirable

species, removal of additional trees to increase available sunlight, scarification of the forest floor to stimulate seedling establishment, and/or direct seeding of desired species. Pre- and post-treatment actions to promote the desired forest regeneration will be addressed in detail in the silvicultural prescriptions. In order to successfully establish new shrubland after the initial tree harvesting is done, planting native shrub species and additional mechanical or chemical treatments of trees or non-native/invasive shrubs may be required.

MANAGEMENT EVALUATION

In order to determine whether the desired forest regeneration and wildlife responses have been achieved by the management outlined above, pre- and post-management assessments will be conducted in accord with guidelines in the *Young Forest Initiative Monitoring Plan, 2016–2025*.²² The Monitoring Plan establishes statewide standards for evaluating vegetation and target wildlife responses to forest management to determine if the outcome is as prescribed.

Regeneration assessments will be conducted within one year of harvest completion, three, and five years after the harvest or until the forester determines adequate natural or artificial (i.e., planting) regeneration has been securely established. YFI wildlife target species selected for Three Rivers WMA, which may be assessed to determine response to management, include:

- American woodcock
- Ruffed grouse
- Wild turkey

Seasonal songbird monitoring via point counts will also be used on select sites to better evaluate and understand the songbird response to forest management. Acoustic bat surveys may be used to determine any presence of at-risk bats and then management actions can be tailored to mitigate any potential disturbance to those species. Non-YFI target species of forest and young forest habitats and of interest on Three Rivers WMA may include:

- Indiana bat, northern long-eared bat, tri-colored bat
- Jefferson's salamander, four-toed salamander
- Red-shouldered hawk, northern goshawk

SHRUBLAND

Shrublands are early successional habitats dominated by woody plants typically less than ten feet tall with scattered open patches of grasses and forbs that provide floristic diversity. Shrublands are typically characterized by >50% cover of shrubs and <25% canopy cover of trees.

MANAGEMENT OBJECTIVES

- Increase the amount of shrubland habitat on the property from 166 acres to 169 acres (5% of the WMA) through a combination of timber management and shrub plantings to benefit upland game birds and breeding songbirds.
- Maintain the existing 166 acres of shrubland through various means including mechanical cutting and planting of native shrub species.

²² The Young Forest Initiative Monitoring Plan can be found at <http://www.dec.ny.gov/outdoor/104218.html>.

- Monitor for invasive species and treat as necessary with mechanical or, when appropriate, chemical means.
- Establish native, food-producing shrubland species areas around wetlands and fields.
- Maintain a “soft-edge effect” around select fields.

DESCRIPTION OF EXISTING SHRUBLAND HABITAT AND TARGET SPECIES

Currently, there are 166 acres of shrubland on Three Rivers WMA split between 14 different stands scattered throughout the property and range in size from 1 to 40 acres. Most of these shrublands originated from grasslands or old agricultural fields that were allowed to naturally succeed into shrub-dominated communities. In some stands, shrubs were planted. Shrubland stands are mostly dense thickets with scattered small trees.

Over time, non-native species such as buckthorn, honeysuckle, and multiflora rose have become established in some of these shrublands. Due to the invasive biology of these species, they can quickly establish in an unmaintained field and become dominant. Native shrubs are also present including species of hawthorn, dogwood, viburnum, and willow. These native shrubs provide a valuable soft mast resource for wildlife. Shrublands contain unique food and cover options that differ from young forest and can often persist longer as a habitat type since dense shrubs can exclude the growth of trees. Shrublands provide habitat for many wildlife species including several that also use young forests. Although young forest and shrubland provide habitat for similar species, both are needed to provide for the full range of disturbance-dependent wildlife species.



Shrubland on Three Rivers WMA.

Photo: DEC

The creation and maintenance of shrubland habitats will benefit species such as:

- Ruffed grouse, American woodcock, wild turkey
- Cottontail rabbit
- Numerous songbird species

MANAGEMENT HISTORY

As mentioned in the Forest section of this plan, as a result of the development plan written in 1950, between 1950 and 1962 over fifty thousand trees and shrubs were planted across the property.²³ Multiflora rose (native to eastern Asia) was one of the shrubs that was widely planted at that time along the edges of openings to serve as a food source and provide cover for wildlife. Unfortunately, due to its ability to rapidly form dense thickets that can crowd out native species,

²³ Development Plan, Three Rivers Game Management Area. 1950. NYS DEC Cortland Sub-Office, Cortland, NY.

multiflora rose today is considered a non-native invasive plant that is detrimental to wildlife habitat.

Prescribed burning has been used on Three Rivers WMA but its main goal was to control shrub encroachment into grassland habitat. Prescribed burning will be discussed in more detail in the Grassland section of this plan.

In the late 1990s through the mid-2000s, 39.4 acres of shrubland habitat was created by ceasing to mow fields. An additional 88.6 acres of shrubland habitat has been added to this original amount, bringing the current total to 128 acres. Similar to the previous 39.4 acres, the majority of the 88.6 acreage resulted from the abandonment of grassland mowing. A forest opening project funded by the Ruffed Grouse Society in 2012 added 6 acres to this total. In a few of these field locations, DEC staff planted 295 trees and shrubs to increase succession rates and increase plant species diversity.

IMPLEMENTATION PLAN AND ANTICIPATED SCHEDULE

- **Management planned for 2018-2022** (Figures 6-7):
 - **Stand E54:** This is a pioneer hardwood stand with a mix of white ash, red maple, and black cherry that will be clearcut to create shrubland habitat. Natural regeneration may be supplemented with planting if necessary (3 acres).
 - **Stands A950, B950, B951, B952, C950, C951, D950, D951, D952, E950, E951, E952, E953, and E954:** These are existing shrublands that will be maintained as needed through various treatments including but not limited to brush mowing, forestry mowing, tree cutting, invasive species control, and shrub planting (166 acres).
- **Management planned for 2023-2027** (Figures 6-7):
 - **Stands A950, B950, B951, B952, C950, C951, D950, D951, D952, E950, E951, E952, E953, E954, E54:** These are existing shrublands that will be maintained as needed through various treatments including but not limited to brush mowing, forestry mowing, tree cutting, invasive species control, and shrub planting (169 acres).

BEST MANAGEMENT PRACTICES

Before any cutting of trees or brush with greater than three-inch DBH, between April 1st and September 30th, pre-treatment acoustic surveys for forest dwelling bats, specifically northern long-eared bats, will be conducted. If it is determined there are sensitive bat species present on a site, management will be restricted to October 1st –March 31st to prevent negative impacts.

MANAGEMENT EVALUATION

Shrubland can be assessed through routine inspection to prevent colonization by mature forest species. Evaluation will be based on success of newly established shrub species and the wildlife response to those areas. Surveys for American woodcock, ruffed grouse, wild turkey, and breeding songbirds will be used to monitor continued use and response from wildlife to shrublands and other habitats on the WMA.

GRASSLAND

Grasslands are open, grassy areas with a minimal amount of shrub and tree cover (<35%) that are maintained, or could be maintained, without significant brush cutting. Grassland management will restore and maintain habitat that will be used by migratory birds as well as contribute to the goal of building self-sustaining grassland bird populations.

MANAGEMENT OBJECTIVES

- Maintain and improve the existing 602 acres (17% of the WMA) of grassland habitat through rotational mowing, prescribed fire, and other grassland improvement projects.
- Monitor for invasive plant species.

DESCRIPTION OF EXISTING GRASSLAND HABITAT AND TARGET SPECIES

There are currently 602 acres of grassland habitat split between 11 different stands scattered throughout the property. The grassland areas range in size from 10 to 212 acres.

Species that benefit from grassland best management practices include:

- Bobolink, Eastern meadowlark, sedge wren
- White-tailed deer
- American woodcock, wild turkey, ruffed grouse

MANAGEMENT HISTORY

The grassland habitats at Three Rivers have predominantly been managed by rotary mowing and occasional use of prescribed fire. In addition, DEC has planted corn and small grain crops on portions of this acreage in the past for wildlife use.

Land managers have utilized both complete field (block) and strip-mowing techniques. As mowing resources diminished, strip-mowing was viewed as a technique that would enable the land manager to continue yearly maintenance in the fields. However, this technique eventually enabled the grasslands to revert to old field conditions with a higher concentration of woody vegetation. Following recommendations from the *Plan for Conserving Grassland Birds in New York*,²⁵ land managers stopped mowing specific fields less than 25 acres in size that were isolated or separated from larger field blocks and returned to the block mowing technique.

Prescribed fire has been used on multiple occasions at Three Rivers WMA to manage grassland habitat (Table 9). The purpose of those burns was to reduce the amount of shrubs and increase grass density to provide higher quality foraging and nesting habitat for waterfowl and grassland birds. In 2002, a prescribed fire plan was approved for Three Rivers WMA. It identified parts of stand E941 to be burned for the purpose of controlling woody vegetation, tick eradication, and to serve as a wildland fire training opportunity for fifteen Forest Ranger recruits of the 14th Basic School.²⁴ A new ten-year (November 1, 2015 through October 31, 2025) prescribed fire plan has been approved for Three Rivers. Similar to previous plans, fire will be used to maintain

²⁴ Pratt, G. and Prunoske, J. 2002. New York State Department of Environmental Conservation Prescribed Burn Plan, Three Rivers WMA, Region 7.

grassland composition, providing quality habitat for grassland and ground nesting birds such as Henslow’s sparrow, bobolink and wild turkey. The benefits from prescribed fire are: accelerated break-down and subsequent release of nutrients from plant materials, effective woody vegetation removal, and negative impacts on tick populations on the WMA.²⁵

Table 9. Summary of prescribed burning conducted on Three Rivers WMA.

| Year | Acres Treated | Stands Treated** |
|---------------|---------------|------------------------------|
| 1980 | 37 | A43, C940 |
| 1982 | 37 | C940, C950, E940, E941, E950 |
| 1985 | 24 | D940, D941, D952 |
| 1991 | 132 | B940, C940, E940, E941, E950 |
| Total: | 230 | |

*No records were found of prescribed burning occurring from 1973-1975 or from 1982-1989.

**Most of the stands listed had only part of their total area treated at any one time.

IMPLEMENTATION PLAN AND ANTICIPATED SCHEDULE

- **Management planned for 2018-2027** (Figures 6-7):
 - **Stands B940, C941, C942, C943, D940, D941, D942, D943, E940, E941, E942:** These are existing grasslands that will be maintained as needed through rotational mowing, prescribed fire, and other grassland improvement projects (602 acres).

BEST MANAGEMENT PRACTICES

The following sub-sections provide guidelines for grassland habitat management on all WMAs in NY. For more detailed information and recommendations see *A Plan for Conserving Grassland Birds in New York*.²⁶ In particular, refer to the plan for species-specific habitat requirements and detailed recommendations regarding grassland management and restoration techniques.

General Management Recommendations

- Target management for grassland bird species known to be in the vicinity, and consider the needs of both breeding and wintering grassland bird species.
- Consider the surrounding landscape when making management decisions.
- Conduct baseline grassland bird surveys on newly acquired fields or fields targeted for management changes to determine species present.
- Increase field size by hedgerow removal, removing trees, etc. to benefit species that require large fields.
- Conduct invasive species control (glossy buckthorn, pale and black swallowwort, Canada thistle, Phragmites, etc.) to improve habitat quality.
- Consider a variety of factors, such as the targeted grassland bird species, pollinators, seed mix (warm versus cool season grasses, forbs, wildflower mixes, grass height and

²⁵ Jackson, S. and M. Putnam. 2015. New York State Department of Environmental Conservation Prescribed Burn Plan, Three Rivers Wildlife Management Area, Region 7.

²⁶ Morgan, M. and M. Burger. 2008. A Plan for Conserving Grassland Birds in New York: Final Report to the New York State Department of Environmental Conservation under Contract #C005137. Audubon New York, Ithaca, NY.

density), timing of planting, existing conditions, and vegetation removal techniques (including herbicide and intensive disking) in developing grassland planting or restoration projects.

- Utilize mowing, haying, burning, and grazing for maintaining grassland habitat, after evaluating the appropriateness of these methods relative to site conditions and management objectives. In particular, burning cool season grasses is not advisable in most situations in New York.

Timing of Management

- Fields over 25 acres (including all contiguous fields) or fields with a history of listed (federally listed and/or state E/T or SC) grassland bird species within the last 10 years, including fields of any size AND contiguous fields. Can also include nearby fields if deemed necessary:
 - Mowing or other management should be avoided between April 23 and August 15 unless at least one of the following criteria are met and the fields are assessed or surveyed to confirm there is no active nesting by E/T/SC grassland birds:
 - Management is to be done for long term benefits to the habitat/wildlife (such as invasive species management).
 - The fields are assessed or surveyed and there is no active nesting by E/T/SC grassland birds.
 - Nesting locations can be avoided, such as using spot treatment for invasive species, reducing any negative impact to the species of concern.
- Fields under 25 acres (including all contiguous fields) with no history of listed species:
 - Field can be managed/mowed within the period April 23 and August 15 if necessary to accomplish other goals and priorities that benefit other species that use the habitat. If early management is proposed, then the habitat requirements and nesting periods of other species should be considered (e.g., nesting waterfowl, American bittern, reptiles and amphibians).

Additional Mowing Guidelines

- Frequency of mowing, size of area mowed, and mowing techniques should be based on species present and current and desired habitat conditions.
- Block or spot mowing is preferred and strip mowing should be limited (especially in fields over 25 acres).
- Unmowed blocks should be in the shape of a square as opposed to long rectangles.
- When mowing, consider mowing from one side of the field to the other side or start in the center and mow outwards to avoid concentrating animals in the area yet to be mowed.
- In general, mow grass to a residual height of 6-12 inches.

MANAGEMENT EVALUATION

Grassland bird surveys have been conducted on the WMA targeting newly formed, modified and improved grasslands to track changes in species use as those locations have responded to management. Future grassland-specific bird surveys may be continued to track further wildlife response to and continued use of the improved and managed grasslands on the WMA.

AGRICULTURAL LAND

Agricultural lands on WMAs include any acreage on which crops are grown, primarily areas that are under cooperative agreements or farming contracts, but also including wildlife food plots.

MANAGEMENT OBJECTIVES

- Maintain and improve 87 acres as wildlife food plots through annual planting of sorghum, millet, buckwheat, sunflowers, and other suitable species.
- Monitor for invasive plant species.



Wildlife food plot on Three Rivers WMA.

Photo: DEC

DESCRIPTION OF EXISTING AGRICULTURAL LANDS AND TARGET SPECIES

There are currently 87 acres that have been identified to be managed as wildlife food plots. These food plots are split between three stands and range in size from 12 to 40 acres. There are currently no agricultural agreements, however future agreements may be evaluated or considered on a case-by-case basis to assist in the creation or improvement of open space habitats on the WMA.

Species that benefit from food plot management include:

- White-tailed deer, wild turkey, ring-necked pheasant
- Bobolink, red-winged blackbird, common grackle

MANAGEMENT HISTORY

As a result of the development plan written in 1950, tillable land was put back into cultivation to grow hay and cereal grains for the benefit of pheasants and rabbits.²⁷ Annual farming operations were established with fields put under a schedule to rotate between being left fallow and growing hay or other crops. In 1962, a total of 121 acres of fields produced crops such as corn, buckwheat, oats and wheat.²⁸ For unknown reasons, farming operations on Three Rivers WMA declined over time. Small sales of hay were made in 1974 and 1977. DEC has recently restarted this effort and intends to annually plant sorghum, millet, buckwheat, and sunflowers in specific fields for wildlife use.

IMPLEMENTATION PLAN AND ANTICIPATED SCHEDULE

- **Management planned for 2018-2027** (Figures 6-7):
 - **Stands C940, D944, and E943:** These stands have been identified to be managed as wildlife food plots and will be planted annually with sorghum, millet, buckwheat, sunflowers, and other suitable species to provide wildlife forage (87 acres).

²⁷ Development Plan, Three Rivers Game Management Area. 1950. NYS DEC Cortland Sub-Office, Cortland, NY.

²⁸ Three Rivers Wildlife Management Area Source Book. NYS DEC Cortland Sub-Office, 1285 Fisher Ave, Cortland, NY.

BEST MANAGEMENT PRACTICES

- Conduct invasive species control (glossy buckthorn, pale and black swallowwort, Canada thistle, Phragmites, etc.) to improve habitat quality.

MANAGEMENT EVALUATION

DEC staff will conduct routine monitoring to ensure success and stability of food plots.

WETLANDS (NATURAL AND IMPOUNDED)

Natural wetlands are areas where the soil or substrate is periodically saturated or covered with water, including emergent (perennial herbaceous vegetation accounts for >50% of hydrophytic vegetative cover) and scrub-shrub wetlands (woody vegetation under 20 feet tall accounts for >50% of hydrophytic vegetative cover). Impounded wetlands are areas similar to natural wetlands, but where water is held back by a berm, road, or other structure. Forested wetlands are addressed in the Forest section above.

MANAGEMENT OBJECTIVES

- Maintain the current acreage of quality wetlands (581 acres).
- Maintain existing wetland infrastructure (e.g., dikes and water control structures) with the exception of the old trolley bed between Stands E913 and E920.
- Remove the existing trolley bed (dike) between Stands E913 and E920 to improve aquatic habitat.
- Maintain wetland habitat to provide habitat for species such as wood duck, beaver, and amphibians.
- Monitor and treat for invasive aquatic vegetation.
- Evaluate the possibility of restoring drainage patterns in Compartment 5 (forests east of Sixty Road) to restore the Silver Maple Ash Swamp.
- Create a sheet water area in the northern portion of C-950 for spring runoff attenuation and to provide foraging habitat for nesting waterfowl.

DESCRIPTION OF EXISTING WETLAND HABITAT AND TARGET SPECIES

Presently, there are 468 acres of natural wetlands and 113 acres of impounded wetlands. Five wetlands are regulated by Article 24 of the Environmental Conservation Law and several additional wetlands shown on the National Wetlands Inventory. Wetlands classified as freshwater ponds, lacustrine and riverine are considered open water habitat types in this plan and are further discussed in that section.

The wetland hydrology of stands E913 and E920 was altered by the installation of a man-made trolley bed (dike) that bisects the two stands. A project is currently underway to remove the dike to improve the aquatic habitat between the stands.

A Silver Maple Ash Swamp community has been identified by the New York Natural Heritage Program (Figure 2), and it is distributed across multiple stands east of Sixty Road. This community

type is only possible in poorly drained soils and/or depressions.

Presently, a man-made drainage ditch extends roughly through the middle of this community. This ditch has altered the hydrology of the area and has provided a potential corridor for invasive plants. We intend to evaluate the possibility of



Wetland on Three Rivers WMA.

Photo: DEC

altering or removing the ditch in an effort to restore the natural hydrology of the area. Future management could then focus on improving the Silver Maple Ash Swamp community. Forest management in this plan that occurs in stands associated with this community will focus on regenerating tree species that are consistent with the Silver Maple Ash Swamp community type.

The wetlands provide habitat for species such as:

- Pied-billed grebe, American bittern, bald eagle
- Rusty blackbird, American woodcock, wood duck
- Snapping, painted, and mud turtles, Jefferson's salamander, four-toed salamander

MANAGEMENT HISTORY

As a result of the development plan written in 1950, extensive work was done to establish shallow flooded areas to benefit waterfowl.²⁹ Between 1950 and 1962, 29 water impoundments were constructed on the WMA which resulted in about 225 acres of impounded wetlands, most notably the '100 Acre Marsh' which was constructed in 1952.³⁰ Much of this work was funded by the Pittman-Robertson Federal Aid Project W-62-D.³¹ For the purposes of this plan, the inundated areas adjacent to control structures have been included in the wetland (impounded) habitat type, and the remaining wetland areas have been included in the wetland (natural) habitat type (Table 1).

IMPLEMENTATION PLAN AND ANTICIPATED SCHEDULE

- **Management planned for 2018-2027** (Figures 6-7):
 - **Stands E913 and E920:** These are wetlands separated by a man-made trolley bed (dike). The trolley bed will be removed to improve the aquatic habitat.

²⁹ Development Plan, Three Rivers Game Management Area. 1950. NYS DEC Cortland Sub-Office, Cortland, NY.

³⁰ Three Rivers Wildlife Management Area Source Book. NYS DEC Cortland Sub-Office, 1285 Fisher Ave, Cortland, NY.

- **Silver Maple Ash Swamp** (Figure 2): Evaluate the possibility of altering or removing the ditch that runs through this community in an effort to restore the natural hydrology of the area.
- **Stands A920, B920, B930, B931, B932, C920, C930, C931, D920, D930, D931, D932, E920, E930, and stands C910, E910, E911, E913:** Maintain the current wetlands and impoundments (with the exception of the dike between stands E913 and E920).
- Monitor for future invasive plant occurrences.

BEST MANAGEMENT PRACTICES

- Protect wetlands from runoff and sedimentation.
- To the extent possible, avoid use of pesticides in surrounding areas.
- Maintain upland habitat buffer for non-breeding habitat.
- Avoid human disturbance during watered periods.³¹

Habitat management activities will be conducted in accordance with the NYSDEC General Permit (GP-0-16-003), the New York State Freshwater Wetlands Act (ECL Article 24), and Water Resources Law (ECL Article 15, Title 5).

MANAGEMENT EVALUATION

DEC staff will conduct routine monitoring to ensure habitats are stable and infrastructure sound.

OPEN WATER (WATERBODIES AND WATERCOURSES)

Open water is defined as any area of open water, generally with less than 25% cover of vegetation or soil and typically named (e.g., Perch Lake, South Colwell Pond). For the purposes of this plan, open water areas without control structures have been included in this section.



Wetlands on Three Rivers WMA.

Photo: DEC

³¹ Mitchell, J.C., A.R. Breisch, and K.A. Buhlmann. 2006. Habitat Management Guidelines for Amphibians and Reptiles of the Northeastern United States. Partners in Amphibian and Reptile Conservation, Technical Publication HMG-3, Montgomery, AL. 108pp.

³¹ 48-D Final Report, NYSDEC Cortland Sub-Office, Cortland, NY.

MANAGEMENT OBJECTIVES

- Maintain the current acreage and quality of open water (64 acres).
- Monitor and control invasive plants as needed.

DESCRIPTION OF EXISTING OPEN WATER HABITAT AND TARGET SPECIES

There are multiple areas (stands) of open water ponds totaling 64 acres. These areas are managed to provide habitat for species such as:

- Wood duck, hooded merganser, Canada goose
- Green frog, bullfrog, snapping turtle
- Beaver, muskrat, mink

MANAGEMENT HISTORY

Some of the ponds on Three Rivers WMA are manmade. Stands E910, E911 and C910 (100-acre marsh) were built in 1952. Stand E911 and E913 were built in 1953 and E912 was built in 1957. With the exception of E912, these ponds have been included in the Wetland (impounded) section above. The dike and control structure of E912 has been removed.

IMPLEMENTATION PLAN AND ANTICIPATED SCHEDULE

- **Management planned for 2018-2027**(Figures 6-7):
 - **Stands A910, A911, A912, A913, B910, B911, B912, D910, D911, D912, and E912:** Monitor and control invasive plants as needed.

BEST MANAGEMENT PRACTICES

Habitat management activities will be conducted in accordance with the NYSDEC General Permit (GP-0-16-003), the New York Freshwater Wetlands Act (ECL Article 24), and Water Resources Law (ECL Article 15, Title 5).

MANAGEMENT EVALUATION

Water bodies on Three Rivers WMA are not regularly surveyed. If future fisheries surveys determine the presence of any significant species, adjustments to the treatment schedule may be required.

HABITAT MANAGEMENT SUMMARY

In summary, Table 10 lists the habitat management actions planned for Three Rivers WMA over the next ten years. Any substantive changes will be appended to this HMP annually or as needed (Appendix D).

Table 10. Summary of habitat management actions recommended for Three Rivers WMA, 2018-2027. (Also see Figures 6-7.)

| Habitat | Management Action | Acres | Timeframe |
|------------------|---|-------|-----------|
| Forest | Patch clearcut stands A44, B35, and E53. | 35 | 2018-2022 |
| Forest/Shrubland | Clearcut stands B30, E54, B40, C39, and D44. | 16 | 2018-2022 |
| Forest | Seed tree cut stands D43, E59, and E69. | 32 | 2018-2022 |
| Forest | Shelterwood cut stands C36 and C37. | 10 | 2018-2022 |
| Forest | Thin stands D45, D46, E45, and E46. | 51 | 2018-2022 |
| Forest | Prescribed fire stands C64.2, D6.2 and D9.2 | 13 | 2018-2022 |
| Forest | Patch clearcut stands D13, E27, D16, E19, and E37. | 57 | 2023-2027 |
| Forest | Clearcut stands A55.1, B22, D39, E34, B23, B24, C55, and E35. | 56 | 2023-2027 |
| Forest | Seed tree cut stands E18 and E70. | 14 | 2023-2027 |
| Forest | Shelterwood cut stands C13, C34, C54, and D3. | 49 | 2023-2027 |
| Forest | Thin stands C9, C10, C12, C49, C51, D2, and E15. | 38 | 2023-2027 |
| Forest | Release stand C7, clearcut and release stand E36. | 12 | 2023-2027 |
| Forest | Forestry mow and release stand E37.1. | 4 | 2023-2027 |

Table 10. Continued

| Habitat | Management Action | Acres | Timeframe |
|---------------------|--|--------------|------------------|
| Shrubland | Maintain stands A950, B950, B951, B952, C950, C951, D950, D951, D952, E950, E951, E952, E953, E954, E54 as needed. | 169 | 2018-2027 |
| Grassland | Maintain stands B940, C941, C942, C943, D940, D941, D942, D943, E940, E941, E942 as needed. | 602 | 2018-2027 |
| Agricultural | Maintain food plots in Stands C940, D944, and E943 with annual planting. | 87 | 2018-2027 |
| Wetland/Impoundment | Remove the man-made trolley bed between stands E913 and E920; maintain existing wetlands and wetland infrastructure (e.g., dikes, water control structures) as needed in stands A920, B920, B930, B931, B932, C920, C930, C931, D920, D930, D931, D932, E920, E930, and stands C910, E910, E911, E913. | 581 | 2018-2027 |
| Wetland/Impoundment | Evaluate the possibility of restoring drainage patterns east of Sixty Road to restore the Silver Maple Ash Swamp. | Variable | 2018-2027 |
| Open Water | Maintain open water habitat as needed (e.g., invasive plant control) in stands A910, A911, A912, A913, B910, B911, B912, D910, D911, D912, and E912. | 64 | 2018-2027 |

III. FIGURES

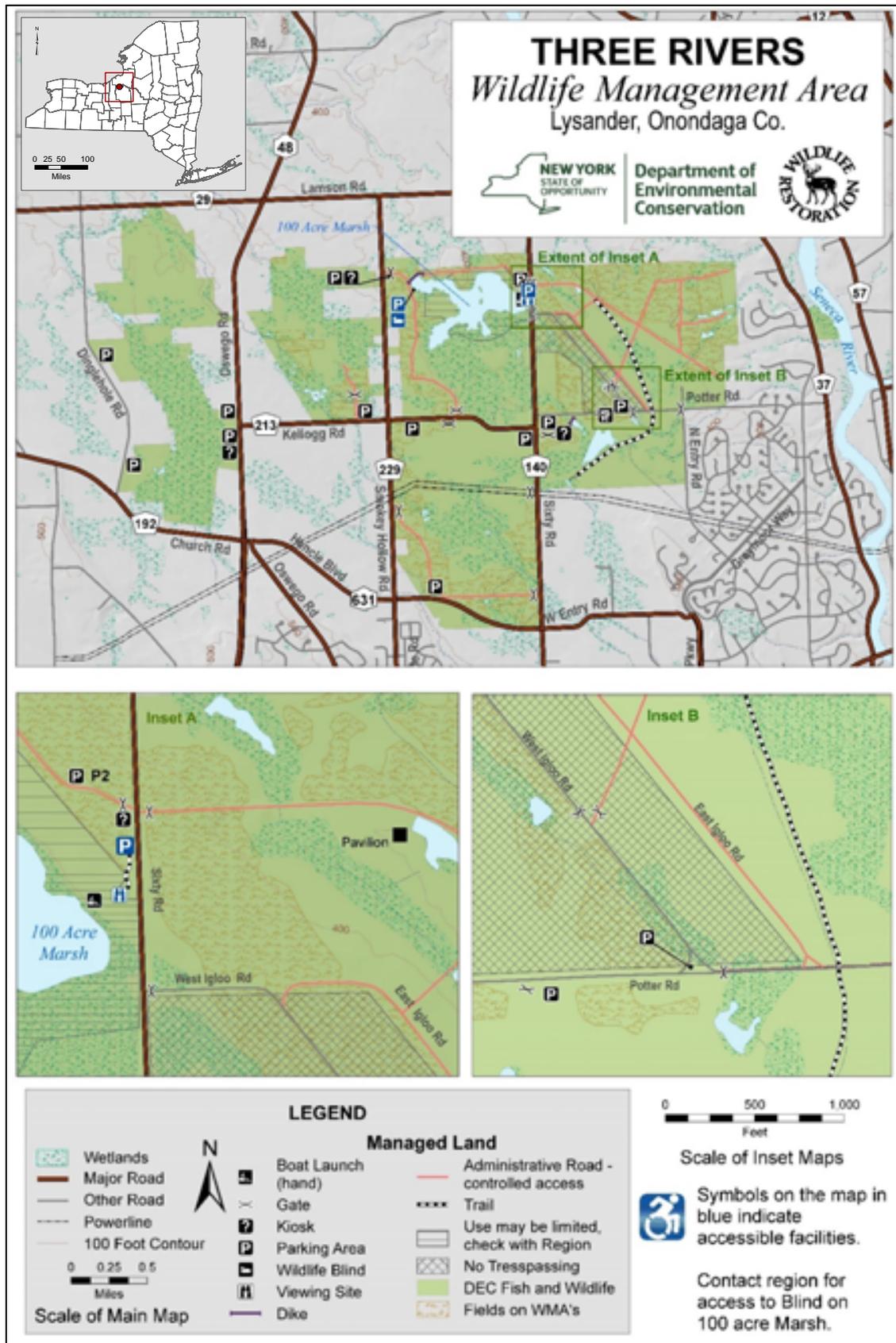


FIGURE 1. Location and access features at Three Rivers WMA.

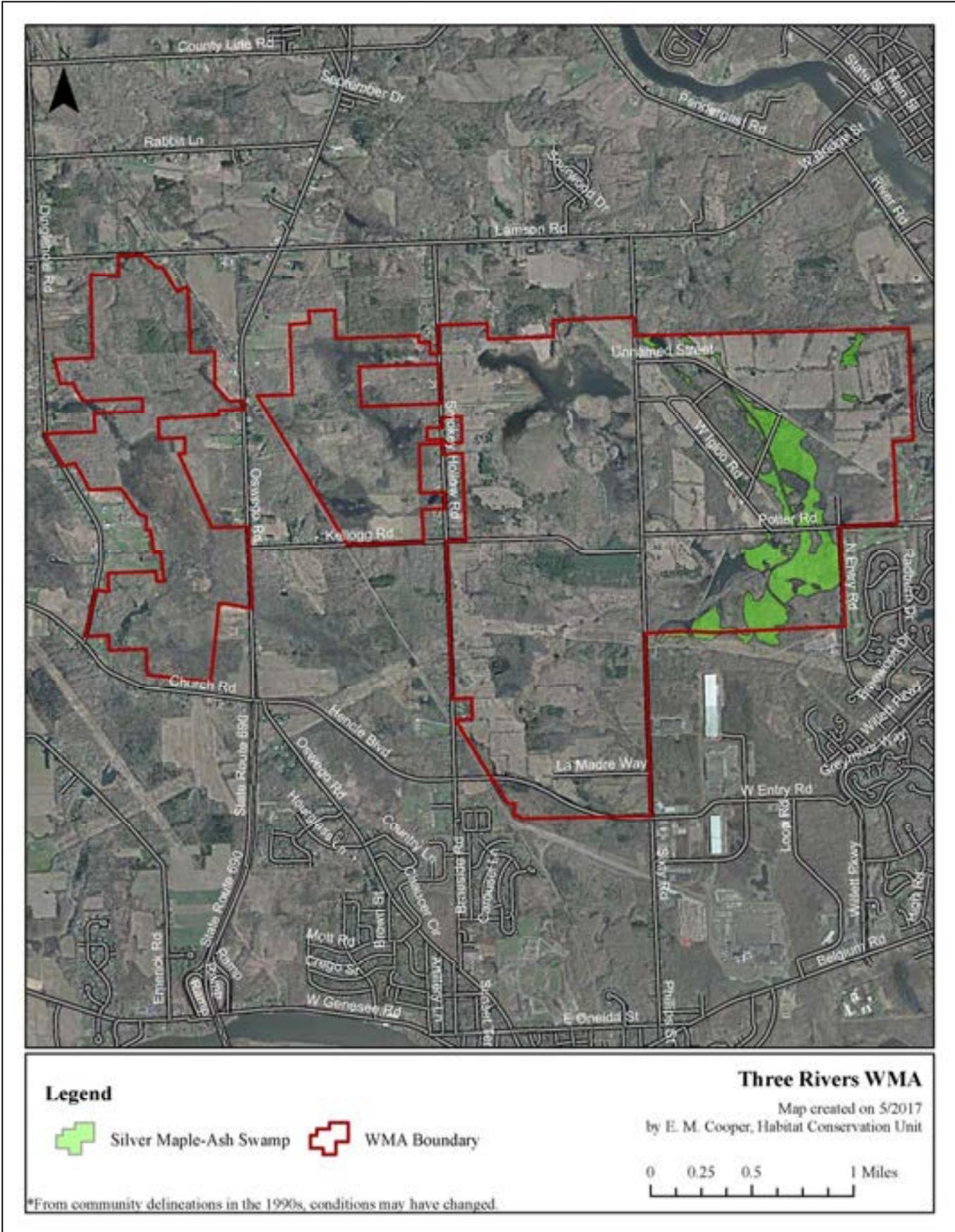
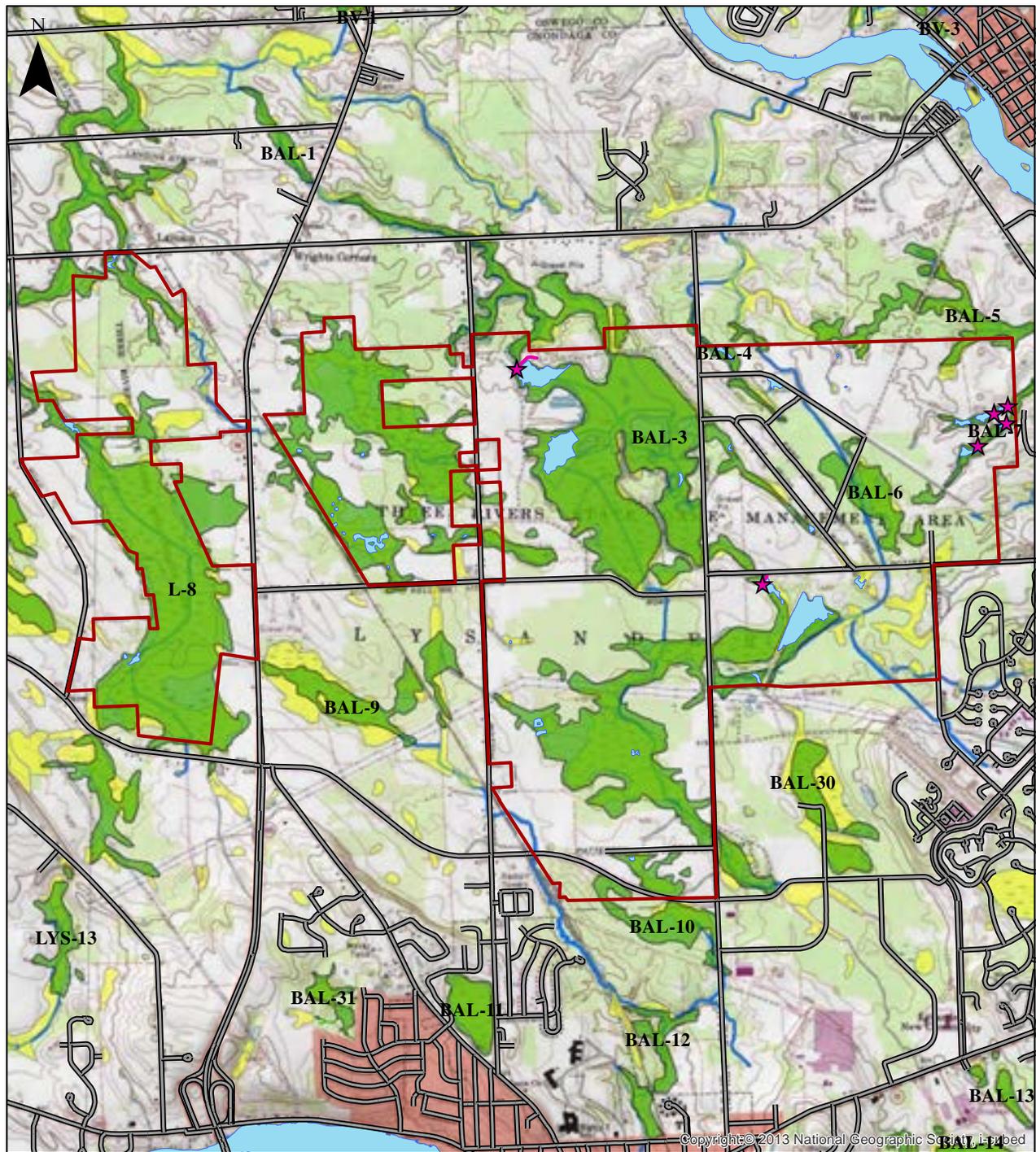


FIGURE 2. Significant ecological communities on Three Rivers WMA. Data from the NY Natural Heritage Program.



Legend

- Article 24 Freshwater Wetlands
- National Wetlands Inventory
- Impoundment/pond
- Stream
- Dikes
- ★ Water Control Structure
- WMA Boundary

Three Rivers WMA

Map created on 3/2018
by E. M. Cooper, Habitat Conservation Unit

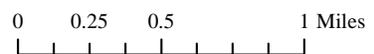


FIGURE 3. Wetlands, open water, and streams of Three Rivers WMA. Note: Wetland boundaries are not exact and may not be used for regulatory purposes without a current delineation.

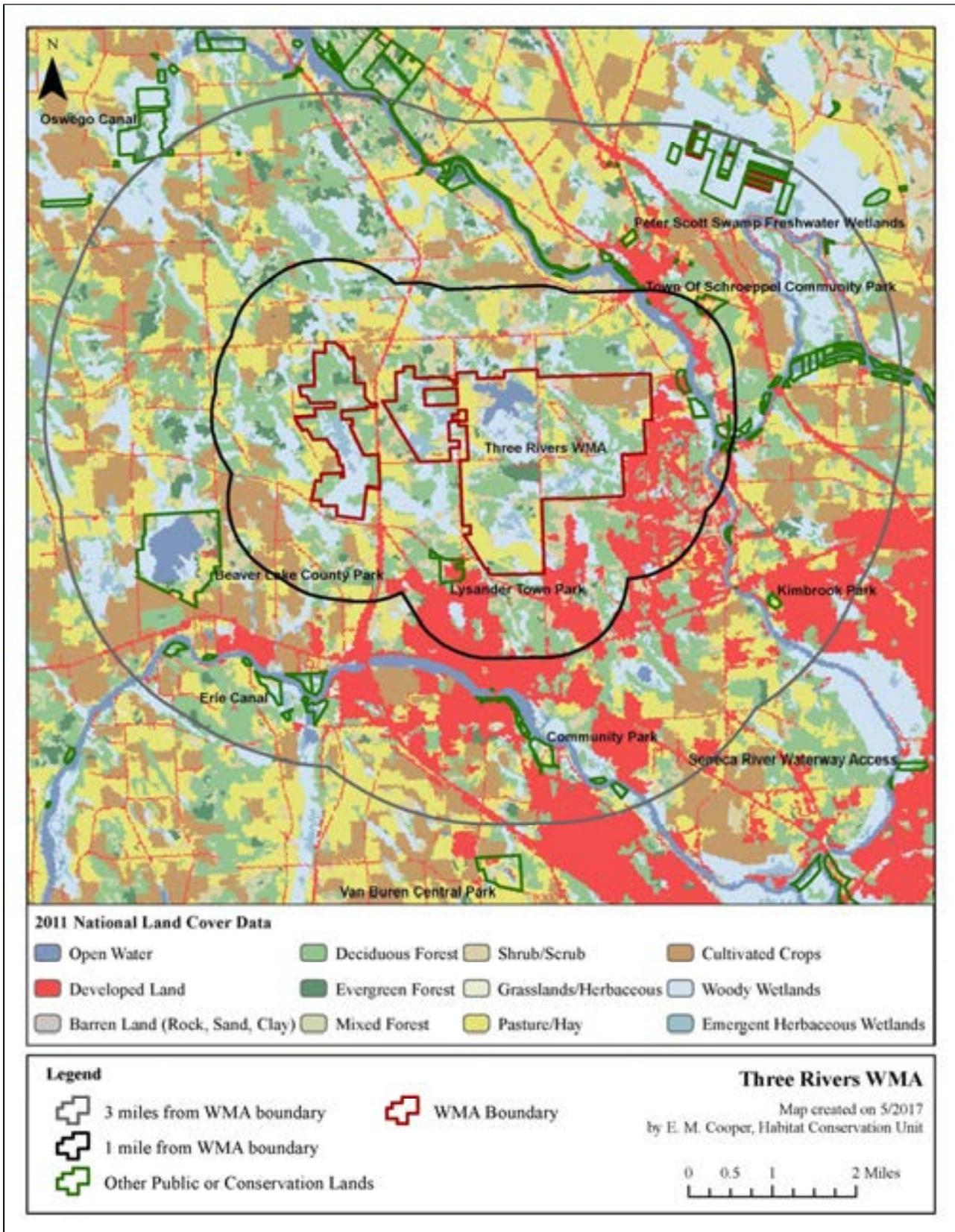


FIGURE 4. Land cover types and conservation lands in the landscape surrounding Three Rivers WMA. Conservation lands are from the NY Protected Areas Database available online at <http://www.nypad.org/>. Land cover types are from the 2011 National Land Cover Data (NLCD) and differ from the habitat types used in the WMA habitat inventory. NLCD definitions are available online at <http://www.mrlc.gov/nlcd2011.php>.

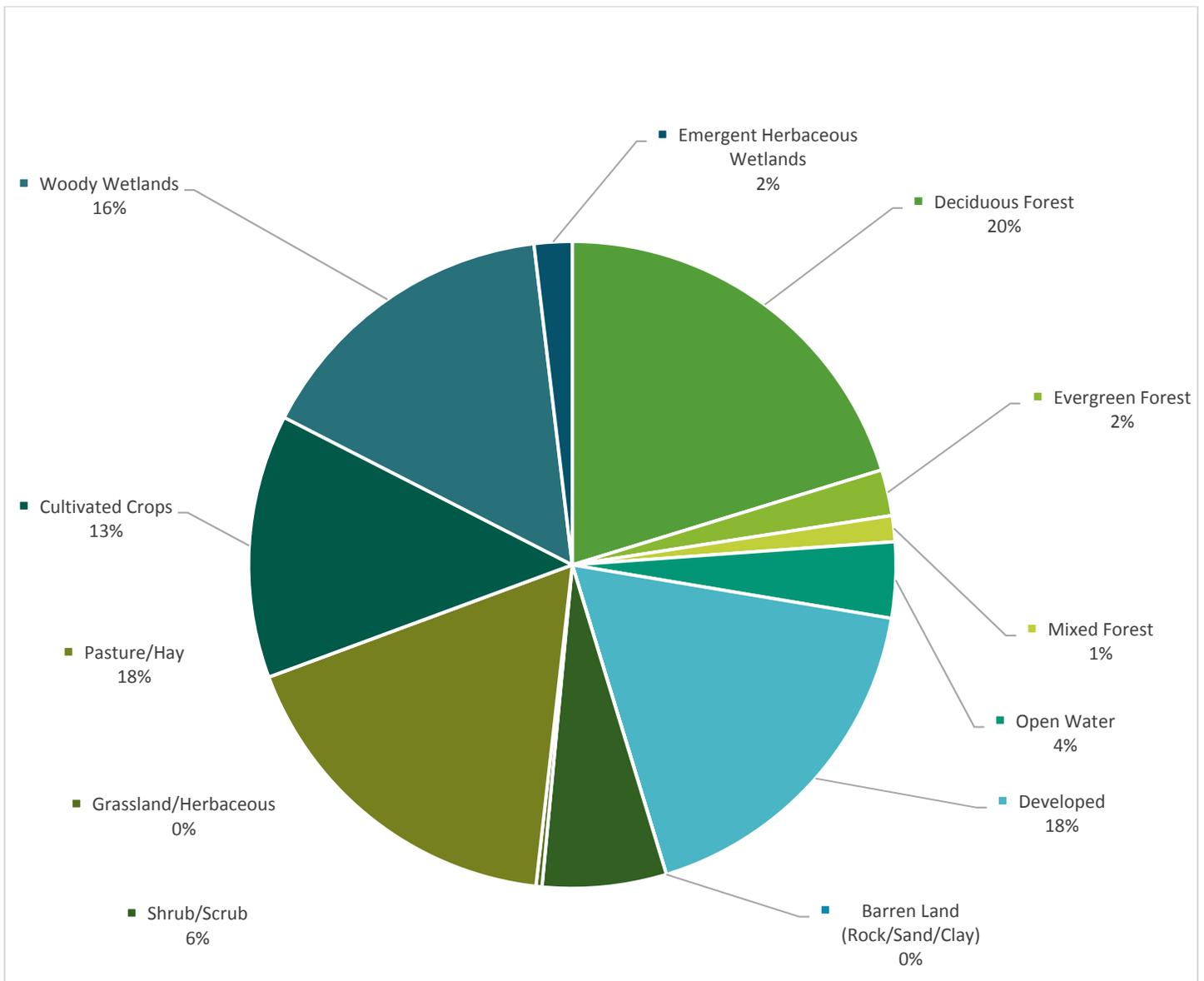


FIGURE 5. Percent cover of land cover types within three miles of Three Rivers WMA.

Land cover types are from the 2011 National Land Cover Data (NLCD) and differ from the habitat types used in the WMA habitat inventory. NLCD definitions are available online at <http://www.mrlc.gov/nlcd2011.php>.

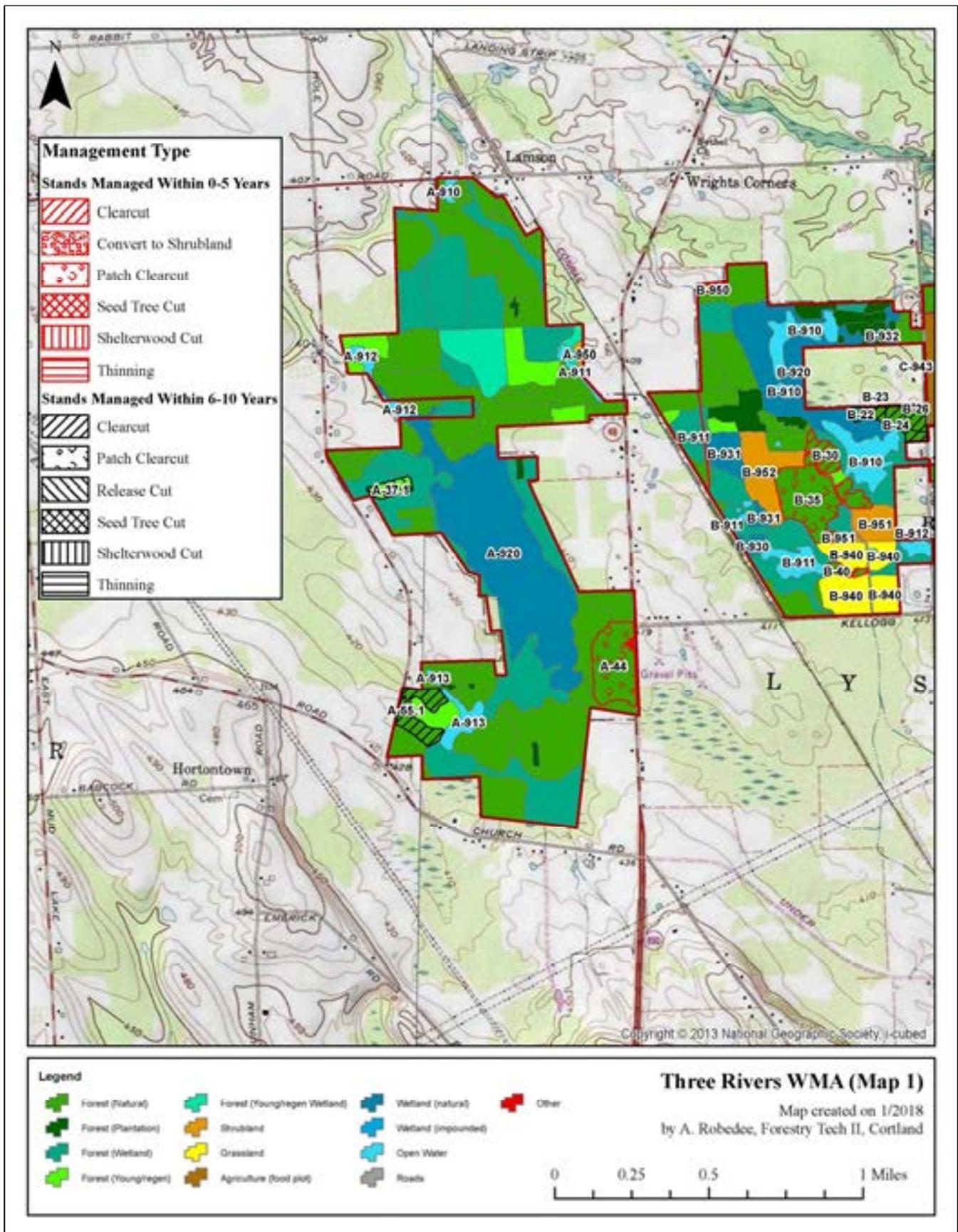


FIGURE 6. Habitat types and locations of proposed management on Three Rivers WMA (Map 1 of 2). Numbers indicate the stand number from habitat inventory.

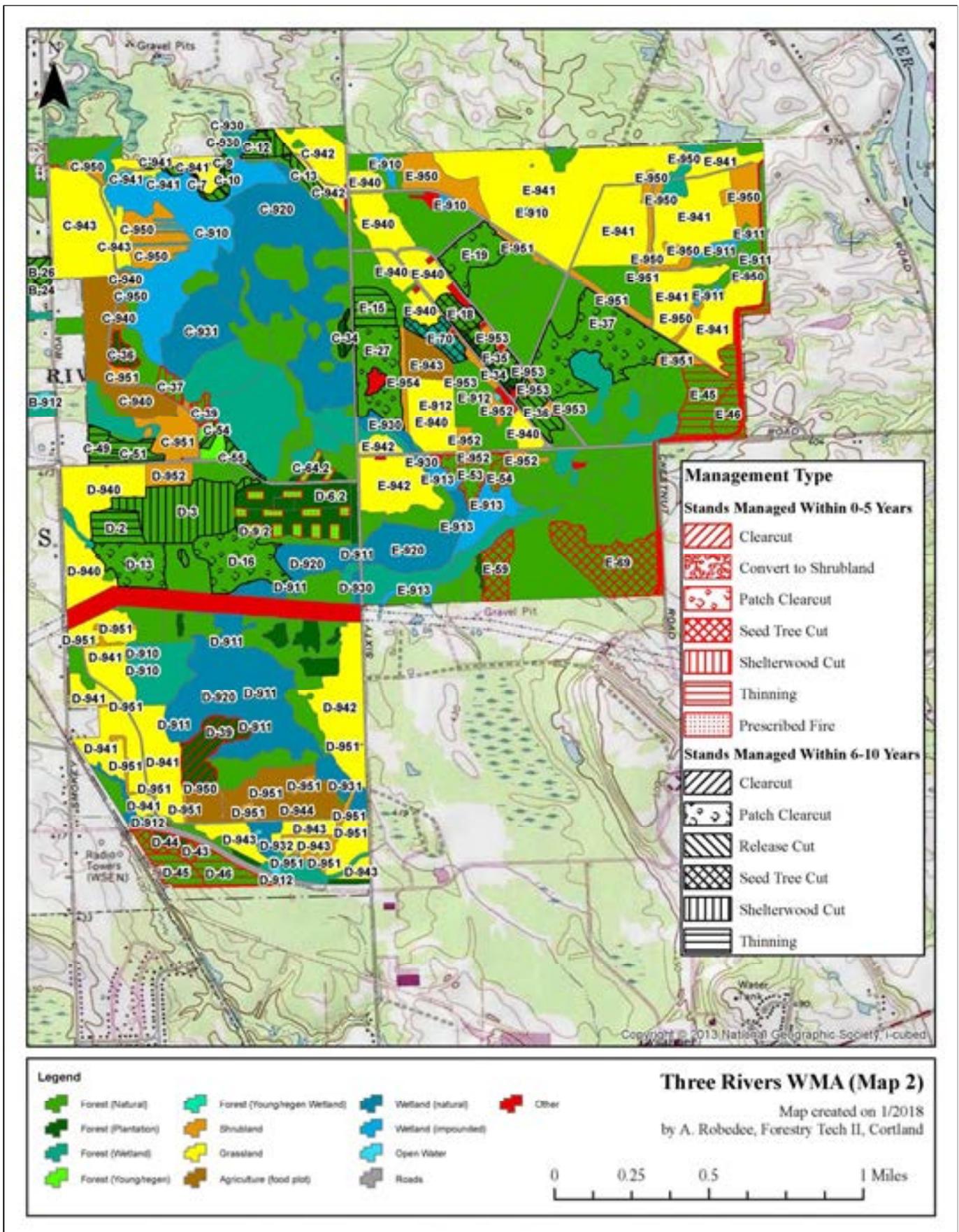


Figure 7. Habitat types and locations of proposed management on Three Rivers WMA (Map 2 of 2). Numbers indicate the stand number from habitat inventory.

IV. APPENDICES

APPENDIX A: DEFINITIONS

The following key words were used in the development of this Habitat Management Plan. Definitions are from The Dictionary of Forestry, Society of American Foresters, J. A. Helms, Editor, unless otherwise noted.

Best Management Practices: (BMP) A practice or combination of practices that are determined to be the most effective and practicable means of avoiding negative impacts of habitat management.

Biodiversity: The variety and abundance of life forms, processes, functions, and structures of plants, animals, and other living organisms, including the relative complexity of species, communities, gene pools, and ecosystems at multiple spatial scales.

Clearcut: A forest regeneration or harvest method that entails the cutting of essentially all trees, producing a fully exposed microclimate for the development of a new age class. Depending on management objectives, a clearcut may or may not have reserve trees left to attain goals other than regeneration.

Community: An assemblage of plants and animals interacting with one another, occupying a habitat, and often modifying the habitat; a variable assemblage of plant and animal populations sharing a common environment and occurring repeatedly in the landscape. (NY Natural Heritage Program)

Crop Tree Release: The selection and release of desirable trees by removing adjacent competing trees. This thinning technique is meant to increase the health and present value of a stand and also enhance the stand's future value by concentrating growth on the most desirable trees.

Endangered Species: Any species listed on the current state or federal endangered species list as being in danger of extinction throughout all or a significant portion of its range.

Even Age: A stand of trees composed of a single age class in which the range of tree ages is usually +/- 20% of rotation (see *Rotation*).

Forb: Any broad-leafed, herbaceous plant other than those in the Poaceae (Gramineae), Cyperaceae, and Juncaceae families (i.e., not grass-like).

Forest: An ecosystem characterized by a dense and extensive tree cover, often consisting of stands varying in characteristics such as species composition, structure, age class, and associated processes, and commonly including meadows, streams, fish, and wildlife.

Forest Health: The condition of a forest derived from concerns about such factors as its age, structure, composition, function, vigor, presence of unusual levels of insects or disease, and resilience to disturbance.

Grassland Focus Area: Regions of NY that support key, residual populations of grassland birds. There are currently eight focus areas, within which there is a concentrated conservation effort for these species. (A Plan for Conserving Grassland Birds in New York, Audubon NY.)

Habitat: A place that provides seasonal or year round food, water, shelter, or other environmental conditions for an organism, community, or population of plants or animals.

Hardwood: A broad leaved, flowering tree belonging to the botanical group Angiospermae, such as red maple, yellow birch, American beech, black cherry, etc.

Impoundment: A pond caused by a dam across a stream and used for purposes such as water supply, water power, or wildlife habitat. (Edinger et al. 2002. Ecological Communities of New York State, Appendix B)

Landscape: A spatial mosaic of several ecosystems, landforms, and plant communities across a defined area irrespective of ownership or other artificial boundaries and repeated in similar form throughout.

Mast: The fruit of trees considered as food for wildlife. Hard mast is the fruits or nuts of trees such as oak, beech, walnut, and hickories. Soft mast is the fruits and berries from plants such as dogwood, viburnum, elderberry, huckleberry, hawthorn, grape, raspberry, and blackberry.

Multiple Use Area: Lands that were acquired by DEC to provide outdoor recreation and wherever possible the conservation and development of natural resources. As their name suggests, they are to be managed for a broader range of public use. (Public Use of Lands Managed by the Bureau of Wildlife)

Native: A plant or animal indigenous to a particular locality.

Old Growth Forest: Forest with an abundance of late successional tree species, at least 180 - 200 years of age in a contiguous forested landscape that has evolved and reproduced itself naturally, with the capacity for self-perpetuation, arranged in a stratified forest structure consisting of multiple growth layers throughout the canopy and forest floor, featuring canopy gaps formed by natural disturbances creating an uneven canopy, and a conspicuous absence of multiple stemmed trees. (Adapted from the NYS Strategic Plan for State Forest Management)

Pole: A tree of a size between a sapling (1" to 5" diameter at breast height) and a mature tree.

Regeneration Cut: A cutting procedure by which a new forest age class is created; the major methods are clearcutting, seed tree, shelterwood, selection, and coppice. The Young Forest Initiative includes these silvicultural treatments: clearcuts, seed tree cuts, and shelterwood cuts. Salvage (following a natural disturbance) will be considered based on the size and scope of the disturbance.

Rotation: The period of time, (usually measured in years) between regeneration establishment and final cutting.

Seed Tree Method: A forest regeneration or harvest method that entails cutting of all trees except for a small number of widely dispersed trees retained for seed production and to produce a new age class in fully exposed microenvironment.

Shelterwood Method: A forest regeneration or harvest method that entails the cutting of most trees, leaving those needed to produce sufficient shade to produce a new age class in a moderated microenvironment.

Shrubland: A community dominated by woody plants typically less than ten feet tall with scattered open patches of grasses and forbs that provide floristic diversity. Typically characterized by >50% cover of shrubs and <25% canopy cover of trees. (Adapted from Edinger et al. 2002. Ecological Communities of New York State, Appendix B)

Softwood: A coniferous tree belonging to the botanical group Gymnospermae, such as white pine, Eastern hemlock, balsam fir, red spruce, etc.

Special Management Zone: A vegetation strip or management zone extending from wetland boundaries, high-water marks on perennial and intermittent streams, vernal pool depression, spring seeps, ponds and lakes, and other land features requiring special consideration. (Adapted from DEC Division of Lands and Forests Management Rules for Establishment of Special Management Zones on State Forests)

State Rank of Significant Ecological Communities:

S1 = Typically 5 or fewer occurrences, very few remaining individuals, acres, or miles of stream, or some factor of its biology making it especially vulnerable in New York State.

S2 = Typically 6 to 20 occurrences, few remaining individuals, acres, or miles of stream, or factors demonstrably making it very vulnerable in New York State.

S3 = Typically 21 to 100 occurrences, limited acreage, or miles of stream in New York State.

S4 = Apparently secure in New York State.

S5 = Demonstrably secure in New York State.

SH = Historically known from New York State, but not seen in the past 15 years.

SX = Apparently extirpated from New York State.

SE = Exotic, not native to New York State.

SR = State report only, no verified specimens known from New York State.

SU = Status unknown.

(Edinger et al. 2002. Ecological Communities of New York State, Appendix A)

Stand: In forestry, a contiguous group of trees sufficiently uniform in age-class distribution, composition, and structure, and growing on a site of sufficiently uniform quality, to be a distinguishable and manageable unit. In this HMP, the term “stand” is also applied to other habitat types (e.g., grassland, shrubland) to describe an area composed of similar vegetation composition and structure, as delineated during the habitat inventory.

Stand Prescription: A planned series of treatments designed to change current stand structure to one that meets management goals. Note: the prescription normally considers ecological, economic, and societal constraints.

Target Species: A suite of high priority wildlife species of conservation interest that are being targeted to benefit from management of a particular habitat type.

Unique Area: Lands that were acquired by DEC for their special natural beauty, wilderness character, geological, ecological, or historical significance for inclusion in the state nature and historical preserve. The primary purpose of these lands is to protect the feature of significance that led to the land being acquired by the state. (Public Use of Lands Managed by the Bureau of Wildlife)

Upland: Sites with well-drained soils that are dry to mesic (never hydric). (Edinger et al. 2002. Ecological Communities of New York State, Appendix B)

Uneven Age: A stand with trees of three or more distinct age classes, either intimately mixed or in small groups.

Wetland: “Freshwater wetlands means lands and waters of the state as shown on the freshwater wetlands map which contain any or all of the following:

- (a) lands and submerged lands commonly called marshes, swamps, sloughs, bogs, and flats supporting aquatic or semi-aquatic vegetation of the following types: wetland trees, wetland shrubs, emergent vegetation, rooted, floating-leaved vegetation, free-floating vegetation, wet meadow vegetation, bog mat vegetation, and submergent vegetation;
 - (b) lands and submerged lands containing remnants of any vegetation that is not aquatic or semi-aquatic that has died because of wet conditions over a sufficiently long period, provided that such wet conditions do not exceed a maximum seasonal water depth of six feet and provided further that such conditions can be expected to persist indefinitely, barring human intervention;
 - (c) lands and waters substantially enclosed by aquatic or semi-aquatic vegetation as set forth in paragraph (a) or by dead vegetation as set forth in paragraph (b) the regulation of which is necessary to protect and preserve the aquatic and semi-aquatic vegetation as set forth in paragraph (a) or by dead vegetation as set forth in paragraph (b) the regulation of which is necessary to protect and preserve the aquatic and semi-aquatic vegetation; and
 - (d) the waters overlying the areas set forth in (a) and (b) and the lands underlying.”
- (Refer to NYS Environmental Conservation Law, Article 24 § 24-0107 for full definition.)

Wildlife Management Area: Lands that were acquired by DEC primarily for the production and use of wildlife, including hunting and trapping. These areas provide and protect wildlife habitats that are particularly significant in their capacity to harbor rare, threatened or endangered species, host unusual concentrations of one or more wildlife species, provide an important resting and feeding area for migratory birds, provide important nesting or breeding

area for one or more species of wildlife, or provide significant value for wildlife or human enjoyment of wildlife.
(Public Use of Lands Managed by the Bureau of Wildlife)

Young Forest: Forests that result from a regeneration cut, typically having a dense understory where tree seedlings, saplings, woody vines, shrubs, and herbaceous vegetation grow together. Young forests are typically 0-10 years old. (Adapted from www.youngforest.org). It is acknowledged that “young forests” will differ in their character in different ecological areas of the state and that 0-10 years is a continuum into more mature forest types. (Refer to: A DEC Strategic Plan for Implementing the Young Forest Initiative on Wildlife Management Areas 2015-2020)

APPENDIX B. COMPLIANCE WITH STATE ENVIRONMENTAL QUALITY REVIEW

This plan identifies habitat management activities to be conducted on the Wildlife Management Area. These activities were analyzed in the 1979 *Programmatic Environmental Impact Statement on Habitat Management Activities of the Department of Environmental Conservation; Division of Fish and Wildlife* (PEIS), as updated and amended in 2017 by the *Supplemental Final Environmental Impact Statement* (SFEIS).³² Any activity that exceeds the thresholds of, or was not analyzed in the 1979 PEIS as amended in 2017, will require individual, site-specific environmental review. Environmental assessment forms prepared as a result of this review will be posted on the Environmental Notice Bulletin (ENB).³³

The activities recommended in this plan:

- Will not adversely affect threatened or endangered plants or animals or their habitat.
 - Prior to implementation of any activity, staff review the NY Natural Heritage Program’s “Natural Heritage Element Occurrence” database and perform field surveys when necessary. If a protected species is encountered in a project area, staff may establish buffer zones around the occurrence, move the project area, follow time-of-year restrictions, or cancel the project.
- Will not induce or accelerate significant change in land use.
 - All lands and waters within the WMA system are permanently protected as wildlife habitat.
- Will not induce significant change in ambient air, soil, or water quality.
 - Activities are designed to protect air, soil, and water quality through careful project planning, use of appropriate Best Management Practices, and establishment of Special Management Zones around sensitive land and water features requiring special consideration.
- Will not conflict with established plans or policies of other state or federal agencies.
 - Activities will follow established plans or policies of other state and federal agencies, including all relevant U.S. Fish and Wildlife Service rules and regulations.
- Will not induce significant change in public attraction or use.
 - The WMA system is part of a long-term effort to establish permanent access to lands in New York State for the protection and promotion of its fish and wildlife resources. Proposed activities will continue to protect, promote, and maintain public access to WMAs and their wildlife resources.
- Will not significantly deviate from effects of natural processes which formed or maintain an area or result in areas of significantly different character or ecological processes.
 - Activities will be conducted in a manner that maintains, enhances, or mitigates ecological processes and/or natural disturbances as appropriate for each WMA and habitat type. Some activities, such as even-aged forest management, intentionally result in areas of different character and ecological processes; however, they are not considered significant because they are ephemeral or transitional and will not permanently alter the landscape.
- Will not affect important known historical or archeological sites.
 - Activities that may result in ground disturbance are reviewed by DEC’s State Historic Preservation Officer (SHPO) and/or the NYS Office of Parks, Recreation and Historic Preservation (OPRHP) to identify potential impacts to historical or archeological sites. Sensitive sites will be protected under the direction of DEC’s SHPO and the OPRHP Archaeology Unit.
- Will not stimulate significant public controversy.
 - It is not anticipated that activities on WMAs will stimulate significant public controversy. A public comment period was held during development of both the PEIS and the SFEIS; no relevant comments in opposition of proposed management activities were received during the SFEIS public comment period. Staff also hold a public information session after completing each HMP, consider feedback from these sessions, and may adjust management as deemed appropriate. Kiosks, signs, webpages, articles, demonstration areas, and other outreach materials also raise awareness about habitat management activities.

³² Available online at <http://www.dec.ny.gov/regulations/28693.html>.

³³ Available online at <http://www.dec.ny.gov/enb/enb.html>.

PRESCRIPTION NOTES

Species Composition: At a minimum, the three most common species found in the overstory should be included, assuming at least three species comprise the stand. Species that individually constitute less than 5% of the stand may be lumped together as “Other” or “Miscellaneous.” For instance, if beech, hemlock and yellow birch each make up 3% of the stand, they may be lumped together as “Other – 9%.”

Natural Heritage Element Occurrence layer review: List those species that the Natural Heritage Element Occurrence (EO) data layer indicates are or were known to be present in the stand, or could be affected by treatments to the stand. For instance, if a rare fish was indicated in a water body that is a short distance downstream of a creek that flows through the stand, it should be listed in the prescription.

SMZ layer review: The SMZ data layer includes Special Management Zones around all streams and wetlands, as well as vernal pools, spring seeps and recreation areas that staff have mapped and digitized. If any of these features are mapped incorrectly or are missing from current data layers, staff can correct their locations by editing their office layers.

Retention data: Include numbers of existing snags, cavity trees, Coarse Woody Material, Fine Woody Material, and legacy trees. Ocular estimates are acceptable.

Soil types and drainage: Specifically named soil types are useful, but not necessarily required. “Flat, sandy, well-drained hilltop” or “Steep, gravelly, moderately well-drained mid-slope” may be just as useful as “Hershisier-Koufax Sandy Silt Loam” in describing the soil conditions as they relate to management decisions. The important point is to note those characteristics that may limit equipment operation or establishment of regeneration. Soil type data is available for some counties on the Data Selector.

Interfering vegetation: Indicate the existing amount of interfering vegetation such as beech, striped maple, fern, etc. This may be quantified using mil-acre plots or by ocular estimate.

Technical guidance used: This may include stocking guides, articles found in technical journals, textbooks or other silviculture-related publications. Other sources of guidance may be acceptable as well.

Treatment purpose: As used here, “treatment purpose” and “management objective” (see below) are two different things. Also, “treatment purpose” is not what is to be done (i.e., “reduce basal area by 25%” or “remove every third row”), but rather is an explanation of why it is being done (i.e., “stimulate regeneration and increase growth of residual stand” or “regenerate current stand and convert to young forest”).

Management objective: As used here, the term “management objective” is somewhat general. At a minimum, the prescription should indicate the desired future age structure and stand type. An entry as general as “Even aged hardwood” is acceptable, but regional staff may be more specific if they so choose. The management objective for a stand may be specified in the Habitat Management Plan (HMP) for the Wildlife Management Area in question. If the existing HMP does not specify the management objective regional staff should choose the management objective when the prescription is written.

Clearcut acreage and configuration: If the harvest involves one single clearcut, indicate the total contiguous area, in acres. If the harvest comprises more than one clearcut, indicate the total combined area of clearcuts, as well as the area of the largest clearcut.

Natural Heritage/MHDB considerations: Indicate what measures will be taken to protect those elements or features that were found in the review of the Natural Heritage Element Occurrence and Special Management Zone (not applicable yet) layers.

Retention considerations: Indicate whether or not existing levels meet the standards set forth in the Division’s policy on Retention on State Forests, or whether they are expected to do so as a result of the proposed treatment. Also indicate if or how the treatment was adjusted in order to improve compliance with the policy standards.

Treatment description: The intended treatment should be clearly described. The amount of information necessary to accomplish this will vary greatly. For instance, in a row thinning of a pole timber sized plantation that had no SMZs or other special features, it may be sufficient to simply indicate “Remove two out of every six rows, taking two adjacent rows and leaving four rows between successive pairs being removed.” An intermediate thinning in a sawtimber sized hardwood stand with a recreational trail, two streams and a known occurrence of an endangered plant community would require significantly more detail. One rule of thumb that could be used is to describe the treatment so that a qualified forestry professional could use it to assist in marking the harvest.

Additionally, since we are focused on creating young forests you should also address the presence/absence of advanced regeneration. If you are planning on clearcutting without advanced regeneration, address how you are going to mitigate that. For example, “This aspen stand will be clearcut and it is anticipated that future regeneration will be established through aspen root sprouting”. Or, “This stand will be clearcut and replanted with Norway spruce to establish conifer cover.”

Furthermore, if you are planning on conducting a shelterwood or seed tree cut, please indicate when you are planning on returning to the stand to conduct the final harvest (overstory removal).

APPENDIX D: AMENDMENTS

Any substantive changes to the habitat management described in this plan will be amended to the plan annually or as needed. Such changes may include: land acquisition, unforeseen natural disturbance, or any other change that alters the need for or the scope, method, or timing of management.