MICHIGAN DEPARTMENT OF NATURAL RESOURCES

Forest Certification Work Instruction

☐ **DRAFT** ☒ **FINAL**

Date of Draft Document:

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Work Instruction Title: 1.4 Biodiversity Management on State Forest Lands

Work Area Group: 1 - Planning, Monitoring, Review

Purpose: To provide direction for addressing biological diversity conservation objectives.

Work Instruction:

The intent of this work instruction is to provide direction for cataloging areas within the state forest that have been identified for a variety of biodiversity values. It is also intended to provide management options that are compatible with conservation objectives.

I. Definitions:

Biological Diversity: *means the full range of variety and variability within and among living organisms and the natural associations in which they occur. Biological diversity includes ecosystem diversity, species diversity, and genetic diversity (*NREPA, Part 355, PA 451, 1994 as amended).

Special Conservation Areas (SCAs). Areas of state forest which have had one or more conservation objectives, interests, or elements identified. Conservation objectives listed in the SCA category have been identified through a variety of methods and mechanisms, and it is important to understand how the objective was determined. The type and strength of recognition—and possible management options—will vary depending on the process used to identify the conservation value. For example, some objectives are detailed in the Land Use Orders of the Director (force of law) while other may be identified through cooperative agreements (administrative direction). There are also conservation objectives that are developed through department processes or agreements for areas such as deer yards and riparian buffers. The SCA category may also be used to document areas identified by an external group or organization, such as National Audubon Society's Important Bird Areas Program. The SCA definition is purposefully broad to encompass a spectrum of conservation interests and elements. It is a descriptor that provides the land manager and/or stand examiner with natural resource information to make informed management decisions.

High Conservation Value Areas (HCVAs). Areas of state forest which have been recognized for their contribution to specific conservation values, objectives and ecological attributes or significant social values and have been through a recognized DNR process[1]. Examples of such a process include legislation, administrative rule, Director's and Natural Resource Commission Orders, and project-specific public reviews. HCVAs include Legally Dedicated Natural, Wilderness or Wild Areas, Natural Rivers, Critical Dune areas, Designated Critical Habitat (e.g. Kirtland's Warbler Management Areas), Dedicated Management Areas (e.g.

[1] Although an important public process, Open House/Compartment Review will not be a final approval forum for designating HCVAs and ERAs. It will be a key process for identifying potential conservation areas.

the Sand Lakes Quiet Area), and Coastal Environmental Areas. Typically, HCVAs are a subset of SCAs on state forest land that have had significant public participation and/or public review as part of their planning process. Biodiversity Stewardship Areas (BSAs) will be a HCVA category that will be designated using the approved Biodiversity Conservation Planning Process (BCPP), as amended. Type 1 and Type 2 Old Growth areas will become a HCVA category upon completion of the public review and approval process for future revisions of Regional State Forest Management Plans.

Ecological Reference Areas (ERAs). ERAs serve as models of ecological reference within the state and may be located on any forest land ownership. They are high quality examples of functioning ecosystems that are primarily influenced by natural ecological processes. The initial set of ERAs is based on Michigan Natural Heritage database of known high quality natural community sites (See Conservation Area Management Guidance). The initial set of ERAs are natural communities that have a Global (G) or State (S) Rank of endangered (1), threatened (2) or rare (3)[2], and have an Element Occurrence (EO) Rank A or B (the site is an "excellent or good" examples of the natural community). This initial set will remain unchanged until additional ERAs or other modifications to the initial set are identified through the BCPP or another process that may be developed. All ERAs on state forest land are, by definition, High Conservation Value Areas.

The ERA, HCVA and SCA designations are nested (Figure 1). These three categories quickly organize areas with conservation objectives or values into Ecological Reference Areas, High Conservation Value Areas and Special Conservation Areas.

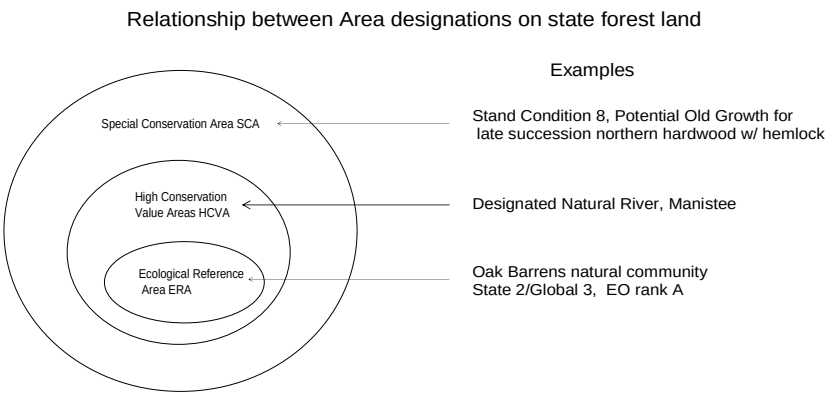

Figure 1. ERA, HCVA and SCA Designations.

Biodiversity Stewardship Areas (BSAs). Currently there are no designated BSAs. A database of potential BSAs has been compiled for all four ecoregions and is in the process of being reviewed by the Statewide Biodiversity Team, consistent with the revised biodiversity conservation planning and approval process approved by the DNR Director in September 2011. BSAs will be areas of land selected to help conserve biodiversity through ecological representation of natural communities. BSAs will contain some of the State's best examples of high-quality common natural communities. Therefore, the BSA network will help us augment the current set of ERAs to better meet the requirements of Criterion 6.4 of the FSC Standard. BSAs will be a category of HCVA with a higher level public review process. After the DNR completes implementation of the BCPP, a management decision will be made on the future of these various labels (e.g., ERA, BSA) in our land management and planning efforts and whether all of them are necessary.

[2] Natural Community Rank and Element Occurrence in Michigan are determined by Michigan Natural Features Inventory using internationally recognized heritage methodology developed by The Nature Conservancy and used by NatureServe.

Type 1 and Type 2 Old Growth. Old-Growth forest (also termed primary forest, ancient forest, virgin forest, or primeval forest) is an area of forest that has few or no signs of human disturbance and that exhibits unique ecological features related to age, composition and associated structure. Old growth forests are of natural origin. They may be dominated by late successional forest species (i.e. sugar maple and American beech), or may be a very old example of a stand dominated by long-lived early- or mid-seral species (i.e. oak, or red pine).

Actively or passively managed second growth forest stands (of natural or planted origin) which were effectively clearcut in the late 1800s and early 1900s, but have subsequently developed late-successional or old growth structure, composition, and function are not considered to be Type 1 or Type 2 Old Growth.

Old-growth stands and forests include:

> **Type 1 Old Growth:** A forested area three acres or more in size that has never been logged and that display old-growth characteristics (Table 1).
>
> **Type 2 Old Growth**: A forested area 20 acres or more acres in size that has been logged (minor cutting), but which does not result in the elimination of any major canopy species and that retains (never lost) significant original elements of old-growth structure and functions (Table 1).

Legacy Tree. An individual tree of a long-lived species, usually mature or remnant of old growth, which provides a biological legacy. It is an individual old tree (or occasionally a small group of old trees) that function(s) as a refuge or provides other important structural habitat values. By definition, relatively short-lived species (including big-tooth and trembling aspen, balsam fir, balsam poplar, and paper birch) cannot be legacy trees.

Legacy trees must be 150+ years old or diameter at breast height is 26+ inches,
and in either case will exhibit some of the following characteristics:

- Presence of hollows and cavities
- Super-canopy crown position
- Broken tops with crown debris accumulations and/or partial snag formation
- Plate-like or thick fire-resistant bark
- Fire scars and basal burn cavities

II. Management Direction:

Forests are managed for a broad array of biological, ecological, social and economic benefits, values, goals and objectives. Strategic and long term planning that includes biological diversity conservation is addressed through the Michigan State Forest Management Plan and other DNR planning processes. Biodiversity conservation objectives and determinations are conducted at several scales (State, eco-regional, and/or FMU/Compartment), identified in several categories (Special Conservation Areas, High Conservation Value Areas, and Ecological Reference Areas), and are linked through planning and operational activities. Elements of biodiversity are also addressed through within-stand retention of specific compositional and structural habitat features (snags, coarse woody debris, and live trees – including legacy trees) in forest stands that are scheduled for harvest treatments.

It is the responsibility of the DNR land management staff to understand the intent of the SCA identification as well as the implications for management activities. The database of SCAs is located within the Geographic

Decision Support Environment (GDSE), and maintained by the FMD GIS Certification Specialist. Through the course of conducting Forest Inventory (IFMAP), stand examiners evaluate the database for completeness. **Any newly proposed SCAs, or previously identified areas of Potential Old Growth that are desirable to maintain, should be coded as an Area of Interest (AOI) in IFMAP (with the "Reason of Interest" attribute being "Unique Site").**

1. Identified SCAs, HCVAs and ERAs will be managed to conserve, protect, maintain, and/or enhance their defined conservation objectives or values. As provided in the Michigan State Forest Management Plan and in Regional State Forest Management Plans, management direction will vary depending on the objective and type of designation.

   On DNR managed lands, Ecological Reference Areas may be protected through a variety of mechanisms (refer to Conservation Area Management Guidance). Management activities or prescriptions in Ecological Reference Areas are highly restricted to those that maintain or enhance the defined attributes and values and protect the immediate natural resource values or human health and safety.

2. Potential Old Growth (POG) Management Direction: No vegetative treatments shall occur in areas currently identified as Potential Old Growth until these stands are assessed in the context of SCAs, HCVAs and ERAs, excepting activities that protect immediate natural resource values (such as control of invasive species pests and wildfire suppression) or human health and safety. Previously identified potential old growth SCAs shall be evaluated for re-designation as ERAs, HCVAs or other SCAs through the Biodiversity Conservation Planning Process and the compartment review process. Those areas that do not meet the criteria for another classification to another category shall have the IFMAP AOI coding and comments as a "unique site" for potential old growth removed.

3. Areas that might meet the definition of Type 1 and 2 Old Growth have been identified in the SCA layer in the GDSE. This set of areas originated from a subset of forested natural communities within some state Natural Areas, and all A/AB-ranked Natural Heritage database Element Occurrences.

   Type 1 and 2 Old Growth SCAs and additional areas that may be identified by field staff will be assessed and validated through the compartment review process over the next decade, using the procedure as laid out in Section III of this work instruction. Those validated areas will become HCVAs in the next planning cycle. Those areas that are reviewed and determined not to meet the definition and criteria as Type 1 or 2 Old Growth will be removed from the GDSE SCA layer. Any other assessed and validated SCA, HCVA, or ERA designation may be retained for the area.

   Type 1 and 2 Old Growth SCAs assessed and validated through the compartment review process shall be protected from harvesting and other timber management activities, except as needed to maintain the values associated with the stand (e.g. removal of invasive species, prescribed fire, and thinning from below for purposes of restoration).

4. Legacy trees shall be marked as individual "leave trees" and specifically protected from harvest in timber sale specifications, subject to forest health and human health and safety concerns. Legacy trees are not permanent features and individual trees are not tracked in inventory.

III. Instruction for Compartment Review:

This section contains three subjects that must be completed for each stand under consideration for treatment in the compartment review process:

1. Review for rare species
2. Determine appropriate biodiversity management guidelines
3. Map and code existing and potential new SCAs, HCVAs and ERAs

1. REVIEW FOR RARE SPECIES

Refer to Figure 2 and the following direction for rare species review. Additional information is contained in the Michigan DNR Rare Species Protection Approach and Resources for DNR Staff on State Forest Lands (IC 4172, dated 2011).

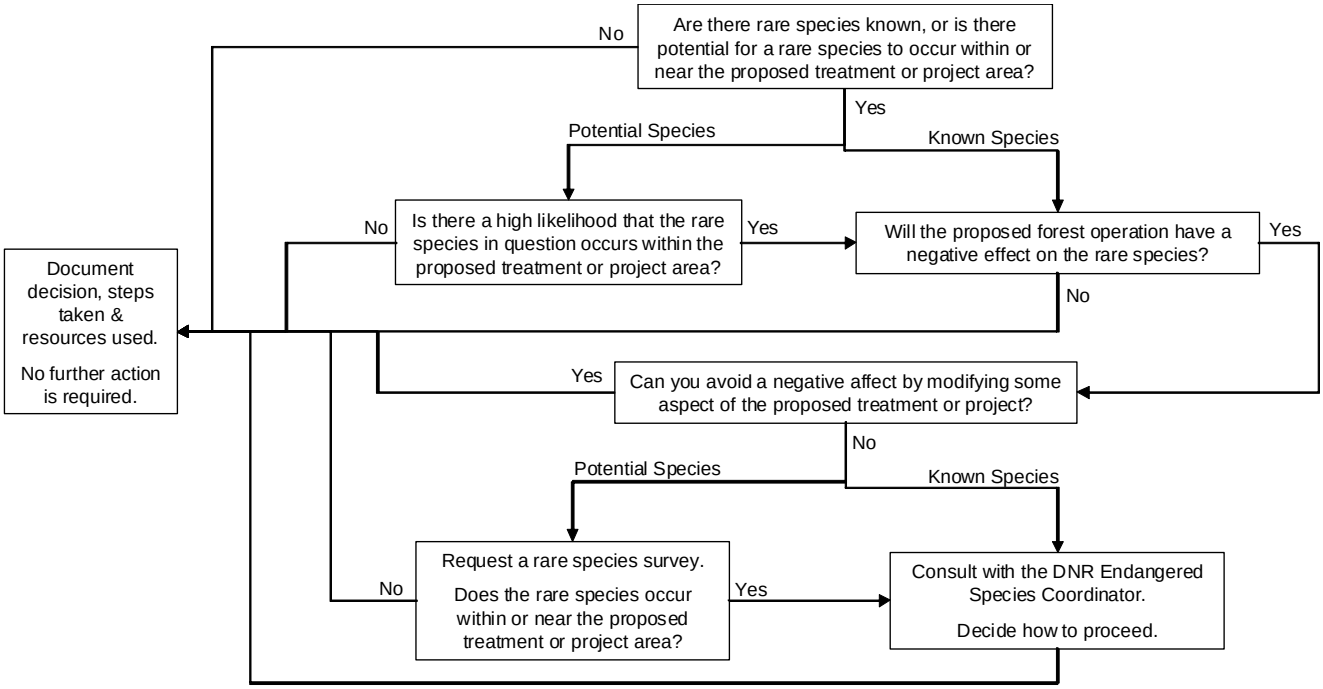

Figure 2. Review for rare species for forest operations.

During the compartment review process, determine if there is a high likelihood of finding a rare species (threatened, endangered, or special concern plant or animal species) within or near the site of any proposed forest operations. Use Compartment Review Comments prepared by contract services (e.g., MNFI ecologists) and other information resources available to make this determination. Information resources may include MNFI web applications, the Natural Heritage database records, MNFI species and community abstracts, Michigan Wildlife Action Plan and GAP habitat models (see references), as well as consultation with experts. A check of the Natural Heritage database records is <u>REQUIRED</u> in all cases because of the dynamic nature of the database. Record determination and resources used to make determination in IFMAP Opportunistic Field Survey (OFS) locked comments and place a signed and dated copy in the Compartment File.

If yes, a rare species is confirmed to occur or there is a high likelihood of a rare species occurring within or near the site of a proposed forest operation, determine (with consideration of existing management guidelines and agreements) whether a potential conflict exists (and cannot be avoided) between

proposed forest operation(s) and the rare species. Use similar resources as above (including consultation with experts, as needed) to make determination. Document in a concise manner the determination, rationale for determination, and resources used to develop rationale and place a signed and dated copy in the Compartment file.

A. If yes, a potential conflict exists and the species is confirmed to occur within or near the site of the proposed forest operation(s), consult with the DNR Endangered Species Coordinator (and Fisheries Division representative for reptiles and amphibians, if appropriate) and decide how to proceed. Document decisions, resources used to make the decisions, and pertinent information from those resources and place a signed and dated copy in the Compartment file.
B. If yes, a potential conflict exists and there is a high likelihood of finding a rare species (as determined above), but the species is not confirmed, request a survey to determine if the species occurs within or near the site of the proposed forest operation(s). Survey requests must be submitted through the Forest Management Unit Supervisors to both the FMD Forest Resource Management Section Manager AND the FMD Biodiversity & Conservation Program Leader. Refer to the Michigan DNR Rare Species Protection Approach and Resources for DNR Staff on State Forest Lands (IC 4172, dated 2011) for details on requesting a survey. Place a copy of the survey results in the Compartment file. If species is confirmed, record presence of species in IFMAP Opportunistic Field Survey (OFS) locked comments, and follow 'A' above.

While preparing treatments, refer to decisions recorded regarding rare species and potential conflicts with proposed forest operations. If implementation actions vary from those approved at the compartment review or new information becomes available, staff must re-assess the potential for rare species to occur and potential impacts on any species identified, make a new determination regarding potential conflicts, and follow-up with a survey and/or consultation with the DNR Endangered Species Coordinator, as appropriate.

2. DETERMINING APPROPRIATE BIODIVERSITY MANAGEMENT GUIDELINES

Forest compartments or portion of compartments or stands that contain any of the following elements may have significant biodiversity values that should be considered during the course of compartment review.

A. A previously designated area (ERA, Potential Old Growth, Dedicated or Non-Dedicated Natural Area, Designated Critical Habitat, Critical Dune, or Coastal Environmental Area).
B. An area with no previously designations but potentially identified through the process described in section III (1) above.

Review biodiversity management guidelines for the natural communities/cover types under consideration for management using management direction contained in the Michigan State Forest Management Plan, approved ERA plans, MNFI species and community abstracts, Michigan Wildlife Action Plan, Silvicultural Guidelines, and other habitat models (see references).

Stand examiners determine how potential management activities may positively or negatively impact the area and identify specific elements that protect, maintain or enhance biodiversity, e.g. snags, coarse woody debris, edge, perches, and legacy trees. (see "Within-Stand Retention Guidance" and "Rare Species Assessment Guidelines" in References section).

A. Record in management prescription comments (IFMAP treatments under review comments).
B. Add biodiversity specifications to timber sale specifications and Forest Treatment Proposals.

3. MAPPING & CODING SCAs/HCVAs/ERAs:

Prior to the initiation of field inventory, use Figure 3 and the following guide to determine if an area should be retained or designated and coded as a Special Conservation Value Area (SCA), High Conservation Value Area (HCVA) or Ecological Reference Area (ERA). Figure 4 and Table 1 (Minimum criteria for assessing stand characteristics and classifying Type 1 and 2 Old Growth on the State Forest) should also be used to assess and validate Type 1 and 2 Old Growth areas as potential HCVAs.

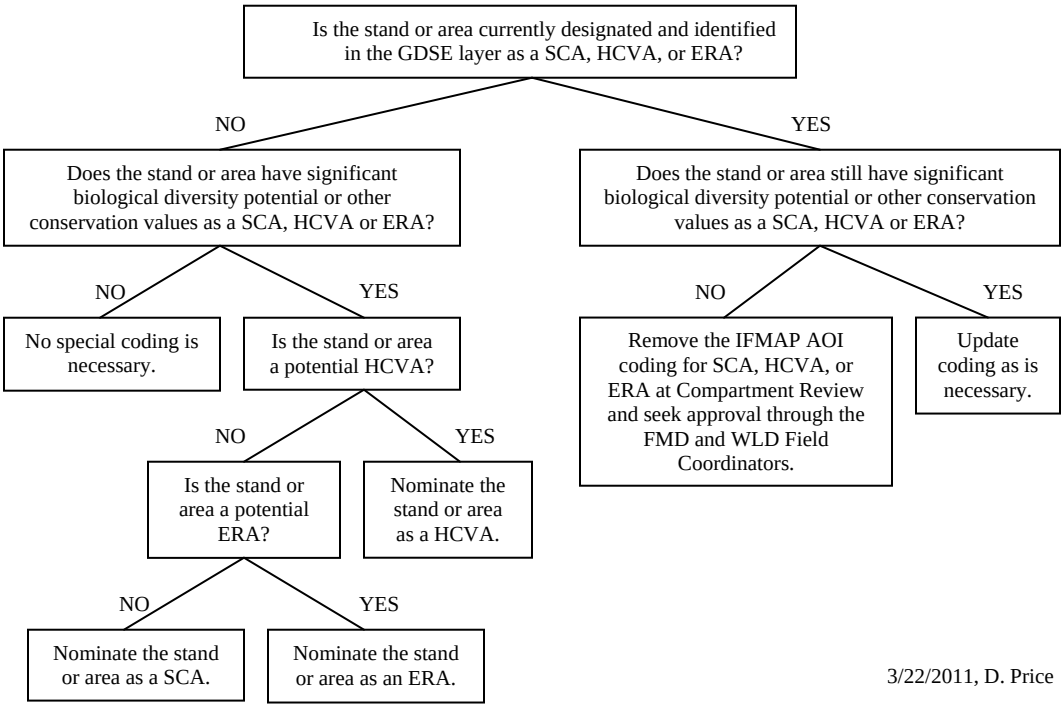

Figure 3. Identification of SCAs, HCVAs, and ERAs during inventory.

Is the stand or area currently identified as a SCA, HCVA, or ERA in the GDSE?

A. If yes, does the stand or area still have significant biological diversity potential or other conservation values as a SCA, HCVA or ERA?

    1) If yes, then update coding as necessary for the appropriate conservation values (the intent is to have an SCA/HCVA/ERA tag in IFMAP so that stand sheets indicate its presence).

        - If there is a need for MNFI survey work to provide more data on the area, then forward a request to Forest Resources Management Section Manager and the FMD Biodiversity Conservation Program Leader through the Forest Management Unit Manager.

    2) If no, then remove the IFMAP AOI coding for SCA/HCVA/ERA at Compartment Review and seek approval through the FMD and WLD Field Coordinators. Notify the Forest Certification GIS Specialist to update the GDSE SCA layer.

B. If no, does the stand or area have significant biological diversity potential or other conservation values as a SCA, HCVA or ERA?

1) If yes, is the stand or area a potential HCVA (requiring approval through a public designation process. See examples in the above definition section.

   a. If yes, nominate the stand or area as a HCVA:

      - Document the area in IFMAP as an AOI, with the 'Stage 2 Reason' being 'Unique Site'. Identify the type of HCVA, what is unique about the area, and how the area will be managed or treated in AOI comments. For example: "HCVA for proposed Natural Area. Late successional mesic northern forest with hemlock in understory. Manage with no proposed treatments." (Reference the document "Conservation Area Management Guidance" for coding direction).

      - After approval at Compartment Review, the District Planning and Inventory Specialist will forward the nomination to the Forest Resource Management Section for action by the DNR Biodiversity Team.

      - If there is a need for MNFI survey work to provide more data on the area, then forward a request to Forest Resources Management Section Manager and the FMD Biodiversity Conservation Program Leader through the Forest Management Unit Manager.

   b. If no, then is the stand or area a potential ERA? (See the above definition section.)

      i. If yes, then nominate the stand or area as an ERA:

         - Document the area in IFMAP as an AOI, with the 'Stage 2 Reason' being 'Unique Site'. Identify the type of ERA, what is unique about the area, and how the area will be managed or treated in AOI comments. For example: "ERA for Mesic Northern Forest with hemlock in understory. Manage with no proposed treatments." (Reference the document "Conservation Area Management Guidance" for coding direction).

         - After approval at Compartment Review, the District Planning and Inventory Specialist will forward the nomination to the Forest Resource Management Section for action by the DNR Biodiversity Team.

         - If there is a need for survey work to validate the nomination or to provide more data on the area, then forward a request to Forest Resources Management Section Manager and the FMD Biodiversity Conservation Program Leader through the Forest Management Unit Manager.

      ii. If no, then nominate the stand or area as a SCA:

         - Document the area in IFMAP as an AOI, with the 'Stage 2 Reason' being 'Unique Site'. Identify the type of SCA, what is unique about the area, and how the area will be managed or treated in AOI comments.

           Example:

           "SCA for Cultural and Customary Use Area for maple sugaring by 1836 Treaty Tribes. Manage for sawlog diameter class sugar maple." (Reference the document "Conservation Area Management Guidance" for coding direction."

         - If there is a need for survey work to validate the nomination or to provide more data on the area, then forward a request to Forest

Resources Management Section Manager and the FMD Biodiversity Conservation Program Leader through the Forest Management Unit Manager.

2) If no, then no special coding is necessary. The stand does not have significant conservation values as an SCA/HCVA/ERA.

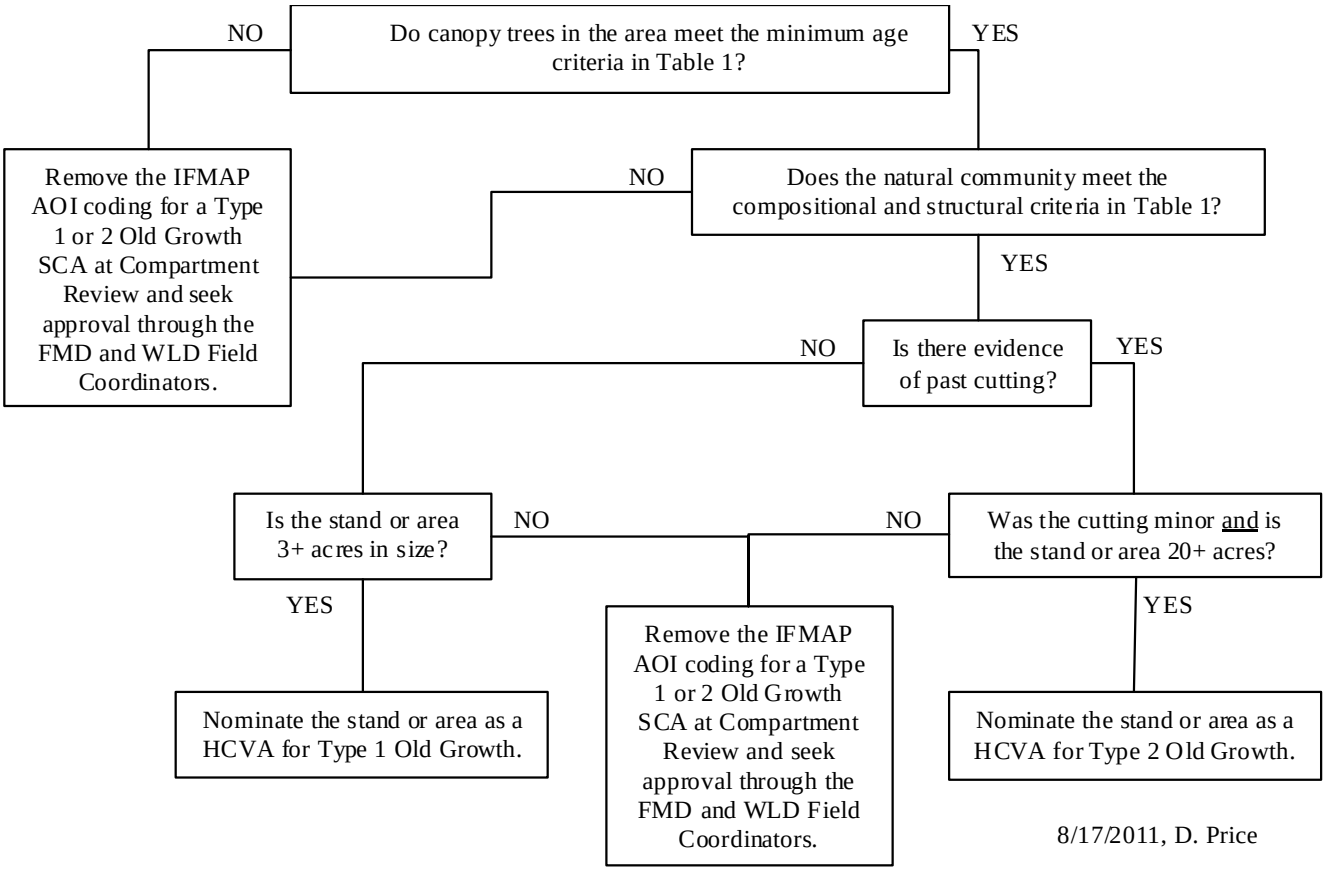

Figure 4. Identification of Type 1 and 2 Old Growth during inventory.

Table 1. Minimum criteria for assessing stand characteristics and classifying Type 1 and 2 Old Growth on the State Forest[1].

Community	Age [2]	Composition	Structure	Disturbance	Size	Type
Boreal Forest	Canopy trees are 150+ years.	Most species from MNFI abstract. Conifer canopy is greater than 80%.	Canopy trees are greater than 8 inches dbh. CWD and pit and mound microtopography present.	No evidence of cutting.[3] Windthrow occurs.	3+ acres.	1
				Minor cutting.[4] Windthrow occurs.	20+ acres.	2
Dry-mesic Northern Forest	Canopy Red and White Pine and Oak are 150+ years.	Most species from MNFI abstract.	Wide variation in tree size and spacing, with multiple canopy layers. Canopy trees are greater than 22 inches dbh. CWD present.	No evidence of cutting.[3] Evidence of fire.	3+ acres.	1
				Minor cutting.[4] Evidence of fire.	20+ acres.	2
Dry Northern Forest (Red Pine Variant)	Canopy Red Pine are 150+ years [2].	Most species from MNFI abstract.	Canopy Red Pine are greater than 20 inches dbh. Canopy Jack Pine are greater than 10 inches dbh. CWD present.	No evidence of cutting.[3] Evidence of fire.	3+ acres.	1
				Minor cutting.[4] Evidence of fire.	20+ acres.	2
Floodplain Forest	Canopy trees are 140+ years.	Most species from MNFI abstract. FQI greater than 35.	Canopy trees are greater than 24 inches dbh. CWD and pit and mound microtopography present.	No evidence of cutting.[3] Windthrow and flooding occurs.	3+ acres.	1
				Minor cutting.[4] Windthrow and flooding occurs.	20+ acres.	2
Hardwood-Conifer Swamp	Canopy Hemlock are 220+ years. Canopy Yellow Birch are 150+ years.	Most species from MNFI abstract. FQI greater than 35.	Canopy trees are greater than 14 inches dbh on wettest sites; greater than 24 inches dbh (hardwoods) and greater than 26 inches dbh (conifers) on drier sites. CWD and pit and mound microtopography present.	No evidence of cutting.[3] Windthrow occurs.	3+ acres.	1
				Minor cutting.[4] Windthrow occurs.	20+ acres.	2
Mesic Northern Forest	Canopy Sugar Maple are 170+ years. Canopy Hemlock are 220+ years.	Most species from MNFI abstract.	Uneven-aged, with multiple canopy layers and gaps. Canopy Sugar Maple are greater than 20 inches dbh. CWD and pit and mound microtopography present.	No evidence of cutting.[3] Windthrow occurs.	3+ acres.	1
				Minor cutting.[4] Windthrow occurs.	20+ acres.	2
Poor Conifer Swamp	Canopy Black Spruce and Tamarack are 140+ years.	Most species from MNFI abstract. Canopy cover is greater than 50%.	Canopy trees are greater than 10 inches dbh. CWD and pit and mound microtopography present.	No evidence of cutting.[3] Windthrow occurs.	3+ acres.	1
				Minor cutting.[4] Windthrow occurs.	20+ acres.	2
Rich Conifer Swamp	Canopy Northern White Cedar are 140+ years.	Most species from MNFI abstract. FQI greater than 35. Conifer canopy is greater than 90%.	Canopy trees are greater than 14 inches dbh on wettest sites and greater than 26 inches dbh on drier sites. CWD and pit and mound microtopography present.	No evidence of cutting.[3] Windthrow occurs.	3+ acres.	1
				Minor cutting.[4] Windthrow occurs.	20+ acres.	2
Rich Tamarack Swamp	Canopy Tamarack and Northern White Cedar are 140+ years.	Most species from MNFI abstract. FQI greater than 35. Canopy cover is greater than 50%.	Canopy Tamarack are greater than 10 inches dbh. CWD and pit and mound microtopography present.	No evidence of cutting.[3] Windthrow occurs.	3+ acres.	1
				Minor cutting.[4] Windthrow occurs.	20+ acres.	2
Wooded Dune and Swale Complex	See criteria for component forested natural communities: Mesic Northern Forest, Dry-mesic Northern Forest, Dry Northern Forest, Hardwood-Conifer Swamp, Rich Conifer Swamp, or Poor Conifer Swamp.			No evidence of cutting.[3] Windthrow occurs.	3+ acres.	1
				Minor cutting.[4] Windthrow occurs.	20+ acres.	2

[1] Criteria are largely based upon those for A-ranked natural communities, as defined in *Draft Criteria for Determining Natural Quality- and Condition Grades, Element Occurrence Size-Classes and Significance Levels for Palustrine and Terrestrial Natural Communities* , Michigan Natural Features Inventory, 17 February 1988.

[2] Ages are species-speciefic and are roughly based upon years of origin between 1790 and 1870. Age can be less than the minimum criteria in fire dependent ecosystems, when documented stand origin is due to natural fire events.

[3] Evidence of cutting determined by sign of human disturbance (including the physical presence of stumps, rail grades, and roads), geographic isolation, old aerial photography, or by written historical reference.

[4] Minor cutting is defined as having been logged but not effectively clearcut; does not result in the elimination of any major canopy species; and that retains (never lost) significant original elements of old-growth structure and functions.

FQI: Floristic Quality Index, as determined by procedures in: Herman, K. D., L. A. Masters, M. R. Penskar, A. A. Reznicek, G. S. Wilhelm, W. W. Brodovich, and K. P. Gardner. 2001. Floristic Quality Assessment with Wetland Categories and Examples of Computer Applications for the State of Michigan - Revised, 2nd Edition. Michigan Department of Natural Resources, Wildlife, Natural Heritage Program. Lansing, MI. 19 pp. + Appendices.

CWD: Corase Woody Debris (standing and downed large diameter decadent trees).

Scope: (All State Forest Land and Affected Divisions): ☒ State Forest Land ☒Other: MNFI

☒ DNR – FMD ☒ DNR – Wildlife ☒ DNR – Fish ☒ DNR – Law ☒ DNR – Recreation

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Responsibility and Role: (Staff who will implement or supervise this instruction)

Job Title/Division	Role
State Biodiversity Conservation Planning Team	Statewide biodiversity assessments, planning and review, and make final recommendation on HCVAs and ERAs.
Eco-Team/All Divisions	Regional biodiversity assessments and planning
Unit Manager and District Planner/ FMD; Wildlife Habitat Biologist and Wildlife Ecologist / WLD; Fisheries Biologist/FD	Compartment/FMU biodiversity assessments, planning, and operations
Stand Examiner/FMD	Identification of elements
Michigan Natural Features Inventory/MSUE	Analysis, identification and management guidance of elements of biodiversity
Endangered Species Coordinator/WLD: Fisheries representative for reptiles and amphibians	Analysis, identification and management guidance and permitting for elements of biodiversity
Program Specialists: Conservation and Biodiversity Program, FMD Natural Areas, WLD Natural Rivers, FSD	Management guidance and monitoring direction for Natural Areas, Natural Rivers, High Conservation Value Areas, and Ecological Reference Areas.
Conservation Officers/LD	Enforcement on special sites (HCVA, ERA, Natural Areas)

Training/Skills: (Those required to accomplish work instruction)

Item	Brief Description of Skill or Course	Exists/ New
Biodiversity Approach	Training on biodiversity approach	☒ E ☐ N
Biodiversity Assessments	Training on assessment techniques	☐ E ☒ N
Biodiversity Guidelines	Training on related community management guidelines	☒ E ☐ N
Community & Elements	Training on recognizing Michigan natural communities and elements	☒ E ☐ N
Special Site Management	Training on natural rivers, natural areas, HCVA, and ERA management	☒ E ☒ N

References:

Federal Law:

Wilderness Act of 1964 (16 U.S.C. 1131-1136, 78 Stat. 890) - Public Law 88-577

Wild and Scenic Rivers Act of 1968 *P.L. 90-542, as amended)(16 U.S.C. 1271-1287)*

State Law:

Natural Resources and Environmental Protection Act, PA 451, 1994, as amended

- Part 005 General Powers and Duties
- Part 305 Natural Rivers
- Part 351 Wilderness and Natural Areas
- Part 355 Biological Diversity Conservation
- Part 525 Sustainable Forestry on State Forestlands

DNR Policy & Procedures

Natural Resource Commission Policy
- 2207 – Management of State Forests
- 2703 –Natural Rivers
- 2704 –Wilderness and Natural Areas
- 2706 – Sand Dune Management and Protection—Department Operations

Biodiversity Conservation Planning Process (IC 4013, dated October 2007)

Forest Mineral and Fire Management
- Policy 441, Operations Inventory and Compartment Review Procedures
- IFMAP Inventory Manual, 2006.
  - Resource Assessment Process Flow Chart, April 2002
  - Conservation Area Coding

DRAFT Conservation Area Management Guidelines (IC 4450, dated September 2005)

Within-Stand Retention Guidance (IC 4110, dated 2011)

Michigan Woody Biomass Harvesting Guidance (IC 4069, dated May 2010)

Natural Areas Program Strategic Plan, March 29, 2000. Michigan Department of Natural Resources, Natural Heritage Program, Wildlife Division Lansing, MI 16 Pp. Adopted By DNR Management Team 2000.

Proposed Old Growth and Biodiversity Stewardship Planning Process and Draft Criteria for Michigan's State Forests and Other State Owned Lands, February 8, 2001 - Note: this is the precursor to the Biodiversity Conservation Planning Process and includes previous direction from the Old Growth on State Forest Lands, addendum to the Statewide Forest Resources Plan of 1983; Identifying potential old growth in operations inventory, Burns, H. March 15, 1995; and other information.

Silvicultural Guidelines

Michigan State Forest Management Plan. 2008. Michigan Department of Natural Resources, Lansing MI. 276 pp.

Michigan DNR Rare Species Protection Approach and Resources for DNR Staff on State Forest Lands (IC 4172, dated 2011).

DNR Monitoring Protocol Summary for Ecological Reference Areas and High Conservation Value Areas.

Department Programs

Endangered Species Program, Wildlife Division
Natural Areas Program, Wildlife Division
Natural Rivers Program, Fisheries Division
Parks Stewardship Program, Parks and Recreation Bureau

Cooperative Agreements/Grants/MOUs

Partnership between DNR, The Nature Conservancy and the Michigan Natural Features Inventory, Michigan State University Extension to survey for, compile and update information on threatened and endangered species and high quality natural communities in Michigan.

Michigan Department of Natural Resources, Michigan Wildlife Action Plan

Partnerships between the US Fish and Wildlife Service and Wildlife Division for the management of wildlife, fish and federally listed endangered and threatened species.

Electronic or Geographic Information Data

Spatial data library
FMD biodiversity information layer
OI database and maps
GDSE data: Areas of Interest database, Treatments database, Opportunistic Field Survey Database

Eco-regional plans: biodiversity management area maps (as applies)
Michigan Natural Features Inventory (MNFI)
Natural Communities of Michigan: Classification and Description
Community and Species Abstracts
Habitat models (under development)
U.S. Fish & Wildlife Service species recovery plans
http://ecos.fws.gov/tess_public/TESSWebpageRecovery?sort=1
The list of Michigan Federal Endangered and Threatened Species in Michigan is on the DNR Forest Certification web page.

Other Information and Resources

Burger, T. and J. Kotar. 2003. A guide to forest communities and habitat types of Michigan. University of Wisconsin, Madison, WI
Michigan Department of Natural Resources
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Monitoring:

Monitoring biodiversity and compliance with this Work Instruction will be done through a variety of mechanisms.

1. Prior to the Year of Entry (YOE) data revision/update deadline, Land management staff and District Planners will ensure that all stand comments, 'limiting factors' and stand condition codes are compatible.
2. The DNR Monitoring Protocol for Ecological Reference Areas and High Conservation Value Areas will be followed.
3. Annual internal audits will include reviews of stand level biodiversity considerations.
4. Ecoregional plans will include biodiversity criteria and indicators in addition to describing SCAs and setting and monitoring targets in the ecoregion.
5. Department-wide review and documentation of biodiversity will be conducted as part of the Biodiversity Conservation Planning process.

Records:

Operations Inventory and IFMAP database of State forest lands, maintained at state-wide level and recorded at local level (stands within a compartment), records of ERAs, HCVAs, and SCAs. The database will include conservation objectives and crosswalk with protection and management directives.

GDSE data layers for ERAs, HCVAs, SCAs.

Compartment Review packets and meeting documents.

Monitoring reports (see Monitoring section)