Timber Harvest BMPs and Revisions

"Considerations and Innovations for Managing Michigan's Lowland Forests" sponsored by MI SAF
Nov.4-5, 2010 Grayling, MI

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Outline

I. Background on timber harvest BMPs

II. New(ish) “Sustainable Soil & Water Quality Practices on Forest Land” (“SWQ”) Manual *(2/2009)*

    i. Focus: manual revisions and new additions

III. MI Woody Biomass Harvesting Guidance *(5/2010)*

Sustainable Soil and Water Quality Practices on Forest Land

For more information, see the DNRE web page:
http://www.michigan.gov/dnr/0,1607,7-153-30301_31154_31261---,00.html

(from the root www.michigan.gov/dnr web page, click on the left pull-down menus for “Forests, Land, and Water,” then “Land Management,” and then “Soil & Water Quality Manual (BMPs).”)

- **The web page has three different manual formats to accommodate different printing needs. The three formats include an 82-page 8.5 x 11 standard sheet size version and two "glove box" 8.5 x 5.5 versions.**

- **A limited number of manuals are available; contact Margaret Spagnuolo at 517-335-3352 or email her at spagnuolom2@michigan.gov for information on these.**

A Few BMP Considerations with Respect to Lowland Forest Management

- *The #1 State Forest timber harvesting limiting factor is "too wet." This may apply to other ownerships also…*
- Lowland forests may have more water quality/BMP issues than harvests on uplands, e.g.: rutting, where to place access roads, skid trails and landings, greater difficulty in capturing or containing chemical spills.
- On the other hand, obvious precautions are often taken, such as waiting for a hard freeze and close monitoring of rutting vs. not being prepared for rain events on upland slopes.
- Other issues, such as regeneration problems and/or wildlife habitat issues may be larger influences on lowland forest management.

Background on timber harvest BMPs

- Origins: every state required to develop voluntary best management practices (BMPs) for major land use activities including forestry as part of the 1987 nonpoint source pollution amendments to the 1972 Clean Water Act.
- The SWQ manual is an update of the original 1994 “Water Quality Practices on Forest Land” document (Michigan’s Forestry “BMP Manual”).
- Scope and use of BMP’s in the new update has been expanded to cover both water quality protection as well as some soil quality protection issues (e.g. rutting).
- Changes were driven by trends in forest certification as well as what we’ve learned about using BMPs since 1994.

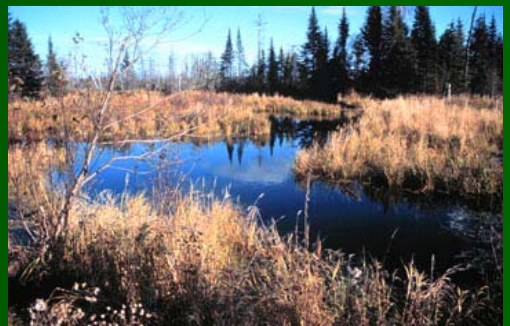
Background

- Use of BMP's is voluntary (and flexible) in the sense that the recommended guidelines and specifications can be tailored to specific site conditions that the field practitioner (logger or forester) encounters. *(Not so voluntary with respect to certification standards which require "meeting or exceeding" state BMP standards.)*
- Many of the BMP recommendations and guidelines are still the same as in the 1994 booklet.
- One of the differences is that the old 1994 BMP manual tended to be more "cookbook" or prescriptive in its approach (i.e. outlined points and practices to follow).
- In contrast, the new edition tends to be more "descriptive" of not only of what needs to be done but also why it is important to do so or factors to consider (such as where or how).

Background

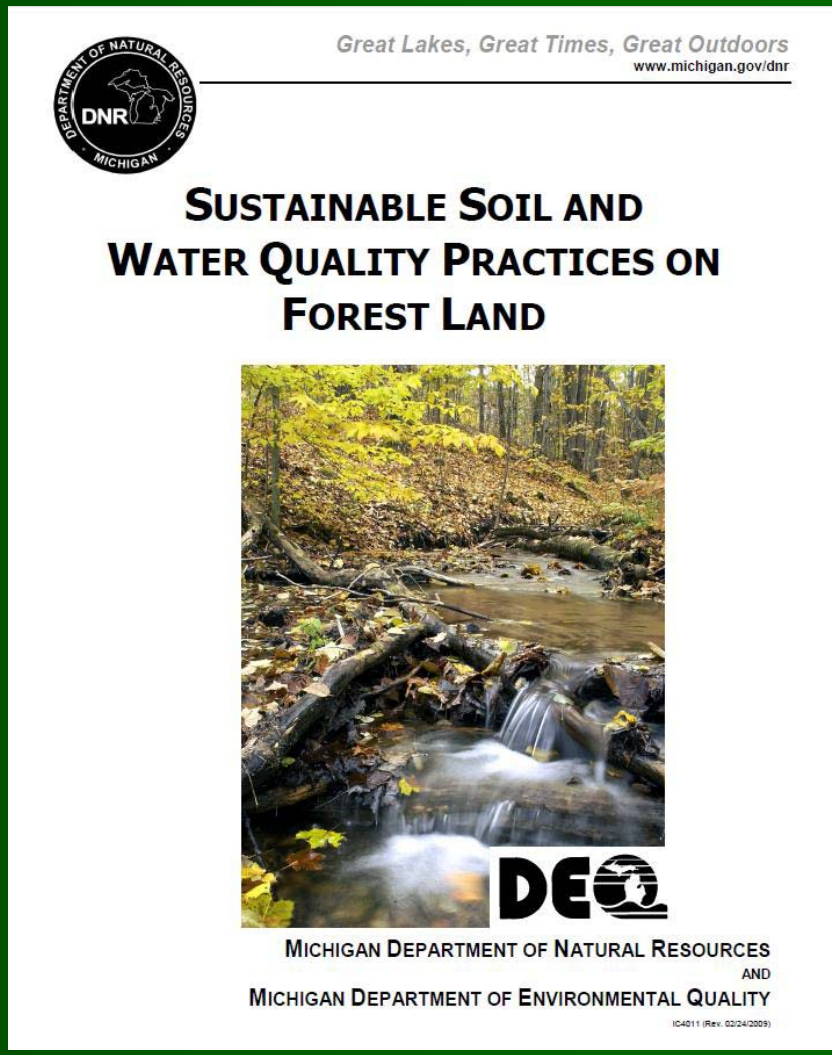
- Symbols are added throughout the manual that designate when things are Mandatory and Required by Law versus those that are Voluntary in practice:
  - The Scales of Justice refers to a legal requirement

  - The Arrow Point Symbol ► means its Voluntary
- Some new terms are used. For example, the old term “Buffer Strip” has been changed to “Riparian Management Zone” or RMZ. This reflects a more accurate description of the use and value of areas of land adjacent to streams and water bodies.



Background

- There are 14 chapters in the new manual; it is 115 pages.
- There are also 6 Appendices including:
  - Working within the Laws Governing NPS Pollution;
  - List of Applicable Laws in Michigan;
  - Frequently Asked Questions about Stream Crossings;
  - Regulations & Permits; and
  - Vegetative Erosion Control Guidance For Natural Resource Management (which provides recommendations on use of Native and Non-Native Species for site restoration).



- Chapters 9 on “Rutting and Related Issues” and Chapter 12 on “Wetland BMPS and Forest Roads” are new chapters.

Table of Contents

SWQ Manual Content

Chapter 1 provides the “why” & the manual’s orientation:

- “…poor management practices can degrade surface water and groundwater quality from the following major pollutants: sediment (mineral & organic); nutrients; chemicals; heat; and debris.”
- “Environmental degradation is covered by existing laws in Michigan. Violation of those statutes or failure to secure the necessary permits can result in financial penalties…”
- “… regular inspection of all roads, bridges, culverts and preventative actions … are what professional foresters and loggers need to do as part of any high quality and sustainable forest management operation.”
- “… guidance can be adjusted to …conditions … at the time activities are carried out. The goal is to provide guidance that protects water and soil quality, while allowing for the efficient removal and transport of forest products, as well as …post-harvest treatments…”

Chapter 2: Laws and Permits

- Generally speaking, a permit must be obtained in order to:
  1. legally cross a stream,
  2. construct a road that disturbs more than one acre of soil, or
  3. engage in an earth change within 500 feet of a body of water
- When constructing a new or upgrading an existing stream crossing, three (3) specific statutes under PA 451 NREPA always apply. *(NREPA = Natural Resources & Environmental Protection Act)*
  1. Part 301, Inland Lakes and Streams;
  2. Part 31 Water Resource Protection
  3. Part 31 Soil Erosion and Sedimentation Control
- In some site specific locations, Part 303 Wetlands Protection and Part 305 Natural Rivers may also apply.

Joint Permit Applications

- For Parts 301, 31 and 303, the landowner or his agent must fill-out and complete a “Joint Permit Application” required by the MDNRE and US Army Corps of Engineering
- All applicants are required to submit a detailed drawing of the proposed project. Photographs taken on-site are helpful.
- The JPA permit process takes time to be processed by MDNRE (i.e. a few months is typical).

Soil Erosion and Sedimentation Control

- Primarily intended to keep sediment from earth changes during construction (via surface flow or wind erosion) from entering the waters of the State
- Harvest areas are generally exempt from being permitted, but long haul roads or large landings MAY require a permit
- Permits required when activities involving earth changes are > 1 acre or within 500 ft of a lake or stream
- Obtain permit before constructing any roads or landings
- The act is locally administered (e.g. Drain Commissioner, Conservation District, etc.) NOT administered by MDNRE

Wetlands and Floodplains

- Under Wetlands Protection, timber harvesting activities are exempt from obtaining a permit WITH CAVEATS:
  - Construction or maintenance of temporary forest roads are exempt provided as long as they do NOT obstruct water flow or create other adverse effects.
  - Exemption predicated on temporary roads being de-constructed after harvest completion to allow wetland back to its natural condition. However, any grading or “land balancing” requires a permit because it is considered dredging or filling within a wetland
  - Floodplain permits (JPA) are required for any work in a floodplain with a drainage area >= 2 square miles (upstream from the point of the road or culvert placement)

Other Laws Affecting Forest Management

- Michigan's NREPA requires protection of cultural and archaeological resources on State lands (e.g. Indian burial mounds, historical village sites, old mines, etc.)
- Avoid these sites entirely if encountered during a harvest operation.
- The new manual provides 6 guidelines for how to handle these situations – but avoiding disturbing the site is critical.
- DO NOT rope-off, flag or in any way physically identify the site so vandals don't steal contents

Other Laws Affecting Forest Management

- Sand Dunes Protection Act (Part 353, NREPA) regulates land use in “Critical Sand Dune” areas including developmental, silvicultural and recreational activities. Permits are usually required to harvest timber off these protected sand dune sites
- Caution: the Critical Dune Area boundaries may extend beyond what you may think of as a sand dune area – so be careful when planning harvests near Great Lakes shores.
- Maps/locations of critical dune areas are available in the local township or other local unit of government or on the MDEQ website (www.michigan.gov/deqland)

Other Laws Affecting Forest Management

- Threatened and Endangered (T&E) species are protected on all lands by Part 365, NREPA.
- Buffers of uncut timber may be needed around T&E sites (nests, vernal ponds, etc.) and/or schedule harvests seasons when the species is not using the site or is dormant.
- A few T&E species may call for no timber harvest whatsoever.
- Most of the T&E species that affect forestry tend to occur on unique or extreme habitats (sites) such as very wet soils, extremely sandy/droughty sites, RMZ's, floodplains, special geologic features, etc.
- Vernal ponds and bogs on forest sites should be avoided/protected.

Ch. #3: Fuels, Lubricants & Spills

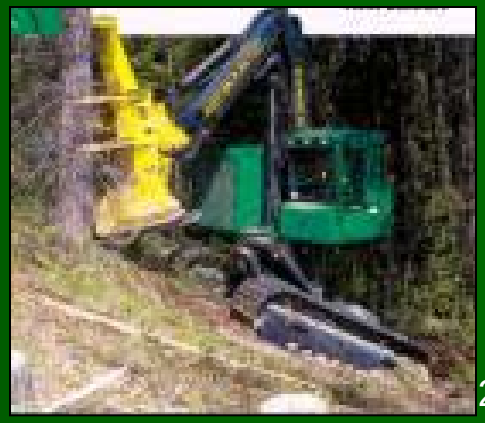
- Avoid spills, but recognize that they do occur...
- Michigan law requires that all spills MUST be cleaned up. This includes any spill that flows into Michigan's waters or that is observable in the field (visible staining of the soil, pooling, etc.).
- The quantity spilled may not have to be reported but that depends upon the circumstances of the spill.
- Proper equipment, preventative maintenance, use of proper precautions such as use of absorbent spill mats under equipment during maintenance are examples of good BMP's
- New SWQ manual recommendation that at least one Spill Kit should be available on every job site at all times.

Fuels, Lubricants & Spills

- A Contingency Plan for accidental spills should be developed for every logging operation and all crew members should be trained periodically on controlling spills.
- Any large or toxic spills should be reported to the Pollution Emergency Alerting System (PEAS) at 1-800-292-4706

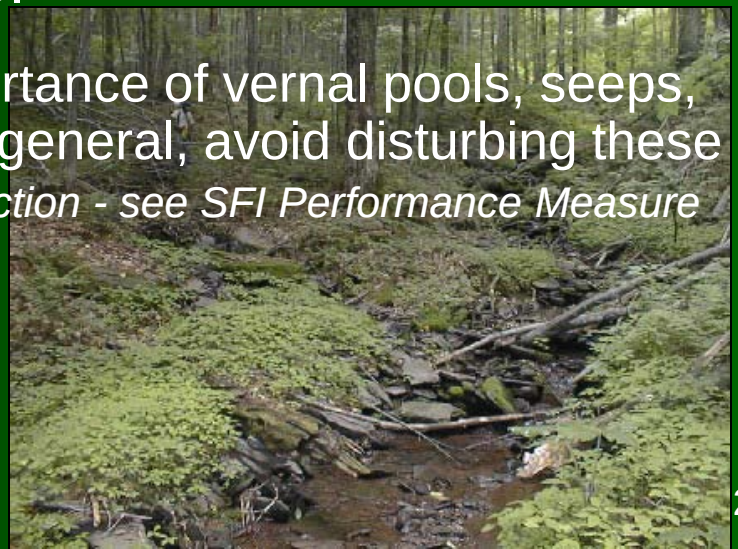
Ch.#5: Riparian Management Zones

- There is new and more in-depth information on RMZ's.
- Harvesting is allowed within RMZ's, but landowners or loggers must take care to ensure that the water quality functions of a RMZ are maintained.
- Site Specific Factors to consider prior to harvest and in laying out RMZ's includes recommended RMZ widths; layout and widths close to Designated Trout Streams and more.
- RMZ widths have NOT changed from the previous manual; a 100 foot width is the minimum and increases with slope.

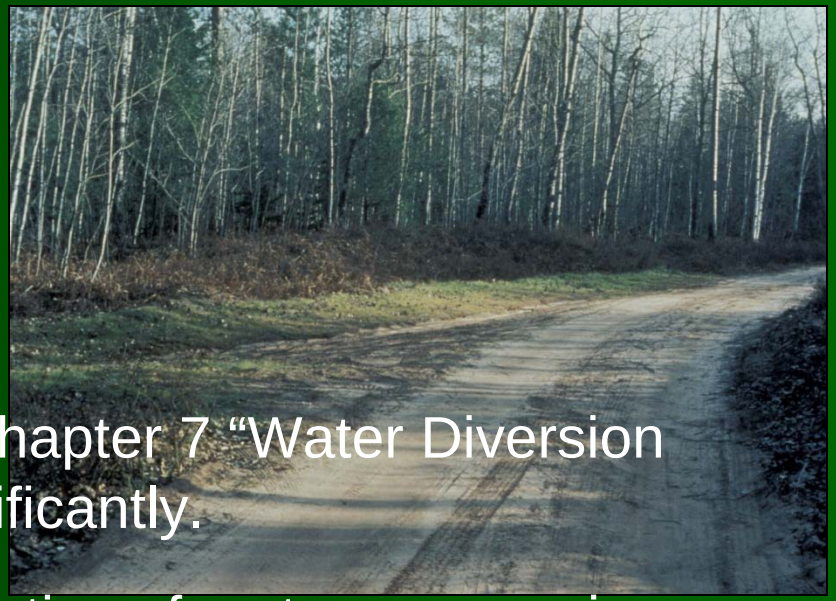


Riparian Management Zones

- New discussion on leaving wider RMZs close to Designated Trout Streams due to the threat of beavers damming up narrow streams (< 50 ft width). DNRE recommends wider RMZ's (>300 ft) where this threat is evident and/or when managing aspen near trout streams.
- This chapter also contains information on the Michigan Natural Rivers Act and the federal Wild and Scenic River Act. Natural Rivers have required buffers or RMZ's that may be different than the ones loggers typically follow and setbacks may vary for the main river channel vs. tributarys, discussed in Appendix F & G.
- New information on the value and importance of vernal pools, seeps, intermittent streams, bogs and fens. In general, avoid disturbing these unique habitats. (*certification requires protection - see SFI Performance Measure 3.2.4)*.

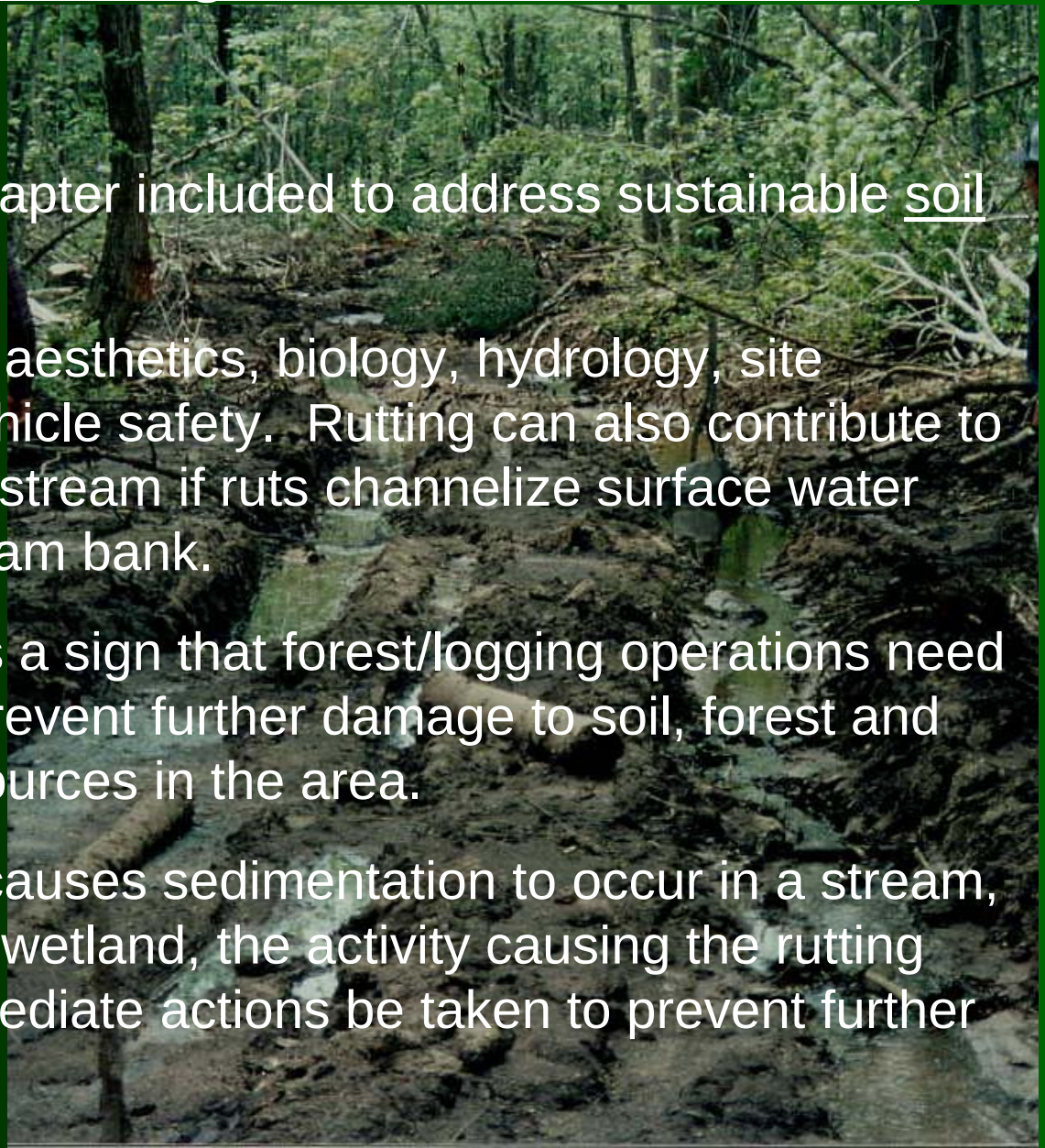


Other Chapters & New Information



- Chapter 6 “Forest Roads” and Chapter 7 “Water Diversion Devices” have not changed significantly.
- Most of Chapter 8’s recommendations for stream crossings and properly installing stream crossing culverts are the same.
  - Two methods are described for estimating the diameter of a culvert to adequately handle stream flow. (The Hasty Method & the MESBOA Method.)
  - Side by side comparisons of the two methods may yield different results depending upon the size of the stream – so take extra precautions when installing culverts over wider streams.

Ch.#9: Rutting and Related Issues



- Rutting is a new chapter included to address sustainable soil quality issues.
- Rutting can impact aesthetics, biology, hydrology, site productivity and vehicle safety. Rutting can also contribute to sedimentation of a stream if ruts channelize surface water flow towards a stream bank.
- Excessive rutting is a sign that forest/logging operations need to be modified to prevent further damage to soil, forest and possible water resources in the area.
- ANY TIME rutting causes sedimentation to occur in a stream, lake or open water wetland, the activity causing the rutting must stop and immediate actions be taken to prevent further damage.

Rutting and Related Issues

- "Soil Protection Precautions for Rutting" (table 6 on pages 63-64), provides a framework for decision-making about rutting. Whether a rut is "excessive" or not is situational. For example, any kind of rut in a RMZ may have a more severe impact than larger ruts elsewhere on a logging job.
- Table 6 describes when and where rutting may occur; provides standards when precautions may be needed (when rutting may be considered excessive under specific situations), and describes what should be done to correct the situation and restore the site from damage. *This includes no restoration if such action causes more site damage.*
- As rutting is situational, the emphasis is on a precautionary approach rather than strict standards. Forest practitioners heeding the guidance will protect both soil and water resources.

Other Chapters

- Chapter 10 on “Landings” and Chapter 11 on “Skidding” are essentially the same information from the previous manual.
- Chapter 12 “Wetland BMP’s and Forest Roads” has new and updated information on constructing forest roads in wetland areas, and on organic wetland soils.
- Chapter 13 “Forest (Haul) Roads”, is essentially the same and lists BMP’s that can be used to control sediment and erosion on major trucking routes out of the forest/harvest area.

Final Thoughts on New SWQ Manual

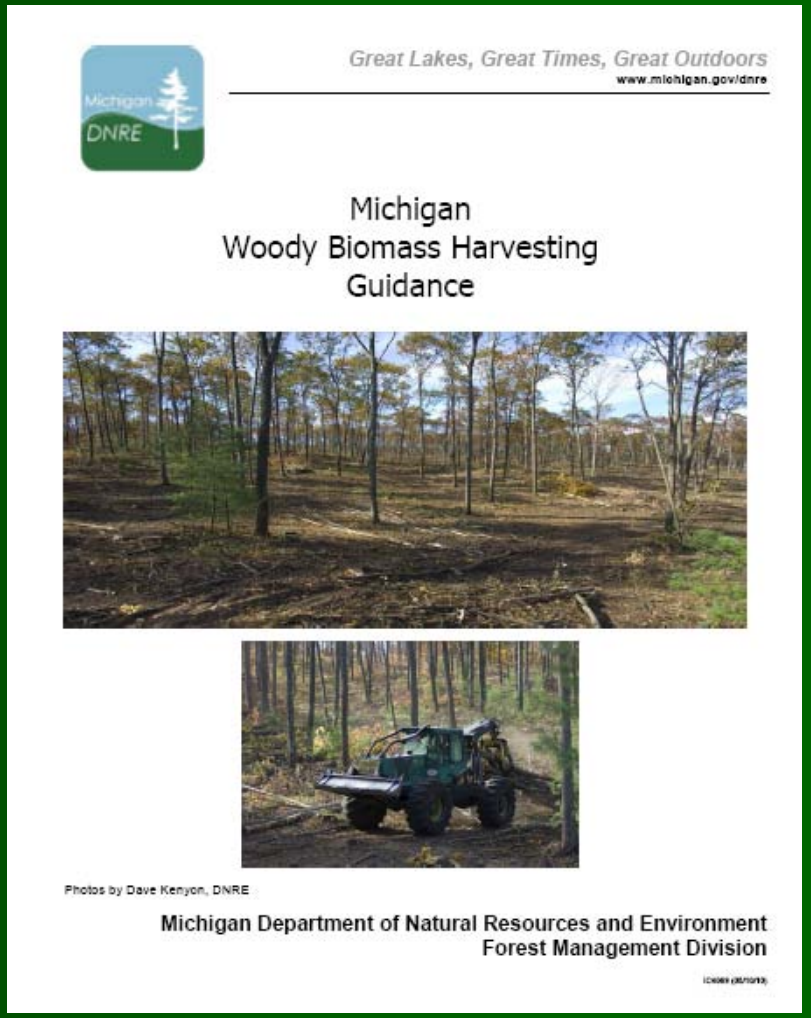
- Generally, the forest community in Michigan has done a good job over the years in protecting our soil and water resources by following voluntary BMP guidelines. The SWQ manual provides some new information and BMP guidance to help maintain this performance.
- Many of the BMP guidelines that have been discussed in logger ED programs over the years remain unchanged - so loggers and foresters will not be “starting from scratch” to learn and understand the BMP recommendations.
- Loggers and foresters do need to become familiar with the guidance for the type of activities they engage in. Their knowledge may be tested through certification audits or sale administration and observations by other forest users.

Michigan Woody Biomass Harvesting Guidance

- Motivated by increased interest in using woody biomass for fuel & energy
- Published in May, 2010

Initiative to develop guidance:

- MDNRE led stakeholder work group:
  - Consulting foresters
  - Industry foresters
  - MI Association of Timbermen
  - TIMOs & REITS
  - Loggers
  - USDA Forest Service & NRCS
  - RC&Ds & Conservation Districts
  - MEDC
  - MSU & MTU
  - Conservation groups:
    - The Nature Conservancy
    - Sierra Club
    - Mackinaw Forest Council



The resulting guidance:

- Consensus document that applies to all Michigan lands
  - Voluntary participation
  - Focus on sustainable harvest of ‘woody’ biomass
    - Does not address utilization, or economics of harvest, storage, and transportation
  - Restricted to traditional forests and brush lands
    - Short-rotation energy crops & brush lands are out of scope

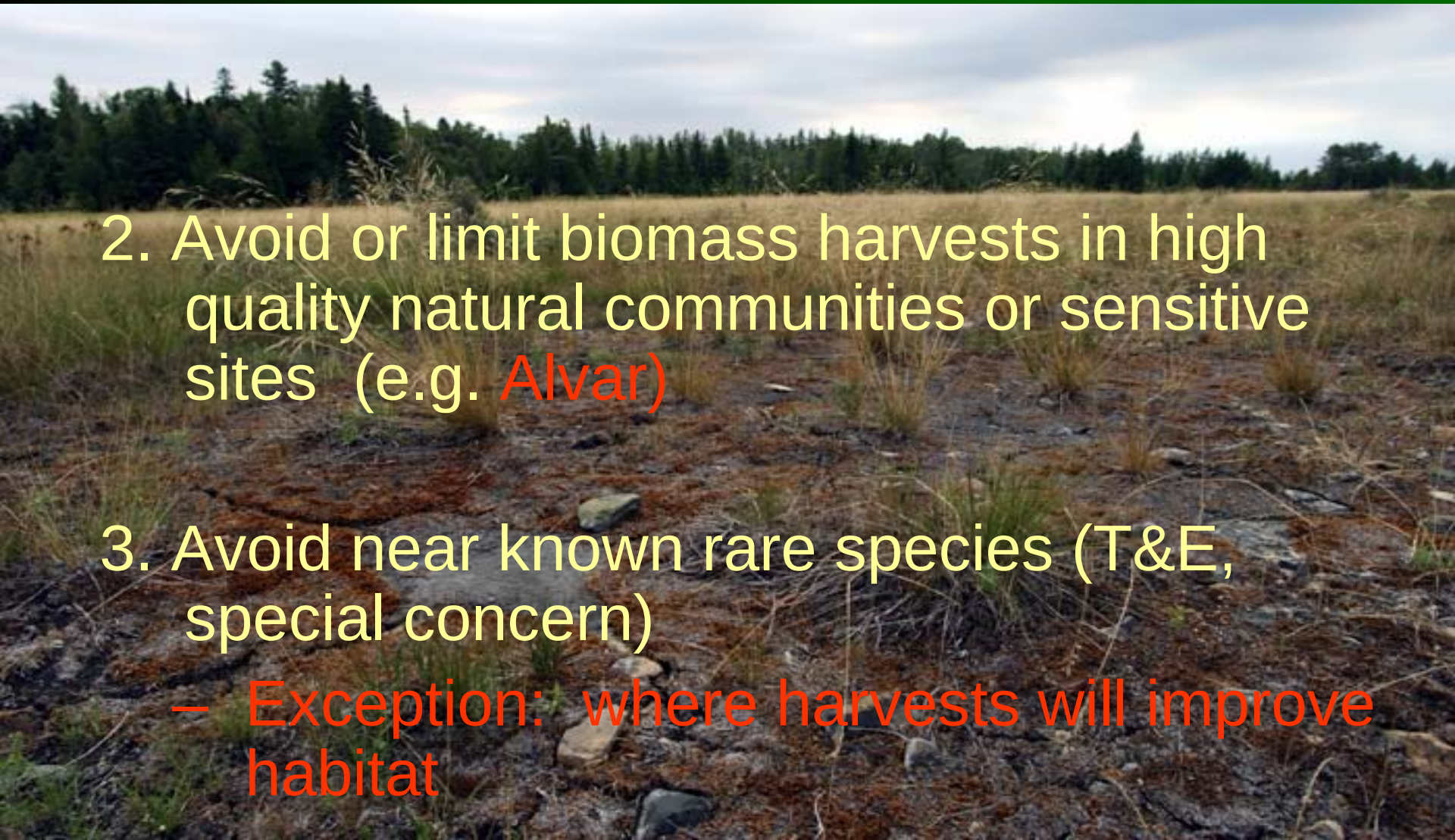
General Guidance:

1. In most cases, retain 1/6 to 1/3 of harvested tree tops

***Retention may be adjusted considering the amount of pre-existing woody debris**

***Also, disperse tops on site**

General Guidance:



2. Avoid or limit biomass harvests in high quality natural communities or sensitive sites (e.g. Alvar)

3. Avoid near known rare species (T&E, special concern)
   - Exception: where harvests will improve habitat

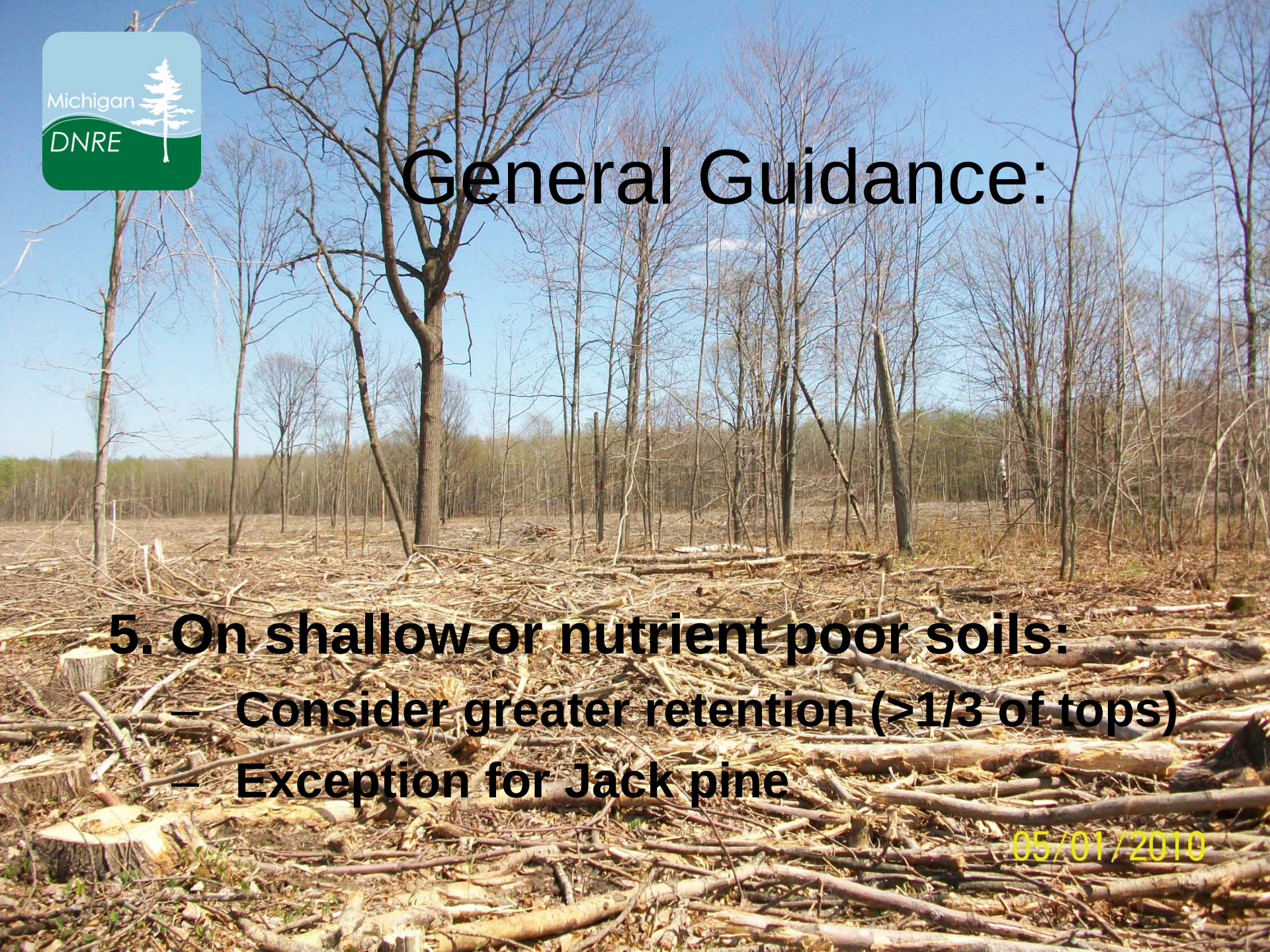
General Guidance:

4. Avoid removal of litter layer and below-ground biomass (roots, stumps)

General Guidance:

5. On shallow or nutrient poor soils:

- **Consider greater retention (>1/3 of tops)**
- **Exception for Jack pine**

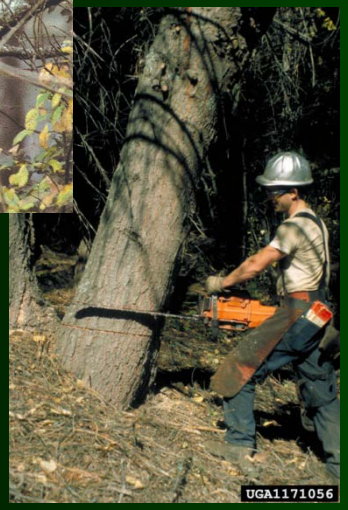


General Guidance:

6. Retain existing coarse woody debris
   - Can be moved on skid trails, landings
   - Leave debris in place that is used to stabilize roads during harvests

General Guidance:

7. Consider augmenting coarse woody debris if lacking on site



8. Retain some snags & live cull for wildlife

Site Specific Considerations

- Follow Michigan's existing BMP guidance: the "Sustainable Soil & Water Quality Practices on Forest Land" manual
  - In RMZs: harvest bole wood only, thin– don't clearcut, & minimize soil disturbance

- **Biomass retention may be reduced or increased for certain severely disturbed sites:**
  - **Tornadoes**
  - **Insect or disease**
  - **Wildfire**

Site Specific Considerations

- Biomass retention may be reduced for Jack Pine stands

Due to low nutrient demand

Or to facilitate planting

Site Specific Considerations

- **Other situations where retention can be reduced:**
  - Where safety is a concern, e.g. snags near recreational facilities or for fuel load reduction
  - For invasive plant control

Site Specific Considerations

- Modify retention in thinnings & selection harvests for pre-existing debris levels:

Thank You

Questions?

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