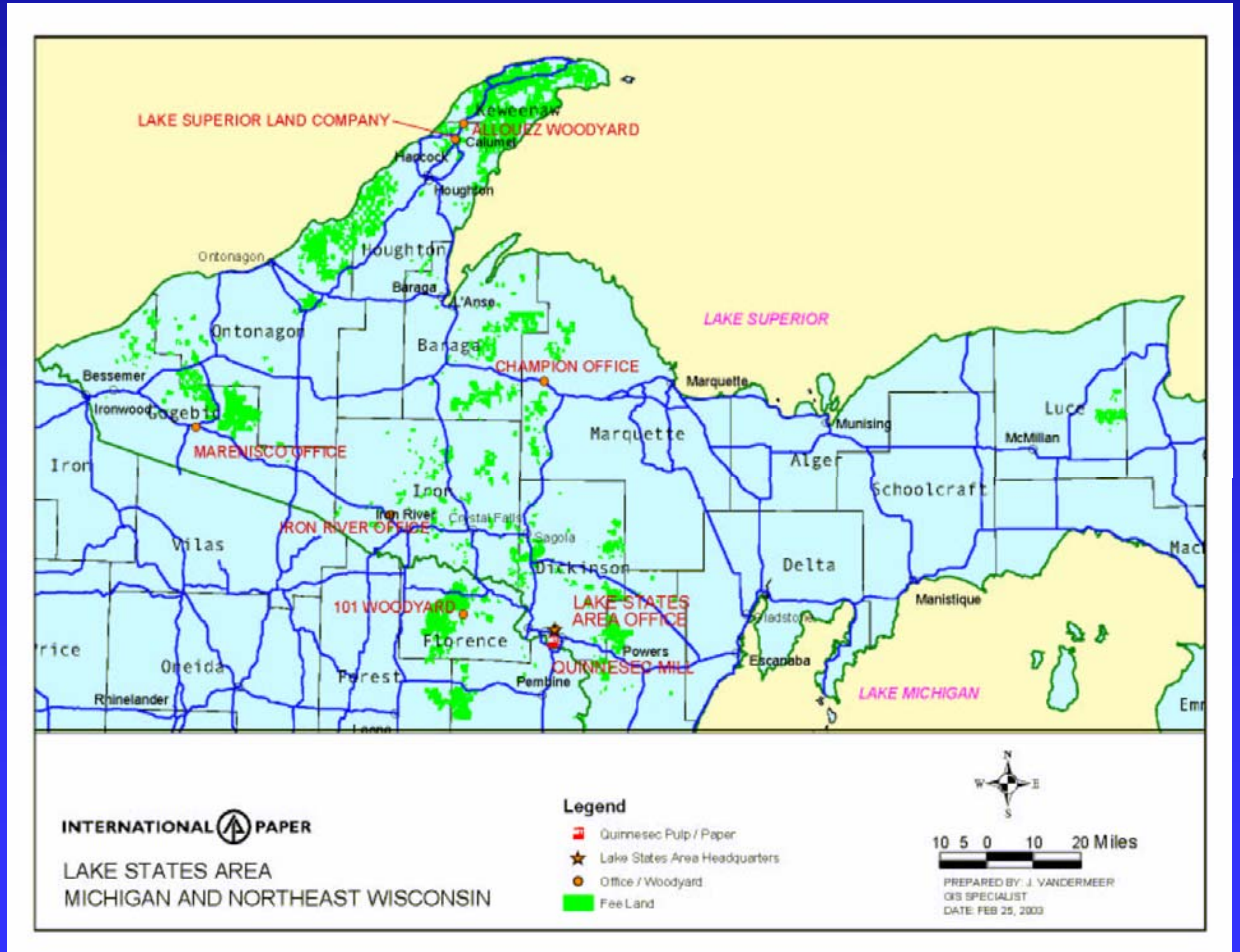
INTERNATIONAL PAPER

Chronic Regeneration Failure in Northern Hardwood Stands: A liability to Certified Forest Landowners

St. Ignace, MI
June 10, 2005

IP Ownership in UP & NE. WI

- 444,328 ac. in UP
- 69, 038 ac. in WI
- ~85% n. hard-wood types
- ISO 14001 & SFIS Certified
- 98 % enrolled in CFP or MFL



IP Environmental Certifications

* International Organization for Standardization – ISO 14001
  - Environmental Management System Standard
  - Disciplined platform to comply with SFI
  - Plan, do, check, act process

* Sustainable Forestry Initiative Standards
  - Participants demonstrate conformance with:
    - Principles
    - Objectives (13)
    - Performance Measures
    - Indicators

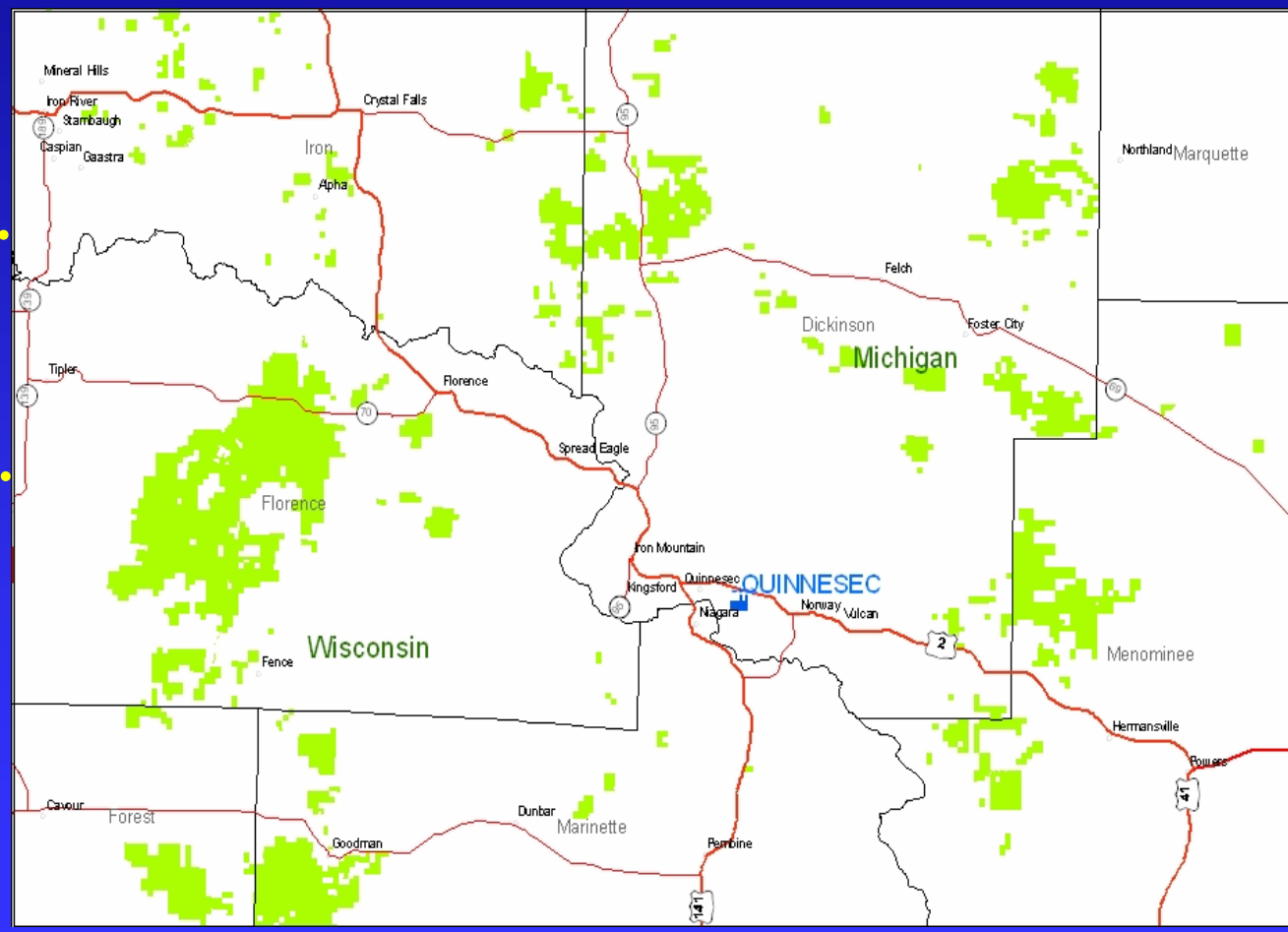
Northern Hardwood Silvicultural Guidelines

IP's guidelines for dense hardwood cover types :

- Uneven-age management
- 10–15 year cutting cycle
- Marked to cut
- Post harvest BA ~70-80 sq. ft.

Issue: Area of hardwood regeneration failure

- ~35,000 ac.
- Chronic regen. failure
- High deer pop.
- Pennsylvania sedge under-story



The Problem: (Vega Block)

- **Deer browsing** has dramatically reduced regeneration for most n. hardwood species
- Forest floor occupied by **Pennsylvania sedge**

The Problem:
(Vega Block)

Deer evidence common

Forest regeneration = species not preferred by deer (Beech, Ironwood)

“Armored Regeneration”

Michigan State Research (Randall)

Lone Sugar Maple Seedling

The Audit:

Vega Block (~14,000 ac., n. Menominee & e. Dickinson Counties):

- Minor nonconformance issued October 1, 2004
  - No natural regeneration within 5 years post-harvest
  - Current procedures failed to create natural regeneration

ISO 14001:
ISO Elements relevant to nonconformance

Element 4.4.3 requires review of objectives and targets, and its significant environmental aspects. (i.e., lack of regen.)

Element 4.3.4 requires environmental management programs to achieve objectives and targets. (i.e., process to solve problem)

Element 4.4.6 requires the establishment and maintenance of documented procedures to cover situations when, if absent could lead to deviations for m environmental policies and targets. (i.e., procedures to use when deer/sedge related regeneration problem is observed)

SFIS:

Objective relevant to regeneration failure

Objective 2:"…to insure long-term forest productivity and conservation of forest resources through prompt reforestation…"

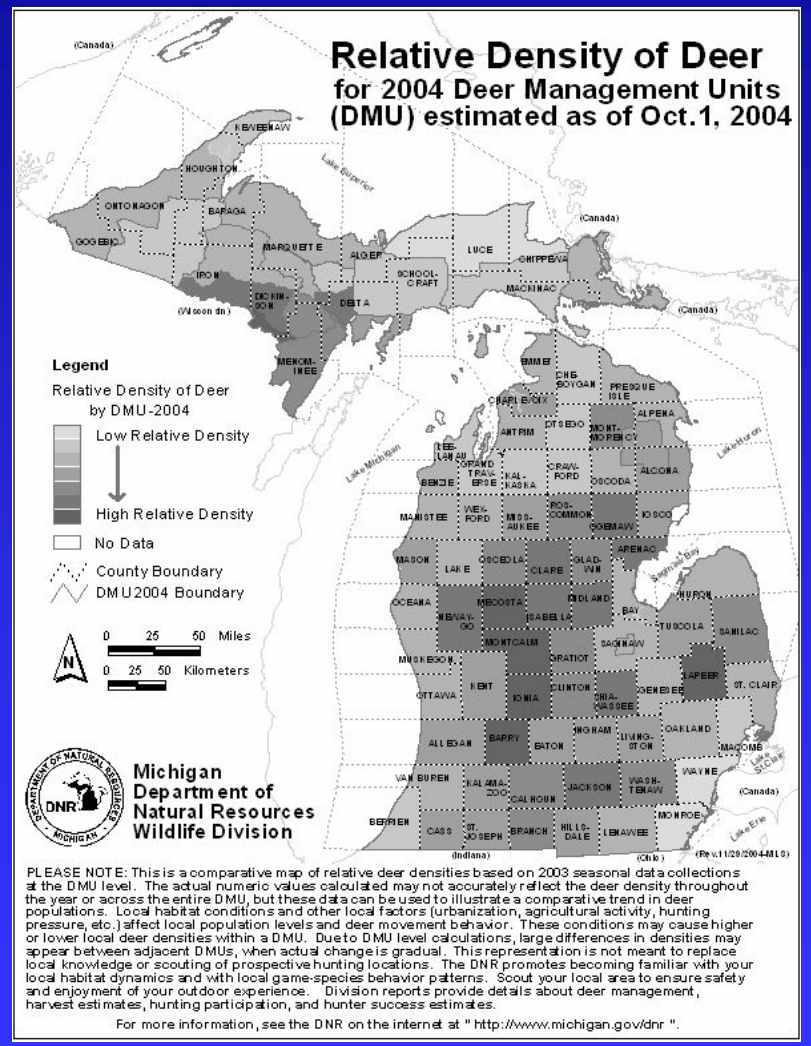
- **Performance Measure-** harvest area must be regenerated within ***five*** years when using natural regeneration methods

  Indicators-

  - designation of either natural or artificial regeneration;
  - …established criteria to judge adequate regeneration and appropriate actions to achieve stocking and species composition.

Reported Deer Densities in Areas of Regeneration Failure

- Deer population "**relatively high**"
- MDNR data > **40 deer/sq. mi.**
  DMUs 022 and 255 (Doepker)
- Michigan State Research - **>30 deer/sq. mi.** at Faithorn tract (Randall)



Carrying Capacity in Forested Landscapes

Research/expert opinion:

- PA northern hardwoods **10 deer/sq. mi.** = adequate regen. in CC and regen. Evident in thinned and uncut areas; > 20 deer/sq. mi. = damage to landscape (Horsley, et al.)
- Successful N. hardwood management in White Mountain National Forest = < **10 deer/sq. mi.** (Yamasaki)
- NY Adirondacks (DMAP) ~**15 deer/sq. mi. or 10 deer/sq. mi.** to re-establish hardwood regeneration (Reed)
- WI abundance of trees/shrubs change with reduced regen. when deer exceed 20-25/sq.mi. (WDNR)

Need vs. Perception:

Need:

- Reduce deer population

Perception: (hunter surveys)

- Hunters want more deer not less.
- Some hunters believe population ~5/sq. mi.
- Can't have too many does because they produce the bucks

Result:

- MDNR Wildlife Division staff has daunting task ahead to gain support for deer reduction programs
  - QDM proposal fails to gain 2/3 support
  - Early antlerless seasons on private lands only

IP Options:

Continue with **UEM** and **control sedge**

- Increase basal area and close canopy to **shade sedge** then **UEM**
- Change silviculture to **EAM** via shelterwood or clearcut and control sedge
- **Convert site** from hardwood to conifer plantations
- **Sell** affected tracts

Moving Forward:

- IP will conduct **herbicide trials** will begin this year as a first step to determine most effective way to address the northern hardwood regeneration issue.
- West UP District Supervisor suggests a **meeting** between the State land owners within the DWA impact area.
- Wildlife Division must continue efforts to **reduce deer numbers** to below carrying capacity to live up to its stated mission.

  Mission: "*To enhance, restore and conserve wildlife resources, natural communities, and ecosystems for the benefit of Michigan's citizens, visitors and future generations.*"

Final Comments:

Environmental certifications are important to IP and its customers,

Opportunities exist to resolve chronic regeneration failure, but…

Losing our ISO 14001 and SFI certifications is not an acceptable option for IP.