

# Assessing and monitoring the influence of forest management practices on soil productivity, carbon storage, and conservation in the Acadian Forest Region



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# The Acadian Forest Region



<http://osi.convio.net>

# SFI Forest Management Standard

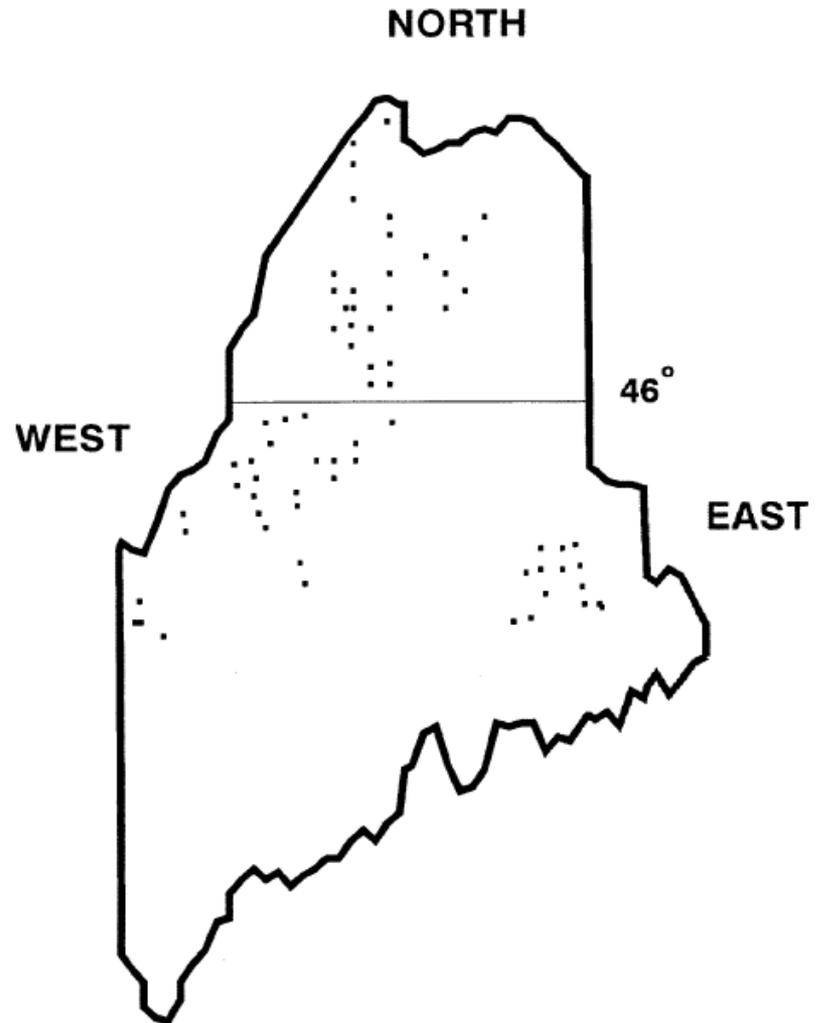
- **Principle and Objective:**
  - ✓ Forest health and productivity
- **Performance Measure:**
  - ✓ Practices to protect and maintain forest and soil productivity
- **Indicators:**
  - ✓ Process to identify soils vulnerable to compaction and avoid excessive soil disturbance
  - ✓ Post-harvest conditions conducive to maintaining site productivity

# Actions to inform policies

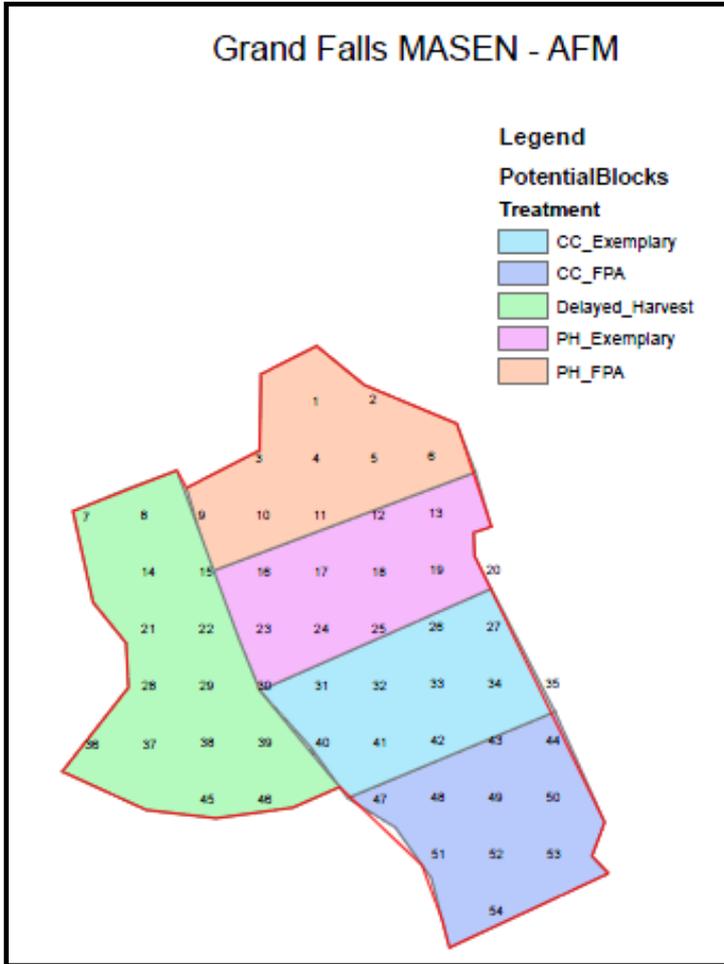
MASEN



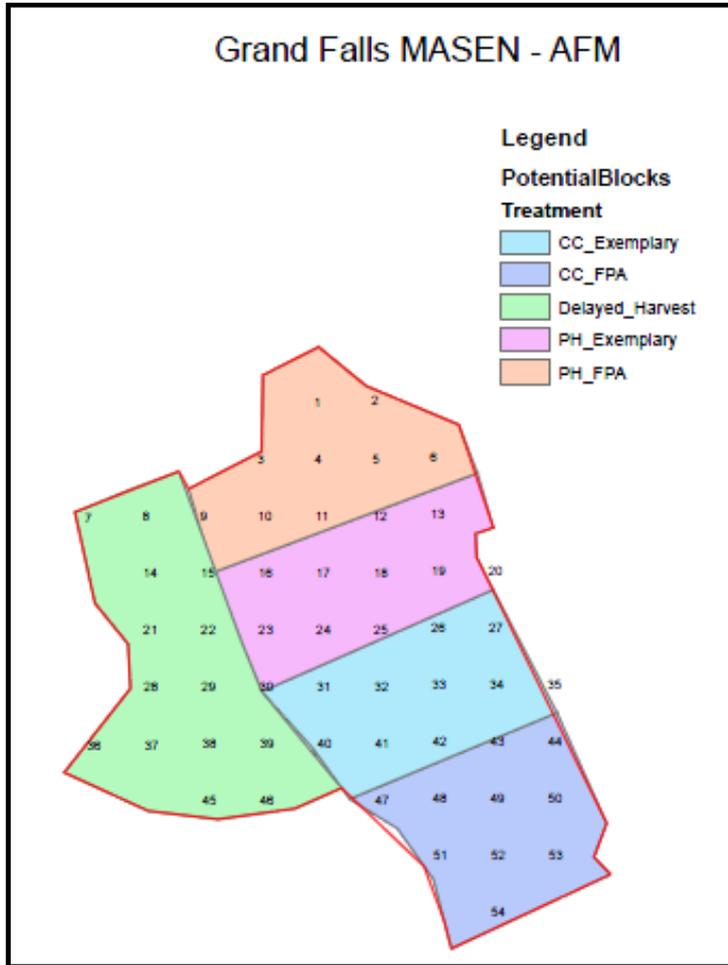
'Legacy sites'



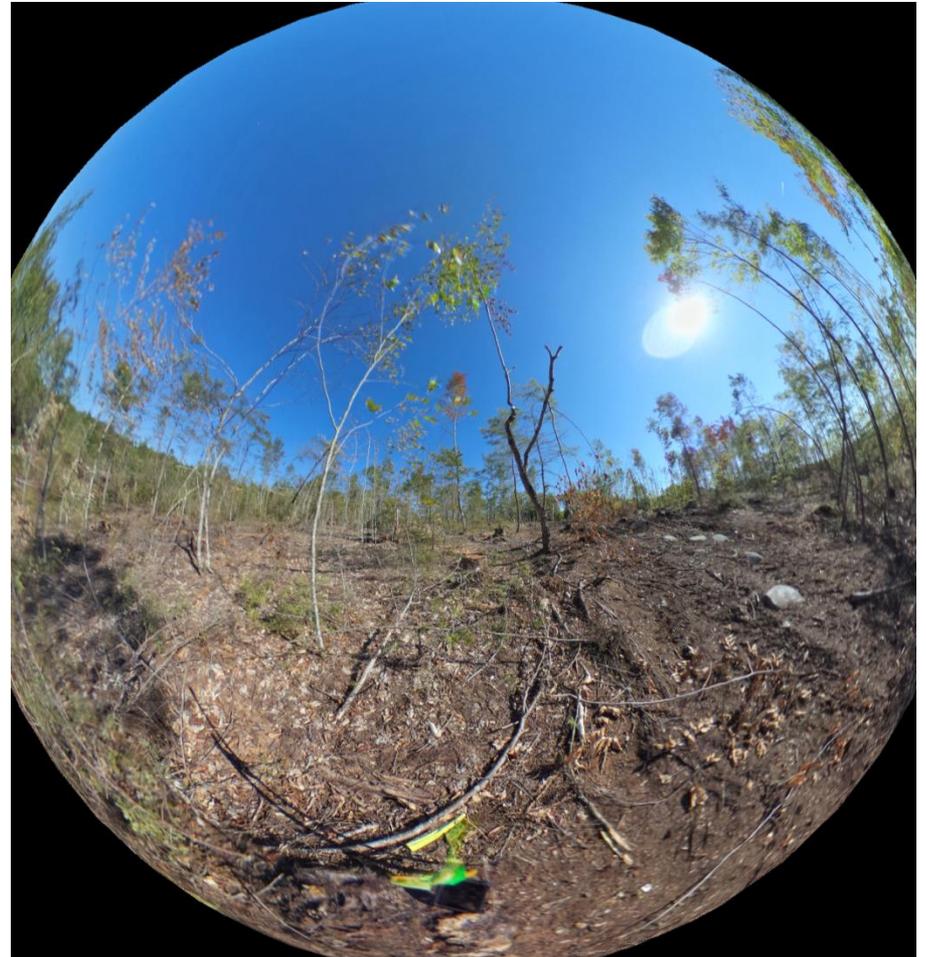
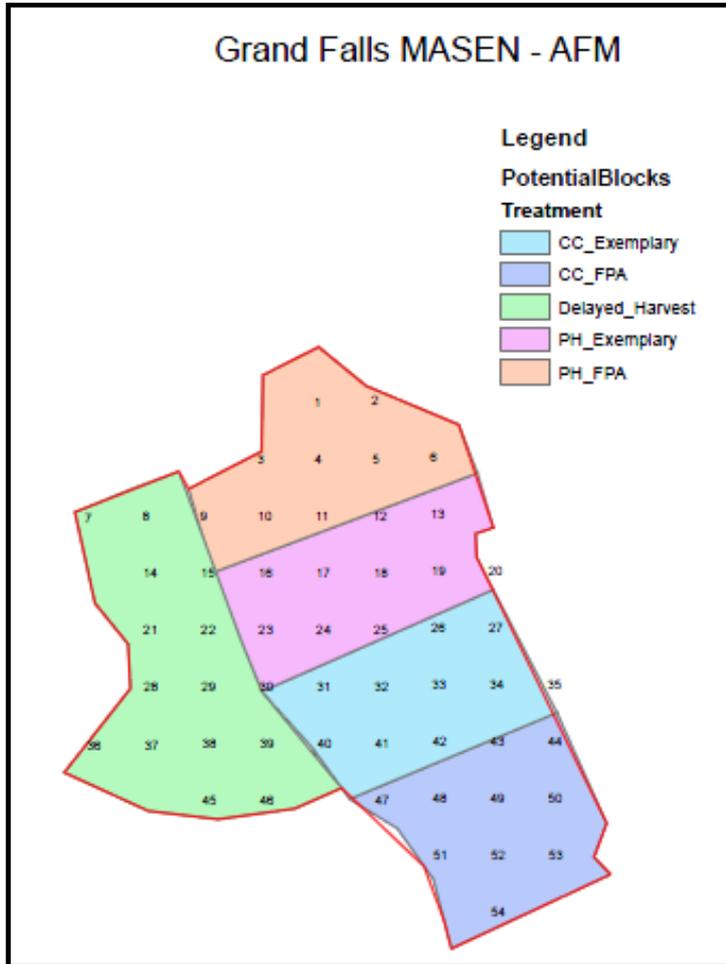
# Control



# Crop tree release



# Operational clearcut



# Sampling on the MASEN

- Pre- and post-treatment sampling
- Organic horizon and mineral soil samples from 2 depth increments
  - ✓ Organic matter and C storage
  - ✓ Available nutrients
- Bulk density and soil strength
  - ✓ Soil compaction and erosion
- Downed woody debris; percentage of coarse fragments in the mineral soil and depth to redoximorphic features

# Soil Sample Analysis

- Soil pH, total C and N (TC, TN), and base cations.



# Evaluating soil health and productivity

- Soil Quality Index (SQI)

Total SQI =  $\sum$  individual soil property index values

SQI, % = (Total SQI / maximum possible SQI) x 100

- ✓ Soil productivity over time

- Nutrient Stress Index (NSI)

NSI = aboveground nutrient stock / available soil stock

- ✓ Comparison of risk among and within installations

- ✓ Model projections under different intensities of tree utilization

## Benefits to Project Partners

- Initial soil and dead wood measurements would serve as a baseline for future measurements and monitoring efforts.
- Identification of forest management practices and soil properties that promote adequate nutrient availability on a sustained basis and that maintain or enhance C stocks.
- The literature review and findings from statistical analyses would allow Participants to access information related to soils during the third-party audit process of compliance to policies.
- In doing so, this could have a direct positive influence on Participant ratings of compliance to maintaining or enhancing soil productivity and C stocks and conserving the soil resource.

# Questions?

