City of Baltimore Reservoir Forest Study

Department of Public Works
Bureau of Water and Wastewater

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DEPARTMENT OF PUBLIC WORKS
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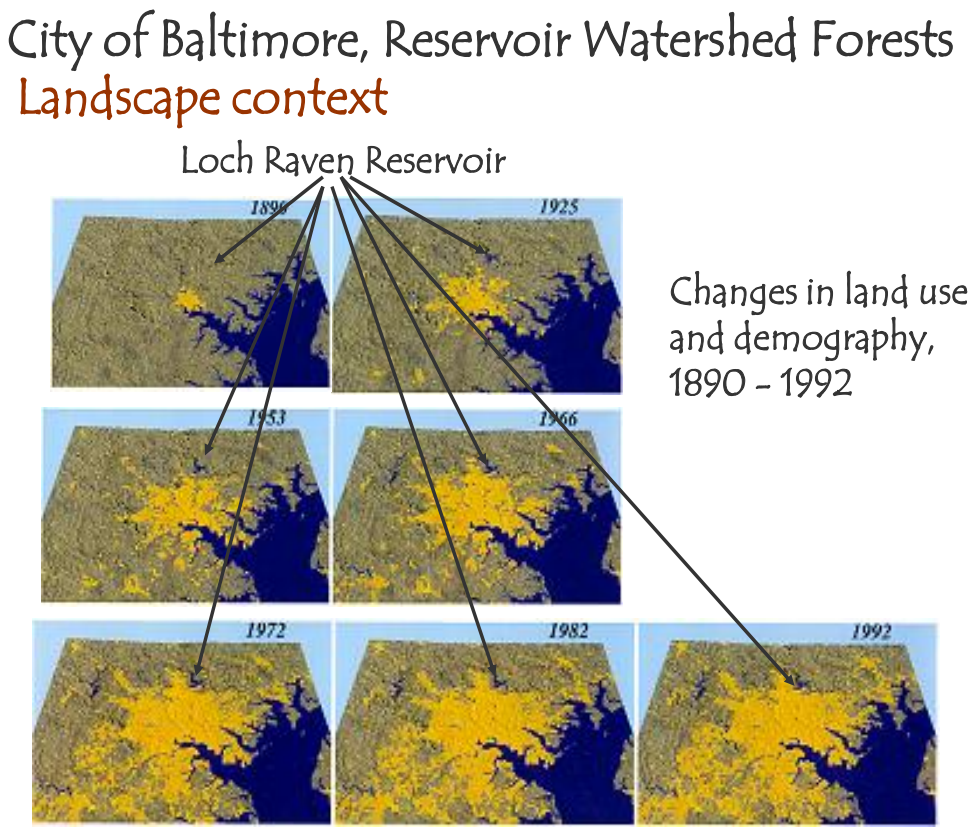
DIRECTOR

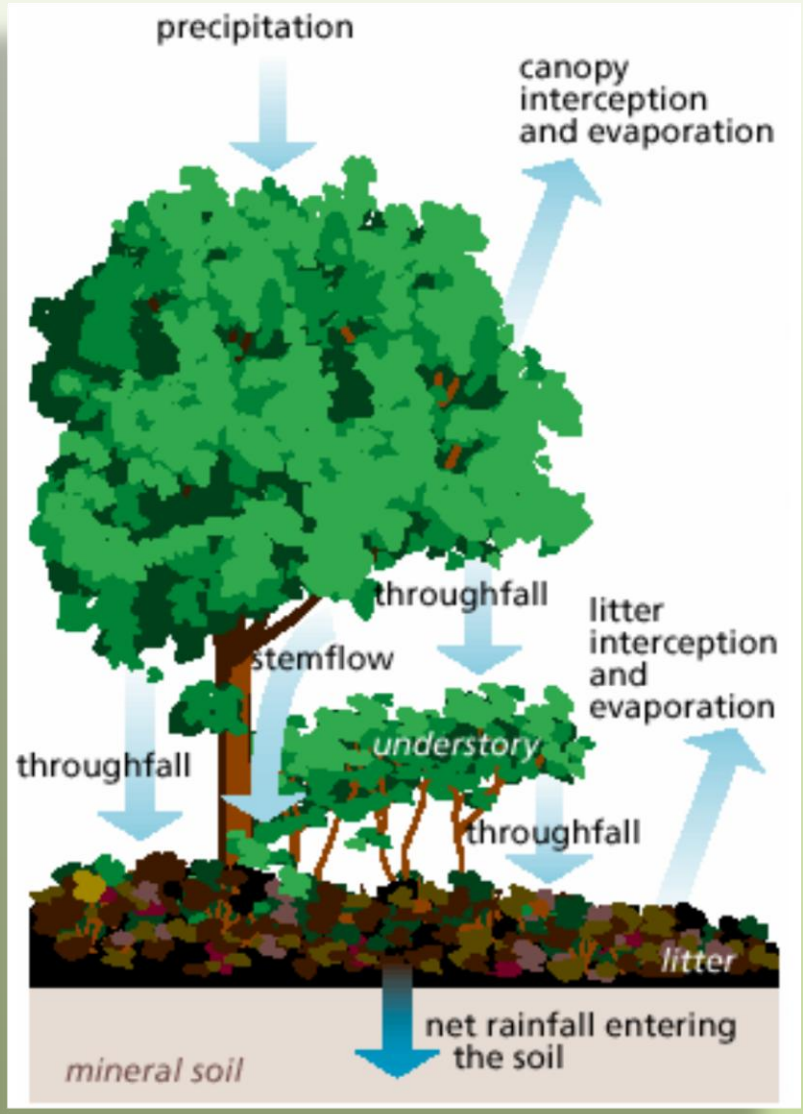
Background

Forest Management Plan



- The watershed around the reservoir has changed dramatically over time
- The natural stresses such as wildfire and deer have also changed
- The Forest Management Plan is designed to develop forests that are:
  - Resistant to disturbance
  - Resilient after a storm

Background



Resistant and Resilient

- Diverse Forests
  - Species
  - Stand types
  - Stand structure
- Multiple Layers
  - Multiple barriers to nutrient/sediment
  - Backup functions
- Actively Regenerating

Background

Baltimore Reservoir Forest Conservation Plan

- Plan developed 2001-2003 in consultation with multiple agencies, resource experts, and City (RNRS) staff
- Forest Conservation Plan approved in 2003
- Plan based on a comprehensive ecosystem-based approach
- Forest Inventory
  - Overstory
  - Mid- and Understory
  - Ground layer and Seedlings
- Wildlife Habitat Elements
  - Snags, Downed wood, Seeps
- Roads/Crossings, Streams
- Recreation Survey

Management Issues

Reservoir Forest Management Issues

- Lack of seedlings/deer browse
- Recreational use
- Road/trail crossings and extent
- Off-site stands prone to windthrow (e.g., aging pine plantations)

Reservoir Forest Study

Reservoir Forest Study Goals

- Study is intended to be a proof of concept
  - Implement sustainable forest practices on small scale study plots
  - Identify challenges with various management practices
    - Look at the effect on canopy closure on forest regeneration
    - Evaluate the impact of deer browse on community composition and forest regeneration
    - Study how invasive species react to the management approach

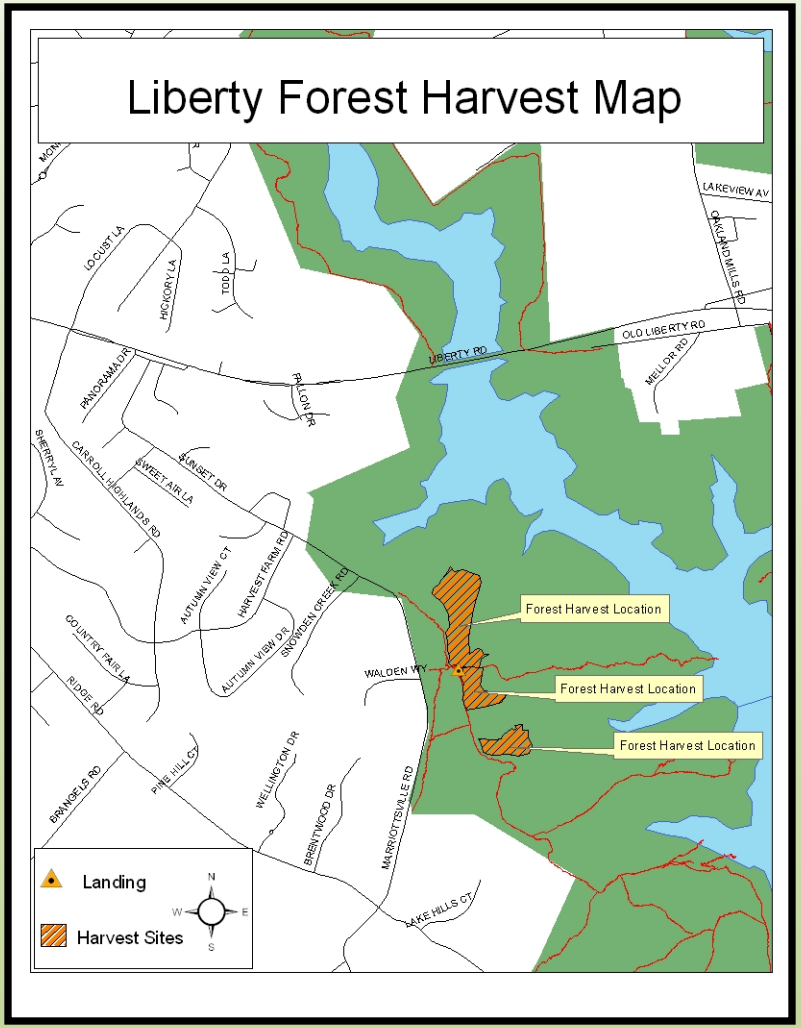
Reservoir Forest Study

Reservoir Forest Study Assumptions

- Tree regeneration is limited by deer browse, lack of light, and competition for water and nutrients
- Partial harvesting will increase light levels and stimulate native plant regeneration
- Control of invasive plants prior to harvest will provide native plants with a chance to thrive
- A shift of dominant forest species away from oaks is likely to continue without some management intervention to affect regeneration

Reservoir Forest Study

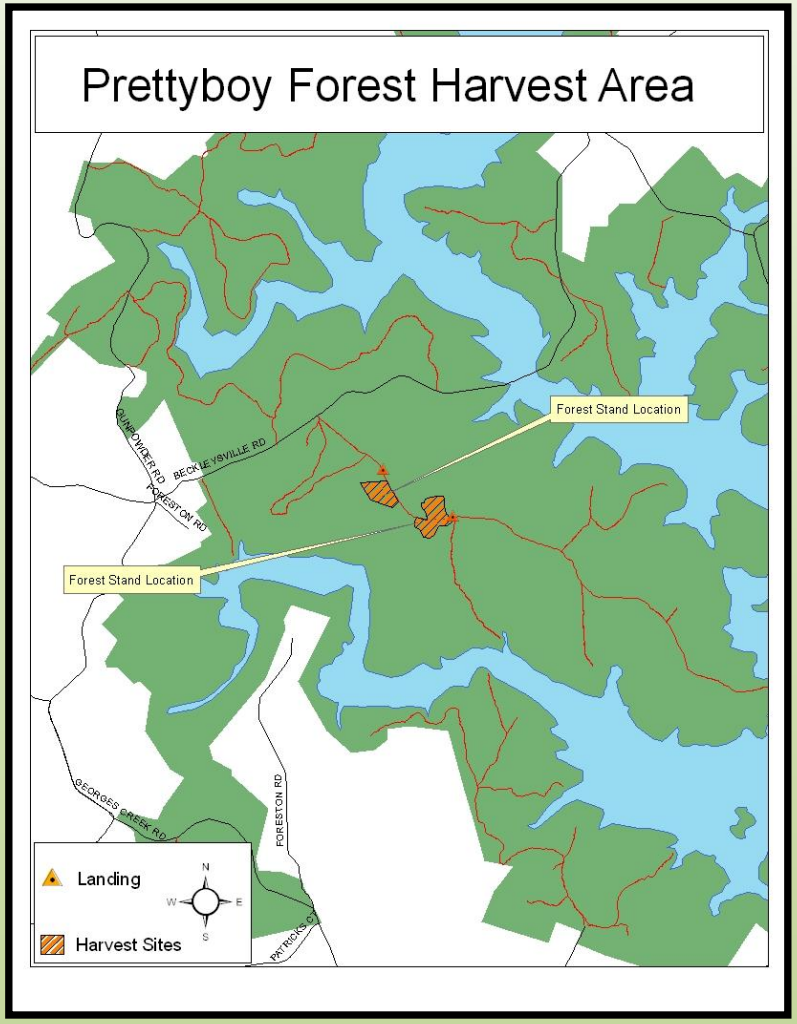
Reservoir Forest Study – Maryland DNR



- The study will be conducted on the Liberty and Prettyboy Reservoir Watersheds
- The Maryland DNR, Forest Service is responsible for :
  - Harvest plot layout and tree marking
  - Assessment of pre-harvest forest condition
  - Recommendations for forest harvesting best management practices
  - Data collection protocols for annual seedling survival assessment
  - Data analysis and assessment of post-harvest condition

Reservoir Forest Study

Reservoir Forest Study – Maryland DNR



- Maryland DNR, Forest Service will also provide financial assistance with:
  - Material for deer fencing
  - Materials for protecting water quality, stone surfacing at harvest road entrances, on slopes, or other areas needed to prevent rutting

Reservoir Forest Study

Reservoir Forest Study – Baltimore City

– Baltimore City will provide:

- Access to the two forest areas used for evaluating the regeneration response to harvest
- Managing of the timber harvest contract

- Personnel to visit harvest study locations on days with active harvesting
- Labor for installing deer fencing to evaluate effect of deer browse on tree regeneration
- Data collection once a year to evaluate number and species of tree regeneration for up to three years

Reservoir Forest Study

Reservoir Forest Study – Stand Thinning

- Three study plots are planned for both Liberty and Prettyboy Reservoir Watersheds
- The study plots will consist of different forest types with differing species composition
  - Approximately 10 acres on each reservoir will be thinned
  - Deer exclosures and controls will be installed on 1/10th acre plots within the study site
  - The highest quality trees will be preserved at each site

Reservoir Forest Study

Reservoir Forest Study

- The harvest will be conducted by Glatfelter Pulp Wood Company
- Glatfelter will carry out the management plan prescriptions- partial harvesting (thinning, timber stand improvements)

GLATFELTER

Reservoir Forest Study

Reservoir Forest Study – Invasive Control

- Proposed invasive species control
  - Ailanthus at Prettyboy location (trunk treatment)
  - Multiple species at Liberty location (cutting and foliar treatment)
- Invasive plants tend to decrease native plant diversity and canopy structure
- Decrease resistance and resilience of forests to disturbance
- Grant money is available for spraying
- Spraying for invasives would be conducted by Maryland Department of Agriculture