Forest Reclamation and Tree Salvage in the Foothills of Alberta

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Outline

• Definitions
• Overview of Silviculture
• Site Description
• Salvaging Trees
• Recontour
• CWD Distribution
• Mounding
• Seedling Planting

• Silviculture Survey
• Tree Survival
• Tree Height
• Leader Length
• Competition
• Tree Density
• Density Model
• Cost Comparison
Reclamation

• The process of reconverting disturbed land to its former, or other, productive uses.

• All practical and reasonable methods of designing and conducting an activity to ensure:

  (1) stable, non-hazardous, non-erodible, favorably drained soil conditions, and

  (2) equivalent land capability.
Silviculture

- The **art and science** of controlling the establishment, growth, composition, and quality of forest vegetation for the full range of forest resource objectives.
- Applies not only to timber production but also includes wildlife, water, recreation, aesthetics, or any combination of these or other forest uses.
Traditional Silviculture Methods

- Planting
- Drag Scarification
- Disc Trenching
- Mound and Plant
- Seed Tree
- Coppice
- Vegetative Repropagation

Emulate

Forest Harvesting
Wellsite Reclamation
Reclamation Objective

- Meet 2010 Forest Reclamation Criteria
- Satisfy landscape, soil and vegetation requirements
- Established a desirable plant community based on the surrounding ecosite
- Vegetation cover > 25% herbaceous and woody cover
- Woody stem count > 2000 stms/ha
- Reclamation certificate
Tree Salvage
Salvage

Species
- Lodgepole Pine
- White Spruce
- Black Spruce
- Balsam Fir
- Trembling Aspen
- Balsam Poplar
- Alder
- Willow
- Mountain Ash
MSL Recontour
CWD Distribution
Mounding
Salvage Tree Planting
Seedling Tree Planting
Aerial
Silviculture Survey
Silviculture Survey

- Circular Plot
- R = 3.99 m
- 1/200 ha
- 50 m²
- 6 plots/disposition
- Tree count = 167
Silviculture Survey

Measured Parameters Included:

- Disposition
- Slope (%)
- Aspect
- Plot position on slope
- Topsoil depth
- Soil texture
- Tree species
- Tree condition
- Tree height
- Root collar diameter
- Dieback
- Leader length
- Course woody debris
- Snags
- Cover (%)
- Cover species
Tree Survival

Tree Survival - LOC

94% 87% 100%
Tree Survival

Tree Survival - MLS

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<th># Trees</th>
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<td>salvaged (89%)</td>
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<td>natural (100%)</td>
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Legend:
- **planted**
- **salvaged**
- **natural**
Tree Height

Mean Tree Height

- Planted: 0.10 – 0.17 m
- Salvaged: 0.27 - 4.5 m
Leader Length

Mean Leader Length

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Competition

Weed and Herbaceous Plant Coverage vs. Tree Survival

LOC MSL

plot #

% weed species herbaceous species survival

1 2 3 4 5 6 7 8 9 10 11 12
Tree Density

Surviving Tree Density

- planted density/hectare
- salvaged density/hectare
- natural density/hectare
- overall density/hectare

LOC MSL

plot #

stems/hectare

1 2 3 4 5 6 7 8 9 10 11 12 avg

0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000

fppt.com
Tree Density Model

Predicted Tree Density

- 2015 density/hectare
- 2016 density/hectare
- 2017 density/hectare
## Cost Comparison

### Salvage Trees
- 3,800 trees
- 633 stems/ha
- Various species
- 87-89% survival
- $6.32/tree

### Nursery Trees
- 12,000 trees
- 2,000 stems/ha
- Lodgepole pine
- 91-94% survival
- $4.10/tree
Questions