Forest Management and Water

Gordon Whitmore
Peace River Pulp Division
Daishowa-Marubeni International Ltd.

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Overview

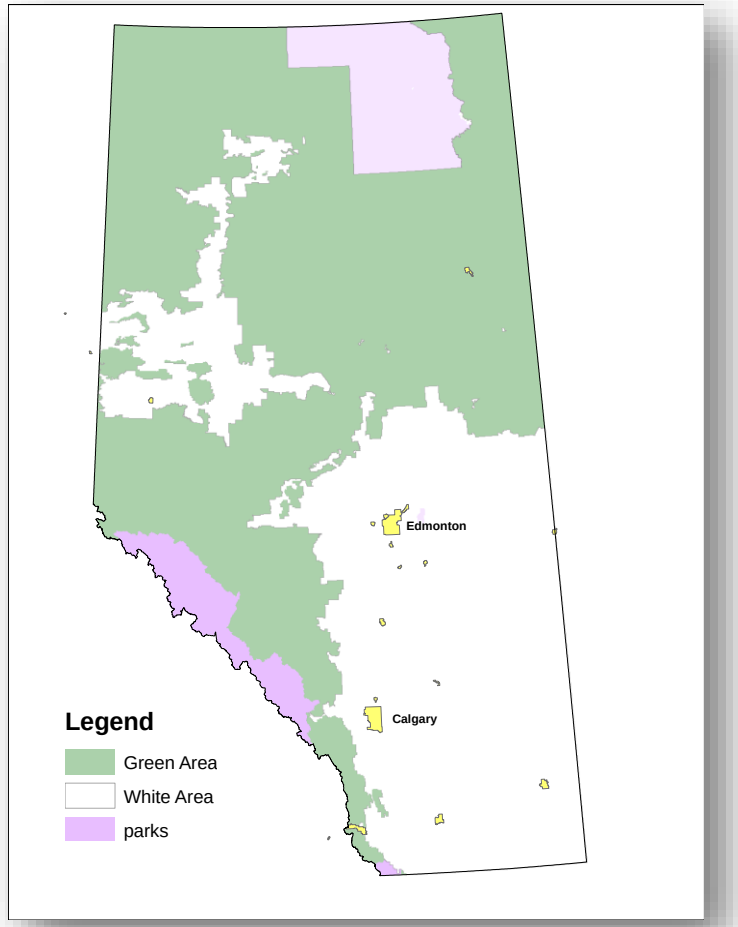
- Background
- Forest Management
- Water and wetlands
- Strategic Considerations
- Operational Considerations
- Future considerations

DMI - Peace River Pulp Division

- Hardwood/Softwood pulp producer
  - 475,000 tonnes (ADMT)
- Fibre Consumption
  - HW: 1,600,000 m3/yr
  - SW: 800,000 m3/yr
- Power Generation:
  - Max of 65 Megawatt
    - Up to 125,000 MWH/yr sold to grid
    - Consume 320,000 MWH/yr
    - ~650,000 tonnes black liquor
    - ~270,000 GMT hog used annually

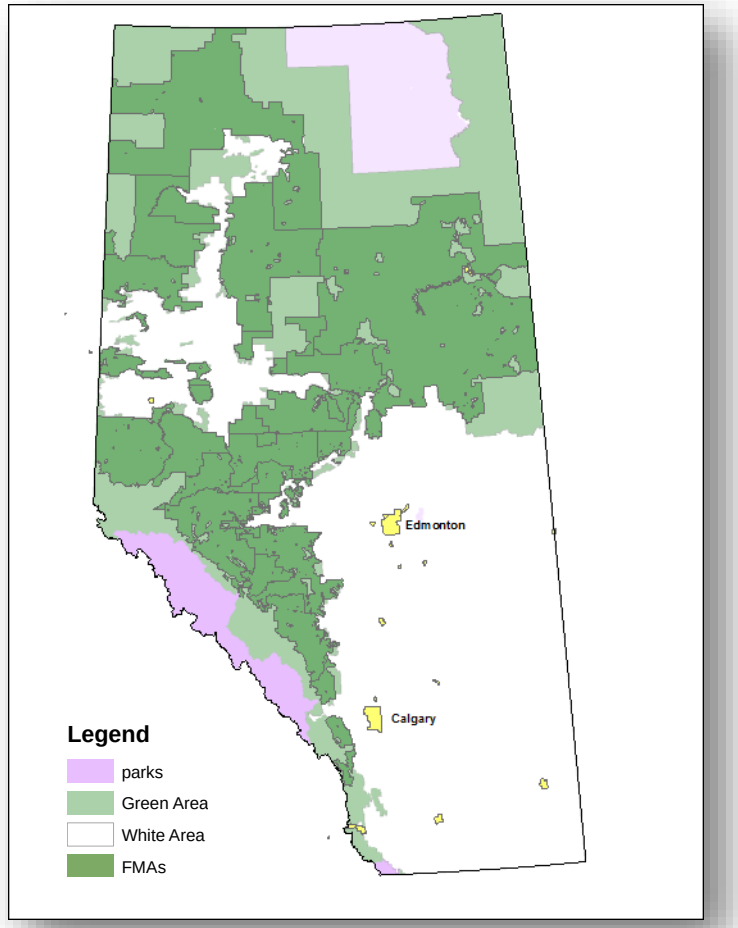
Background

- White Area
  - Settled Area (29 million ha)
  - Over 75% private; some forest
- Green Area
  - Forested Area (35 million ha)
  - Managed for resources and multiple use
- Federal Lands
  - Federal parks, First Nation Reserves



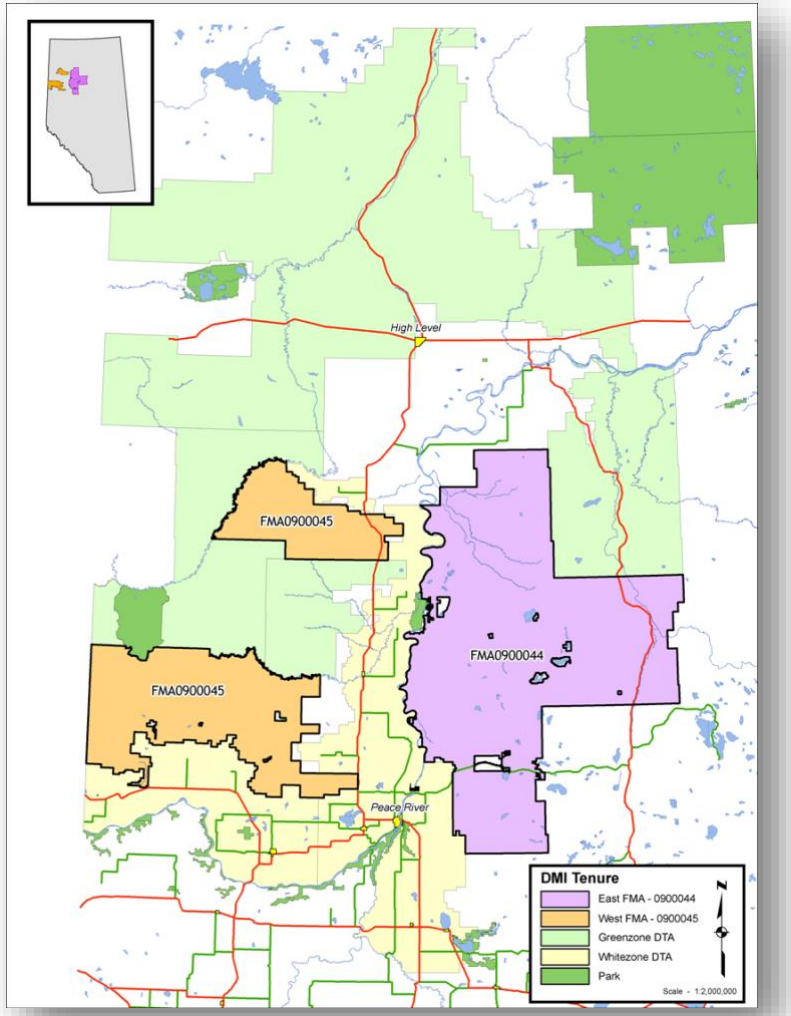
Background (cont'd)

- Over 2/3^{rds} of the Green Area under Forest Management Agreements (FMAs).
- FMA holder required to manage in accordance with AB Forest Management Planning Standard



DMI-PRPD Fibre Supply

- Tenured Fibre Supply
  - 2 FMA's (2.7 million ha)
  - 3 DTA's (4.6 million ha)
- Annual Fibre Requirements
  - Deciduous: 1.6 million m^3
  - Coniferous: 0.8 million m^3
  - Biomass: 300,000 GMT



Forest Management Guiding Principles

- Maintain Biological Diversity
- Maintain Ecosystem Productivity
- Protect Soil and Water
- Consider Global Ecological Cycles
- Multiple Benefits to Society
- Accepting Society's Responsibility for Sustainable Development

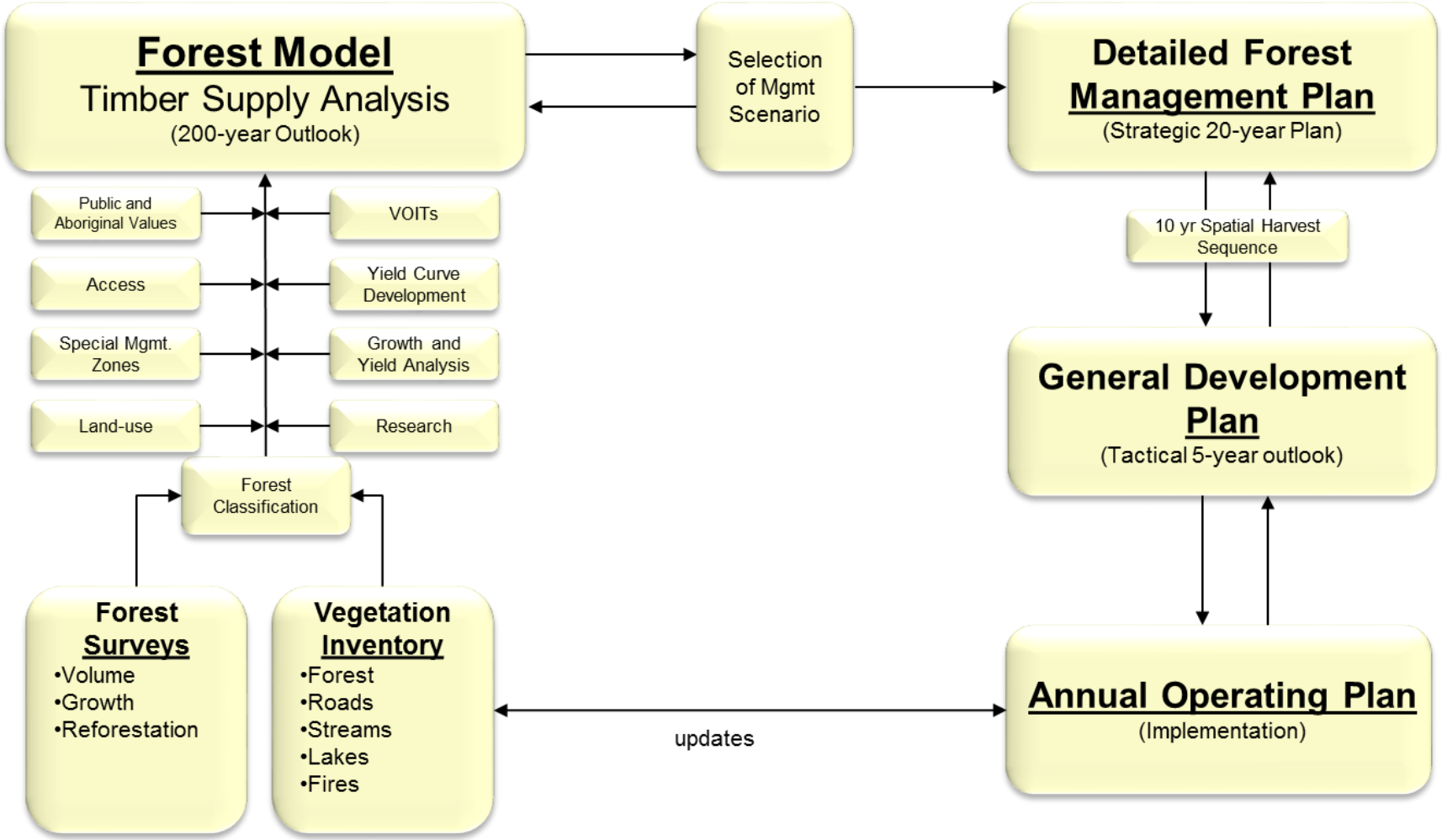
Values, Objectives, Indicators & Targets

VALUES	OBJECTIVES
Criteria 1: Biological Diversity	
Landscape Scale Biodiversity	Maintain coverty pe/seral stage distributions.
	Avoid landscape fragmentation.
	Minimize access.
	Maintain plant communities uncommon in the forest or province.
	Maintain unique habitats created by wildfire and blowdown events.
	Retain ecological values and functions associated with riparian zones.
Local / Stand scale biodiversity	Retain stand level structure (variable retention).
	Maintain integrity of sensitive sites.
	Maintain aquatic biodiversity by minimizing impacts of water crossings.
Viable populations of plant and animal species	Maintain habitat for identified high value species.
Genetic integrity of natural tree populations	Retain wild forest populations for each tree species in each seed zone through establishment of in-situ reserves.
	Retain wild forest genetic resources through ex-situ conservation.
Areas with minimal human disturbances within managed landscapes	Integrate transboundary values and objectives into forest management.
Criteria 2: Ecosystem Productivity	
Reforested Harvest Areas	Meet reforestation targets on all harvested areas.
Maintenance of Forest Landbase	Limit conversion of productive forest landbase to other uses.
	Recognize lands affected by insects, disease, or other natural calamities.
Control Invasive Species	Control non-native plant species (weeds).
Criteria 3: Soil & Water	
Soil Productivity	Minimize impact of roading and bared areas in forest operations.
	Minimize incidence of soil erosion and slumping.
Water Quantity	Limit impact of timber harvesting on water yield.
Effective Riparian Habitats	Minimize impact of operations in riparian areas.
Criteria 4: Global Ecological Cycles	
Carbon Uptake and Storage	Maintain the ability of the forest to capture carbon.
Forest Land Conversion	Limit conversion of productive forest landbase to other uses.
Criteria 5: Multiple Benefits to Society	
Sustainable Timber Supplies	Establish appropriate Annual Allowable Cuts (AACs).
Low Wildfire Risk	Reduce wildfire threat potential.
Provide opportunities to derive benefits / participate in use and management	Integrate other uses and timber management activities.
Forest Productivity	Maintain long run sustained yield.
Criteria 6: Accepting society's responsibility for sustainable development	
Compliance with government regulations and policies	First Nation consultation, public involvement program.
Meaningful public Involvement	Implement public involvement program.

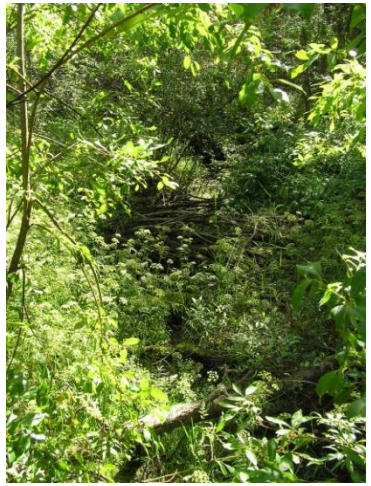
Ecosystem-Based Management

- Emulate natural disturbances like fires
- Reflect what would occur naturally.
- Objective is to ensure all the pieces are there for the future
- Manage for the identified values

Planning Cycle



Water and Wetlands





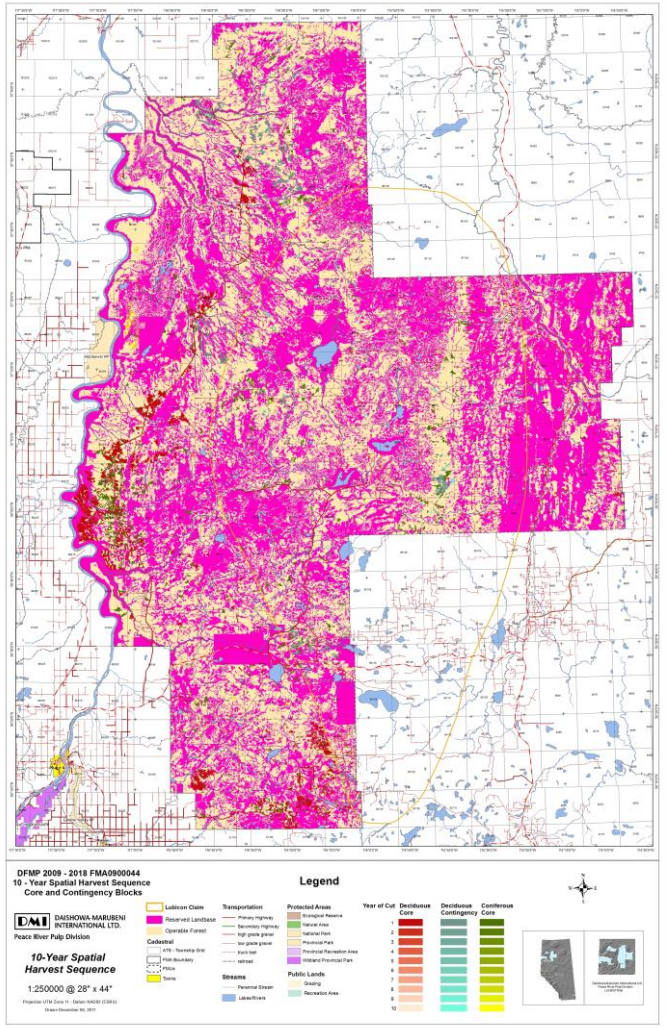


Wetlands

- Filters producing clean water
- Moderate water flow
  - Reduce erosion, flooding, drought
- Vegetation maintains soil stability
- Key zones of biodiversity
  - Hundreds of species depend on wetlands

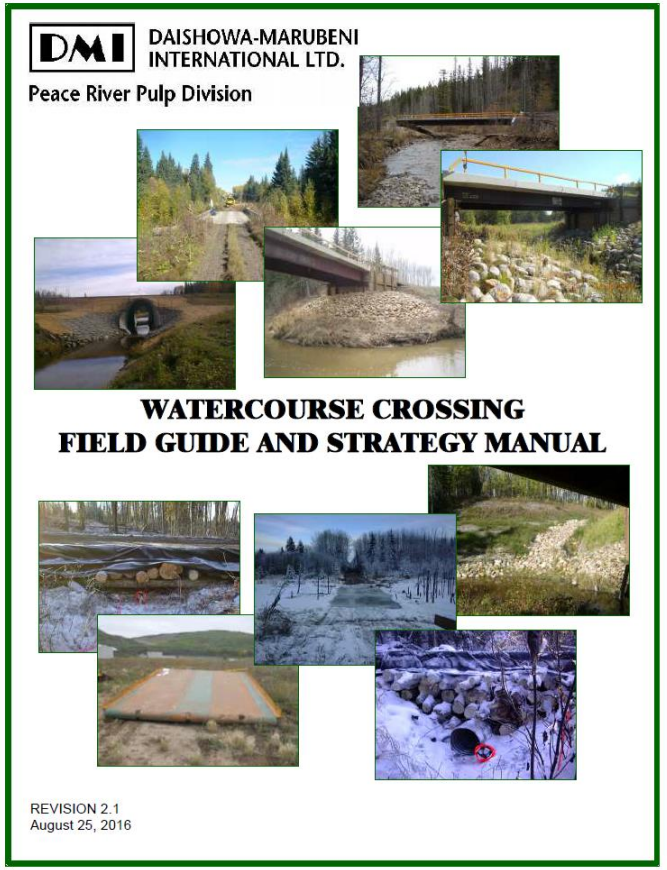
Strategic Considerations for Water

- Restricted operations
  - Riparian Buffers
  - Non-forested areas
    - Typically wetlands
  - Black spruce Forest (wet)
  - Breaks along watercourses
  - Approximately 50% of DMI FMAs is not operated in (eg FMA0900044 - pink)
- Watershed Analysis
  - ECA (Equivalent Clearcut Area)
- Ecosystem-Based Management
  - NRV, Variable Retention



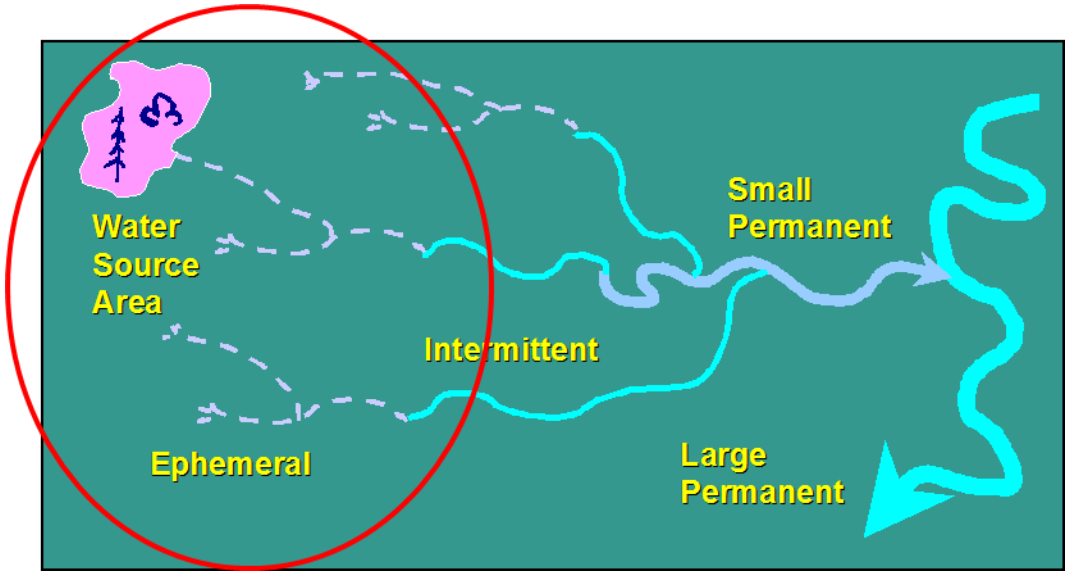
Operational Considerations for Water

- DMI Operating Ground Rules
  - Approved by GOA
- DMI's Watercourse Crossing Field Guide and Strategy Manual
  - Guide to Reg's, SOPs, explanation of watershed features, etc.
- DMI Crossing/Culvert monitoring system
- Bridge Inspection System
- Retention aligned to wet areas
- Operational retention on vernal pools



Knowing Location of Water is Critical

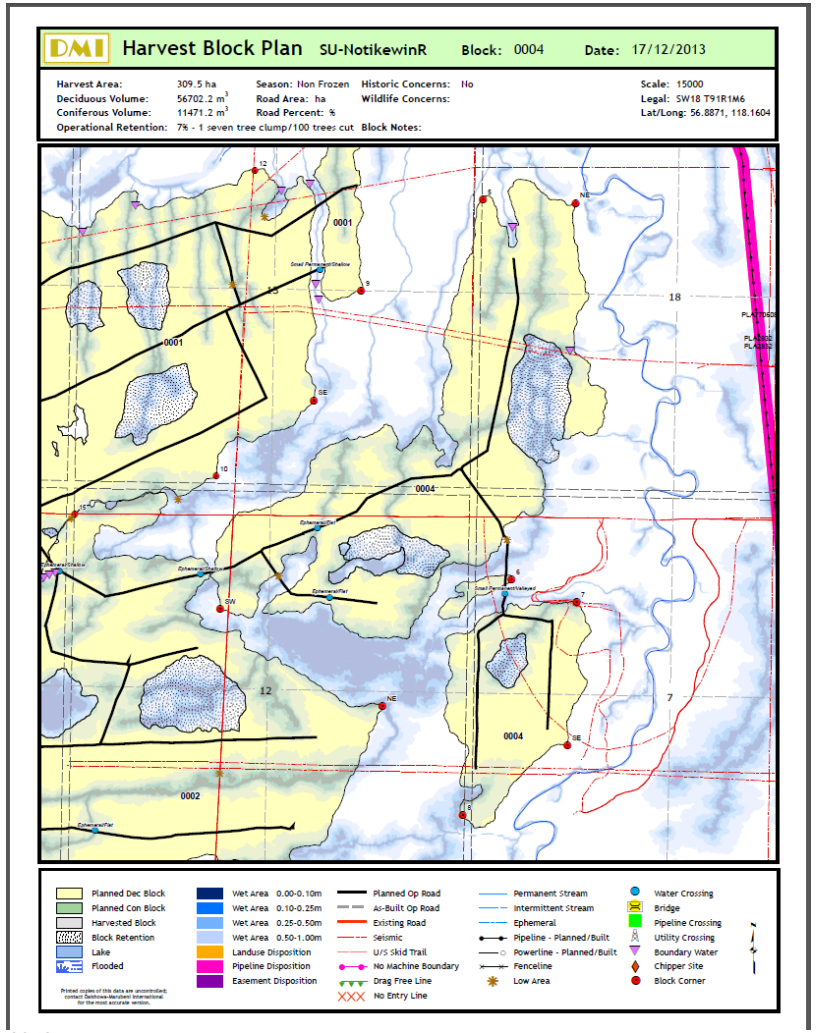
- Permanent and Intermittent are well-mapped
- Little or no mapping of ephemeral draws, wet patches
- Operational issues
- Environmental issues
- Reforestation issues



Unmapped Water = Problems

Full Implementation of Wet Areas Mapping (WAM)

- Proven product for identifying potential hydrologic condition
- ID of potential wet areas and unmapped streams
  - Verified during layout and operations.
- Highlighting of high risk areas
- Highlighting of best route for locating access roads.



WAM Used in Combination w/ Provincial Water Coverage

Problem Prevention

- Minimize Risks = Minimize Costs
  - Maintain site/soil productivity
  - Maintain optimal root productivity for natural regeneration
  - Maintain water quality
- Minimize “surprises” during and after harvest
  - Focus on planning stage!
  - ID summer blocks
  - ID access wrt water

Future Considerations

- Natural Disturbances
  - Insect and Disease Infestations
    - Mountain Pine Beetle
    - Spruce Budworm
    - Forest Tent Caterpillar
  - Fire
  - Blowdown
- Drought
- Planning for Species at Risk
  - Caribou
  - Grizzly Bear
  - Etc.


DMI
Growing the Future...