

BRIEF SUBMITTED TO THE
ROYAL COMMISSION ON FORESTRY

BY

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HALIFAX, NOVA SCOTIA

INTRODUCTORY REMARKS

MR. CHAIRMAN, COMMISSION MEMBERS, LADIES
AND GENTLEMEN -

I THANK YOU FOR THIS OPPORTUNITY TO
PRESENT MY VIEWS ON FOREST MANAGEMENT, AND
HOW GOOD OR BAD FOREST PRACTICES AFFECT THE
LIFESTYLE OF ALL NOVA SCOTIANS.

MY NAME IS MURRAY PREST. I LIVE AT
MOOSELAND, HALIFAX COUNTY. I AM A LANDOWNER
AND FOR MOST OF MY LIFE HAVE BEEN ENGAGED IN
THE VARIOUS ASPECTS OF GROWING, HARVESTING,
MANUFACTURING, AND SELLING OF FOREST PRODUCTS.
MY EXPERIENCE IN FOREST MANAGEMENT COVERS THE
GREATEST AND MOST RAPIDLY CHANGING PERIOD OF
NOVA SCOTIA'S FOREST HISTORY.

FOR MANY YEARS ALL OF THE SUPPLIES AND
EQUIPMENT USED IN THE FOREST INDUSTRY CAME FROM
LOCAL MANUFACTURERS. THE PRODUCTION OF A
SMALL AMOUNT OF A LUMBER REQUIRED THE SERVICES
OF MANY PEOPLE, CHOPPERS, TEAMSTERS, BLACKSMITHS,
AND SAWMILL CREWS.

THE PRODUCTION AND TRANSPORTATION OF THIS
LUMBER PROVIDED A MARKET TO FARMERS FOR HORSES,
HAY, OATS, MEAT AND VEGETABLES. EVEN THE SAW-
MILL EQUIPEMENT USED BY THE INDUSTRY WAS
MANUFACTURED AT AMHERST, OXFORD, AND NEW GLASGOW.
ONE HUNDRED PERCENT OF THE BENEFITS GAINED FROM
THE HARVESTING OF THE FOREST CROP REMAINED WITHIN THE

PROVINCE, THE HARVESTING OF ONLY A SMALL NUMBER OF TREES PROVIDED A GREAT DEAL OF EMPLOYMENT AND MADE A LARGE IMPACT ON THE PROVINCIAL ECONOMY.

FOREST MECHANIZATION IN THE FORM OF TRUCKS AND TRACTORS STARTED IN THE 1930'S AND BY THE 70'S INCLUDED POWER SAWS, SKIDDERS, PORTERS, BULLDOZERS, HARVESTERS, DELIMBERS, SLASHERS, CRANE LOADERS, TRUCKS AND TRAILERS, ALL MANUFACTURED IN OTHER PARTS OF THE WORLD, AND USING FUEL IMPORTED FROM OTHER COUNTRIES.

THESE MACHINES ARE ALL VERY EXPENSIVE, HEAVILY FINANCED, HEAVILY INSURED, AND SUBJECT TO RAPID DEPRECIATION AND OBSOLESCENCE. ALL HAVE TO BE PAID FOR BY TREES CUT FROM THE FOREST, NOW A GREAT MANY TREES HAVE TO BE HARVESTED JUST TO PROVIDE A SMALL NUMBER OF JOBS AND TO BREAK EVEN FINANCIALLY.

LEFT ON ITS OWN, MECHANIZATION OF THE FOREST INDUSTRY WOULD HAVE PROGRESSED AT A RATE CONSISTENT WITH THE MARKET; HOWEVER, THE SETTING OF GIVE-AWAY STUMPAGE RATES ON CROWN LAND, GOVERNMENT ASSISTANCE ON THE CONSTRUCTION OF WOODS ROADS, TRUCKING SUBSIDIES, MACHINERY GRANTS, TAX CREDITS, HARVEST ASSISTANCE, ETC., ALL CONTRIBUTED TO AN OVER-INVESTMENT IN MANUFACTURING PLANTS AND HARVESTING MACHINERY.

THIS FINANCIAL BURDEN CREATED AN ATTITUDE OF "TO HELL WITH THE FOREST, THE MILL MUST BE LOGGED", BY COMPANY SUPERVISORS, AND "TO HELL WITH THE FOREST, I HAVE PAYMENTS TO MAKE", BY

THE FOREST OPERATORS.

TO MAKE MATTERS WORSE, THE SMALL TREE ACT THAT HAD MAINTAINED A DEGREE OF ORDER AND DISCIPLINE IN HARVESTING OPERATIONS THROUGHOUT THE 40'S AND 50'S CAME UNDER ATTACK BY THE PULP AND PAPER INDUSTRY.

ON MARCH 30, 1965, THE SMALL TREE ACT WAS OFFICIALLY ENDED. IT WAS REPLACED BY A NEW ACT. AN ACT THAT WOULD GIVE A FREE HAND TO INDUSTRY, HOPE AND WINDOW DRESSING TO THE PUBLIC, AND A SMOKE-SCREEN FOR GOVERNMENT. IT WOULD BE CALLED THE "FOREST IMPROVEMENT ACT".

THE STAGE WAS NOW SET FOR WHAT WOULD BE KNOWN IN MODERN WARFARE AS A FULL SCALE BLITZKREIG - TWENTY YEARS OF THE MOST DESTRUCTIVE METHODS OF FOREST HARVESTING IN NOVA SCOTIA'S HISTORY.

TAKING A LOOK BACK OVER THE YEARS IT IS INTERESTING TO FIND OUT THAT NOVA SCOTIA PIONEERED THE SULFITE PULP INDUSTRY IN CANADA. IN THE MONTH OF OCTOBER, 1885, THE HALIFAX WOOD FIBRE COMPANY LOCATED AT SHEET HARBOUR PRODUCED THE FIRST SULFITE EVER PRODUCED IN CANADA. IT PRODUCED ONE TON OF PULP FROM 2 TON 11 CWT OF DRY WOOD.

IT IS IRONIC THAT 100 YEARS LATER THE SULFITE AND SULFATE PROCESS STILL REQUIRES THE SAME AMOUNT OF WOOD TO PRODUCE ONE TON OF PULP, AND THAT NOVA SCOTIA'S FORESTS ARE

BEING SACRIFICED TO MAINTAIN AN OLD AND WASTEFUL PROCESS, WHILE SYSTEMS THAT CAN PRODUCE A TON OF PULP FROM ABOUT ONE-HALF THAT AMOUNT OF WOOD ARE IN PRODUCTION IN MANY PARTS OF THE WORLD.

AGAIN LOOKING BACK OVER THE LONG HISTORY OF EXPLOITATION OF NOVA SCOTIA FORESTS ONE FINDS A CONTINUOUS DOWNWARD TREND IN SPECIES MAKE-UP, A DECLINING FOREST LAND BASE, AN INCREASING ARRAY OF IMPORTED INSECTS AND DISEASES, AND A CONTINUING TOTAL DISREGARD FOR TOPSOIL, NUTRIENT LOSS, AND THE FOREST FLOOR.

TO REVIEW THIS SUBJECT, I AM GOING TO USE EXCERPTS FROM PAPERS I HAVE PRESENTED ON OTHER OCCASSIONS.

I WILL DEAL WITH HISTORICAL FOREST CONDITIONS AND THE EFFECT ON THE SPECIES MAKE-UP OF THE FOREST INVENTORY BROUGHT ABOUT BY HARVESTING, FIRE, AGRICULTURE, AND DISEASE.

NOVA SCOTIA'S CHANGING FOREST

THE APPALACHIAN REGION OF NORTH AMERICA BEGINS IN THE SOUTHERN PART OF THE UNITED STATES AND EXTENDS NORTH EASTERLY PARALLEL TO THE ATLANTIC OCEAN TO NEWFOUNDLAND. IT IS AN AREA BLESSED WITH BOUNTIFUL AND VARIED SPECIES OF TREES, PLANTS, ANIMALS, FISH AND BIRDS.

THE PENINSULA OF NOVA SCOTIA STRETCHING OUT INTO THE ATLANTIC IS PART OF THIS REGION AND IS THE NORTHERN LIMIT FOR MANY HARDWOOD AND SOFTWOOD TREES THAT ONE WOULD EXPECT TO FIND IN A MORE SOUTHERLY PART OF THE REGION.

THIS MIXED FOREST OF BIRCH, MAPLE, OAK, HEMLOCK, PINE, SPRUCE, FIR, AND MANY OTHER SPECIES IS KNOWN AS THE 'ACADIAN FOREST'.

IT WAS THIS ACADIAN FOREST WITH ITS LUXURIOUS GROWTH OF VEGETATION THAT SO IMPRESSED THE NORSEMEN OVER ONE THOUSAND YEARS AGO THAT THEY NAMED THE COUNTRY 'VINLAND'.

WHEN THE LAND WAS AGAIN VISITED SOME FIVE HUNDRED YEARS LATER BY THE FRENCH, THEY FOUND IT OCCUPIED BY THE MIC MAC INDIANS WHO CALLED IT 'ACADIE', (MEANING IN THEIR LANGUAGE - 'LAND OF PLENTY').

EXPLOITATION OF NOVA SCOTIA'S FOREST FOR

TIMBER BEGAN WITH THE BUILDING OF THE FIRST WHITE SETTLEMENT AT PORT ROYAL. THE DECLINE IN FISH AND WILDLIFE FOLLOWED A COURSE DIRECTCLY RELATED TO THE LOSS OF FOREST HABITAT AND SPAWNING BEDS. REPORTS ON FISH CATCHES AND WILDLIFE POPULATIONS COMMON ONLY ONE HUNDRED AND TWENTY YEARS AGO SEEM FANTASTIC BY TODAYS STANDARDS.

THE EARLY FORESTS OF NOVA SCOTIA HAVE BEEN DESCRIBED AS "VAST CATHEDRALS", "SHADY GROVES OF GIANTS", "WOODED SOLITUDES", AND "FORESTS PRIMEVAL".

LIEUTENANT GOVERNOR OF NOVA SCOTIA, LAWRENCE ARMSTRONG, HAD THIS TO SAY IN 1725 ABOUT OUR FORESTS:

"THIS WHOLE COUNTRY FROM ONE END TO THE OTHER IS PRODUCING TREES OF ALL KINDS, EITHER FOR THE BUILDING OF SHIPS OR HOUSES, AND ENOUGH TO SERVE THE NATION FOREVER."

CHARLES MORRIS, SURVEYOR GENERAL OF NOVA SCOTIA, WROTE IN HIS 1765 REPORT ON CAPE BRETON ISLAND: "HERE GROWS A GREAT QUANTITY OF EXCELLENT TIMBER CALLED BIRCH. IT GROWS IN FORM AND SHAPE LIKE THE OAK. IN BIGNESS COMMONLY 9 TO 12 FEET IN GIRTH AND GENERALLY 20 TO 30 FEET BEFORE THE FIRST BRANCHES. IT IS USED IN SHIPBUILDING AND HAS BEEN FOUND TO BE MORE DURABLE THAN OAK".

AN EXCERPT FROM A BOOK ENTITLED FORESTS OF ACADIE, WRITTEN ONE HUNDRED AND FIFTEEN YEARS

AGO, BY CAPTAIN CAMPBELL HARDY, READS:

"THE TRUE CHARACTER OF THE ACADIAN FOREST IS NOT TO BE STUDIED FROM THE ROAD-SIDE OR ALONG THE EDGE OF THE CLEARED LAND. TO READ ITS MYSTERIES ARIGHT, WE MUST PLUNGE INTO ITS DEPTHS AND LIVE UNDER ITS SHELTER THROUGH ALL PHASES OF SEASONS, LEAVING FAR BEHIND THE SOUND OF THE SETTLER'S AXE AND THE TINKLING OF HIS CATTLE BELLS."

"ON ENTERING THE WOODS THE FIRST FEATURE WHICH NATURALLY STRIKES US IS THE CONTINUAL OCCURANCE OF DENSE COPSES OF YOUNG TREES, WHERE A PARTIAL CLEARING HAS AFFORDED A CHANCE TO THE PROFUSELY SOWN SEEDS TO SPRING UP AND PERPETUATE THE SPECIES. NOTWITHSTANDING THE CONTINUED AND OFTEN WANTON MUTILATION BY THE AXE AND THE IMMENSE AREA ANNUALLY DEVASTATED BY FIRE, THE FIERCE ENERGY OF ACADIAN VEGETATION, IF ALLOWED, QUICKLY FILLS UP THE GAPS, AND THE BURNT, BLACKENED WASTE IS SOON RECLOTHED WITH DENSE COPSES OF BIRCH AND ASPEN."

BY 1910, B.E. FERNOW, IN A REPORT THAT IS OFTEN REFERRED TO AS NOVA SCOTIA'S FIRST FOREST INVENTORY, BUT WHAT IS DESCRIBED BY HIM AS A RECONAISSANCE, STATED THAT APPROXIMATELY 2,000,000 ACRES OF THE PRESENT FOREST AREA OF THE PROVINCE HAD BEEN SO SEVERELY BURNED THAT IT IS NOW SEMI-BARREN OF COMMERCIAL TREES.

FERNOW WARNED THAT WITHOUT BETTER CARE TIMBER-OF SAWLOG QUALITY WAS IN DANGER OF

EXHAUSTION.

HE MADE THE FOLLOWING RECOMMENDATION:

"NEXT TO PROTECTION AGAINST FIRE, IMPROVEMENT IN LOGGING METHODS WITH PROPER REGARD TO YOUNG GROWTH SHOULD BE SECURED. THE AIM OF THE LOGGER AT LEAST SHOULD BE NOT TO PREVENT THE EFFORTS OF NATURE TO RESTORE THE CUTOVER LANDS TO USEFUL PRODUCTION."

THESE FEW EXCERPTS FROM HISTORY INDICATE THE VAST CHANGE IN INVENTORY, AGE, AND SPECIES MAKE-UP, BROUGHT ABOUT IN THE FOREST MAINLY BY FIRE AND USE OF THE AXE.

THE IMPACT OF TWO WORLD WARS, THE SAW, THE BULLDOZER, DISEASE AND HURRICANES, WOULD TAKE A FURTHER TOLL BEFORE THE SITUATION WOULD AGAIN BE ASSESSED IN THE BOOK ENTITLED FOREST RESOURCES OF NOVA SCOTIA.

THE REPORT, PRINTED IN 1958, STATES: "THE YIELDS PER ACRE OF THE FOREST LANDS OF NOVA SCOTIA HAVE BEEN DECREASING. HARVESTING STANDS BEFORE THEY HAVE ATTAINED MATURITY IS RESPONSIBLE IN PART. MANY STANDS ARE CUT WHEN TREES HAVE REACHED SIX TO EIGHT INCHES. UNDER NORMAL CONDITIONS SUCH TREES WILL DOUBLE THEIR VOLUME WITHIN TEN YEARS. ON THE OTHER HAND, THERE ARE FORESTS IN THE PROVINCE THAT HAVE BEEN PERMITTED TO GO BEYOND MATURITY.

CLEARCUTTING OR HEAVY CUTTING OF MEDIUM

IN WHITE SPRUCE ACREAGE SEEMS INEVITABLE AS WHEN SUCH STANDS DO REGENERATE TO SOFTWOOD, BALSAM FIR IS THE SPECIES TO EXPECT.

BALSAM FIR

"CLEARCUTTING LARGE AREAS OF SOFTWOOD MEANS THAT MANY IMMATURE STANDS OF RED SPRUCE, WHITE PINE, AND HEMLOCK, ARE HARVESTED BEFORE THEY HAVE ESTABLISHED REGENERATION. THE LIKELY RESULT IS THAT THE NEXT CROP WILL BE MOSTLY BALSAM FIR" - THE FOREST RESOURCES OF NOVA SCOTIA.

FIRE & BLACK SPRUCE

IT MUST BE ASSUMED THAT FIRE PLAYED SOME PART IN THE MAKE-UP OF NOVA SCOTIA'S VIRGIN FORESTS. HOWEVER, THE SETTLERS' DESIRE TO DRIVE BACK THE FOREST, AND TO CLEAR THE LAND, TOGETHER WITH THE SLASH OF FOREST HARVESTING, GREATLY INCREASED THE INCIDENCE OF FIRE.

FERNOW REFERRED TO 2,000,000 ACRES OF VERY SEVERELY BURNED LAND, BUT DID NOT TRY TO PUT A FIGURE ON THE ACRES THAT HAD SATISFACTORILY REGENERATED AFTER LESS SEVERE BURNING.

RECENT BURNS ARE REFERRED TO BY FERNOW AS FIRE THAT OCCURRED BETWEEN 1900 AND 1910. A TOTAL OF 550,098 ACRES. THIS INDICATES AN AVERAGE BURN OF 55,000 ACRES PER YEAR. IF THE SAME ANNUAL RATE IS APPLIED TO THE PREVIOUS

100 YEARS, THE TOTAL FROM 1800 TO 1910 WOULD BE OVER 6 MILLION ACRES. THERE IS NO DOUBT THAT SOME OF THE SAME LAND WAS BURNED TWO OR MORE TIMES, BUT THE FIGURES DEMONSTRATE THAT A VAST AREA OF NOVA SCOTIA'S FOREST LAND HAS A HISTORY OF FIRE.

DEPENDING ON THE TIME OF YEAR, SITE, AND WEATHER CONDITIONS, THE EFFECT OF FIRE MAY VARY FROM FOREST DESTRUCTION TO FOREST RENEWAL. REGENERATION MAY VARY ALL THE WAY FROM PURE SOFTWOOD TO PURE HARDWOOD. HOWEVER, THE GENERAL PATTERN HAS BEEN AWAY FROM THE CLIMAX SPECIES OF RED SPRUCE, WHITE PINE, YELLOW BIRCH, HEMLOCK, AND ROCK MAPLE, TO THE LESS VALUABLE SPECIES OF BLACK SPRUCE, WHITE MAPLE, GREY BIRCH, POPULAR, AND BALSAM FIR. A LARGE PERCENTAGE OF THE AREA PRESENTLY GROWING BLACK SPRUCE IS THE END RESULT OF FIRE AND THE SPECIES PROGRESSION THAT TOOK PLACE. WITH THE ANNUAL LOSS TO BURNING NOW REDUCED TO ABOUT 5,000 ACRES A YEAR, THE DISASTEROUS EFFECTS OF LARGE FIRES IS HOPEFULLY PAST HISTORY. THEREFORE, FERNOW'S FIRST RECOMMENDATION TO PROTECT THE FOREST FROM FIRE HAS WITHIN PRACTICAL LIMITS BEEN CARRIED OUT.

IF CHANGES THAT HAVE OCCURED IN THE FOREST IN THE PAST ARE INDICATIVE OF TRENDS IN THE FUTURE, THEN WE CAN EXPECT A DECREASE IN ABONDONED FARMLAND RESULTING IN A DECREASE OF WHITE SPRUCE, A DECREASE IN THE BURNING OF FOREST LAND FOLLOWED BY A DECREASE OF BLACK SPRUCE

REGENERATION, CLEARCUTTING BEFORE MATURITY ELIMINATING MANY STANDS OF RED SPRUCE, PINE AND HEMLOCK, AND THE REPLACING OF THEM WITH BALSAM FIR. AT FIRST GLANCE IT WOULD LOOK AS IF THE SOFTWOOD AREAS WOULD EVENTUALLY DEGENERATE TO A BALSAM FIR FOREST. HOWEVER, A NATURAL RECURRENCE OF THE BUDWORM, AND THE IMPORTATION FROM EUROPE OF THE WOOLY APHID HAS GREATLY REDUCED THE SEED PRODUCTION POTENTIAL OF THIS SPECIES.

YELLOW BIRCH

MOST OF THE STANDS OF THESE BEAUTIFUL AND VALUABLE TREES THAT REMAINED AFTER YEARS OF HARVESTING FOR LUMBER, VENEER, AND FIREWOOD, WERE KILLED IN THE DIEBACK OF THE 1940's.

THIS DISEASE CALLED THE 'BIRCH DIEBACK' SWEEPED MOST OF EASTERN NORTH AMERICA. IN NOVA SCOTIA FROM ABOUT 1945 TO 1955, IT DESTROYED MOST OF THE YELLOW BIRCH. IT AFFECTED THE TIPS OF THE BRANCHES AT THE TOP OF THE TREE FIRST AND GRADUALLY WORKED DOWN TO THE STEM. IN THIS WAY, THE SEED PRODUCTION OF MANY TREES STOPPED YEARS BEFORE THE TREE WAS TOTALLY KILLED. IN OTHER CASES, RESIDUAL TREES SURVIVED AND GREW A NEW TOP.

THIS NEW TOP THAT TOOK ABOUT TEN YEARS TO DEVELOP THEN BECAME A NEW SEED SUPPLY.

BY CHANCE AND FORTUNATE TIMING, THIS

SEED SUPPLY BECAME AVAILABLE AT THE SAME TIME THAT THE FOREST FLOOR WAS BEING SCARRED AND TORN BY MECHANIZED HARVESTING.

"THE MAJOR CONSTRAINT TO THE ESTABLISHMENT OF YELLOW BIRCH IS NOT CANOPY OPENING SIZE BUT SEEDBED RECEPTIVITY" - HATCHER, 1966. THUS, ON ALL SCARIFICATION TREATMENTS, REGARDLESS OF CUTTING METHODS, HATCHER DISCOVERED AN IMPROVEMENT IN YELLOW BIRCH REGENERATION.

IT NOW APPEARS THAT UNLIKE THE PAST, WHERE YELLOW BIRCH REGENERATION DEPENDED ON SOIL DISTURBANCE CAUSED BY THE BLOWDOWN OF OVERMATURE AND DECADENT TREES OR THE RESULT OF HURRICANE DAMAGE, MAN HAS NOW UNINTENTIONALLY, AND WITHOUT THOUGHT OF THE FUTURE, CREATED CONDITIONS NECESSARY FOR THE REBIRTH OF OUR MOST VALUABLE CLIMAX SPECIES - THE YELLOW BIRCH. WHERE SEED IS AVAILABLE, THIS NATURAL PROCESS OF RE-ESTABLISHMENT IS WELL UNDERWAY, AND THE BEST WE CAN DO NOW IS TO TAKE THE ADVICE GIVEN BY FERNOW IN HIS SECOND RECOMMENDATION "THE AIM OF THE LOGGER AT LEAST SHOULD BE NOT TO PREVENT THE EFFORTS OF NATURE TO RESTORE THE CUTOVER LANDS".

THE YELLOW BIRCH GROWS ONLY FROM A SEED. IT DOES NOT DEVELOP FROM STUMP SPROUTING. IT GROWS IN A SINGLE STEM AND PROVIDED THE AREA IS REASONABLY WELL STOCKED, THE TREE WILL GROW TALL AND STRAIGHT. IT IS CLASSED AS AN INTERMEDIATE IN REGARDS TO SHADE TOLERANCE AND DOES

ADVANTAGE OF MAN-MADE SOIL DISTURBANCES, BUT ALSO AT A TIME WHEN NATURAL AREAS OF WHITE AND BLACK SPRUCE CAN BE EXPECTED TO DECLINE AND THE BALSAM IS UNDER ATTACK BY THE BUDWORM AND WOOLY APHID.

MOTHER NATURE, LIKE ANY GOOD FARMER SHOULD, APPEARS TO HAVE DECIDED THAT NOW IS THE TIME FOR A CROP ROTATION, AND IF THIS IS THE CASE, THEN THE YELLOW BIRCH IS A SPECIES THAT SHOULD BE PROTECTED AND PROMOTED.

IT IS GENERALLY ACCEPTED IN FORESTRY CIRCLES THAT THE FORESTS OF NOVA SCOTIA ARE DECLINING IN QUALITY AND QUANTITY AT AN ACCELERATING RATE AND THAT IMMEDIATE ACTION IS NECESSARY IF THIS TREND IS TO BE REVERSED. HOWEVER, THERE IS A DEEP DIVISION OF OPINION AS TO THE BEST WAY TO BRING THIS OBJECTIVE ABOUT AND WHO SHOULD PAY THE BILL.

IN A RECENT ARTICLE THAT IS VERY CRITICAL OF NOVA SCOTIA, WRITTEN BY KENNETH GREAVES, PRESIDENT OF THE ONTARIO FOREST INDUSTRIES ASSOCIATION, MR. GREAVES STATES: "THE FORESTS OF CANADA HAVE NO REAL VALUE UNLESS THEY CAN BE MANUFACTURED INTO PRODUCTS AND SOLD COMPETITIVELY ON THE MARKETS OF THE WORLD". THANK HEAVEN MOST NOVA SCOTIANS HAVE A MORE ENLIGHTENED CONCEPT OF THE REAL VALUE OF A FOREST THAN DOES MR. GREAVES.

CITING THE TWO EXTREMES OF OPINION, SOME PEOPLE SUGGEST THAT MAINTAINING A FOREST INDUSTRY

MUST HAVE PRIORITY, THAT THE GROWING OF WOOD FIBRE MUST OVER-RIDE ALL OTHER CONSIDERATIONS, THAT ACCEPTANCE OF AERIAL APPLICATIONS OF CHEMICAL SPRAYS IS PART OF THE PRICE THAT MUST BE PAID FOR A WOOD FIBRE SUPPLY, THAT THE TAX-PAYER MUST ANTE UP FOR EXPENSIVE AND SPECULATIVE FOREST PLANTING PROGRAMS, OR LOSE THE INDUSTRY.

ON THE OTHER HAND, THERE ARE PEOPLE WHO SAY THE VALUE OF THE OTHER FOREST BENEFITS WE IN NOVA SCOTIA HAVE BECOME ACCUSTOMED TO AND ENJOY, FAR EXCEED THAT OF ANY PRESENT OR FUTURE BENEFITS THAT MAY BE DERIVED FROM THE FOREST INDUSTRY, THAT IF THESE ARE THE ONLY ALTERNATIVES, THEN LET INDUSTRY GO.

IN VIEW OF THE CONFRONTATION ON THIS SUBJECT, I SUGGEST TO YOU THAT THERE IS A WAY TO MEET INDUSTRY'S NEED FOR WOOD FIBRE - A WAY TO DO IT WITHOUT ACCEPTING AN EXPENSIVE PROGRAM OF POISONOUS CHEMICAL SPRAY - A WAY FOR EVERYONE TO SHARE FOREST-RELATED BENEFITS, AND A WAY THAT THE FOREST ENVIRONMENT CAN BE PROTECTED IN THE PROCESS.

THE CUTTING OF IMMATURE STANDS HAS BEEN ONE OF INDUSTRY'S BIGGEST SINS, CUTTING STANDS BEFORE THEY HAVE GONE THROUGH THEIR GREATEST WOOD-PRODUCING STAGE HAS BEEN A SHORT-SIGHTED SELF-DEFEATING PRACTICE. LET ME GIVE YOU AN EXAMPLE:

USING THE CONTENT TABLES FOR RED AND BLACK SPRUCE, RED PINE AND LARCH, AND BY USING AN

AVERAGE GROWTH RING OF $1/10$ OF 1 INCH PER YEAR, WHICH MEANS A DIAMETER INCREASE OF $2/10$ INCHES PER YEAR, A TREE 50 YEARS OLD AT BREAST HEIGHT WOULD HAVE A DIAMETER OF 10 INCHES. ALLOWING THAT IT TOOK 10 YEARS FOR THE SEEDLING TO REACH BREAST HEIGHT, THIS TREE WOULD HAVE A TOTAL AGE OF 60 YEARS. THE SAME TREE GROWING AT THE SAME RATE FOR THE NEXT 50 YEARS WOULD REACH 20 INCHES DIAMETER BREAST HEIGHT AT AGE 110.

LOOKING AT THE MERCHANTABLE VOLUME OF THIS THEORETICAL TREE AT THE AGE OF 60 YEARS AND AGAIN AT 110 YEARS AND USING VOLUME TABLES FROM THE DEPARTMENT OF LANDS AND FORESTS 1968 INVENTORY, WE FIND THAT THE 60 YEAR OLD TREE CONTAINED 10.9 CUBIC FEET OF MERCHANTABLE WOOD AND THE 110 YEAR OLD TREE CONTAINED 63 CUBIC FEET OF MERCHANTABLE WOOD.

IN OTHER WORDS, THE AVERAGE VOLUME OF GROWTH OF MERCHANTABLE WOOD FOR EACH OF THE FIRST 60 YEARS WAS APPROXIMATELY .18 CUBIC FEET, WHILE THE AVERAGE VOLUME OF GROWTH OF MERCHANTABLE WOOD FOR THE NEXT 50 YEARS WAS 1.24 CUBIC FEET PER YEAR.

IN THE 50 YEARS FROM AGE 60 YEARS TO AGE 110 YEARS THAT TREE PRODUCED A MERCHANTABLE VOLUME OF WOOD AT A RATE OF 5.8 TIMES FASTER THAN IT DID IN THE FIRST 60 YEARS.

FROM THIS EXAMPLE IT BECOMES APPARENT

THAT THE BEST WAY TO INCREASE THE ANNUAL GROWTH OF MERCHANTABLE WOOD IS TO MAINTAIN A CROP OF TREES 10 INCH AND LARGER, 60 YEARS AND OLDER, BY SELECTIVE CUTTING AND NOT BY DENUDING THE LAND THROUGH INDISCRIMINATE CLEARCUTTING.

SELECTION CUTTING

SELECTIVE OR PARTIAL CUTTING CAN CONTROL THE GROWTH OF UNWANTED WEED SPECIES.

FOREST STANDS WITH A GOOD CROWN CLOSURE THAT HAVE REACHED THE AGE OF 60 YEARS OR MORE HAVE NATURALLY ELIMINATED UNDER GROWTH, NEW GROWTH OF WEED SPECIES SUCH AS POPLAR, RED, OR WHITE MAPLE AND CHERRY ARE VERY SELDOM FOUND IN SUCH STANDS.

BETWEEN THE AGES OF 75 TO 100 YEARS THIS TYPE OF STAND WILL ESTABLISH AN UNDERSTORY OF REGENERATION, AT 100 YEARS OR MORE THE LARGE TREES CAN BE REMOVED BY SELECTION CUTTING OR EVEN BY A CLEAR-CUT WITHOUT EXCESSIVE DAMAGE TO THIS WELL-ESTABLISHED REGENERATION. REGENERATION IN THE 10 TO 20 YEAR STAGE WILL NOT BE GREATLY AFFECTED BY COMPETITION FROM OTHER SPECIES, IN THIS WAY A HIGH QUALITY SPECIES CAN BE PERPETUATED.

TO WITNESS NATURE'S WAY OF PERPETUATING THE SPECIES AND WAYS OF CONTROLLING UNWANTED UNDERGROWTH ONE SHOULD WALK THROUGH A GROVE OF MATURE SPRUCE, PINE OR HEMLOCK.

THE GROUND COVER UNDER A DENSE STAND

CHANGES AS THE STAND DEVELOPS. THIS IS EQUALLY TRUE REGARDLESS OF WHETHER THE STAND IS ON FERTILE SOIL OR GRANITE ROCKS.

IN THE EARLY STAGES OF A SOFTWOOD THICKET THE GROUND MAY BE CLEAR OF ALL OTHER VEGETATION INCLUDING MOSS. AS THE TREES GROW AND MORE LIGHT PENETRATES INTO THE STAND, MOSS WILL START GROWING IN THE DUFF LAYER OF FALLEN NEEDLES AND TWIGS.

AFTER A NUMBER OF YEARS A DEEP MOSS BLANKET WILL COVER THE FOREST FLOOR. IN THIS MOSS BLANKET ARE THE CONDITIONS THAT DICTATE WHAT THE NEXT CROP WILL BE. THESE CONDITIONS COULD BE COMPARED WITH THE GENETIC D.N.A. CODES.

IN THE CASE OF A RED SPRUCE STAND NATURE TAKES MANY YEARS TO CAREFULLY PREPARE A SEED BED THAT WILL ENSURE THE ACCEPTANCE OF SPRUCE SEEDS WHILE AT THE SAME TIME CREATING CONDITIONS THAT ASSURE THE REJECTION OF HARDWOOD SEEDS.

THIS PROCESS HAS BEEN SO CLEARLY OUTLINED BY THE MARITIME FOREST RESEARCH CENTRE THAT I WILL READ A FEW PARAGRAPHS FROM THEIR ARTICLE:

"UNDER RED AND BLACK SPRUCE STANDS SHAGGY MOSS TENDS TO DOMINATE THE MOSS CARPET; UNDER WHITE SPRUCE, SHREBER'S MOSS IS THE DOMINANT

SPECIES. BOTH ARE USUALLY ASSOCIATED WITH THE SHINY, PLUME AND BROOM MOSSES, AND COLLECTIVELY THESE ARE REFERRED TO AS FEATHER MOSSES. THE SPAGHNUM MOSSES, USUALLY FOUND ON SWAMPY SITES, ARE NOT FEATHER MOSSES, NOR ARE THEY HAIRCAP MOSSES, WHICH APPEAR TO HAVE A DIFFERENT PHYSIOLOGY."

"THE FEATHER MOSS LAYER PLAYS AN IMPORTANT ROLE IN THE NUTRITION OF FOREST TREES. MOSS PLANTS HAVE BEEN SHOWN TO BE NUTRITIONALLY INDEPENDENT FROM THE UNDERLYING HUMUS AND MINERAL SOIL, DERIVING MOST OF THEIR NUTRIENTS FROM PRECIPITATION AND TREE-DRIP. THIS MEANS THAT THEY DO NOT COMPETE WITH THE TREE ROOTS FOR AVAILABLE NUTRIENTS IN THE SOIL. IN FACT, BECAUSE THE BASAL PORTIONS OF THE MOSS SEGMENTS DECOMPOSE SLOWLY AND CONTINUALLY, THEY APPEAR TO RELEASE NUTRIENTS TO THE DENSE NETWORK OF TREE ROOTLETS BELOW THE LIVING MOSS LAYER."

"STUDIES ON THE TEMPERATURE REGIME IN THE FOREST FLOOR INDICATE THAT A DENSE GROWTH OF FEATHER MOSSES INCREASES THE THERMAL INSULATING PROPERTIES OF THE SURFACE ORGANIC LAYER. THUS THE TEMPERATURE OF THE SOIL UNDER A THICK MOSS LAYER CHANGES BUT SLOWLY. THIS IS IMPORTANT WITH RESPECT TO ROOT GROWTH, NUTRIENT CYCLING, RATE OF HUMUS DECOMPOSITION AND SEEDLING ESTABLISHMENT".

"SOFTWOOD SEED GERMINATES ABUNDANTLY IN THE MOSS LAYER AND THE SEEDLINGS DEVELOP A SPECIFIC ROOT SYSTEM ADAPTED TO THE ECOLOGY OF THE MOSS CARPET. THE TAP ROOT OF EACH SEEDLING USUALLY DIES BACK IN A YEAR OR TWO AND A NEW ROOT SYSTEM DEVELOPS HORIZONTALLY, IMMEDIATELY UNDER THE LIVING SPONGY MOSS LAYER. THE SEEDLINGS ARE THUS ABLE TO TAKE ADVANTAGE OF THE BETTER NUTRIENT, MOISTURE AND TEMPERATURE CONDITIONS PROVIDED BY THE MOSSES. HAVING LOST CONTACT WITH THE MINERAL SOIL, HOWEVER, THEY ARE COMPLETELY DEPENDENT UPON THE MOISTURE CONTAINED IN THE MOSS LAYER."

"MOSSES THRIVE UNDER THE SHADE OF THE TREE CANOPY (WHERE THEY RECEIVE SUFFICIENT LIGHT AND THROUGHFALL TO PERMIT NUTRIENT UPTAKE AND PHOTOSYNTHESIS). SUDDEN REMOVAL OF THE OVER-STORY, AS IN CLEARCUTTING OR HEAVY PARTIAL CUTTING, MAY RESULT IN DESSICATION OF BOTH THE MOSS CARPET AND ANY SMALL SPRUCE SEEDLINGS THAT ARE PRESENT."

"THE MOST IMPORTANT IMPLICATION TO FOREST MANAGERS IS THAT CUTTING OPERATIONS IN PURE, DENSE SPRUCE STANDS, PARTICULARLY IN WHITE SPRUCE, MUST BE DESIGNED TO ENSURE THE SURVIVAL OR PARTIAL SURVIVAL OF THE MOSS LAYER AND THUS PROVIDE FOR THE SURVIVAL OF ADVANCE GROWTH. THIS CAN BE ACHIEVED BY UNIFORM SHELTERWOOD FELLINGS OR BY CLEAR FELLING NARROW EAST-WEST STRIPS. CLEAR - CUTTING OF LARGE BLOCKS OF PURE SPRUCE WILL FREQUENTLY REQUIRE THAT THE HARVESTED AREA

BE GIVEN SITE PREPARATION FOLLOWED BY
EITHER SEEDING OR PLANTING".

HERE IN THIS RECOMMENDATION WE SEE
THAT THE METHOD OF HARVESTING CAN HAVE
SUCH AN IMPACT ON THE FOREST FLOOR THAT
IT IS UNLIKELY TO NATURALLY REGENERATE
BACK INTO THE SPRUCE.

IT IS QUITE APPARENT THAT MAN CANNOT
DUPLICATE NATURE'S WAY OF SITE PREPARATION,
SO HE HAS IMPROVISED A SYSTEM OF HIS OWN.

ARTIFICIAL SITE PREPARATION

LET US HAVE A LOOK AT ARTIFICIAL SITE PREPARATION AND THE TOOLS WE USE. IN THIS ARTIFICIAL SYSTEM WE SUBSTITUTE ENERGY FOR TIME. INSTEAD OF LETTING THE LIMBS AND TOPS SLOWLY ROT AND THE NUTRIENTS RETURN TO THE SOIL, THE BRUSH IS BULLDOZED INTO PILES AND BURNED.

THE AREA IS THEN SUBJECTED TO LARGE MACHINES CUTTING DEEP FURROWS WITH A PLOW OR SCARIFYING BY DRAGGING A VARIED ASSORTMENT OF APPARATUS OVER THE GROUND.

THESE METHODS ARE USED TO EXPOSE THE MINERAL SOIL AND TO MAKE PLANTING EASIER. SITE PREPARATION MAY ALSO INCLUDE THE APPLICATION OF CHEMICAL FERTILIZERS TO ENHANCE THE GROWTH OF THE PLANTED SEEDLINGS.

IF THIS METHOD OF ARTIFICIAL REGENERATION OF THE FOREST WAS PROFITABLE IN NOVA SCOTIA OR EVEN IF IT COULD BE EXPECTED TO PRODUCE WOOD FIBRE AT A REASONABLE COST, INDUSTRY WOULD CARRY OUT A PROGRAM ON ITS OWN. IT WOULD NOT WAIT FOR GOVERNMENT, CLEARLY INDUSTRY DOES NOT HAVE ENOUGH FAITH IN AN ARTIFICIAL FORESTRY PROGRAM TO CONSIDER IT AN ACCEPTABLE INVESTMENT.

ARTIFICIAL FOREST REGENERATION AT BEST IS VERY EXPENSIVE AND IN SOME CASES COSTS ARE PROHIBITIVE. HOWEVER, WHEN AN AREA IS BEING PLANTED WITH EXOTIC SPECIES OR WITHOUT CONSIDERATION OF SITE CONDITIONS THE FULL RANGE OF ARTIFICIAL SITE PREPARATION INCLUDING HERBICIDES AND FERTILIZER MAY BE NECESSARY TO GIVE THE NEW PLANTINGS A SATISFACTORY SURVIVAL RATE IN THEIR PRIMARY STAGE OF DEVELOPMENT.

FOREST NUTRIENTS

THE FACT THAT SOMEBODY STICKS SO MANY THOUSANDS OR MILLIONS OF SEEDLINGS INTO THE GROUND DOES NOT ASSURE THAT FORTY OR FIFTY YEARS IN THE FUTURE THERE WILL BE AN EQUAL NUMBER OF TREES READY TO HARVEST. IN ADDITION TO THE MANY HAZARDS OF WEATHER, FIRE, DISEASE AND INSECTS, THE SEEDLING MAY BE PLANTED ON SOIL WITH INSUFFICIENT NUTRIENTS TO ALLOW IT TO GROW TO A HARVESTABLE SIZE.

STUDIES ALREADY CARRIED OUT IN NOVA SCOTIA INDICATE THAT WHOLE TREE LOGGING AND SHORT ROTATION WILL CAUSE A NUTRIENT DEFICIENCY AND THAT FERTILIZATION WILL BE NECESSARY TO ENABLE THE GROWTH OF A FOREST CROP IN MANY AREAS.

THE REMOVAL OF ANY VEGETATION IS A NUTRIENT DRAIN. THE PROCESS IS THE SAME FOR LONG TERM CROPS OF TREES AS IT IS FOR ANNUAL CROPS SUCH AS CARROTS AND POTATOES. THROUGH POOR HARVEST MANAGEMENT SOIL CAN BE DRAINED OF NUTRIENTS TO THE EXTENT THAT IT CANNOT GROW A MERCHANTABLE CROP.

THE SYSTEM OF LONG ROTATIONS AND THE UTILIZATION OF ONLY THE MAIN PART OF THE TREE BOLE MEANS THAT ONLY A PORTION OF THE NUTRIENTS CONTAINED IN THE WHOLE TREE IS

REMOVED. THE LONG ROTATION BEFORE THE NEXT CROP ALLOWED THE SITE NUTRIENT BANK TO BE RESTORED THROUGH NATURAL NUTRIENT REPLACEMENT.

APPROXIMATELY 50% OF THE NUTRIENTS CONTAINED IN A WHOLE TREE ARE CONTAINED IN THE FOLIAGE LIMBS AND TOPS. IF THESE ARE LEFT ON THE GROUND, THE DRAIN IS REDUCED BY ONE HALF. ROOTS AND STUMPS CONTAIN ABOUT 20% OF THE NUTRIENTS. BY ONLY HARVESTING THE BOLE OF THE TREE THE NUTRIENT DRAIN THROUGH WOOD REMOVAL IS ONLY 30% OF THE AMOUNT AS COMPARED TO THE AMOUNT BY WHOLE TREE HARVESTING.

I WOULD LIKE YOU TO REFER TO A GRAPH PRODUCED BY DR. BARRY GOLDSMITH WHICH SHOWS TYPES OF HARVESTING AND THE DRAIN ON SITE NUTRIENT CAPITAL.

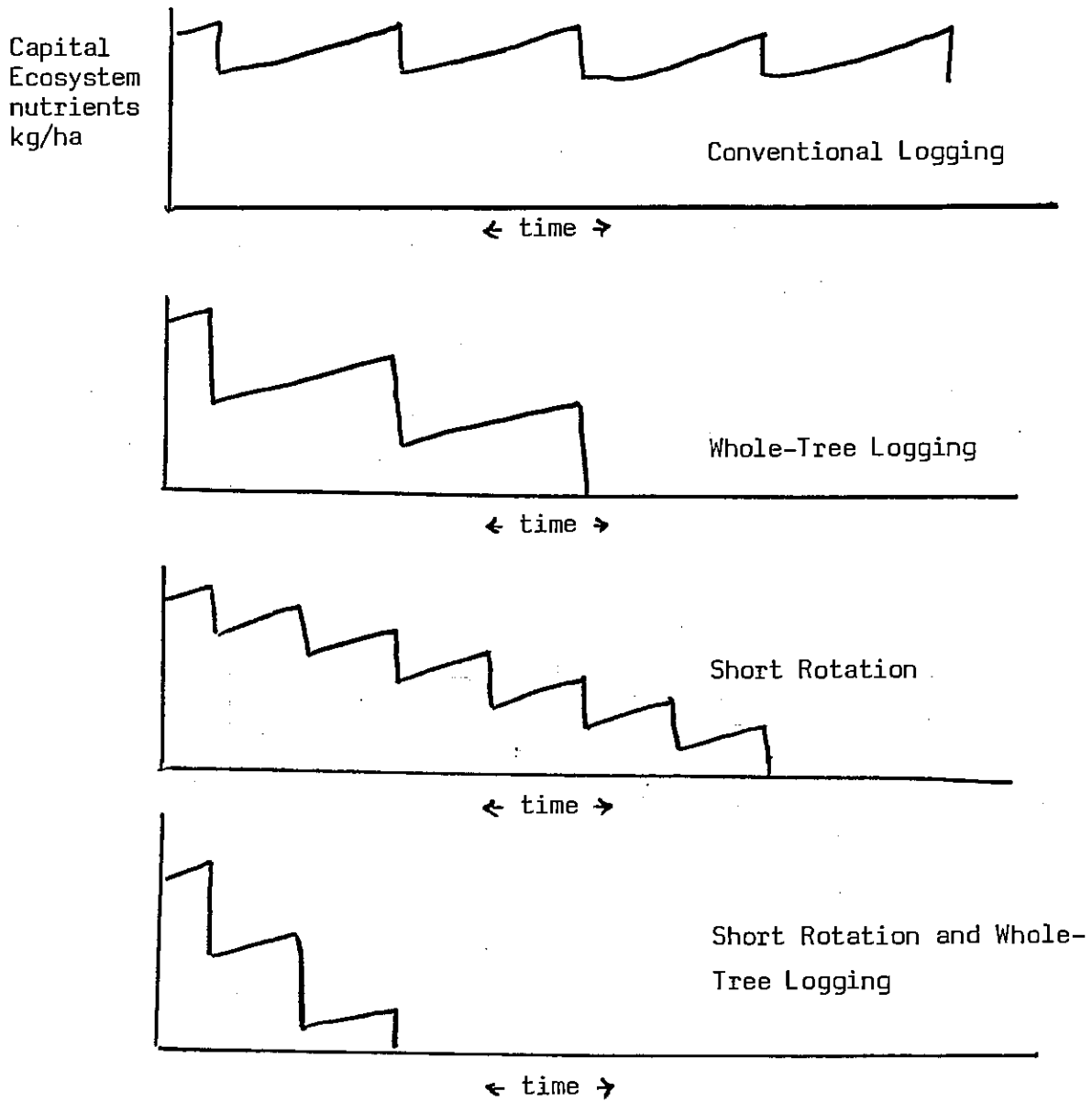


Fig. 1 - Diagrammatic relationship between the type of harvesting operation, rotation length and site nutrient capital.

IN HIS PAPER, "AN EVALUATION OF A FOREST RESOURCE - A CASE STUDY FOR NOVA SCOTIA", MR. GOLDSMITH STATES:

"THE PROVINCE HAS ONE OF THE LONGEST HISTORIES OF LOGGING IN NORTH AMERICA AND SOME OF THE MOST NUTRIENT DEFFICIENT SOILS. IF ANY REGION IS LIKELY TO EXPERIENCE A SERIOUS NUTRIENT DEPLETION PROBLEM, IT IS NOVA SCOTIA",

INDISCRIMINATE CLEARCUTTING, SHORT HARVEST ROTATIONS, PLANTING WITHOUT SOIL TESTING OR FERTILIZATION, DESTRUCTION OF FOREST RESIDUALS AND HERBICIDE USE ON HARDWOOD REGENERATION DOES NOT BODE WELL FOR A FOREST IN THE FUTURE.

MR. CHAIRMAN, UP TO NOW I HAVE DEALT WITH MECHANIZATION, HARVEST PRACTICES, FOREST HISTORY, NATURAL REGENERATION CONTROL, THE FOREST NUTRIENT BANK, AND THE FOREST ROTATION PERIOD.

LOSS OF OPTIONS

I WILL NOW EXPLAIN WHY FROM A FORESTRY POINT OF VIEW, I, LIKE MANY OTHER PEOPLE IN THIS PROVINCE, CONSIDER IT WRONG TO GIVE UP THE TIME TRIED FREE GOD-GIVEN NATURAL PROCESS OF FOREST REGENERATION FOR A MAN-MADE CHEMICALLY SUPPORTED ARTIFICIAL FOREST. I WILL ALSO DEAL WITH CURRENT DEVELOPMENTS RELATING TO HERBICIDES AND HEALTH.

NOVA SCOTIA, BECAUSE OF ITS GEOGRAPHIC LOCATION, IS A GOOD PLACE TO LIVE. CLIMATICALLY, WE DO NOT EXPERIENCE EXCESSIVE HEAT OR EXTREME COLD. WE USUALLY HAVE A NICE SUMMER FOLLOWED BY A BEAUTIFUL AUTUMN AND A REASONABLE WINTER. WE HAVE A PROVINCE THAT IS EIGHTY PERCENT WILDLAND WITH AN ABUNDANCE OF RIVERS, LAKES, AND STREAMS. THIS WILDLAND, WITH ITS POPULATION OF BIRDS, FISH AND ANIMALS, TOGETHER WITH ITS FREEDOM OF ACCESS TO THESE RIVERS, LAKES, AND STREAMS, HAS ADDED A QUALITY TO LIFE IN NOVA SCOTIA THAT IS PRICELESS.

IN THIS PROVINCE WE CAN GROW NATIVE SPECIES OF TREES OF THE HIGHEST QUALITY THAT CAN SERVE OUR NEEDS AS WELL AS TREES FROM ANY OTHER PART OF THE WORLD. I SPEAK NOW OF OUR YELLOW BRICH, ROCK MAPLE, RED SPRUCE, WHITE PINE AND HEMLOCK.

TO THE PEOPLE UNFAMILIAR WITH OUR NATURAL FOREST, THE PRESENT FOREST LAND APPEARS TO BE IN A NORMAL CONDITION AND A GOOD TREE OR GOOD STAND OF TREES IS JUDGED ACCORDINGLY. THEIR ESTIMATION OF WHAT THE NATURAL FOREST OF NOVA SCOTIA IS CAPABLE OF PRODUCING IS FAR LESS THAN WHAT THOSE OF US THAT HAVE SEEN OR HARVESTED THE BEST KNOW IS POSSIBLE. THE POTENTIAL TO REGENERATE A NATURAL FOREST THAT WOULD FAR EXCEED THE GREATEST EXPECTATIONS OF THE GENERAL PUBLIC STILL EXISTS.

AT THE PRESENT TIME WE HAVE THE OPTION TO LIVE WITH WHAT WE HAVE, TO CUT IT ALL DOWN OR TO IMPROVE IT BY CAREFUL AND DISCIPLINED MANAGEMENT PRACTICES. THE USE OF HERBICIDES WILL DESTROY THE ABILITY OF THE LAND TO REGENERATE NATURALLY AND ONCE WE HAVE EMBARKED ON THE WHOLESALE HERBICIDE ROUTE, WE LOSE THOSE OPTIONS. HERBICIDE TREATMENT IN A FOREST IS ONLY ONE LINK IN A FIRMLY INTERLOCKING PROCESS. ACCEPT HERBICIDE AND YOU MUST ACCEPT THE FULL PROCESS. YOU HAVE NO OPTIONS LEFT.

AN INTER-LOCKING PROCESS

THE CREATION OF AN ARTIFICIAL FOREST ON A LARGE SCALE NECESSITATES THE USE OF OTHER CHEMICALS SUCH AS FERTILIZER AND PESTICIDES FOR THE CONTROL OF INSECTS AND ANIMALS.

(Chemicals)

THE ARTIFICIAL FOREST IS USUALLY STARTED ON LAND THAT HAS BEEN CLEAR-CUT. THE NEXT STEP IS TO KILL OFF ALL VEGETATION WITH AN APPLICATION OF HERBICIDE.

THEN, DEPENDING ON THE TERRAIN, THE DEAD BRUSH IS BURNED BY WILDFIRE IN A CONTROLLED AREA, OR DOZED INTO PILES AND BURNED. IN EITHER PROCESS ANIMALS, INSECTS, BIRDS AND PLANT-LIFE ARE ELIMINATED FROM THE SITE. FIRE NOW BECOMES PART OF THE INTERLOCKING PROCESS.

(Fire)

THE NEXT STEP IS THE PLANTING OF NURSERY STOCK. THESE SEEDLINGS COST ABOUT \$108 PER ACRE, PLANTING COSTS ABOUT \$120 PER ACRE, SITE PREPARATION \$110.

(Planting)

TO ASSURE GROWTH AND TO REAP THE MOST FINANCIAL BENEFITS POSSIBLE FROM THESE EXPENSIVE OPERATIONS FERTILIZER IS ADDED AT A COST DEPENDING ON LOCATION OF APPROXIMATELY \$100 PER ACRE.

(Fertilizer)

THE TOTAL COST TO THIS STAGE IS \$438

(Financial)

PER ACRE WITH ADDITIONAL COSTS YET TO COME. AS IT IS HIGHLY UNLIKELY THAT THE MONEY SPENT IN THIS MANNER WILL EVER BE RECOVERED AND AS THE STATED GOAL OF THE PULP AND PAPER INDUSTRY IS "LOW COST FIBRE FOREVER", IT MUST BE GOVERNMENT MONEY THAT IS INVESTED.

ONCE THE GOVERNMENT IS COMMITTED TO THE CONCEPT OF ARTIFICIAL FORESTS IT IS LIKE A POKER PLAYER: WHEN YOUR MONEY IS IN THE POT - YOU MUST PLAY THE GAME.

CONSIDERING THE DEFICIT FINANCIAL POSITION THAT CANADA AND THE PROVINCES HAVE BEEN IN FOR THE PAST DECADE, GOVERNMENT MONEY THAT IS SPENT ON AN ARTIFICIAL FOREST WILL BE BORROWED MONEY. THE NUMBER OF YEARS THAT IT WILL TAKE TO PAY BACK THE PRINCIPAL AND INTEREST WILL EXTEND INTO THE FUTURE FAR BEYOND THE VALUE AND LIFESPAN OF THE PLANTED TREES. WE NOW HAVE THE LINK OF FINANCIAL BONDAGE.

AS THE INVESTMENT INCREASES, SO DOES THE NEED FOR PROTECTION OF THIS INVESTMENT. PROTECTION DOES NOT ONLY MEAN PROTECTION AGAINST INSECTS, IT ALSO MEANS PROTECTION AGAINST ANIMALS AND PEOPLE. PEOPLE CAUSE FIRES, PEOPLE RUN SNOWMOBILES OVER SEEDLINGS, PEOPLE TAKE TREES FOR CHRISTMAS AND FIREWOOD. IN ONE COUNTRY I VISITED, THE PLANTED FOREST WAS ENCLOSED BEHIND A TEN FOOT HIGH WIRE FENCE WITH LOCKED GATES. ALL ANIMALS WITHIN THE

(Protection)

FENCE WERE DESTROYED AND ALL UNAUTHORIZED PEOPLE WERE LOCKED OUT.

AT A SESSION DEALING WITH FORESTRY PROTECTION, A CANADIAN INSTITUTE OF FORESTRY REPORT READS, "BROWSING BY DEER AND MOOSE CAN BE OF GREAT IMPORTANCE IN THE DEVELOPMENT OF A FOREST. WHEN A DEER POPULATION EXCEEDS 15 TO 20 PER SQUARE MILE OR A MOOSE POPULATION OF 3 OR 4 PER SQUARE MILE, FOREST MANAGERS SHOULD CHECK THE INFLUENCE OF BROWSING ON REGENERATION VERY CAREFULLY.

THE PRESENT TREND TO LARGER OPERATING UNITS, THE ELIMINATION OF ADVANCE GROWTH, AND THE EXTENSIVE USE OF SPRUCE IN ARTIFICIAL REGENERATION PROGRAMS WILL ALL RESULT IN LOGGED AREAS BEING LESS FAVOURABLE FOR MOOSE AND DEER."

AGAIN, THE REPORT STATES: "NATIVE INSECTS LARGELY INNOCUOUS IN NATURAL STANDS HAVE ADAPTED TO THE APPARENTLY MORE FAVOURABLE CONDITIONS OF PLANTED STANDS OF NATIVE AND EXOTIC TREES; ACCIDENTLY INTRODUCED INSECTS ATTACK BOTH PLANTATIONS AND NATURAL STANDS; SEED CONES ARE SUBJECT TO HEAVY ATTACKS BY VARIOUS INSECTS."

"THERE IS REASON TO BELIEVE OUR PROBLEMS WILL INCREASE DIRECTLY WITH THE EXPANSION OF PLANTING PROGRAMS".

"DISEASE OF LITTLE IMPORTANCE IN NATURAL STANDS CAN BE OF MAJOR IMPORTANCE UNDER PLANTATION CONDITIONS".

"UNDER CONDITIONS OF ARTIFICIAL REGENERATION, FORESTRY CROP UNIFORMITY POSES ONE OF THE MAJOR RISKS. THIS KIND OF CROP CAN BE UNIFORMLY VULNERABLE TO A PARTICULAR DISEASE AND IT CARRIES THE POTENTIAL OF RAPID DISEASE SPREAD ONCE THE INFECTION STARTS".

THE PLANTED FOREST IN ITS SEEDLING STAGE IS VERY SUSCEPTABLE TO RODENT DAMAGE. THIS INCLUDES MICE, RABBITS, AND PORCUPINES. AGAIN, HERBICIDES ARE THE SUGGESTED ANSWER.

THE PROCESS OF SCARIFICATION, FERTILIZATION, AND REPEATED APPLICATIONS OF HERBICIDE ENCOURAGE THE GROWTH OF GRASS AND GRASS-RELATED PLANTS. THESE DRY OUT CREATING AN EXTREME FIRE HAZARD. TO COUNTER THESE EXPLOSIVE CONDITIONS, CONTROLLED OR PRESCRIBED BURNING IS CARRIED OUT AT PERIODIC INTERVALS. *(Burning)*

THIS IS A WIDESPREAD PRACTICE IN THE SOUTH AND SOUTH-WESTERN UNITED STATES AND LIKE SOME EXPERIMENTAL BURNING THAT HAS TAKEN PLACE IN CANADA IT OFTEN TURNS INTO A DISASTER.

THE FINAL LINK IN THE PROCESS IS LEGISLATION RESTRICTING TRAVEL IN THE FOREST. THE DANGEROUS FIRE CONDITIONS TOGETHER WITH THE NEED TO PROTECT A MASSIVE INVESTMENT WILL MAKE RESTRICTIVE LEGISLATION SEEM LOGICAL AND *(Legislation)*

NECESSARY.

THE INTERLOCKED PROCESS WILL BE COMPLETE,
CLEAR CUT - HERBICIDE - FIRE - PESTICIDES -
FINANCIAL BONDAGE - AND, RESTRICTIVE LEGISLATION,
FOR A FEW EXTRA CORDS OF WOOD, THE PEOPLE OF
NOVA SCOTIA WILL HAVE LOST A PRICELESS PART
OF THEIR HERITAGE.

THE ARTIFICIAL FOREST

THE ARTIFICIAL FOREST MAY BE A WAY TO GROW WOOD FIBRE, BUT IT HAS NEVER BEEN A LOW COST WAY. EVEN IN THE SOUTHERN UNITED STATES WITH IDEAL LAND CONDITIONS, A LONG GROWING SEASON AND A PRICE OF \$55 PER CORD FOR PULP STANDING ON THE STUMP, THE STATE GOVERNMENTS FIND IT NECESSARY TO SUBSIDIZE PLANTING STOCK AND PRESCRIBED BURNING COSTS.

IN NOVA SCOTIA THE COST OF GROWING THAT EXTRA WOOD AND FOR CALCULATION PURPOSE ONLY WE WILL ASSUME THAT AN ARTIFICIAL FOREST UNDER IDEAL CONDITIONS CAN PRODUCE EXTRA WOOD, THEN THAT COST WILL BE PROHIBITIVE. USING CURRENT COSTS AND INTEREST RATES, THE EXTRA WOOD THAT COULD BE HARVESTED IN FORTY YEARS TIME WOULD COST \$2,900 PER CORD STANDING ON THE STUMP. THIS COST PROJECTION IS A MINIMUM FIGURE AND ONLY VALID IF GOOD STOCK IS PROVIDED. IT CANNOT BE LIKE SOME OF THE SEEDLINGS RECENTLY PLANTED IN THE FOREST THAT SHOULD HAVE BEEN BURNED AT THE NURSERY.

THE USE OF HERBICIDES, LIKE THE INSECTICIDE SPRAY PROGRAM IN NEW BRUNSWICK, WILL HAVE A TENDENCY TO GROW, NOT BECAUSE OF THE NEED TO CONTROL WEED SPECIES, BUT BECAUSE IT PROVIDES A JUSTIFICATION FOR EXISTANCE TO ORGANIZATIONS PROVIDING THAT SERVICE.

A PRIME EXAMPLE IS A LOT OF LAND THAT WAS

APPROVED FOR HERBICIDE TREATMENT LAST YEAR IN NOVA SCOTIA DESPITE THE FACTS, THAT THE SITE APPRAISAL REPORTED THAT THE AREA WAS 65% OCCUPIED BY SINGLE STEMS OF YELLOW BIRCH 1 METER HIGH; THAT YELLOW BIRCH IS ONE OF THE MOST VALUABLE TREES THAT GROW IN NOVA SCOTIA; THAT IF WE HAD A 65% SURVIVAL RATE IN A PLANTED AREA WE WOULD CONSIDER IT A SUCCESS; THAT YELLOW BIRCH IS A PROTECTED SPECIES UNDER THE FOREST IMPROVEMENT ACT; AND, THAT IT IS AGAINST THE LAW OF THE LAND TO DESTROY HEALTHY IMMATURE STANDS OF YELLOW BIRCH, APPROVAL FOR HERBICIDE SPRAY WAS GIVEN BECAUSE THE SITE WAS AVAILABLE.

HERBICIDES AND HEALTH

IN THE UNITED STATES SIX CONGRESSIONAL COMMITTEES ARE INVESTIGATING THE ALTERATION OF SCIENTIFIC REPORTS BY THE ENVIRONMENTAL PROTECTION AGENCY. THE DELETIONS CONCERNING PUBLIC HEALTH WERE MADE FOR THE BENEFIT OF DOW CHEMICAL AND THIS SCANDAL HAS MADE HEADLINES ALL ACROSS THE NATION. COLUSION AND COVER-UP REGARDING DIOXIN CONTAMINATION IS BEING INVESTIGATED BY CONGRESS AND HAS NECESSITATED ACTION BY THE PRESIDENT RESULTING IN RESIGNATIONS OF 11 OF THE TOP PEOPLE OF E.P.A.

IF OUR FRIENDLY LOCAL PRESS WANTS TO "DO SOMETHING FOR NOVA SCOTIA TODAY", PERHAPS IT COULD PRACTICE ENOUGH FAIR AND UNBIASED REPORTING SO THAT NOVA SCOTIA WOULD NOT MAKE THE KIND OF MISTAKE THAT WAS MADE IN TIMES BEACH, MISSOURI. IN 1970, DIOXIN CONTAMINATED WASTE MATERIAL FROM A PLANT MANUFACTURING HERBICIDES WAS SPREAD ON THE STREETS FOR DUST LAYER. NOW THE TOWN MUST BE EVACUATED AND DESTROYED. E.P.A. HAS PURCHASED THE HOMES OF 2,000 PEOPLE FOR 36 MILLION DOLLARS.

THE FEDERAL CENTER FOR DISEASE CONTROL IN ATLANTA REPORTS THAT LEVELS OF 100 PARTS PER BILLION OF DIOXIN WERE FOUND IN THE STREETS OF TIMES BEACH. THIS LEVEL IS IN THEIR OPINION

100 TIMES THE LEVEL CONSIDERED HARMFUL FOR LONG TERM CONTACT.

THE STANDARD FOR FEDERAL REGISTRATION IN CANADA AND THEREBY ACCEPTED AS A SAFE LEVEL IN NOVA SCOTIA IS 0.1 P.P.M. (ONE PART IN TEN MILLION).

.1 P.P.M. IS 100 PARTS PER BILLION, THE SAME LEVEL AS THAT FOUND IN TIMES BEACH, AND 100 TIMES THE LEVEL CONSIDERED SAFE BY THE UNITED STATES FEDERAL DISEASE CONTROL CENTERS IN ATLANTA. 0.1, P.P.M. IS THE MAXIMUM LEVEL OF DIOXIN THAT CAN BE CONTAINED IN 245T AND 24D IN ORDER FOR THESE HERBICIDES TO RECEIVE APPROVAL TO BE SPRAYED ON NOVA SCOTIA FORESTS.

THIS IS ALSO A LEVEL 2 BILLION TIMES AS MUCH AS THE LEVEL REPORTED BY THE UNITED STATES GOVERNMENT TO CAUSE CANCER IN HUMANS.

THE WIDESPREAD MISTRUST IN GOVERNMENT'S ABILITY TO MONITOR, CONTROL, OR PROTECT THE PUBLIC AGAINST THE DANGERS INHERENT IN TOXIC CHEMICALS IS WELL FOUNDED. TO EMPHASIZE THIS POINT I GIVE YOU THE FOLLOWING NEWSPAPER EXCERPTS:

HOUSTON CHRONICLE, MARCH 17, 1983

"CONGRESSIONAL RESEARCHERS SAY FEDERAL REGULATIONS CONCERNING HAZARDOUS WASTES FALL FAR SHORT OF PROTECTING PUBLIC HEALTH".

"REGULATIONS FOR HAZARDOUS WASTE MANAGEMENT DO NOT EFFECTIVELY DETECT, PREVENT, OR CONTROL THE RELEASE OF TOXIC SUBSTANCES INTO THE LAND, AIR AND WATER, PARTICULARLY OVER THE LONG TERM". (SEE APPENDIX 1)

THE GLOBE AND MAIL, APRIL 27, 1981

"SAFETY TESTS FAKED, BUT 79 PESTICIDES LEFT ON MARKET".

"THE FEDERAL GOVERNMENT IS ALLOWING 79 PESTICIDES TO BE USED ACROSS CANADA EVEN THOUGH A U.S. LABORATORY THAT CLAIMED THE CHEMICALS WERE SAFE IS KNOWN TO HAVE FAKED SOME TESTS". (SEE APPENDIX 2)

HALIFAX CHRONICLE HERALD, MARCH 23, 1983

(PRESENTATION BY DR. LAVIGNE TO THE ROYAL COMMISSION ON FORSTRY);

"NOVA SCOTIA AND OTHER PROVINCES ARE TOO SMALL TO DO THEIR OWN EXPERIMENTS. WHAT I'VE BEEN DOING IS TAKING THE BEST MATERIAL POSSIBLE AND ANALYZING IT". (SEE APPENDIX 3)

THE WALL STREET JOURNAL, MARCH 16, 1983

"DOW CHEMICAL URGING GOT EPA TO SOFTEN
1981 DIOXIN WATER REPORT OFFICIALS SAY"

"THE CONTROVERSY OVER THE REPORT COMES
AT A TIME WHEN SEVERAL ENVIRONMENTAL GROUPS
AND SOME STATE OFFICIALS ARE INCREASINGLY CONCERNED
ABOUT POLLUTION FROM DOW CHEMICAL'S MIDLAND
COMPLEX. SOME ENVIRONMENTAL GROUPS, CITING
WHAT THEY CONTEND ARE UNUSUALLY HIGH RATES OF
CANCER AND BIRTH DEFECTS IN RESIDENTIAL AREAS
NEAR PLANTS ARE DEMANDING STATE AND FEDERAL
ACTION AGAINST THE COMPANY." (SEE APPENDIX 4)

NEWSWEEK, MARCH 7, 1983

"THE TOXIC-WASTE CRISIS - HAZARDOUS
CHEMICALS MEANCE TOWNS AND CITIES..."

"SOMETIME THIS SPRING THE TOWN OF TIMES
BEACH, MO., WILL BEGIN TO DISAPPEAR. MOST OF
ITS 2,500 RESIDENTS WILL PACK UP AND LEAVE.
MOST OF THEIR 800 HOMES AND 30 BUSINESSES WILL
BE SOLD TO THE FEDERAL GOVERNMENT, WHAT WILL
BECOME OF THE ONE-SQUARE MILE HAMLET ON THE
MERAMEC RIVER STILL ISN'T CLEAR, BUT ITS
TERRIFIED RESIDENTS ARE LUCKY TO HAVE A WAY
OUT: THEY ARE ESCAPING FROM DIOXIN, ONE OF
THE MOST TOXIC SUBSTANCES KNOWN TO MAN - AND
ONE THAT HAS KILLED HUNDREDS OF ANIMALS AND
THREATENS HUMAN HEALTH THROUGHOUT THEIR STATE.

EPA ADMINISTRATOR ANNE BURFORD HERSELF TRAVELED TO TIMES BEACH LAST WEEK TO ANNOUNCE THE \$36.7 MILLION FEDERAL BUYOUT OF AN ENTIRE TOWN". (SEE APPENDIX 5)

THE DALLAS MORNING NEWS, MARCH 18, 1983

"TWO STUDIES CONDUCTED ABROAD HAVE REACHED CONFLICTING CONCLUSIONS AS TO WHETHER AGENT ORANGE, THE HERBICIDE USED TO DEFOLIATE JUNGLES AND KILL CROPS IN VIETNAM, CAUSED BIRTH DEFECTS IN THE OFFSPRING OF TROOPS WHO FOUGHT IN THE VIETNAM WAR". (SEE APPENDIX 6)

RECOMMENDATIONS

MR. CHAIRMAN, IN MY PRESENTATION I HAVE DISCUSSED MANY PROBLEMS THAT DEVELOP FROM IMPROPER FOREST CUTTING PRACTICES. THE CITIZENS OF NOVA SCOTIA WANT A WELL-MANAGED FOREST. THAT IS A FOREST MANAGED FOR PEOPLE, BIRDS, FISH, WATER, ANIMALS, AND THE BENEFITS A HEALTHY FOREST INDUSTRY CAN BRING.

THE PEOPLE OF CANADA HAVE SHOWN THEIR WILLINGNESS TO PAY FOR A WELL MANAGED FOREST BOTH ON A FEDERAL AND PROVINCIAL LEVEL THROUGH SUCH PROGRAMS AS THE GENERAL DEVELOPMENT AGREEMENT. NOW AFTER HAVING COMMITTED HUNDREDS OF MILLIONS OF DOLLARS THEY MUST NOT BE RIPPED-OFF BY A "GET TREES QUICK" SCHEME.

MY CONCERNS IN THIS REGARD ARE SHARED BY D.M. TREW, A FORESTER FROM THE WEST COAST WHO STATES IN AN ARTICLE PUBLISHED IN THE CANADIAN FOREST INDUSTRIES MAGAZINE ENTITLED "BAND-AID FORESTRY":

"SELECTIVE LOGGING MEANS JUST THAT. NO FOREST IS HOMOGENEOUS, BUT IS COMPOSED OF VARYING SPECIES AND AGE CLASSES THAT CHANGE WITH EVERY FOLD OF LAND. THESE VARIED TYPES OF STANDS SELDOM MAINTAIN UNIFORMITY OVER MORE THAN TEN, OR A MAXIMUM OF A HUNDRED ACRES,

AND EVEN WHEN THE LATTER EXISTS, THEY MAY STRADDLE A CREEK OR CONTAIN OTHER ENVIRONMENTAL FEATURES WHICH WARRANT SPECIAL LOGGING CONSIDERATIONS. THUS, TO CLEAR-CUT AN AREA THAT STREATCHES UP HILLS AND DOWN VALES OVER SUCH HETEROGENEOUS CONDITIONS IS TO PRACTICE 'FORESTRY' IN ITS MOST PRIMITIVE FORM.

SELECTIVE LOGGING FOREST MANAGEMENT PLACES THE EMPHASIS ON THE FOREST FIRST, AND ITS LOGGABILITY SECOND. SO IT PROVIDES THE OPTIONS TO PRODUCE MORE WOOD PER ACRE, TO PRODUCE QUALITY OR QUANTITY, TO PROTECT GROWING SITES FROM EROSION, OR TO JOINTLY HARVEST TIMBER WHILE PROTECTING ENVIRONMENTAL VALUES. BUT THESE OPTIONS INCLUDE SELECTIVE LOGGING BY PATCH OR STRIP CLEAR-CUTTING, AS WELL AS SINGLE TREE, GROUP SELECTION OR COMBINATIONS OF THESE, WHICHEVER BEST PRESERVES THE IMMATURE FOREST AND HELPS MEET THE ECONOMICS OF LOGGING".

"THE ILLUSION OF 'FORESTRY' THROUGH REFORESTATION, THE FALLACIES OF GENETICALLY IMPROVED WONDER SEEDLINGS, AND THE BLACKMAIL OF THE 'WILDLIFE VERSUS OLD-GROWTH' ISSUE CAN ONLY BE FULLY UNDERSTOOD AND JUDGED BY A FAR MORE OPEN PUBLIC FORESTRY DIALOGUE THEN PRESENTLY EXISTS".

"OUR FORESTS WILL NEVER DISAPPEAR, BUT SUDDENLY THERE WILL BE NO MORE LOGGABLE TIMBER". (SEE APPENDIX 7)

NOW, IN CLOSING, I WANT TO RECOMMEND A BASIC PRINCIPLE THAT WILL PROVIDE A SOLUTION TO PRACTICALLY ALL PROBLEMS RELATING TO THE REGENERATION AND MAINTENANCE OF A FOREST.

THE SOLUTION IS TO USE HARVESTING TECHNIQUES AND REGENERATION CUTTING SYSTEMS THAT COOPERATE WITH, COMPLIMENT, AND UTILIZE THE FORCES OF NATURE.

THIS PRINCIPLE IS EMBODIED IN THE FOREST IMPROVEMENT ACT. THE OBJECTIVES ARE CLEARLY STATED AND THE LEGISLATION IS IN PLACE. ALL THAT IS NEEDED IS A FIRM COMMITMENT FROM, AND DIRECTION BY, GOVERNMENT AND BOARD MEMBERS IN PLACE THAT ARE DEDICATED TO MAKING THE ACT WORK.

I RECOMMEND FULL AND IMMEDIATE IMPLEMENTATION OF THE FOREST IMPROVEMENT ACT.

Report: EPA rules on toxic wastes don't protect public

BY WILLIAM E. CLAYTON JR.
Chronicle Washington Bureau

WASHINGTON — Congressional researchers say federal regulations concerning hazardous wastes fall far short of protecting public health.

EPA regulations "do not assure consistent nationwide levels of protection for human health from the potential effects of massive annual accumulations of toxic waste," said the report released Wednesday by the Office of Technology Assessment, an agency of Congress.

Work on the report was going on long before the confrontation between Congress and the Reagan administration that brought the dismissal of Rita M. Lavelle, manager of the Environmental Protection Agency's toxic waste programs, and the resignation of Anne M. Burford, EPA administrator.

But the report is almost certain to highlight continuing debate about effectiveness of basic EPA guidelines, regardless of who is administering them.

"Regulations for hazardous waste management do not effectively detect, prevent, or control the release of toxic substances into the land, air and water, particularly over the long term," the study says.

Part of the problem is that what states call hazardous differs greatly from what federal officials call hazardous. For example, the Office of Technology Assessment study said Texas officials estimate 29 million tons of hazardous wastes are generated each year in Texas, but the EPA estimates the volume at 3 million tons. The difference is that Texas' estimate includes wastes not counted by EPA, including refuse from energy production, industrial ash, wastes from environmental control activities themselves, mining wastes and wastes from demolition.

The Resource Conservation and Recovery Act is one of two major federal laws covering management of hazardous waste. The recovery act is concerned with present and future wastes, and the law setting up the "superfund" is concerned with cleaning up old and often abandoned waste sites from past generation of wastes.

The Office of Technology Assessment said it found these general weaknesses in the "superfund":

"There are no specific federal technical standards for determining the extent of 'superfund' cleanups required, and there is an incentive under EPA rules to minimize initial costs by, for example, shifting wastes from one location to another. Thus, remedial cleanup actions costing billions of dollars may prove ineffective in the long run."

Ms. Lavelle was criticized for allegedly being too close to industry in the discussion of its responsibility for cleaning up waste sites.

Last summer, the EPA made three Houston area sites "prime targets" for the federal cleanup fund, along with 45 others nationwide. They are the Crystal Chemical Co. Rogerdale Road facility near Alief, the so-called Harris Site or Farley Street Site at 2122 Genoa-Red Bluff Road in Houston and the Highland acid pits in Highlands, southeast of Houston.

The Office of Technology Assessment said current EPA policy seems to reduce industry's cost for land disposal "by shifting some long-term cleanup and monitoring costs to government or to society as a whole." Being tougher on industry now could speed up "the adoption by industry of alternatives such as waste reduction and waste treatment," the report said.

The Globe and Mail

NATIONAL EDITION

MONDAY, APRIL 27, 1982

Safety tests faked, but 79 pesticides left on market

By MICHAEL KEATING

The federal Government is allowing 79 pesticides to be used across Canada even though a U. S. laboratory that claimed the chemicals were safe is known to have faked some tests.

The deception was discovered in 1977 and it will take as long as four more years before all the chemicals will be cleared of suspicion of causing such things as cancer, birth defects, reproductive problems, mutations or harm to major organs.

The chemicals under suspicion are used by householders, farmers, foresters and public health officials for everything from killing weeds and insects to sterilizing drinking water and swimming pools.

The spurious test results uncovered by U. S. investigators in 1977 had been submitted by Industrial Biotech Laboratories, a suburban Chicago company that until then had a large share of the business of testing products for chemical companies.

The IBT recommendations had been accepted by both the U. S. and Canadian governments as proof the chemicals were not dangerous. So far the United States, like Canada, has left the suspect chemicals on the market until they are proved unsafe.

Now, while 16 Canadian and 75 U. S. researchers try to decide what is safe, farmers and homeowners are heading into another spraying season without knowing if

Dr. Trevor Hancock, a Toronto public health official, says Ottawa's decision to leave the suspect chemicals on the market creates "a new Canadian principle of erring on the side of danger."

Dr. David Penman, a senior environmental health official of the Saskatchewan Government, says: "I think the situation medically is absolutely scandalous."

No one in the federal Government will accept responsibility for allowing the chemicals to stay on the market despite doubts about the U. S. tests. Nor will Ottawa release details of the faulty tests — even to provincial governments, which share with it the responsibility for protecting public health and the environment.

some of the chemicals they are handling have passed tests.

Despite assurances by Canada's Agriculture Department that the list of IBT-tested chemicals used in this country has been widely circulated, few people know how to get a copy. (And despite federal statements that the list of suspect chemicals now stands at 79, the latest list that the Health Department would give The Globe and Mail contains 89.)

Herbicides 'not hazard to health'

Chronicle Herald - March 23/83
By ROGER TAYLOR

Staff Reporter

The provincial health department has given tacit approval for herbicide spraying in Nova Scotia by terming the spray program a "minimal threat" to public health.

In a presentation Tuesday to the Royal Commission on Forestry, Dr. Pierre Lavigne, provincial epidemiologist, said his study of data on the effects of phenoxy herbicides — such as 2,4-D and 2,4,5-T proposed for use on Nova Scotia forests — indicate they are not a serious hazard to public health.

Stressing he is not in a position to say whether or not spraying should go ahead, Dr. Lavigne said he was asked only to determine the possible effects the spraying of herbicides would have on the population.

Dr. Lavigne's job as provincial epidemiologist is to take information presented by various scientists and determine the effects certain diseases will have on large population areas.

"Nova Scotia and other provinces are too small to do their own experiments. What I've been doing is taking the best material possible and analyzing it."

He said that usually, the experiments are done by the federal government which provides large amounts of money for them. But he said he also has looked at studies in Sweden and field studies in the United States which helped him come to his conclusion.

Although Sweden and the U.S. have both either banned or strongly restricted the use of 2,4,5-T and 2,4-D, Dr. Lavigne said the reasons for the restriction were not medical but mainly political.

"There are a number of things to take into account when deciding to allow the use of these sprays. Although the chemical may be medically safe, there may be other social and political considerations which may be taken into consideration."

He said although there are many horror stories of spontaneous abortions, cancers and birth defects resulting from exposure to these chemicals, "the evidence shows that there may be other circumstances which may have caused these problems."

Vietnam veterans in the United States, who claim they have contracted cancer and have deformed children from exposure to 'agent orange' — a defoliant sprayed in Vietnam — just don't have a case, said Dr. Lavigne. "In studies of the group, the facts just don't bear out."

Dioxin, the byproduct of manufacturing phenoxy herbicides, is the substance which has concerned many people, Dr. Lavigne said.

"Many of the dioxins we have in our environment today are from the burning of wood and fossil fuels. The levels of dioxin contributed to the environment by the herbicides, although measurable, are not any more a threat to life than already appear in the environment naturally."

Despite his recommendation that the spraying of 2,4,5-T and 2,4-D are safe, Dr. Lavigne said stringent controls should be legislated by the provincial government to ensure the controls already carried out by the spraying companies are enforced.

"The safest way to apply the herbicide is through aerial spraying. They have the technology to make sure the spray goes where it is supposed to and doesn't affect surrounding communities or water supplies."

Dow Chemical Urging Got EPA to Soften 1981 Dioxin Water Report, Officials Say

By a WALL STREET JOURNAL Staff Reporter

WASHINGTON—At the urging of Dow Chemical Co., the Environmental Protection Agency deleted from a 1981 study conclusions that the company contaminated major Michigan waterways with dioxin and other toxic chemicals, agency officials said.

John Hernandez, currently the acting EPA administrator, asked Dow scientists to review the scientific validity of the draft report in June 1981, agency and company officials confirmed. Dow submitted comments critical of the main findings, and within a few weeks the EPA substantially softened some of the language and issued a final study that didn't suggest the chemical company was primarily responsible for the pollution, officials who have seen both reports say.

The chain of events raises additional questions about the troubled agency's dealings with industry representatives and its aggressiveness in pursuing corporate polluters, according to several lawmakers and other critics of the agency. Disclosure of the two reports, which were first reported by NBC and CBS television network news shows, also could mean additional political problems for the EPA and the Reagan administration in Congress. Two House subcommittees have scheduled hearings on the issue in the next few days.

EPA officials yesterday disclosed that the draft report wasn't sent to any scientists outside the EPA or to any other companies or private laboratories that have conducted research on the toxic chemicals involved. The agency frequently sends drafts of controversial scientific reports to disinterested researchers and experts for comment on the validity of the results before they are released.

"Upon reflection," Mr. Hernandez said in a statement issued by the agency, "I believe it might have been better to have circulated the draft report for comment more widely."

EPA officials said Mr. Hernandez approved the final version of the report, but it isn't clear whether he personally ordered the changes Dow Chemical requested. That is one of the main issues the congressional panels are expected to pursue.

A Dow Chemical spokesman in Washington confirmed that the company challenged the draft report's conclusion that pollution from the company's chemical manufacturing complex in Midland, Mich., was primarily responsible for traces of dioxin detected in the waterways. The spokesman said the company specifically asked that reference to Dow's responsibility for the pollution be removed from the report because such references were "scientifically flawed."

Dow Chemical maintained that pollution from cars, natural chemical processes and other sources are primarily responsible for dioxin contamination of Michigan's waters.

Several agency aides and Michigan officials who have seen both reports asserted that all of the conclusions in the draft version were deleted and that other substantial changes favorable to Dow Chemical were made in the body of the report.

For example, these officials say, the draft report concluded that pollution from Dow Chemical's plants "represented the major source, if not the only source," of dioxin in Saginaw Bay and in the Tittabawassee and Saginaw Rivers. The draft report also accused Dow Chemical of being the "primary contributor" to dioxin contamination in Lake Huron, according to the officials.

The original version of the report also recommended a complete ban on the eating of fish caught in the two rivers, in Saginaw Bay and in other sections of the Great Lakes where abnormally high dioxin levels either were proved or suspected, according to the officials who have seen the report. The final report doesn't mention such a ban, the officials said.

In response to questions, EPA officials yesterday acknowledged that the final report amounted to a "compilation" of scientific research on the subject of dioxin that didn't attempt to identify the major sources of the pollution.

Dioxin, a highly toxic byproduct of certain chemical manufacturing operations, has been linked to cancer and birth defects in test animals and is considered by the government to be one of the most dangerous known pollutants. Earlier this year, the EPA agreed to spend more than \$30 million to relocate all the residents and businesses of Times Beach, Mo., after dangerously high levels of dioxin were detected in the soil there.

Mr. Hernandez maintained it was "completely appropriate" to ask for Dow Chemicals reaction to the study because much of the detailed scientific material it contained was based on the company's own laboratory and field studies.

At the time the draft study was completed, Mr. Hernandez told agency officials and Canadian reporters who got hold of a copy that the study was sent to Dow Chemical as part of the agency's normal "peer review" process. Dow Chemical said that the report received high-priority treatment by top company scientists and that comments were submitted to the EPA within about a week.

The controversy over the report comes at a time when several environmental groups and some state officials are increasingly concerned about pollution from Dow Chemical's Midland complex. Some environmental groups, citing what they contend are unusually high rates of cancer and birth defects in residential areas near the plants, are demanding state and federal action against the company.

THE TOXIC-WASTE CRISIS

Hazardous chemicals menace towns and cities across the nation -- and the threat is growing every day

"It was May 1971 when Russell Bliss, a waste hauler, sprayed oil at Judy Piatt's stables in Moscow Mills, Mo., to help control the dust. A few days later hundreds of birds nesting in the stable's rafters fell to the ground and died. Soon, more than 20 of her cats went bald and died, as did 62 horses over the next three and a half years. Piatt herself developed headaches, chest pains and diarrhea, and one of her daughters started hemorrhaging. In 1974 the federal Centers for Disease Control in Atlanta identified the culprit as dioxin and traced it to Bliss's oil, which contained wastes from a defunct hexachlorophene plant that had paid him to dispose of it. Bliss, it turned out, had sprayed the waste-oil mixture on horse arenas, streets, parking lots and farms throughout the state, leaving what state Assistant Attorney General Edward F. Downey called "a trail of sickness and death."

Although investigators suspected in the mid-1970s that the unpaved streets of Times Beach had been contaminated by Bliss, no tests were conducted there until last December. The EPA found dioxin levels of more than 100 parts per billion -- 100 times the level considered harmful for long-term contact. In December, after the Meramec River flooded Times Beach, CDC officials urged residents not to return to their homes. EPA officials decided on the buyout plan when more tests showed that the dioxin was still present. A few Times Beach residents insist that they will stay, that they aren't frightened by the poison they have lived with for 10 years. But

other Missouri residents aren't so sanguine. Dioxin contamination -- sometimes at even higher levels -- has been confirmed at 21 other sites in Missouri, at two sites in Illinois and is suspected in some 80 other nearby locales. Most disturbing of all, about 40 pounds of the dioxin from the plant have never been accounted for."

(Note: This excerpt from Newsweek Magazine, March 7, 1983, edition, has been re-typed verbatim for duplication purposes.)

Agent Orange studies conflict

Reports differ on birth-defect risk from dioxin

New York Times News Service

WASHINGTON — Two studies conducted abroad have reached conflicting conclusions as to whether Agent Orange, the herbicide used to defoliate jungles and kill crops in Vietnam, caused birth defects in the offspring of troops who fought in the Vietnam War.

A study conducted by Vietnamese scientists concluded that there was an increase in abnormalities among the children of North Vietnamese women whose husbands served in South Vietnam during the war and thus were potentially exposed to Agent Orange.

"The rate of monsters born to families of Vietnamese veterans of the war seems to be higher than in normal families," a recent summary of the findings said.

But a study of Australian soldiers who served in Vietnam found "no evidence that army service in Vietnam relates to the risk of fathering a child with an anomaly (defect)."

U.S. scientists said they did not know why the two studies reached such opposite conclusions or what the relevance of either finding might be to debate in the United States over whether Agent Orange, which contains the deadly poison dioxin, caused birth defects among the offspring of U.S. servicemen. The Centers for Disease Control in Atlanta is conducting a study to determine whether there was any increase in defective children born to U.S. veterans of the Vietnam War.

The Vietnamese study was discussed at a symposium in Ho Chi Minh City in January that was attended by several U.S. scientists. A report of that conference now circulating in U.S. scientific circles says the group was "very much impressed" with the Vietnamese studies, but it stops short of endorsing the findings. Instead the report says that the scientists have "no specific reason" to doubt that the Vietnamese studies were well designed and conducted.

Arthur H. Westing, an ecologist from Hampshire College in Amherst, Mass., who served as co-chairman of the organizing committee for the conference, called the Vietnamese results "quite startling" because "there is no precedent for it in the international literature." Birth defects caused by toxic agents ordinarily result from exposure of the mother rather than exposure of the father.

But several U.S. experts on Agent Orange said that they remain skeptical of the Vietnamese results, in part because they are so startling and in part because the full data, reportedly covering about 40,000 families in North Vietnam, have not been published for critical scrutiny.

The Australian study reported "persuasive evidence that Vietnam service has not been associated with any important increase in the risk of birth defects." But the study was unable to determine how much exposure to Agent Orange or other chemicals the soldiers received. Other studies have shown that exposure of Australian troops was relatively low and infrequent.

Alternatives to band-aid forestry

By D.M. Trew

Selective logging has not yet reached British Columbia, and few people realize that there are alternate ways of harvesting timber other than by clear-cutting from valley bottom to mountain top. Given the option, British Columbians would vote overwhelmingly for the introduction of more refined, thus more selective, methods of logging. Yet foresters seem adamant in their refusal to put before the public these alternatives.

There is not one in a hundred British Columbians who could explain why we knock down millions of small, perfectly healthy young trees in the process of harvesting the bigger ones. Their best answer seems to be, "I guess it can't be done otherwise", and thus they give free rein to the continued careless exploitation — by industry for maximized immediate profits, and by government for maximum revenue — that characterizes our 'forestry' to date. When the public does not keep a watchful eye on politicians, governments tend to advocate policies that reap maximum revenues from resources without reinvesting for proper management. The reliance on reforestation alone, even if it were fully implemented, is mere band-aid forestry in comparison to management planning based on a variety of selective logging options.

The fact that we are 'mining' our forest resources is well documented in various reports. Unfortunately these are more concerned with fact-finding than with debates on remedial action. And it is this lack of an interpretative dialogue with the public, who own 95 percent of the forests, that prevents people from understanding their

options. This ignorance is reflected by the intolerant demands of environmental groups who 'fear' the mere mention of the term 'logging'. Thus they are in confrontation with industry.

'Selective logging' means just that. No forest is homogeneous, but is composed of varying species and age classes that change with every fold of land. These varied types or stands seldom maintain uniformity over more than ten, or a maximum of a hundred acres, and even when the latter exist, they may straddle a creek or contain other environmental features which warrant special logging considerations. Thus, to clear-cut an area that stretches up hills and down vales over such heterogeneous conditions is to practice 'forestry' in its most primitive form.

Selective logging forest management places the emphasis on the forest first, and its loggability second. So it provides the options to produce more wood per acre, to produce quality or quantity, to protect growing sites from erosion, or to jointly harvest timber while protecting environmental values. But these options include selective logging by patch or strip clear-cutting, as well as single tree, group selection or combinations of these, whichever best preserves the immature forest and helps meet the economics of logging.

The logging industry cannot be blamed for opposing practices that are more costly and demand more care in harvesting. But who really knows what these added costs represent? U.S. logging companies are paying up to five times higher stumpage rates for their timber than B.C. companies. Yet, until the present economic downturn

made such uneven competition excessive, they could log profitably and compete satisfactorily. This revelation of the low stumpage rates our government charges for OUR timber has been known to foresters for decades, but it is a political decision that only a forestry conscious public can put right. To do so there must be a better understanding of the economic factors involved in forest management.

To start with, it must be realized that there is no really free log market in BC, and that because of our Tree Farm Licence system and a parallel timber quota system for non-holders of TFL's, there is practically no bidding for the timber being logged. And true to the formula of 'easy come easy go', there is much evidence of considerable wood wastage, of inefficient logging, and a disregard for government regulations even in their present mild form. Thus there is every reason to believe that a tightening of logging regulations, and the imposition of the selective logging methods, would not be as economically hard on companies as may be believed. For their part, the loggers themselves have a reputation for competence and initiative that could easily adapt to the more careful felling and yarding requirements of selective logging.

Logging equipment already exists with which any timber, anywhere in the province, can be harvested according to any selective logging prescription. And contrary to common belief, felling of even our few remaining giant trees can be done without the excessive damage one commonly visualizes. I have supervised the felling of some of these giants in park areas with no aesthetic or silvicultural damage to the residual forest, and using only standard logging methods.

Thus, if it is possible to log by selective methods, it is possible to harvest all or a percentage of mature timber from uneven-aged stands where big trees are intermingled with an advanced crop of immature trees, which, if saved, could again be cut within a few decades or by periodic cuts on a permanent basis. Some such 'selective' logging is already practiced in the south B.C. Interior Dry Belt, and by a 'diameter limit' system elsewhere, but in both cases the emphasis is too much on logging convenience and not enough on the preservation of the residual forest. If such selective methods are applied there, consideration should be given to more refined logging methods where indiscriminate clear-cutting of vast acreages is being practiced.

The economic advantages of selective harvesting are considerable. Not only is it possible to save the saplings commonly found in more than 50 percent of old-growth stands and thus provide another crop long before any reforested seedlings would mature, but it is also possible to maintain a permanent forest cover and a sustained timber supply around forest based communities. Our history is full of communities isolated in a sea of immature trees that become ghost towns if no other economic base can be developed.

By the same token, selective harvesting of the remaining old-growth and advanced second-growth would help small local operators and it would appease environmental groups which would be dealing with local logging companies rather than distant corporations.

So far no one has offered a solution for the timber shortage, which is predicted to reduce available timber within the next decade or so by one or two thirds of our present cut. Thus fall-down (as the government calls it) is largely due to the destruction of the second-growth caused by clear cutting the old-growth. Also no effort has been made — and vast clear-cutting does not offer the possibility — to harvest the oldest timber first, before decadence robs us of vast volumes of wood each year. This wasted forest potential, added to logging and milling methods notoriously wasteful, becomes a paradox in the looming seriousness of the predicted timber shortage.

This incongruous forest policy only persists because of an uninformed public, and especially because of a body of MLA's unwilling to fathom facts beyond the publicity of "timber and jobs" versus "forest conservation and environment protection". Nothing could be further from the truth. Research and reports prove that diversified logging methods are essential to intensive forest management, but only a realistic concern and a willingness to 'understand' basic forestry and its many options will help the public force British Columbia out of its cut-and-get-out forest policy. The illusion of 'forestry' through reforestation, the fallacies of genetically improved wonder seedlings, and the blackmail of the "wildlife versus old-growth" issue, can only be fully understood and judged by a far more open public FORESTRY dialogue than presently exists.

Our forests will never disappear. But suddenly there will be no more 'loggable' timber. ✚

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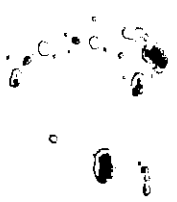
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