

STRONG ROOTS SUSTAINABLE FUTURE

2017 Outcome Based Forestry in Maine



IRVING WOODLANDS, LLC

IRVING WOODLANDS IN MAINE



We grow more wood
than we harvest every year



2.95 Million
trees planted in 2017



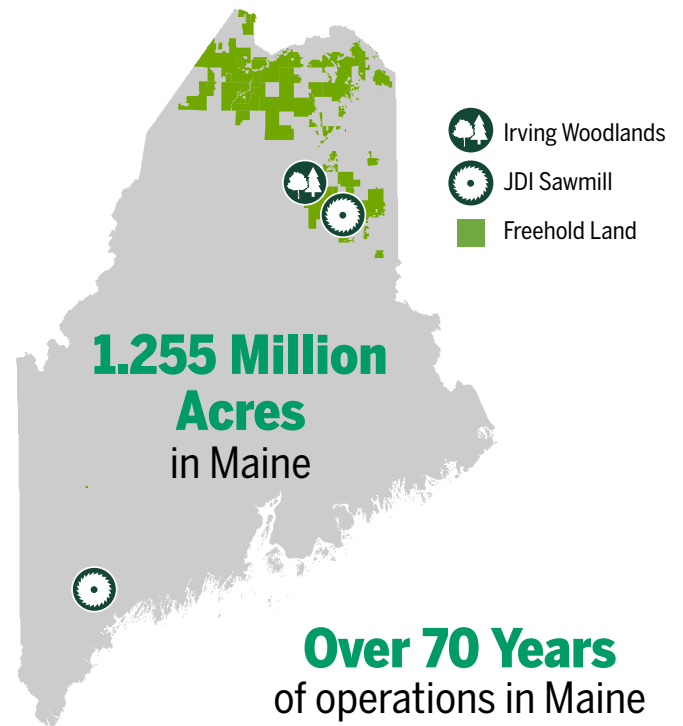
A team of
30+ forestry professionals



**SFI LEADERSHIP
IN CONSERVATION
AWARD**

"J.D. Irving stands out as a research leader that engages universities and conservation partners year after year. As Canada marks its 150th anniversary we are pleased to recognize J.D. Irving, Limited, whose roots in forestry go back 135 years."

Kathy Abusow, President and CEO of SFI Inc.
September 2017





IRVING WOODLANDS, LLC



Over 2,700 Jobs
(direct, indirect and induced)



Over \$100 Million
in total wages
(direct, indirect and induced)



Over \$100 Million
in local Maine purchases



\$87 Million
in Capital Investment
(2012-2016)



Providing a dependable and sustainable
WOOD SUPPLY
to numerous customers throughout
the State of Maine

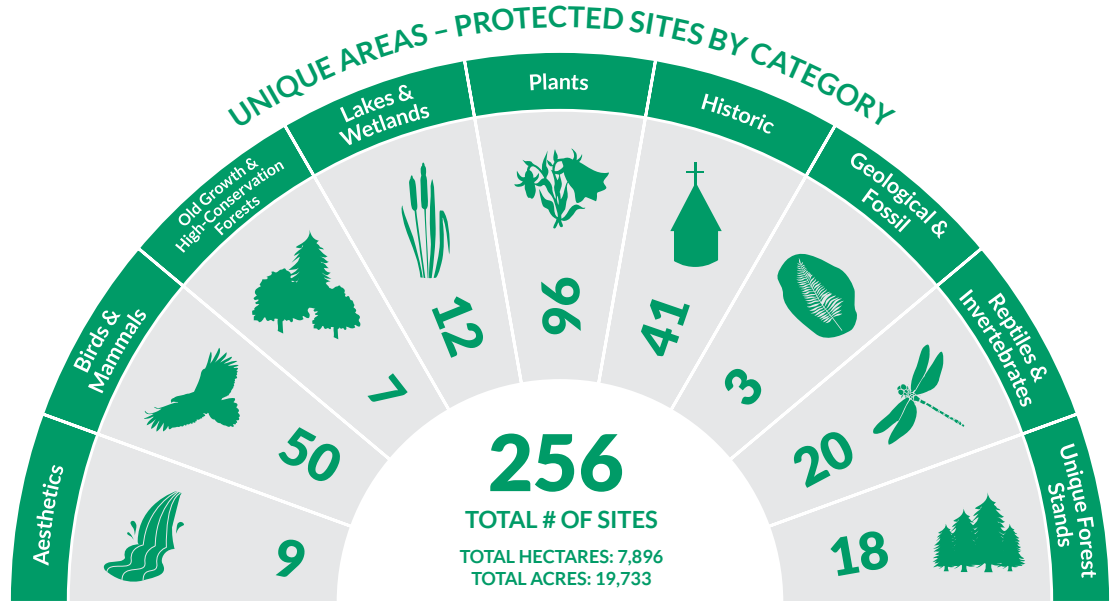
2017 ECONOMIC IMPACT

Forestry & Forest
Products in Maine



CONSERVATION & RESEARCH

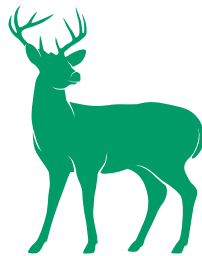
Voluntary Conservation Efforts in the North Maine Woods




25,540 ha
Old Forest Sites

Additionally, Irving Woodlands has set an objective to designate and maintain old forest within the working forest landscape - to date, more than 25,540 hectares (63,108 acres) have been designated towards meeting this objective.

Aug 2018



122,000 Acres
of deer wintering habitat



94,000 Acres
of watercourse buffers

RESEARCH PARTNERS

Our (voluntary) Forest Research Advisory Committee includes UMaine scientist Dr. A. Weiskittel as well as Mr. A. Whitman from Manomet.

Dr. A. Weiskittel is the Irving Chair in Forest Ecosystem Management at UMaine.

Dr. Neil Thompson is the Irving Chair in Applied Forest Management at UMaine Fort Kent.

Irving Woodlands, LLC has been a long term and active member of the Cooperative Forestry Research Unit.





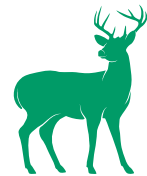
MORE THAN JUST TREES

This white-tailed deer research project is the largest ever of its kind in the region with JDI as the major funding partner.



8 Partners

in Canada and the U.S.

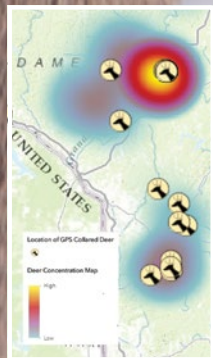


Over 100

deer in Maine and New Brunswick monitored with precise GPS collars



The Largest White-Tail Deer Research Project in the Region



Maine Department of Inland Fisheries and Wildlife



Cooperative Forestry Research Unit



New Brunswick Department of Energy and Resource Development



Natural Resources Canada / Ressources naturelles Canada



OUTCOME BASED FORESTRY OVERVIEW

In 2017 we updated our management plan for the 1,255,000 acres that we own in Northern Maine. This forest management plan aligns with the criteria and objectives outlined within the Maine Forest Service’s (MFS) Outcome Based Forestry (OBF) law. We are confident that our new plan can be implemented to meet the desired outcomes of the OBF agreement that we entered into with the MFS. This agreement requires that our operations be implemented in a manner that is ecologically sustainable, economically viable and socially responsible.

Outcome Based Forestry requires economic, social and environmental assessment.

www.maine.gov/dacf/mfs/policy_management/outcome_based_forestry.html

Our OBF agreement obligates us to maintain independent third party certifications for our woodlands and relieves us from certain provisions of the Maine Forest Practices Act (FPA). Today, our woodland’s are certified to meet the standards of the Forest Stewardship Council® (FSC® C041515) and the Sustainable Forestry Initiative® (SFI®) forest certification systems. Under this agreement the FSC US Forest Management standards have been aligned (with additional indicators) with all federal and state laws.

Final OBF assessment is determined by a governor appointed panel of technical experts who report to the director of the MFS. The accompanying table provides a quick reference comparison between OBF and the Maine FPA and the benefits that have been achieved thus far. A summary of our forest management plan and our SFI and FSC certification reports are both publicly posted on our website.

OBF	COMPARISON BETWEEN OBF AGREEMENT AND FPA	FPA
Yes	State of Maine, Based Technical Experts Review	No
Yes	Independent 3 rd Party Certification Required	No
Yes	Provisions to Improve Timber Supply and Quality	No
Yes	Provisions to Protect Forest Health	No
Yes	Provisions to Conserve Biological Diversity	No
Yes	Provisions to Consider Economic and Social Obligations	No
Yes	Reduced Administrative Work for Landowner and MFS Staff	No
Yes	Increased Reporting Transparency	No
Required for all harvests	Science Based Harvest Prescriptions	Only required for clearcuts
Required	Regeneration of Clearcuts	Required
250 acres	Maximum Clearcut Size Allowable	250 acres
Landowner can manage with scientifically based silviculture prescriptions	Clearcut Separation Zone Requirements	May only be harvested according to prescriptive standards in rule
Buffering between clearcuts can utilize natural landscape features		Minimum 250 foot separation zones with short term 1:1 acreage requirement
Yes	*Required Compliance to All Local, State & Federal Regulations to Protect Water and Wildlife and Protected Resources (i.e. DEP, LUPC, MFS, AWW, Local Ordinances, etc.)	Yes

*The State of Maine has established laws that protect the wildlife, waters and unique natural resources in our State that are above and beyond the FPA. All of the laws protecting our natural resources remain intact and are still subject to compliance under OBF.

BENEFITS OF OUTCOME BASED FORESTRY

- ✓ Less road building (40% reduction)
- ✓ Operate on less of the landbase – less fragmentation of the forest
- ✓ Science-based harvest prescriptions = better management
- ✓ Salvaging mortality due to wind damage and disease, improving forest health and reducing forest loss due to mortality
- ✓ More efficient operations
- ✓ A competitive wood supply for Maine mills
- ✓ No increase in percentage of clear cutting



Science Based Harvest Prescriptions

“Under outcome based forestry my machines spend less time on a low-bed and this has helped me improve my bottom line.”

Jeremy Fournier – Ironwood Logging
Eagle Lake, ME (7 employees)



ACCOUNTABILITY

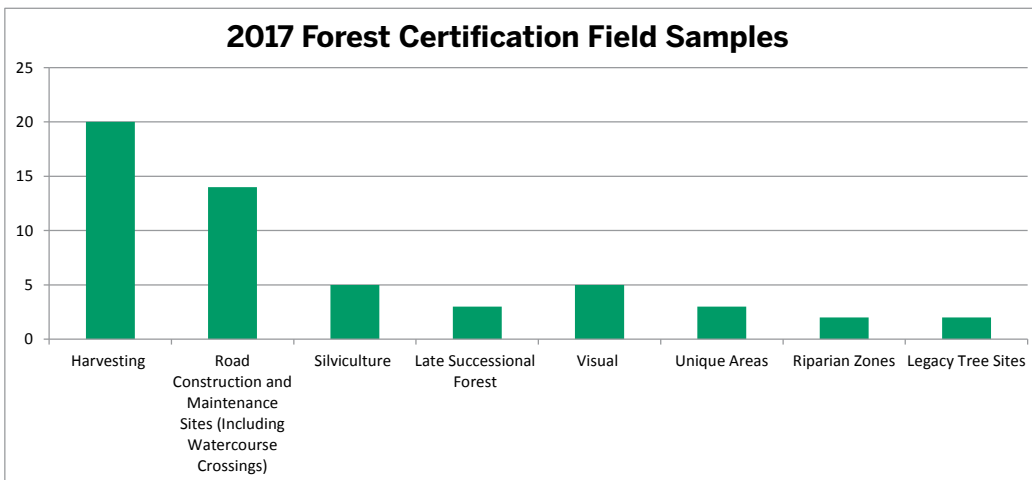


Independent 3rd party verification of our forest management is important for public credibility and confidence. Under our OBF agreement with the MFS, we are required to maintain independent 3rd party certification (aligned with all state and federal laws) for all of our Maine Lands with oversight and endorsement of auditing results by a governor appointed panel of experts.

In 2017, our operations were audited to the standards of the Sustainable Forestry Initiative (SFI) and ISO 14001 as well as the principles and criteria of the Forest Stewardship Council (FSC) – US Forest Management Standards. Auditors found our sustainable forest management system to be in conformance to the SFI program and that the ISO 14001 Environmental Management System (EMS) was being effectively implemented and that overall conformance to the applicable FSC standards was achieved. No corrective action requests were issued by auditors for FSC indicators under the US Forest Management Standards.

Our FSC and SFI certifications require us to minimize and strive to reduce our use of chemical pesticides.

Expert panel findings for 2017 can be found on the Maine Forest Service’s website for Outcome Based Forestry. The following graphs depict focal areas for auditors in 2017.



IRVING WOODLANDS DETAILED SCORECARD



MAINE WOODLANDS DETAILED SCORECARD

Sustainable Forestry	2017 Maine Data
Resource holdings (freehold - Maine)	1,255,000 acres
Land base harvested	2.3%
Trees planted – # of seedlings	2.95 million
Forest lost from disease	0 acres
Forest lost from windthrow	0 acres
Forest lost from fire	0 acres
Forest lost from all causes	0 acres
Mapped watercourse buffers (total)	94,000 acres
Watercourse distances sustainably managed (total)	252 miles
Forestry road building (new roads)	57 miles
Pre-commercial thinning & planted stand cleaning completed	4,800 acres
Tree planting completed	4,450 acres
Sustainable Forestry Initiative Certification (SFI)	100% of Maine holdings
Environmental Management System Registration (ISO 14001)	100% of Maine holdings
Forest Stewardship Certification (FSC)	100% of Maine holdings
Certification Non-Conformances (FSC, SFI & ISO 14001)	0
Volunteer Conservation areas on JDI land # of unique areas set aside	256 sites / 19,733 acres

FROM THE AUDITOR'S REPORT

“Numerous examples of effectively protected riparian areas and waterbodies were observed during the field audit.”

“A number of vernal pools were observed during the field audit to be well protected under the Company’s Vernal Pool Policy.”

“JDI planners do an effective job of tailoring the silviculture system(s) being prescribed to the stand characteristics (species composition, structure, condition, age(s), etc.), site characteristics (fertility, trafficability) and broad management objectives pertaining to a particular stand. In addition to clearcut systems, a variety of partial cutting silviculture systems are prescribed and implemented by the Company.”

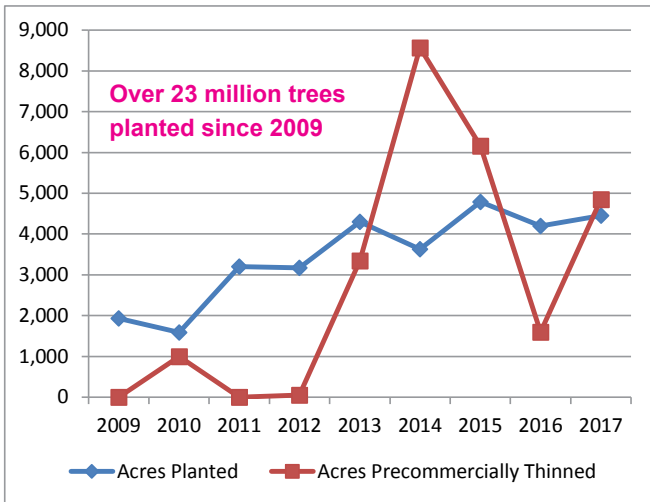


ZERO Non-conformance

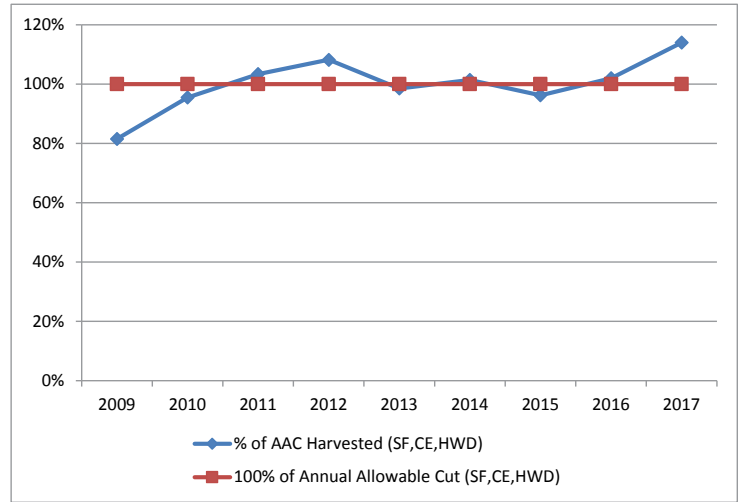
2017 OPERATIONS REPORT

In 2017, our foresters implemented an operating plan that was designed to meet our sustainable forest management strategy as outlined in our management plan under OBF. Operations were conducted under complex environmental, market and economic conditions this past season. The flexibility afforded by OBF to properly plan and execute operations to meet the daily challenges that our people face was a tremendous asset in closing a successful operating year.

Silviculture – Growing a Healthy Forest



Sustainable Harvesting of Forest Products



MAINE WOODLANDS

Planning 80 years ahead for the environment and to ensure healthy forests for generations to come.



FOREST MONITORING RESULTS

As part of our commitment to improve the health, growth and long term yield from our lands, we continuously monitor forest health, development and growth and yield (often in cooperation with the MFS). Monitoring is achieved through staff training and observation, stakeholder consultation and input, regular aerial reconnaissance, and an intensive ground sampling program that measures growth and yield dynamics for long term planning needs. The following provides a sample of our 2017 monitoring program.

FOREST SURVEYS		
1 st year Planted Stand Survival Plots	97%	Survival issues are mostly related to weather.
2 nd year Planted Stand Survival Plots	87%	Survival issues are related to competition, and weather.
5 th year Planted Stand Survey	4,300 acres	were surveyed and were found to be free from significant competition.
10 th year Planted Stand Survey	3,258 acres	were surveyed and found to have significant natural competition that now requires intermediate thinning treatments.
High Conservation Value Forest (HCVF) Survey	7 areas	No management activities occurred in or adjacent to any HCVF. No significant changes have occurred within the designated areas. Old trees continue to show signs of stress and dieback. Insect and disease damage is still evident. No evidence of fire.
Invasive Species Monitoring	All	Glossy Buckthorn, Garlic Mustard and Dog Strangling Vine are invasive species of particular concern, at this time monitoring has not detected evidence of establishment in the woodlands.
Insect Monitoring	92 plots	Irving foresters assisted MFS personnel with insect monitoring, primarily looking for spruce budworm activity (see: MFS website for regional results of findings).

In addition to monitoring forest health and growth, we are obligated and required to measure our impact on the environmental and social aspects of our operations. We strive to protect our environment with programs to improve operations, lessen our impacts on water resources and improve our handling of dangerous goods such as fuel. Operations improvement is the focus of our daily work. It covers all of our operations from planning to reforestation of harvest areas. Programs to improve operations include sustainability of wood supply, public education and communication in forest management affairs, soil conservation by controlling equipment rutting, conservation of biodiversity by protection of habitat, respecting forest cover type distribution and site specific and forest level habitat protection.

Water protection programs include managing our use of dangerous goods near water, careful planning and management of riparian areas, management of siltation from harvest areas, proper installation and maintenance of watercourse crossings, and strict control of activities within municipal water supply areas. These programs all follow existing government regulations and are part of all staff and contractors' daily routines.

The environmental and social impact of our operations is monitored by following an Environmental Management System (EMS) that allows us to record, monitor and respond to incidents as they are reported. Our EMS system is based on a "top to bottom" communication system. Corporate leadership to our regional team flows through the operations. Staff meetings are regular, and operational issues in the form of Incident's and Non-conformances are discussed between staff and contractors every week. All incidents and non-conformances are entered into a database where corrective actions are reported, prioritized and tracked to monitor trends for determining where we are off plan and where improvements need to be made.

In 2017, improvement was below expectation for equipment rutting, wood waste and road construction. Action plans have been established to assist in meeting established targets. In 2017, 7 public complaints were received and action plans to address those concerns were completed.



STAKEHOLDER ENGAGEMENT

Meeting with and formally addressing stakeholder concerns is part of our 3rd party certification requirements. We have met both formally and informally with individuals and organizations in an effort to incorporate responsible ideas, guidance, suggestions, information/data, positive comments, complaints and concerns into our management planning process.

Organization	Nature of Business
Maine Natural Areas Program	Gathering spatial information on any recent finds of Maine's rare and invasive plants as well as providing the state with details on staff finds. This is done annually.
Maine Inland Fisheries & Wildlife	Gathering spatial information on recent finds of Maine endangered/threatened fauna species and provide details to the State on any JDI staff finds. This is done annually. Spent time with MIFW staff in the field to confirm the use of a number of Great Blue Heron colonies. Regular discussions on issues such as deer and moose management, heron colonies, etc.
Maine Heritage Preservation Commission	Gathering spatial information on any recent archaeological finds.
University of Maine (Presque Isle)	Discuss operational constraints on our harvesting equipment that will be in the vicinity of an historic native site.
New England Wildflower Society (NEWFS)	NEWFS provides Irving Woodlands, LLC with detailed information on the status of particular rare plant sites on our land in northern Maine.
Manomet Center for Conservation Sciences	Advice on rare/uncommon forest communities and late successional forests.
Penobscot Environmental Consulting	Advice on retaining and recording legacy trees.
SFI Fisheries Improvement Network (FIN)	Maine Forest Products Council / SFI led group consisting of Landowners, State and ENGO groups dedicated to improving fish habitat state-wide.
Maine Stream Connectivity Network	Regulator, landowner ENGO group formed to improve fish and aquatic connectivity on Maine watercourses.
MFPC Wildlife Technical Committee	Landowner group who discuss fish & wildlife issues, usually with state regulators and user groups like SAM.
Cooperative Forest Research Unit (CFRU)	UMaine researcher-landowner sponsored body which develops and researches a variety of forestry and wildlife interaction issues.
Maine Department of Environmental Protection	Issues concerning invasive forest plant species.

In 2017 we also met with the following:

- Numerous Individuals
- Local Town Boards
- Aboriginal Groups
- Sportsmen Organizations
- Technical Schools
- Other Landowners
- Numerous Forestry Organizations
- Sportsmen Forest Landowner Alliance
- Maine Snowmobile Association Clubs
- ATV Clubs
- North Maine Woods
- Allagash Wilderness Waterway
- Maine Forest Service
- Fish River Lakes Association

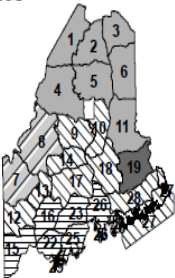
RECREATIONAL USE



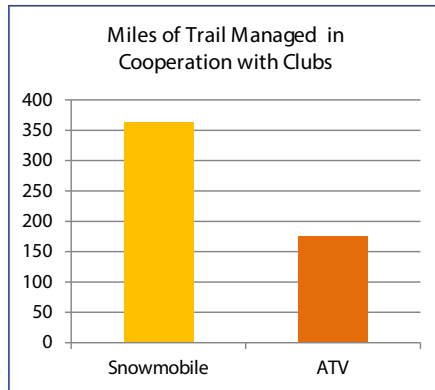
Irving Woodlands, LLC continues to provide historic, traditional recreational opportunities. Both inside and outside the North Maine Woods framework of Aroostook County, there is a well developed culture that provides public access to private land for engaging in traditional recreational uses. The working relationships developed with both individuals and groups from this sector has been mutually beneficial to all. Continued support of traditional uses such as hunting, fishing, trapping and hiking on our lands are welcome.

Hunting Zones

- Week 1,2
- ▣ Week 1,2,3
- ▣ Week 2
- ▣ Week 2,3
- November



Week 1: September 23 - September 28, 2013
 Week 2: October 14 - October 19, 2013
 Week 3: November 4 - November 9, 2013
 November Season: November 4 - November 30, 2013
 November 2, 2013 (Maine Residents Only)



North Maine Woods, Inc.

P. O. Box 425, 92 Main Street, Ashland, Maine 04752

"Experience the Tradition"





INVESTING IN MAINE

WE ARE COMMITTED TO CONTINUOUSLY IMPROVING EVERY ASPECT OF OUR MANAGEMENT AND OPERATIONS.

We want to be partners and good neighbors and we continue to actively work to support our state, our communities, workers, contractors, suppliers and customers.

- ✓ **In 2017 we worked with 30 commercial outfitters offering outdoor experiences in our woodlands**
- ✓ **Cooperative working relations with over 650 camp leases**
- ✓ **Recruiting, developing and training people internally, from our university system and our communities**

2017 INVESTMENTS IN GROWING HEALTHY FORESTS

- ✓ 2,950,000 trees planted
- ✓ 4,800 acres of pre-commercial forest thinning
- ✓ \$2,500,000 silviculture investments in 2017

ADDITIONAL PROJECTS UNDERWAY

- ✓ Increased spruce budworm monitoring levels
- ✓ Recruitment of contractors and specialized equipment for working in the forest
- ✓ Development of a new management plan utilizing next generation data and analysis
- ✓ Development and use of precision forestry tools

We're Hiring!

Sawmills Operations 2018 -2020
126 Forecasted Hires
(staff, hourly and student)

We're Also Recruiting
17 Contractors
96 Contractor Operators

OUTCOME BASED FORESTRY SUSTAINS A VALUE-CHAIN OF JOBS THROUGHOUT MAINE

HEALTHY FORESTS • GROWING JOBS • VIBRANT COMMUNITIES

<p>TOP LEVEL VALUE-ADDED MANUFACTURING</p>			
<p>TRANSPORT TO MARKET</p>			
<p>SECONDARY MANUFACTURING</p>			
<p>TRANSPORT TO FURTHER MANUFACTURING OPERATIONS</p>			
<p>PRIMARY MANUFACTURING</p>			
<p>TRANSPORT TO MILLS</p>			
<p>SUSTAINABLE HARVESTING</p>			
<p>GROWING AND PROTECTING THE FOREST</p>			

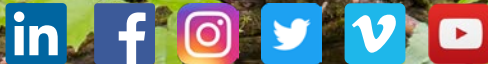
Outcome based forestry means a competitive wood supply to many non-Irving mills in the state, including:

- Columbia Forest Products
- Corinth Pellets
- JM Huber
- Katahdin Forest Products
- Louisiana Pacific
- Maibec Lumber
- Maine Woods Company
- Northeast Pellets
- Portage Wood Products
- Premium Log Yards
- Re-Energy Ashland
- Re-Energy Fort Fairfield
- Woodland Pulp LLC
- WT Gardner Chipmills



IRVING WOODLANDS, LLC

irvingwoodlands.com



© 2018 Irving Woodlands, LLC
September 2018