An Introduction to Environmental Monitoring within the Alberta-Pacific Forest Industries Inc. Forest Management Agreement Area (2016-2020)

From the soil to the tops of the trees, there is a lot to learn from Alberta's forests! They are filled with social and ecological values we depend on and enjoy during everyday life. Responsible forest management means safeguarding these values, and one way of doing so is through environmental monitoring.

Alberta-Pacific Forest Industries Inc.'s (Al-Pac) Forest Management Agreement (FMA), with the Government of Alberta grants the company sustainable timber harvesting rights on over 6.3 million hectares of northern Alberta boreal forest. Within that area, Northland Forest Products Ltd. (NFPL) has a volume-based tenure providing the company access to conifer timber. Both Al-Pac and NFPL are dedicated to understanding the environmental effects of their forestry activities on the FMA area. As organizations certified by the Forest Stewardship Council® (FSC®) under a group certificate, they monitor various aspects of forest ecosystem health and provide this information to FSC auditors, governments and the general public. This document will provide some insight into these environmental monitoring programs and explain where to find additional public information on the monitoring results.

Forest regeneration

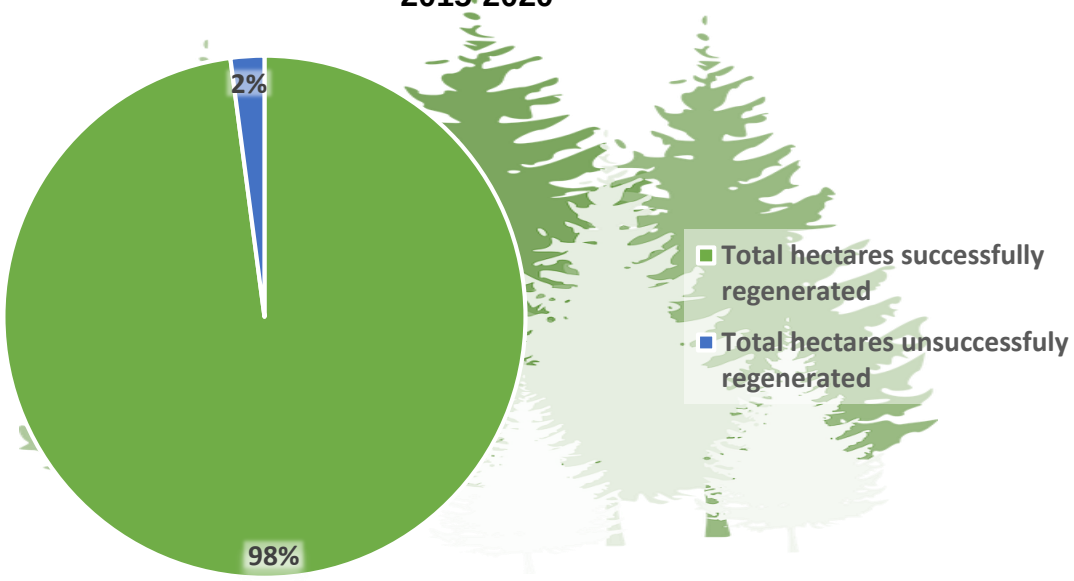
Al-Pac and NFPL are required to reforest the areas where they operate to a similar mixture of tree species that was found in the forest before the harvests occurred. This regeneration can be achieved by tree planting in coniferous stands or by leaving deciduous trees to regrow naturally.

Structure retention

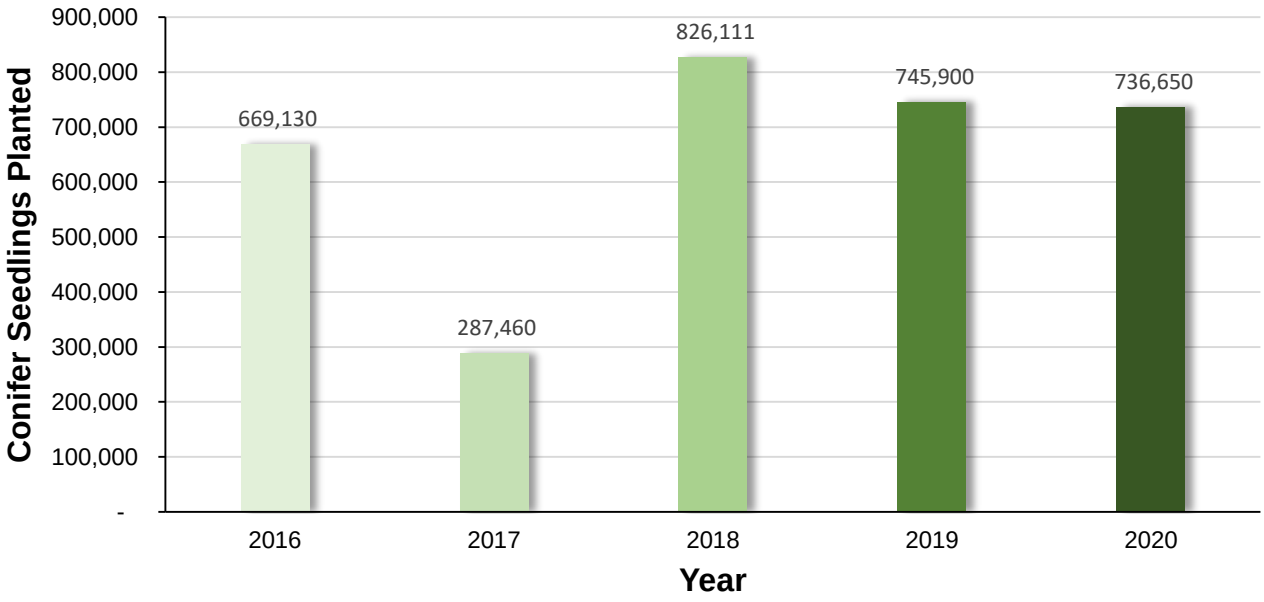
Leaving a portion of trees standing at the time of harvest can improve regeneration and provides forest remnants from the pre-existing stand that benefits various elements of biodiversity. Protection of these residual trees is called ‘structure retention’. Maintaining residual trees better equips the rest of the forest to recover.

Al-Pac and NFPL monitor regeneration by conducting surveys to make sure the forest is regrowing as prescribed within the Reforestation Standard of Alberta (RSA). Establishment surveys determine the level of success of early silviculture activities four to eight years after harvest. Then, at 11 to 14 years after harvest, performance surveys determine if established stands have continued to grow into forest that is healthy, vigorous, and capable of generating the expected future timber yields. Survey data can be found in Al-Pac's Stewardship Report, and some major findings are shown below. In areas where the regrowth is not meeting the required standards, the companies will complete additional silviculture treatments to enable successful regrowth.

26,232 hectares of predominantly deciduous forest were surveyed by Al-Pac from 2015-2020

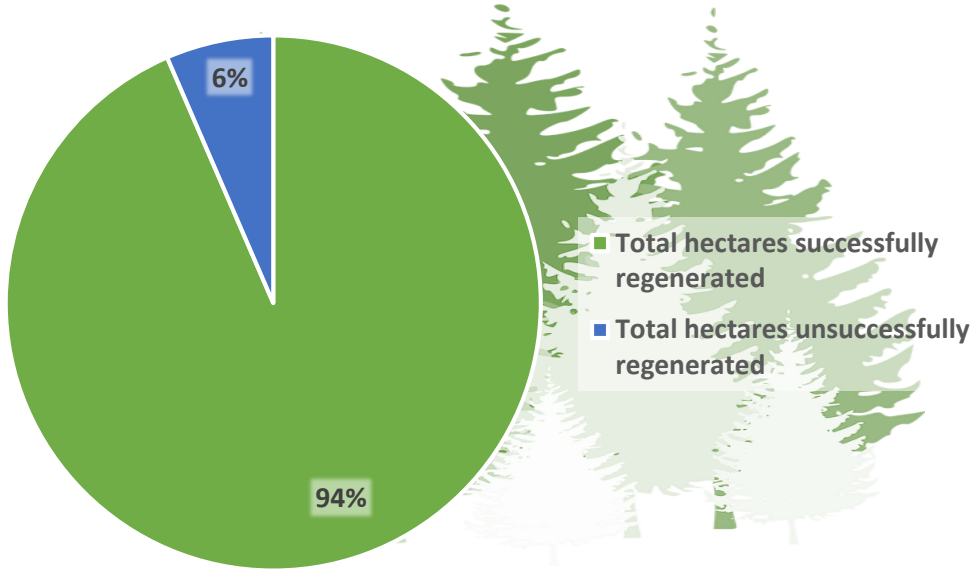


25,750 hectares have successfully regenerated

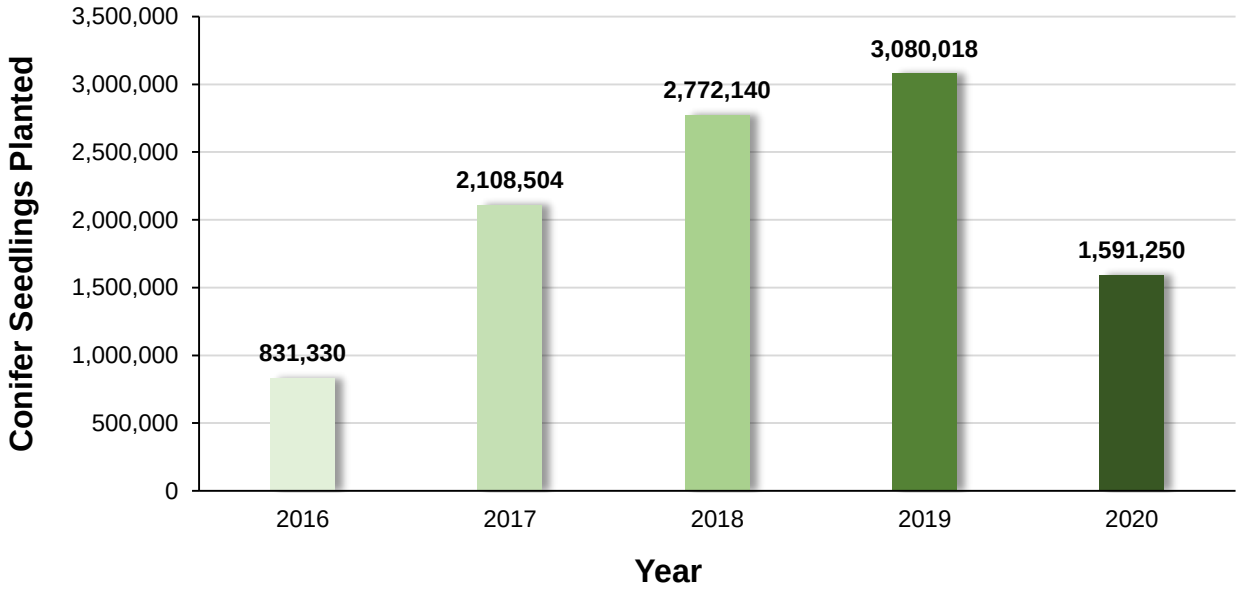


3,265,251 conifer seedlings were planted on 2,398 hectares by Al-Pac from 2016-2020

4,444 hectares of predominantly conifer forest were surveyed by Al-Pac from 2015-2020

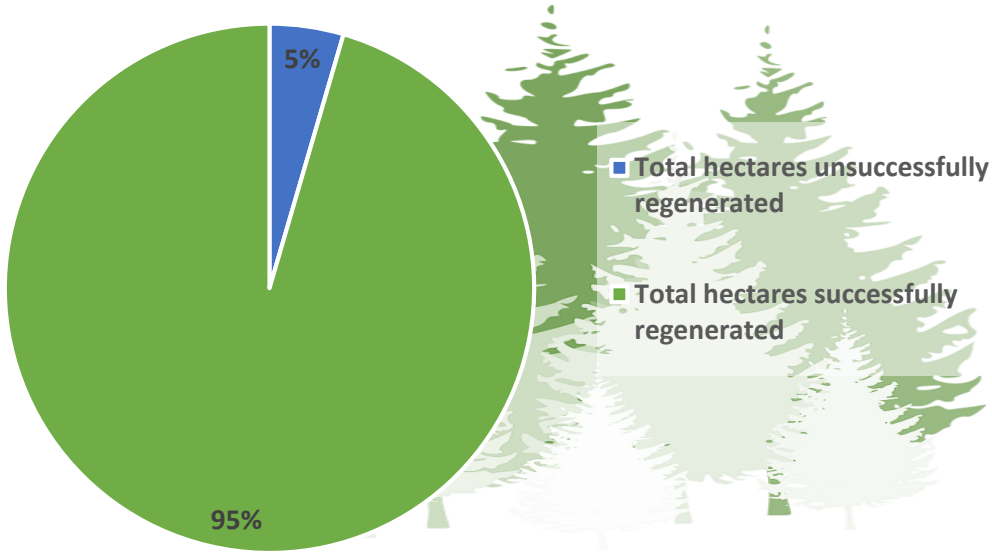


4,155 hectares have successfully regenerated



10,383,242 conifer seedlings were planted on 3,358 hectares by NFPL from 2016-2020

9,005 hectares of predominantly conifer forest were surveyed by NFPL from 2015-2020



8,598 hectares have successfully regenerated

Vegetation management

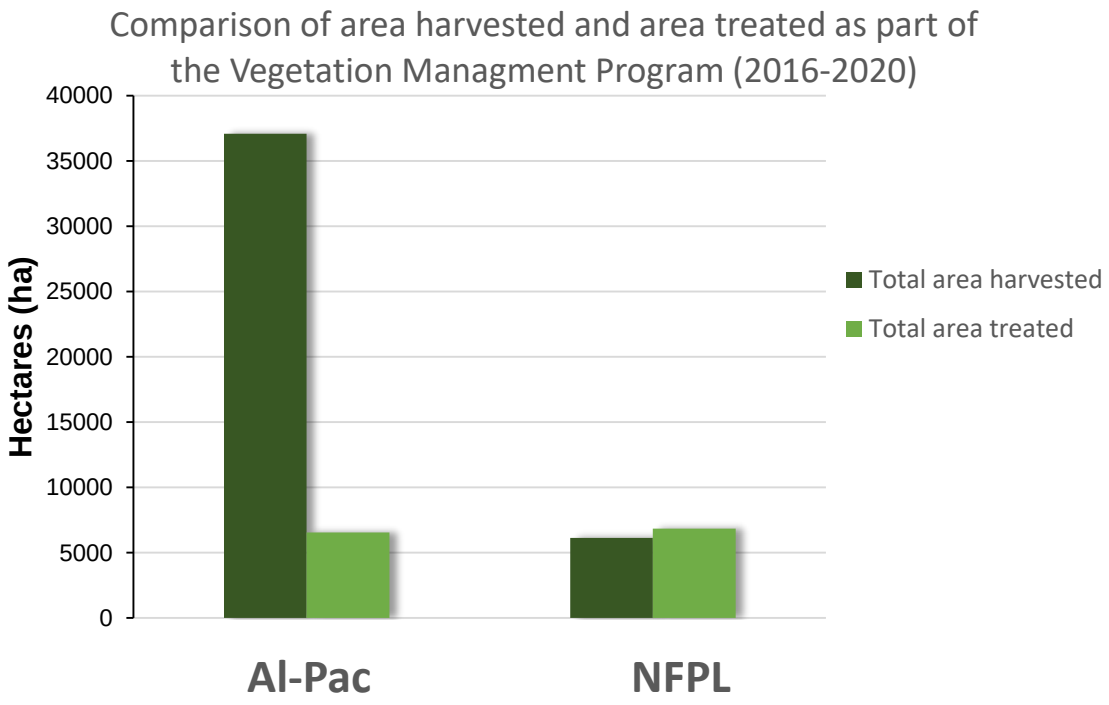
After harvest of their aboveground stems, deciduous trees have the ability to re-sprout rapidly from root 'suckers' on their own. Coniferous trees on the other hand need specific conditions to grow after harvest. One way that Al-Pac and NFPL help coniferous regrowth is by applying herbicide treatments to control competing vegetation that may take sunlight, water, and nutrients from the young conifers.

Vegetation control with herbicides

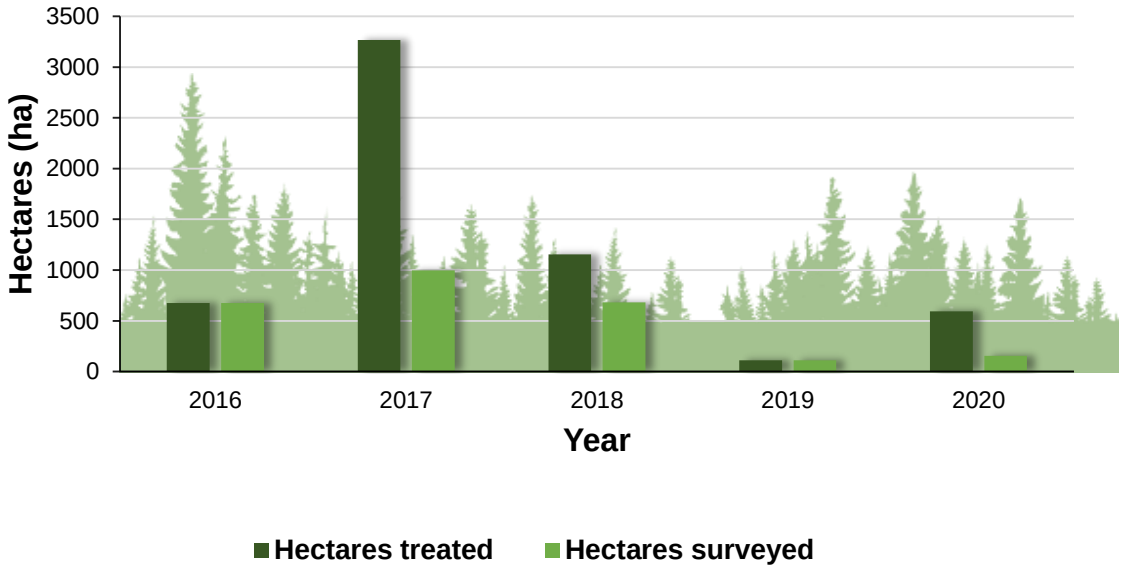
Chemical treatments can be a cause for concern for stakeholders and Indigenous communities, so its use requires careful consideration and consultation. Alternative methods for vegetation

management are considered when possible, but herbicide use is often the only option to return the forest to the density and mix of species that were present within the forest before harvest. Many measures are taken to prevent negative impacts to sensitive areas, such as not allowing herbicide application near waterbodies and not applying herbicide during unfavourable weather conditions. Al-Pac and NFPL currently use the herbicide glyphosate for chemical vegetation control. An Environmental and Social Risk Assessment has been completed for the application of glyphosate for silvicultural purposes on the FMA area and is available upon request.

To monitor the outcomes of herbicide use, Al-Pac and NFPL conduct annual excursion flights to observe herbicide success and to see if there were any application trespasses outside of the treatment areas. Data from both companies' vegetation management programs over the past 5 years are presented below.



Al-Pac treated 5,801 hectares with herbicides from 2016-2020



2,620 hectares of that area has been surveyed with Al-Pac excursion flights, and 0.8 hectares of off-target herbicide applications were identified

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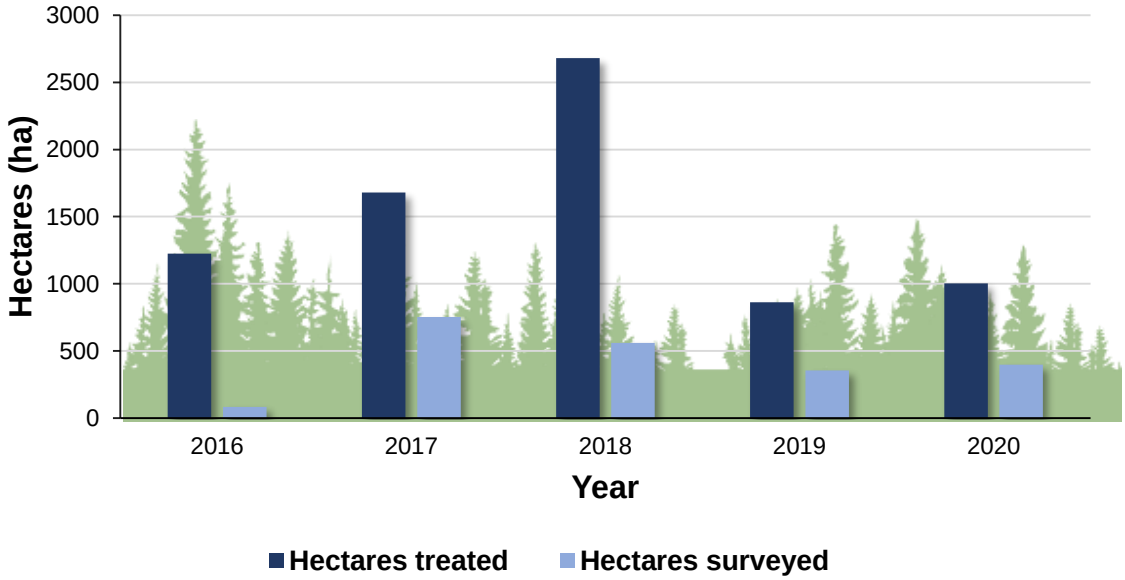
NFPL treated 7,451 hectares with herbicides from 2016-2020



2,145 hectares of that area has been surveyed with NFPL excursion flights, and 0.18 hectares of off-target herbicide applications were identified

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Al-Pac and NFPL are required by law to control the spread of noxious or invasive species within the areas that they operate. Invasive plants are those species that are ‘new’ to a region they were not historically found in. They commonly grow in disturbed areas, such as along roads and seismic lines. Al-Pac's Stewardship Report states that about 1,700 km of road dispositions in the FMA area have been treated for invasive plant species found during internal inspections.

Al-Pac works with the Alberta Biodiversity Monitoring Institute (ABMI) to develop a biodiversity monitoring report every 5 years. The 2020 report *Status of Land Cover and Biodiversity in the Al-Pac Forest Management Agreement Area* provides monitoring data about the status of non-native vascular plants in the FMA area.

ABMI reported non-native plants at 39% of the sites sampled, and 26 non-native plant species were identified

Monitoring to protect forest resources

Throughout all stages of Al-Pac’s and NFPL’s planning and operational processes, measures must be taken to mitigate damage to forest soils and residual trees. Forestry involves the use of heavy machinery and the creation of roads which can cause soil compaction, especially during the non-winter months when the ground is soft. These soil disturbances can directly damage root systems, or indirectly harm plant growth by reducing water infiltration to the roots.

Healthy soils are the basis of forest productivity. Hence, the Northeast Alberta Timber Harvest Planning and Operating Ground Rules (OGRs) require that the total area of displaced soils cannot exceed 5% in each harvest area and all temporary roads must be

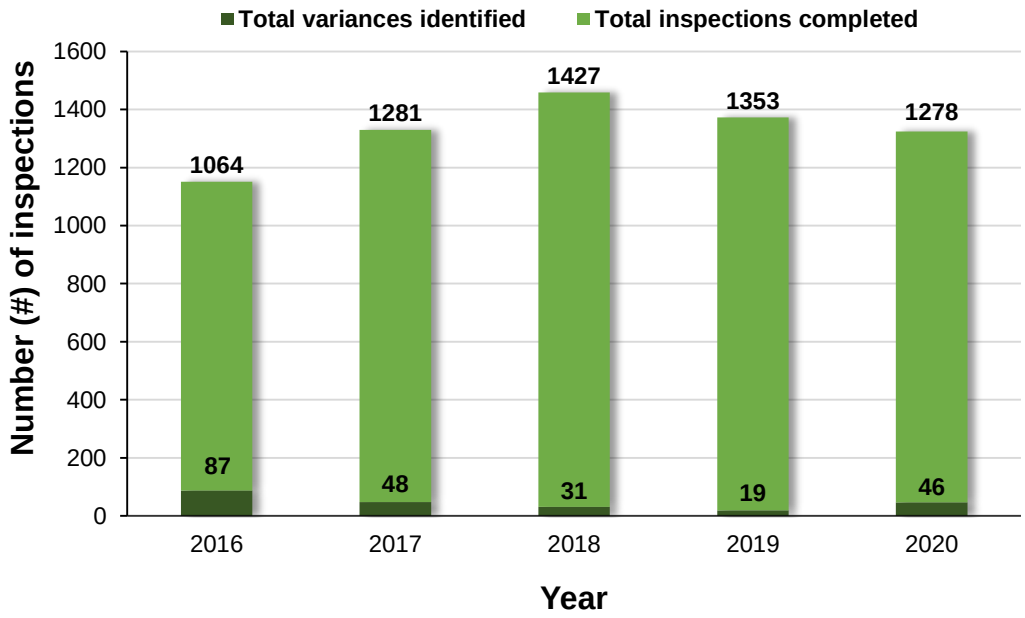
reforested. As well, OGR requirements prohibit site-level damage to residual trees and other environmental features.

Proper waste management is another crucial component of protecting ecological values and meeting OGR requirements. All waste generated during forestry operations must be transported offsite and disposed of appropriately. Any damage caused by improper storage or disposal of waste must be monitored, reported, and repaired.

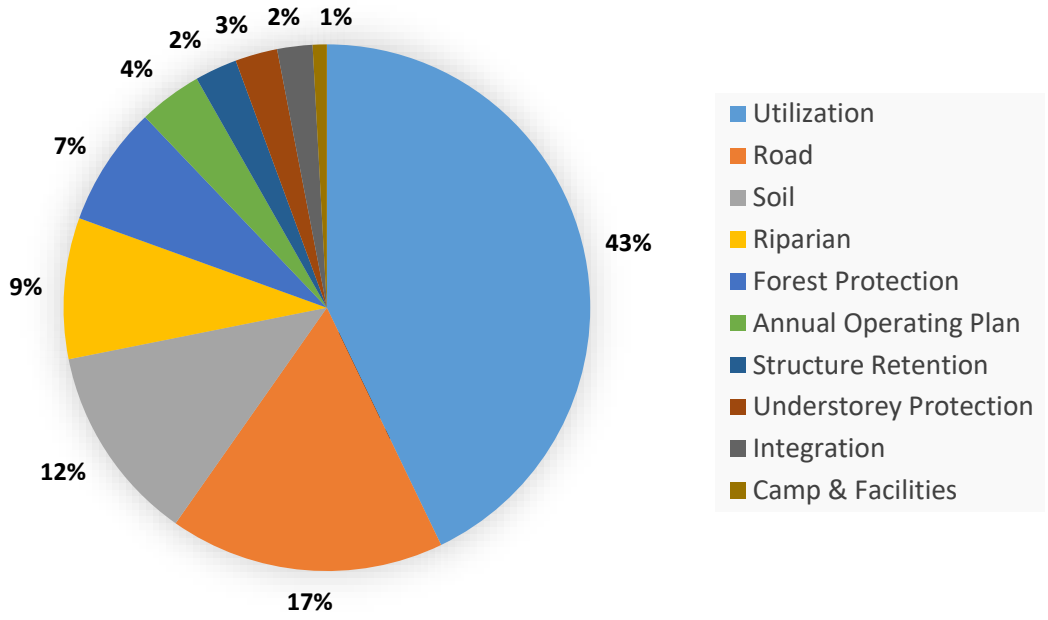
Winter access road to harvest areas

In order to ensure compliance, Al-Pac and NFPL conduct internal Forest Operations Inspections to identify 'variances' from the OGRs and implement corrective measures. Data showing Al-Pac variances over the last 5 years are shown below.

6,403 Internal Forest Operations Inspections were completed by Al-Pac from 2016-2020



231 variances from the OGR standards were identified and categorized during the internal inspections



The Government of Alberta also monitors for conformance to the provincial *Forests Act*.

268 Alberta Government inspections were completed to confirm Al-Pac compliance to various forestry-related regulations from 2016-2020. Al-Pac had 1 contravention to the Forest Act identified in 2017 related to skidding across an ephemeral watercourse resulting in damage to a vegetation buffer

118 Alberta Government inspections were completed to confirm NFPL compliance to various forestry-related regulations from 2016-2020. NFPL had no contraventions.

This environmental report illustrates some of Al-Pac and NFPL's efforts to monitor their management areas. Forest regeneration surveys and vegetation management programs are just some of the many tools used to support sustainable forestry. Frequent inspections keep Al-Pac and NFPL accountable and foster a work environment centered around continuous improvement.