

## LAND

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Our long-term vision is to create a landscape that sustains a healthy diversity of plants and animals, and supports a range of land uses. We are committed towards ensuring the final reclaimed landscape has equivalent land capability, is integrated with the surrounding area, establishes boreal forest upland and lowland communities with characteristic biodiversity, yields water suitable for return to the natural environment, and is planned in direct consultation with local, directly affected communities.

### OUR PROGRESS

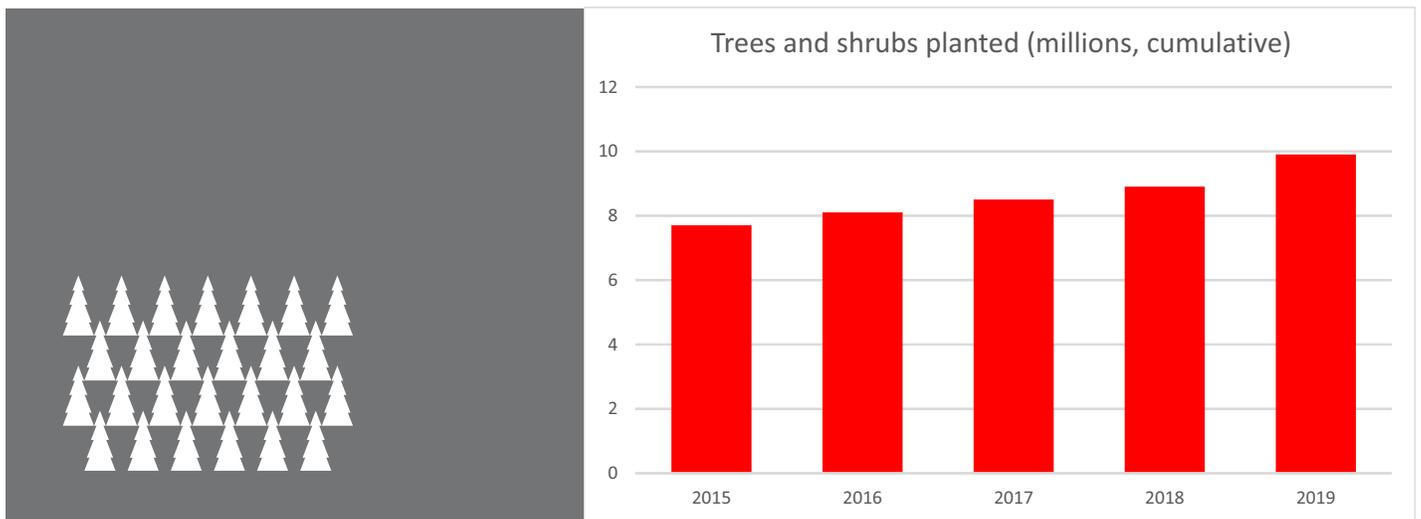
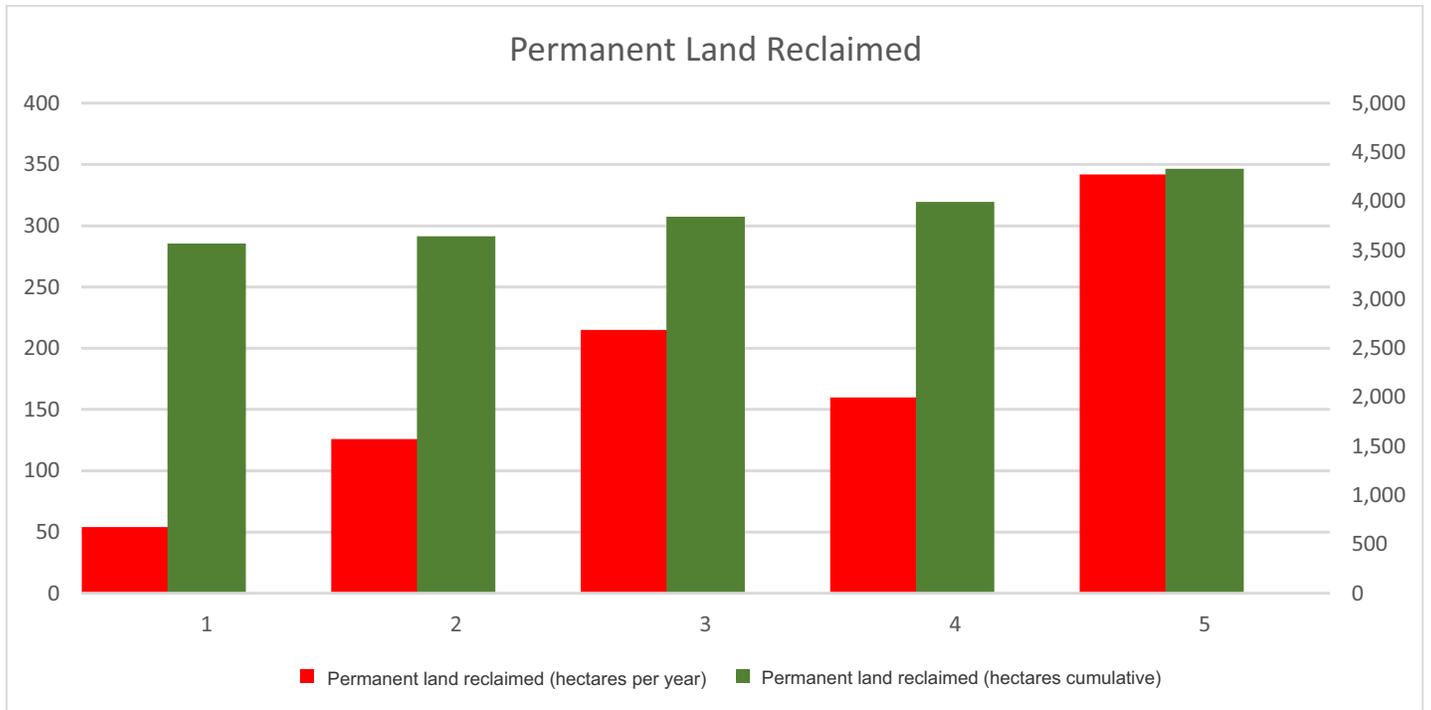
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We've reclaimed about 13 per cent of the land we've disturbed with plans to double that by the mid-2020s. We've reclaimed over 4,300 hectares of land to date and planted around 9.9 million trees and shrubs. An additional 1,100 hectares of land have been placed with soil and are ready for revegetation.

A 2018 research study of ecosites on our reclaimed areas found the presence of 83 per cent of regional characteristic species. Of this, we have detected around 165 different boreal species in reclaimed uplands, including over 60 which have been identified by local Indigenous communities as possessing traditional value. On reclaimed wetlands, over 200 boreal wetland plant species have been recorded, including 17 species of moss and six species of liverworts.

In 2019, we reclaimed 342 hectares and planted a little under one million seedlings, six species of trees, 18 species of shrubs and two herbaceous species. We plan to reclaim a further 220 hectares of land in 2020.

## OUR PROGRESS (Cont'd)



## EAST MINE RECLAMATION - CREATING A BOREAL FEN

Reclamation of our former East Mine is ongoing. This area is approximately 1,150 hectares in size and bordered by Highway 63 south of our main plant site. Reclamation began in 2000 using composite tails, as the landform substrate or underlying layer, to fill in the mined-out pit. Revegetation is expected to be complete around 2025.

This reclaimed area includes the 57-hectare Sandhill Fen research watershed. In the wetland, the surface water quality falls within the range assessed in natural marshes and other fens. Numerous natural wetland plants have established, and the forest surrounding the wetland has over 190 different plant species. The fen has also demonstrated the potential to accumulate carbon. These results indicate good progress toward achieving equivalent wetland function.

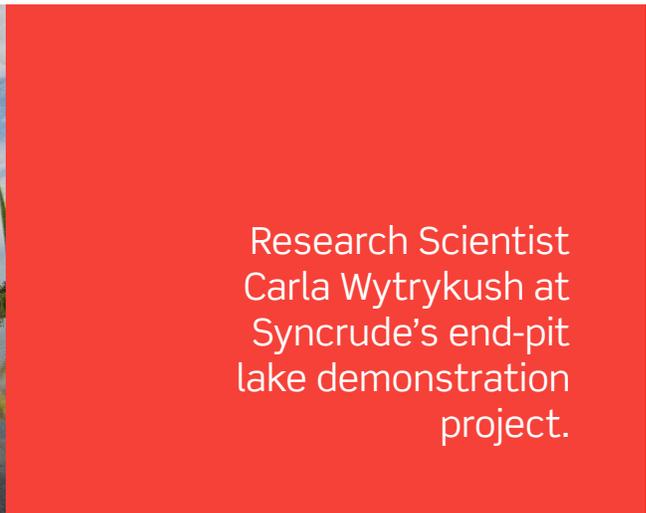


The Sandhill Fen watershed is a restored area in our former East Mine using reclaimed tailings as the landform substrate.



## WEST MINE RECLAMATION - CREATING A LAKE

Our former West Mine is under reclamation using end-pit lake technology, which places water on top of tailings to create an aquatic ecosystem. Research and monitoring is helping us to optimize and validate this technique, which is adapted from similar reclamation activities at mines around the world. Already, the water is home to a variety of aquatic life, including algae, insects and microscopic animals.



Research Scientist  
Carla Wytrykush at  
Syncrude's end-pit  
lake demonstration  
project.

## CREATING CULTURAL LANDSCAPES

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We understand that local Indigenous communities expect reclaimed land to support traditional hunting, trapping and gathering for food, herbs and medicines. Towards this, consultation and engagement occurs through various activities. One example is the Reclamation Engagement Focus Group (REFG) through which local communities share traditional knowledge and on-the-ground input with Syncrude staff towards improving closure planning and reclamation outcomes.

## REVEGETATION PRACTICES

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Our reforestation program helps to encourage a rapid return of plant biodiversity similar to conditions in the local region. The process starts by actively managing woody debris and soil placement to promote the creation of microsites and establishment of species from seed banks in the soil or through natural colonization. In fact, we have recorded the presence of over 300 characteristic species within seven years of an area being reclaimed.

We supplement natural processes through our own revegetation program, including direct seeding. Planting increases diversity and plays an important role at quickly stabilizing vegetation growth to allow the development of sustainable ecosystems. Currently, we plant eight species of trees and over 25 species of shrubs, forbs and grass. These plants are sourced locally and collected manually from seeds or cuttings. Seeds are extracted, sorted and then propagated at a number of nurseries across Alberta. The plants are then returned to us as seedlings.

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## RESEARCH AND COLLABORATION

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Syncrude invested \$78.2 million on research and development efforts in 2019; of this, over half was directed to environmental projects such as mine closure. In this area, research is focused on achieving a self-sustaining final landscape that also meets regulatory requirements for fluid fine tailings management, land certification and water release. Employing a watershed scale approach, we monitor constructed landforms and assess long-term performance in the areas of water and energy balances (location, quantity, quality and movement of water in a landscape), mass balances (including inorganics, organics, ions, nutrients, metals) and biological responses.

We also collaborate through Canada's Oil Sands Innovation Alliance (COSIA) and provide financial grants to Canadian and U.S. universities to assist us in advancing oil sands reclamation science. Among those are the NSERC (Natural Sciences and Engineering Research Council of Canada)/Syncrude Industrial Research Chair in Mine Closure Geochemistry at the University of Saskatchewan and the NSERC/Syncrude Industrial Research Chair in Hydrogeological Characterization of Oil Sands Mine Closure Landforms at the University of Saskatchewan.



## STEWARDING TO REGULATORY COMMITMENTS

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Syncrude stewards to the expectations of the Alberta Environmental Protection and Enhancement Act, which requires us to return the land we use to a productive capability equivalent to that of the pre-disturbance landscape. A mine closure plan is submitted to the government every ten years, with a mid-term update; a mine reclamation plan is submitted every three years, supplemented with annual progress reports.

We also ensure end land use goals are consistent with objectives expressed in the Integrated Resource Plan (IRP) and LARP policy documents, specifically: areas of land capability considered suitable for commercial timber production; areas considered suitable for traditional land uses such as hunting, trapping, fishing and harvesting; and wildlife habitat within the range of natural variability in the region.

## Land Performance Data

Land Use	2015	2016	2017	2018	2019
Cleared <sup>1</sup> (cumulative hectares)	3,528	3,190	2,847	2,464	2,164
Disturbed: land used for mine or plant purposes <sup>1</sup> (cumulative hectares)	20,085	20,455	20,917	20,995	21,234
Total active footprint – mine and plant site footprint <sup>1</sup> (cumulative hectares)	28,963	29,027	29,913	29,426	29,750
Soils placed – land available for revegetation <sup>1</sup> (cumulative hectares)	1,080	1,044	730 <sup>2</sup>	975	1,018
Temporary reclamation <sup>1</sup> (cumulative hectares)	703	697	1,064 <sup>2</sup>	1,109	1,109
Permanent land reclaimed <sup>1</sup> (hectares per year)	54	126	215	160	342
Permanent land reclaimed <sup>1,3,4</sup> (cumulative hectares)	3,568	3,642	3,843	3,993	4,330
Trees and shrubs planted (# per year)	272,300	408,300	402,500	404,900	995,600
Trees and shrubs planted (millions, cumulative)	7.7	8.1	8.5	8.9	9.9

1 For a full list of definitions regarding land use and reclamation in Alberta's oil sands, visit [www.osip.alberta.ca](http://www.osip.alberta.ca).

2 Reflects a land status change from soils placed to temporary reclamation.

3 Includes land certified by the Alberta Government.

4 Numbers reflect the addition of all newly reclaimed areas as well as any reclamation losses due to re-disturbance that may occur. Syncrude promotes early reclamation of unused land when practical. This may result in future re-disturbance of areas that have been reclaimed in the past. Reclaimed areas may be selected as project sites, pipeline or power line corridors, or work may be necessary to maintain the integrity of the underlying structure. Note: Syncrude conducts quality assurance checks of reclamation data in support of the Alberta Government geospatial database submission requirement. This process involves survey and investigation to verify field conditions, interpretation of air photos and satellite imagery to adjust boundaries, and analysis of historic data and classification. This work can result in adjustments to previously reported information.