Norman Wells Wellbore Closure

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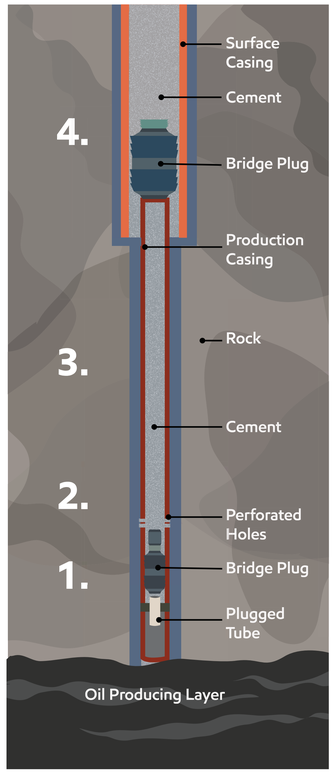
imperialoil.ca/company/operations/norman-wells or
contact **normanwellscommunity@esso.ca**

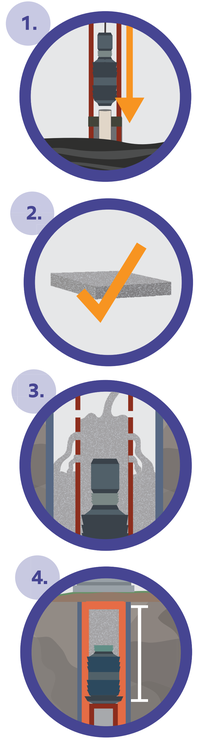
Imperial | Norman Wells

Downhole closure

Once wells are no longer going to be used, they are permanently sealed to protect the surrounding environment and communities. Closing a wellbore involves two main stages:

Downhole closure and **wellhead removal**





Steps for downhole closure

First, production equipment and tubing are removed from inside the well. The only parts left are those needed to keep the oil and gas contained during closure.

Then, the bridge plug (a metal and rubber sealing device) is secured inside. The plug is tested under pressure to verify the oil or gas is contained.

A tool is used to confirm quality of the cement placed during initial drilling of the well.

After the bridge plug is tested, a layer of cement is placed on top. Holes are made in the well casing at the top of this layer so that the cement can be squeezed out into the gap between the production casing and the surrounding rock. For wells outside of the scour zone, downhole closure is complete.

For wells within the scour zone, the production casing is cut and removed below the surface. Another bridge plug is installed and tested above this, which is capped with a layer of cement.

Once downhole closure is complete, the well is monitored to verify it sealed as intended prior to the wellhead removal.

Why is part of the well left in the ground?

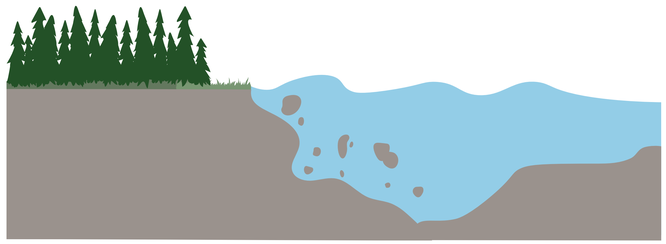
Closing a well involves sealing the different layers of rock for containment. This prevents fluids from coming to the surface and prevents surface water from flowing down into the well. Part of the well is left in place to support the surrounding earth and help seal everything in place. Attempting to remove the wellbore could make the ground unstable, potentially leading to sinkholes and leaks. This process meets stringent regulatory standards.

Wellhead removal

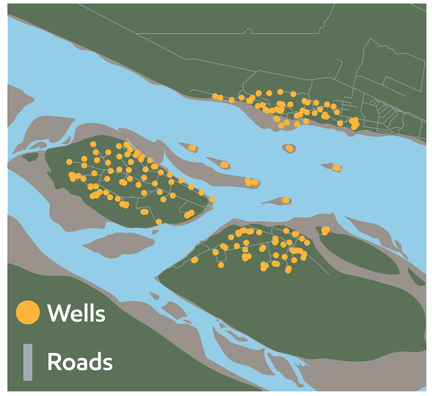
Wellhead removal involves removing the surface equipment and facilities associated with the well. This process is different for wellbores located within or outside of the **scour zone** of the river.

Scour zones

Includes any areas where water or ice from the river could erode the sediment over time.

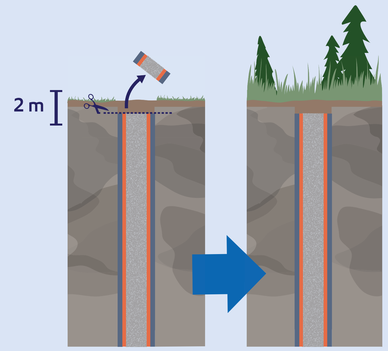


Where are the wells?



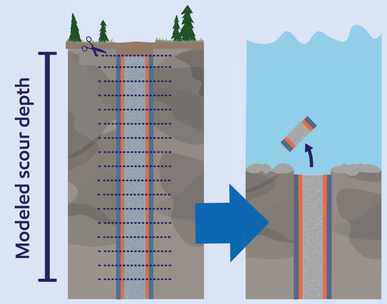
Outside the scour zone

Since minimal erosion occurs outside of the scour zone, the surface casing of these wells is cut and removed two meters below the surface. The remaining hole is filled with dirt and once vegetation grows, the site will not be recognizable as a closed well.



Inside the scour zone

Over time, the sediment around these wells may erode. To prevent a well casing from sticking up above the surface, the surface casings will be cut every two meters to the modeled scour depth below the surface. These cuts are designed to prevent exposed casing and future navigational hazards. The remaining hole is filled with dirt.



Even after wells are closed, they remain the responsibility of Imperial.

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