

## Muskrat Falls Emergency Repairs

Churchill River, Newfoundland and Labrador, Canada

Keller implemented fracture grouting and compaction grouting to reduce water seepage through the cofferdam to allow construction activities to continue.



### The project

A temporary earthen cofferdam was constructed in the Churchill River to permit the construction of the permanent dam. Excessive leakage through the cofferdam jeopardized the integrity of the earth structure making work downstream unfeasible. Leaks were determined to be coming from fractured rock between the dam and rock as well as within the dam itself.

## The challenge

Extreme cold weather conditions, common to Labrador in December through March, slowed down and endangered the operations. Pump rates had to be maintained at very slow and controlled rates to mitigate pressure on the dam which caused challenges with the quality of grout within the lines. A balance had to be reached to ensure pump rates were not so slow that grout quality deteriorated or washed away but not too aggressive to cause damage to the structure.

## The solution

Keller worked closely with the Owner's representatives to determine grout mix design and sequence activities to mitigate risks. Crew members were informed of the daily work plan and notified of key parameters so that each person was keenly aware of how their specific job influenced the outcome of the grouting program. Seepage through and below the dam was sufficiently reduced using high mobility and low mobility grouts to return the cofferdam to a safe condition and permit the dewatering activities to take place allowing for the construction of the North Dam to begin.

## Project facts

### Owner(s)

Nalcor Energy

### Keller business unit(s)

Keller

### Main contractor(s)

Barnard Pennecon Joint Venture

### Engineer(s)

SNC Lavalin

### Solutions

Groundwater control and dewatering

### Markets

Infrastructure  
Dams and levees  
Power

### Techniques

Low mobility (compaction) grouting  
Compensation (fracture) grouting

### Email address

[info@keller-na.com](mailto:info@keller-na.com)

### Phone number

1 (800) 456-6548