

"Where the Snow Goes"

Few things come with the same certainty that the changing of seasons brings. We know to expect the snow and every year, slowly, but with certainty, the snow falls, continues falling, and builds.

Amidst a tug of war between freezing and thawing, and temperatures that flirt with the negatives, our heaters go on in anticipation of colder nights, and are sometimes turned off again when they don't arrive as soon as we expect them. November will often bring with it Montreal's first snow. The first time you see it, it might look something like chunks of white fluff falling from the sky, floating down to the pavement and dissolving upon landing. As time goes on, we know that those pieces will stop dissolving. They'll stick to the ground, decrease our mobility and often eradicate our interest in being outside all together. The white layer will accumulate, dusting gardens, walkways and the cars lined up and down streets, eventually turning to grey slush full of gravel and salt that stains and crystallizes on even the most winterized of footwear, its splashback leaving traces up and down the backs of pant legs. Maybe it will melt a few times before it decides to stay, but even if it does, we know it's quite likely to come back because every year, slowly, but with certainty, the snow falls, continues falling, and builds.

Once it begins to accumulate, making it too slippery for assurance in the safety of mobility, city crews hop in small vehicles, driving up and down streets to spread salt and gravel on sidewalks, crushing bikes, forgotten toys and whatever else stands in their way. Montreal is the only city on earth with its population density that manages as much snow as it does. Every year, the city uses 150,000 tonnes of salt, sand and rocks, stored in 30 garages across the city. In 2016 that mixture turned the streets blue because of the liquid magnesium chloride that was used to moisten it. In 2019, all of that salt travelled to us from Chile because the workers of the city's usual Ontario based supplier were on strike over labour disputes.

Traditional rock salt poses serious risks to soil, plants, animals and waterways, and also has a habit of corroding infrastructure and damaging roadways (something you might already be familiar with from Montreal's reputation for cracked cement, potholes, and the occasional sinkhole). Many cities are working to move away from rock salt because of its environmental impacts. Some are getting quite experimental too. Saskatoon followed Switzerland's lead by testing how wood chips improve traction on roads. In some cities in the United States, cheese brine, pickle brine and potato juice have been tested as de-icers. Edmonton has used anti-icing brine spray on the roads before plowing. They hoped it would reduce the environmental impact of winter clearing strategies, improve safety by ridding streets of snow and ice more quickly, and save money. Which it did—\$4 million in its pilot year in fact. Calgary tried out sugar beet molasses and salt brine as a de-icing agent, they really liked it too, and quadrupled their beet brine order from 30,000 litres in the 2017-2018 season to 120,000 litres for the 2018-2019 season. Montreal is less into the beet approach though, stating that it clogs equipment and stains clothing and carpets, but Calgary hasn't had that same problem.

Once salt, gravel or whatever variety of brines are no longer enough, which the city designates as 2.5 cm of snow cover, the plowing will begin. Fluorescent orange high visibility signs warn of the snow's imminent removal, car owners drive around, and around, and around their neighbourhoods trying to find new parking spots before the familiar screech of the tow trucks' sirens ring throughout the night signaling that the city's contracted snow removal services and their weighted vehicles will soon arrive. If any one car stands in their way, it will be gone within moments. Taken...elsewhere with only vague instructions of where elsewhere is, leaving their owners to wander the streets until they've spotted it,

cleaned it off, and moved it yet again. The homes that Montreal's trademark spiral staircases lead up to gently shake as snow blowers siphon the snow from the sidewalks and dump it into the back of their trucks to be taken away, moved from sight. And where to next? When the backs of eighteen wheeler after eighteen wheeler brim to the top and above with piles of snow stained with the city's exhaust from idling cars, containing greased takeout wrappers, discarded gum, lost keys, the fallen mittens of children and all that residual sidewalk salt, where does it go?

Along the edges of the island known as Montreal, there are 29 dump sites waiting to receive piles of snow that the communities occupying the island can no longer navigate. Some of those dump sites are on land, while others are large holes in the ground that feed into the city's sewer system, where 30% of the city's collected snowfall is treated and released into the Saint-Lawrence river. Before 1990, much of that snow was dumped directly into the river, a practice stopped upon understanding the ecological damage done by the salt and gravel that comes along with the snow melt.

Each snow cleanup costs from \$15 million to \$20 million dollars, totaling \$165 million annually. Every year, 3,000 workers come together to clear 12 million cubic metres of snow from 10,000 kilometres of streets and sidewalks. Snowfalls can take over a week to clear, and as the climate changes, and weather patterns intensify, that timeline will change as well.

Workers drive their fleet of snow filled dump trucks to Anjou, Lachine, LaSalle, Pierrefonds-Roxboro, Rivière-des-Prairies–Pointe-aux-Trembles, Saint-Laurent, and Villeray–Saint-Michel–Parc-Extension. They line up in rows, idling and emitting exhaust in the process, waiting to enter dumps sites, where the snow piles can reach up to 10 storeys high and over 4 football fields long.

The largest of Montreal's snow dumps lives in the Saint Michel quarry, which occupies 17% of the Saint-Michel neighbourhood and represents 40% of the total capacity of the city's snow disposal sites. The quarry is owned by the city, and can be found on Jarry, just between 17th avenue and avenue Leonard-de Vinci. Each year, the Saint-Michel quarry is filled with around 4.8 million cubic metres of greyed and browned trash-filled snow collected from the city's streets. Trees surround the area, allowing the pile to remain discrete, shielded from public view. But despite this careful shield that has been erected around it, the effects of its presence are felt widely, and are responsible for a number of the neighbourhood's problems. The snow dump is 1.8 kilometers long and almost half a kilometer wide, essentially cutting the neighbourhood in two which causes access and mobility issues, especially if you're on the East side of it, as much of the community's resources are located West of the pile. The trucks themselves pass often, sometimes as many as 330 per hour at the peak of operations. They create constant noise, worsen already difficult traffic and pose physical threats to pedestrians. As they idle, awaiting their turn to dump the snow they've collected, they emit fumes that soil the air and the land with dust and dirt.

Saint-Michel quarry has always posed issues for the neighbourhood, even back when it was known as Francon quarry where they once did mineral extraction, an operation that has been inactive since 1981. But when those natural resources were being extracted from it, they used dynamite which could be heard and felt exploding twice a day at minimum, cracking the foundations of the homes in the surrounding area, and emitting dust and smoke to be seen and breathed throughout the streets of Saint-Michel. Today 40% of the neighbourhood's residents live below the poverty line, and perhaps have more pressing things to worry over and solve than the snow pile that physically divides their neighbourhood.

What happens when these immense snow piles, soiled by the city's life and garbage, begin to melt? Those particles enter into the air, leaving the communities surrounding them to deal with the pollutants that have been trapped inside the frozen masses. And some years, they don't ever fully melt. Some years, those snow piles stay all summer long, and all summer long those communities experience the particulate pollution and the toxins they release into the air.

What could we do with that snow? Most places push it to the side of the road, but there's always other options. Some people wish for the snow to be placed strategically around town so that winter activities like skiing or pulling toboggans could be more commonly practiced. And in Bibai, Japan they store snow to cool data centres through the summer months. In Oslo, the airport has a snow-based cooling system that reduces their energy costs. And Sweden, Norway, and China, well they use leftover snow to sustainably cool hospitals.

What could we do with that land? Especially when many of these snow dump sites are located in neighbourhoods with some of the city's highest population densities, and some of the city's lowest average incomes. What needs of the neighbourhoods and their inhabitants could be better met by making better use of that land? Some of Saint-Michel's community members imagine social and community housing units, urban farmland, public markets, green spaces, meeting spaces, and footbridges that would provide direct paths across the area that the quarry currently occupies. This vision is neither unreasonable or unprecedented. In Montreal, a former quarry turned landfill has become a public space, now known as Frédéric-Back Park. Where garbage was once brought is now covered in greenery, providing areas for walking, biking, tobogganing, bird watching, and more generally areas to convene, where nature has been brought back into the urban landscape.

We need snow, it helps to regulate the temperature of the Earth's surface, and once melted, that water fills rivers and reservoirs. But when that snow is polluted by sodium chloride, by oil and grease and toxic chemicals from cars, by pesticides and nutrients from lawns and gardens, by thermal pollution, by metal and debris and by all sorts of other toxins and pollutants, they go where the snow goes. Down sewer drains, into the Saint-Lawrence river and other surrounding lakes and bodies of water, sometimes even seeping into groundwater supplies, posing dangers to fish, wildlife and vegetation. As our winters change, so do our behaviours and our needs, so do our methods for handling and caring for the environments that we live in. But there's always other options.

When parts of our natural systems are treated as inconveniences, as nuisances and burdens, we alienate ourselves from the reality of our needs for them, and our interdependence with them.