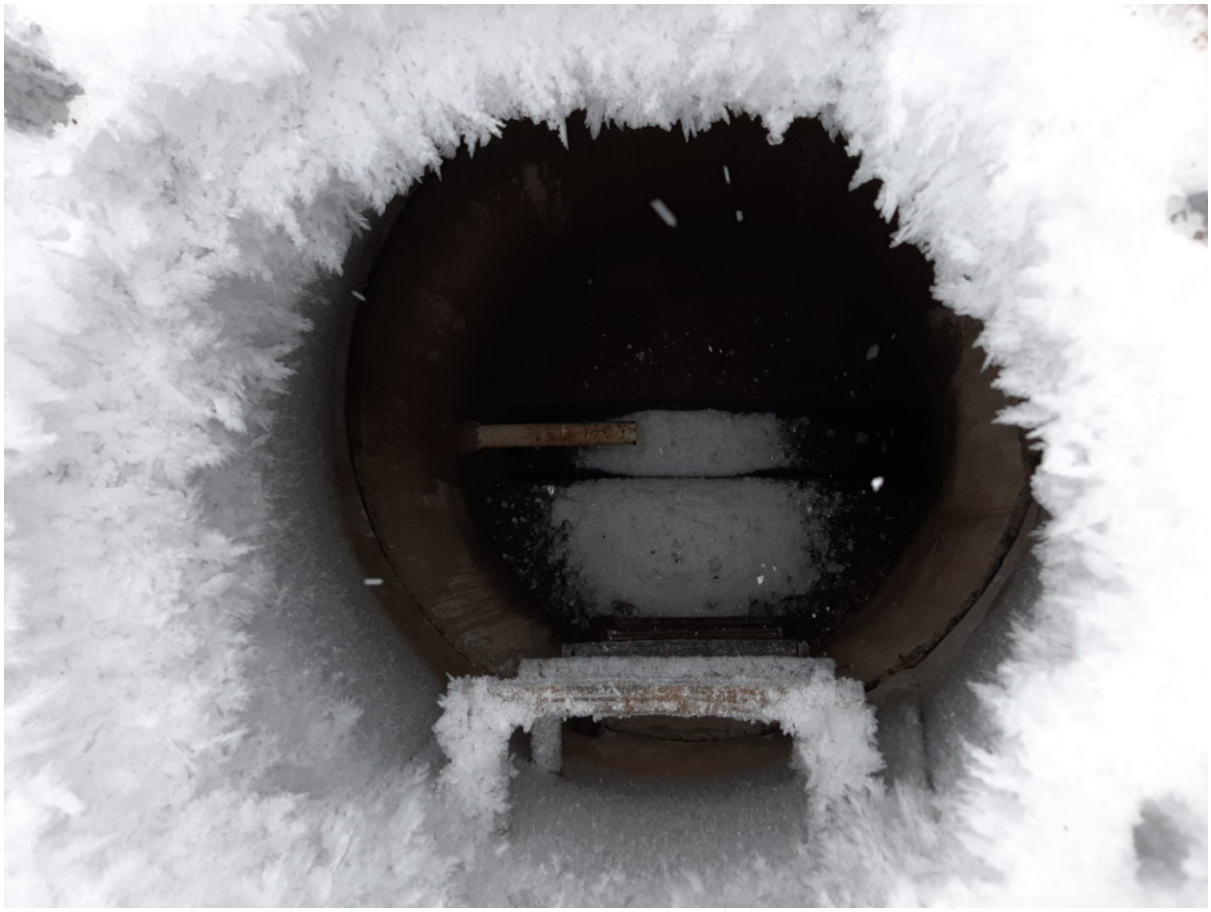
Winter has settled in!



In the Moose River Valley we experience what some call seasonally frozen ground. This is when the ground freezes in the winter and thaws in the summer. Many locals refer to this as frost. Traditionally frost occurs when a thin layer of ice forms on a solid surface as a result of water vapor freezing to the frozen surface of a solid object. The picture above is a great example of this. This is the view looking down into one of the 166 manholes the Jackman Utility District maintains. This picture was taken on February 3rd, 2021. The water vapor traveling through the sewer main freezes as it comes into contact with the manhole walls, stairs and cover. This results in a phase change from water vapor to ice as it reaches the freezing point.

In comparison the "frost" we refer to in the ground is actually ground freeze. The water between rocks and soil and the water inside rocks will freeze. This frozen water is called pure ice. Ground freeze is when the water in the ground becomes ice. As the temperatures stay below freezing the frozen ground line continues to go deeper freezing the water in the ground as it comes into contact with it.

How deep it goes depends on time, temperature and insulation. Snow cover is a great insulator. Snow cover early in the winter will insulate the ground preventing the frozen ground from continuing to go deeper at a fast rate. Lack of snow cover early will allow the frozen ground to go deeper at a faster rate. Many people say the spring drives the frost deeper into the ground, but the frozen ground is already traveling deeper into the ground as it has done all winter. What actually happens in the spring is the surface of the ground is warmed and melts. As temperatures warm to above freezing the frozen ground close to the surface begins to melt and does not refreeze at night because temperatures do not go below freezing. As this continues day after day the warmer melting top layer actually catches up with the deeper layer of frozen ground continuing to travel deeper. This happens until the warm melting soil catches the frozen layer. The spring is not driving the frozen ground deeper; it is catching up with it.