

# Local Environmental Impacts of Deicers in the Sagebrush Ecosystem

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## Introduction

- The impact of deicers used at Truckee Meadow Community College's (TMCC) Dandini Campus on the surrounding sagebrush habitat are unknown.
- TMCC facilities are exploring the impacts of switching from crystalized deicers to brine to minimize environmental impacts and improve TMCC's sustainability efforts.
- Examining rates of deicing salt accumulation and leaching in urban soils is important for understanding the distribution, movement, and effects of salt in the environment and subsequent impacts upon living organisms.

## Overview

This study directly impacts sustainable practices at TMCC, where deicers and their impact to sagebrush habitat in high elevation, cold deserts climates with minimal precipitation, is unknown. This semester was dedicated to research, methodology related to soil, and vegetation analysis. Soil samples from basin/variable and control site were analyzed for baseline data



## Results

NASA - Spring 2022 Deicer Research			
Control		Basin	
Location	39.5723, -119.7991	Location	39.5743, -119.7927
Altitude	1528m	Altitude	1476m
pH	7.08	pH	7.66
Total Dissolved Solids	475 PPM	Total Dissolved Solids	27.7 PPM
Conductivity	0.667 mS	Conductivity	0.04 mS
Salinity	0.33 PPT	Salinity	0.02 PPT

Source: Soil Analysis Data Tracking Log 2022

## Conclusion

**2021-2022 Winter Season** - Given that it was a mild winter with minimal precipitation (roughly 13.4 inches of snow recorded), use of deicers on campus was infrequent. Annual precipitation average from 2016 – 2022 is roughly 20.9 inches for this area. This semester focus was on establishing baseline data relative to the soil. Vegetative analysis methodology for tissue/salt analysis still to be determined

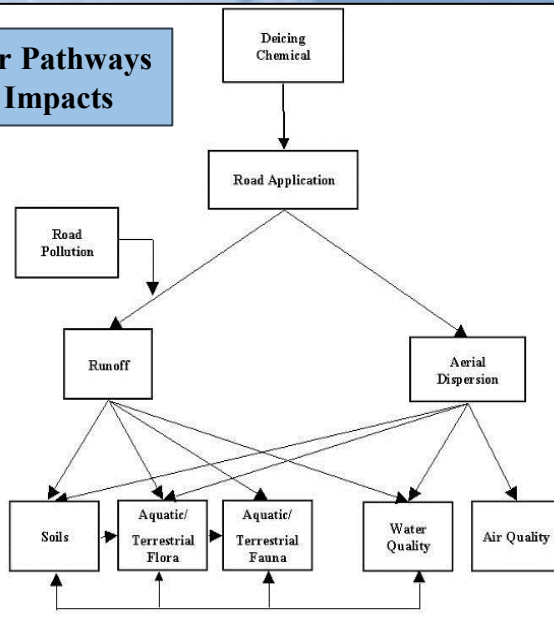
## Acknowledgments

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## Resources

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## Deicer Pathways & Impacts



Source: Report No. CDOT-DTD-R-2001-15 (page 39)  
<https://www.codot.gov/programs/research/pdfs/2001/deicers.pdf>

## Study Site

Catch basin at NE boundary of the Dandini campus (39.5742° N, -119.7928° W), which is the primary drainage point for most surface runoff and thus where we expect the highest deicer salt accumulation.

## Methods

**Composition of deicer's utilized at Dandini TMCC Campus:**  
*Road Runner Ice Melt:* Sodium Chloride, Calcium Chloride, and Magnesium Chloride. Melting Point at -15°F; &  
*Purple Heat Ice Melter:* Magnesium Chloride (6%), Sodium Chloride (92%), Calcium Chloride (1%), Potassium (1%) at -15°F.

- Soil analysis was conducted to determine levels of inorganic and organic compounds in the soil that are direct and indirect indicators of increased deicer salts
- Vegetation analysis to be determined.