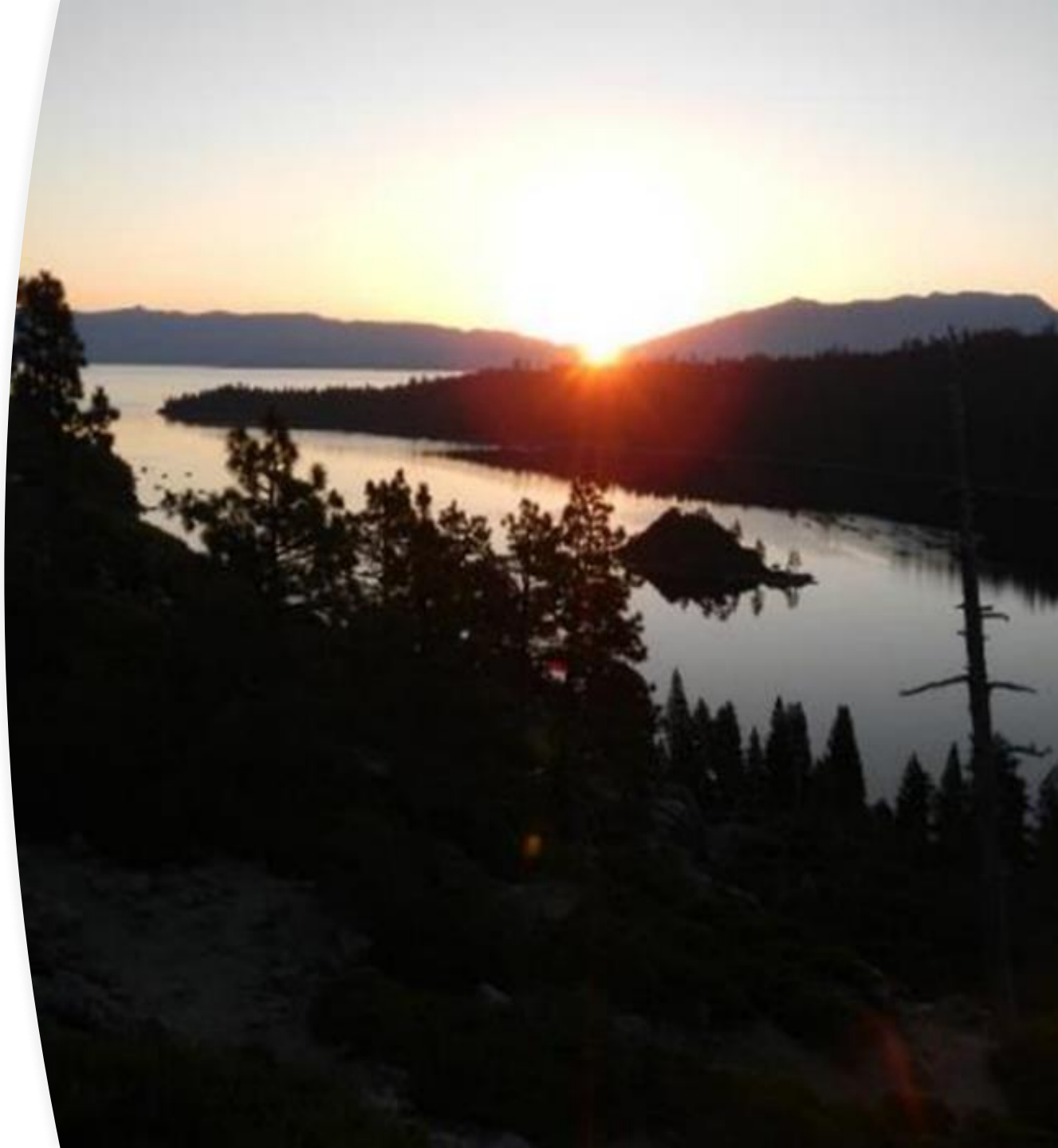
Tahoe Science Advisory Council

Council Overview and Purpose

- Link science with management needs
- Identify emerging issues and scientific advances
- Provide a collaborative science perspective
- Maintain a venue for science/policy dialogue



Council membership

- University of California, Davis
- University of California system
- University of Nevada, Reno
- Desert Research Institute
- US Geological Survey
- US Forest Service, Pacific Southwest Research Station

- Nevada DCNR
- California Natural Resources Agency

Plastic pollution in the Tahoe Basin

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What are plastics?

Synthetic solid material made up of polymers

What are macroplastics?

Plastic particles bigger than 5 mm

What are microplastics?

Plastic particles less than 5 mm but bigger than 1 μm

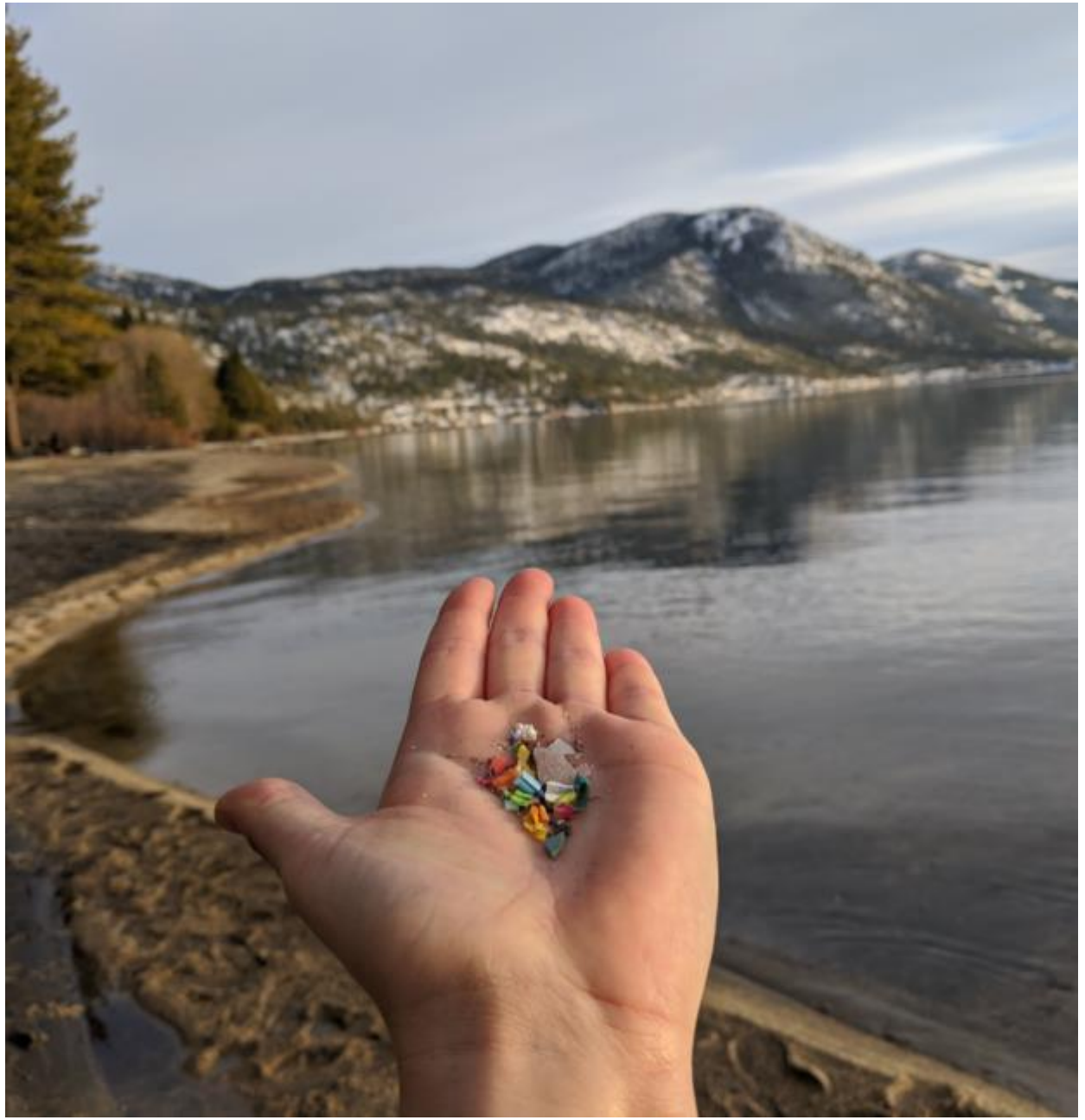


Photo Credit: Amanda Heidt

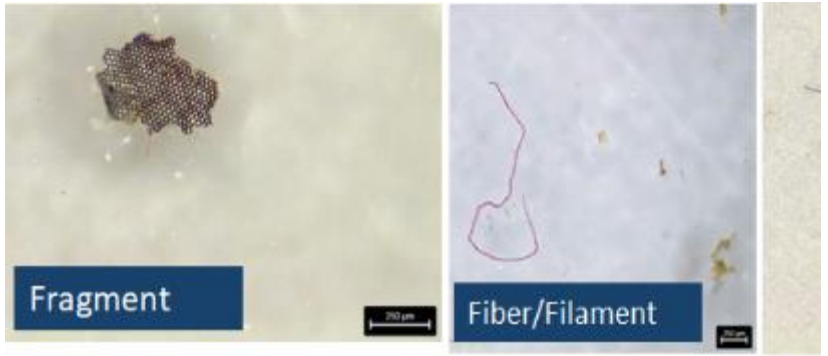
Macro and microplastics = a lot to study

Abreu and Pedrotti, 2019

Variation in size

Macro and microplastics = a lot to study

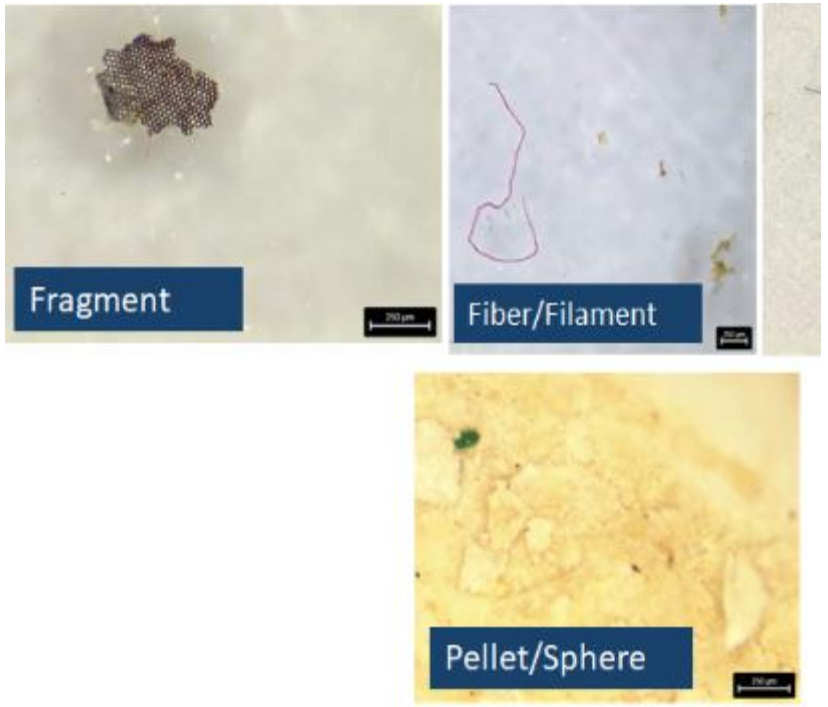
Variation in size



Variation in shape and color

Macro and microplastics = a lot to study

Variation in size

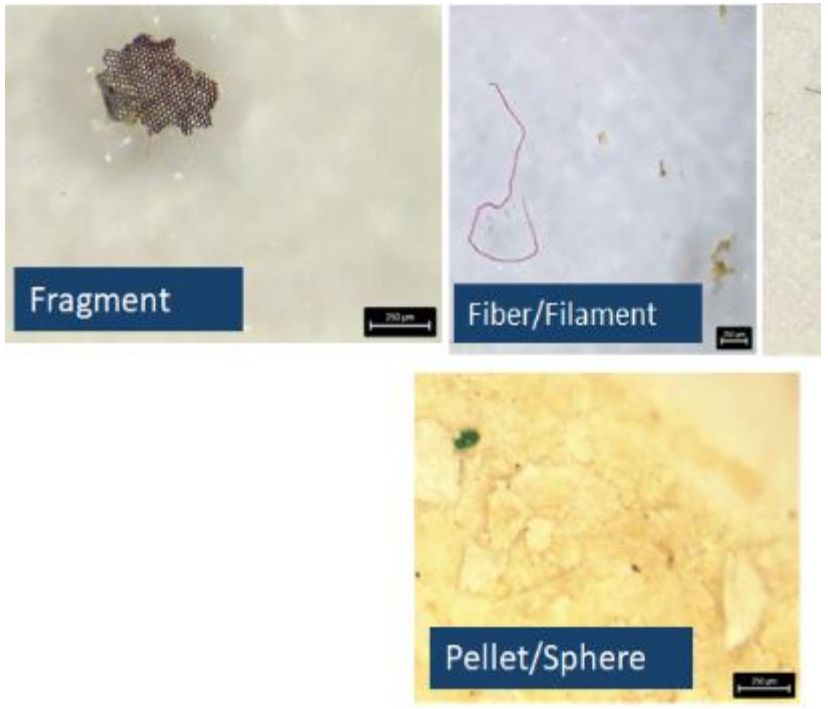


Variation in shape and color

Variation in chemical make up

Macro and microplastics = a lot to study

Variation in size



Variation in shape and color

Variation in chemical make up

These characteristics play important roles in our research on plastic pollution

Why study plastics?

Macroplastics can break down to microplastics or nanoplastics

PLASTIC WASTE

PLASTIC BREAKDOWN

MACROPLASTICS
>5mm

MICROPLASTICS
5mm- 1µm

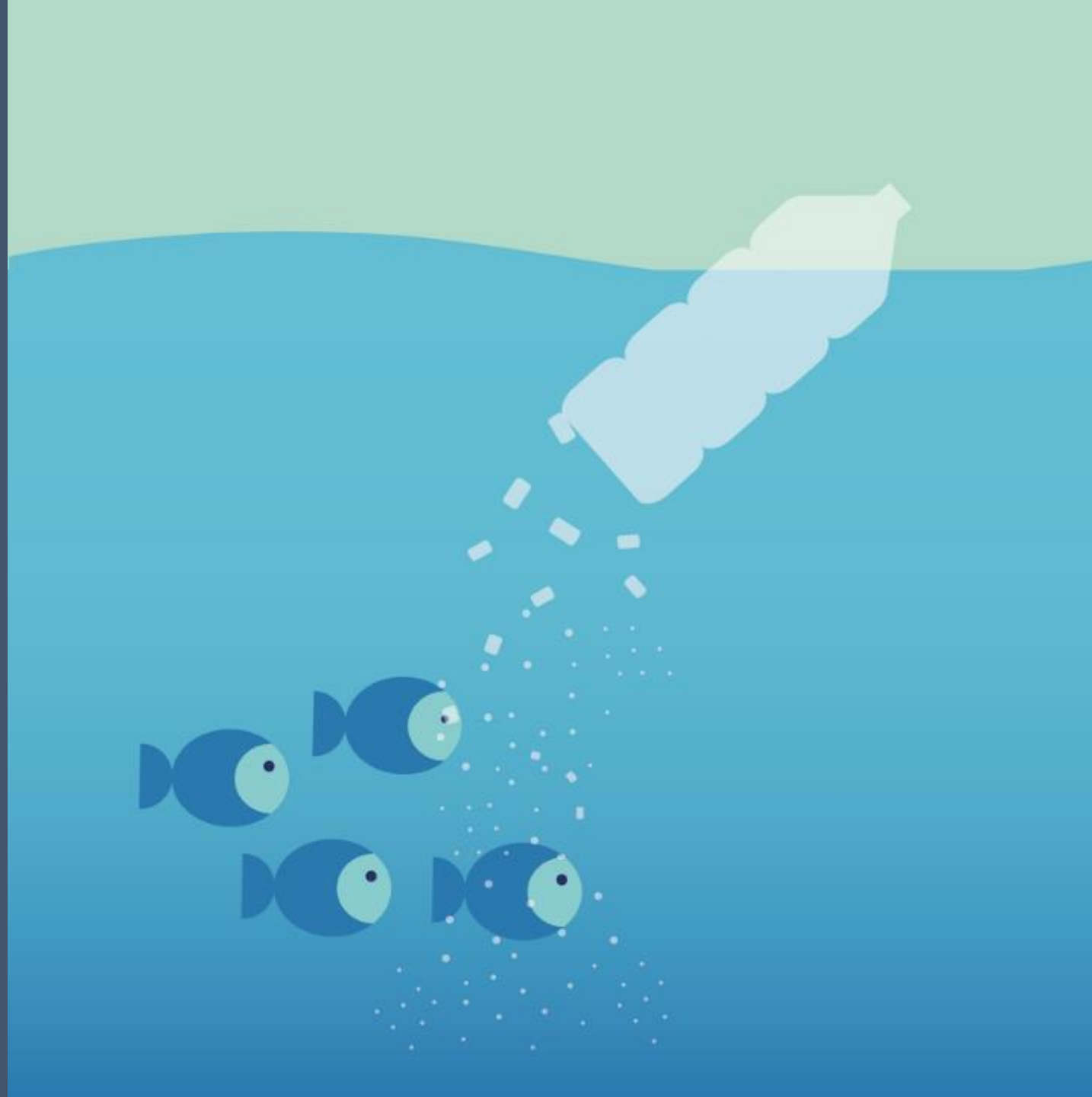
NANOPLASTICS
< 1µm

www.iucn.org/

Why study plastics?

Macroplastics can break down to microplastics

Can sorb or release other chemicals

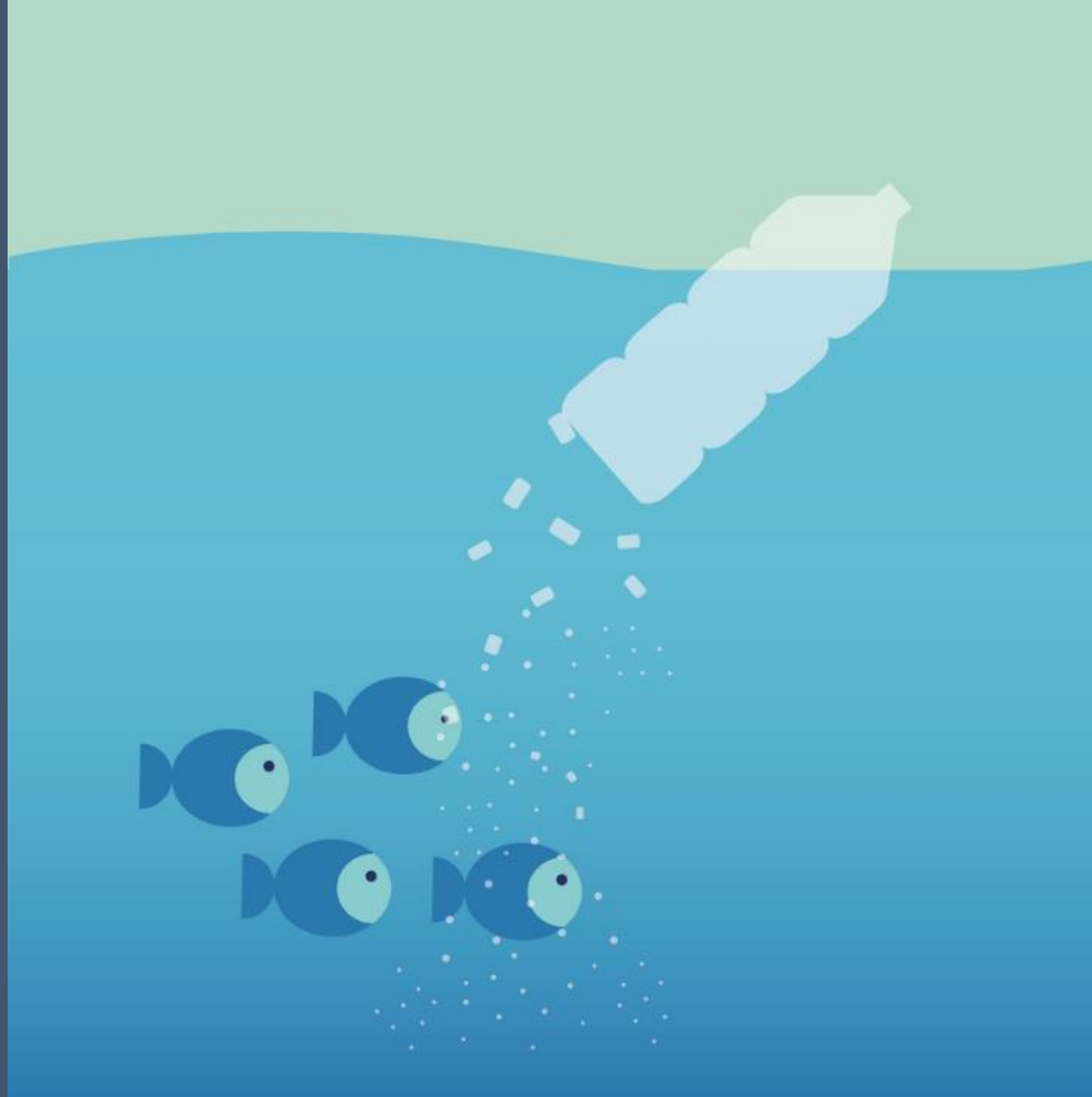


Why study plastics?

Macroplastics can break down to microplastics

Can sorb or release other chemicals

Can be consumed by animals or animals can be ensnared

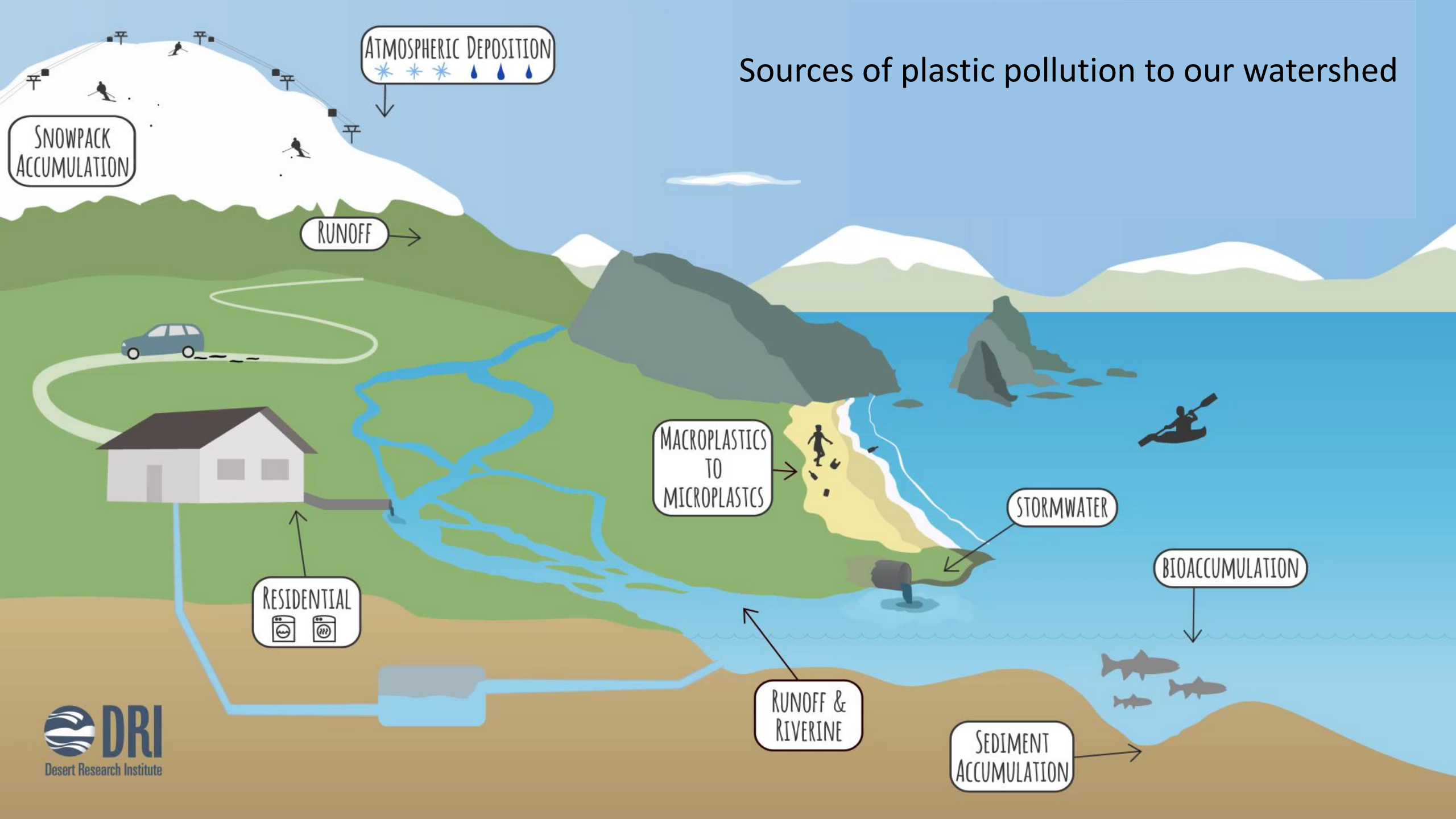


Water

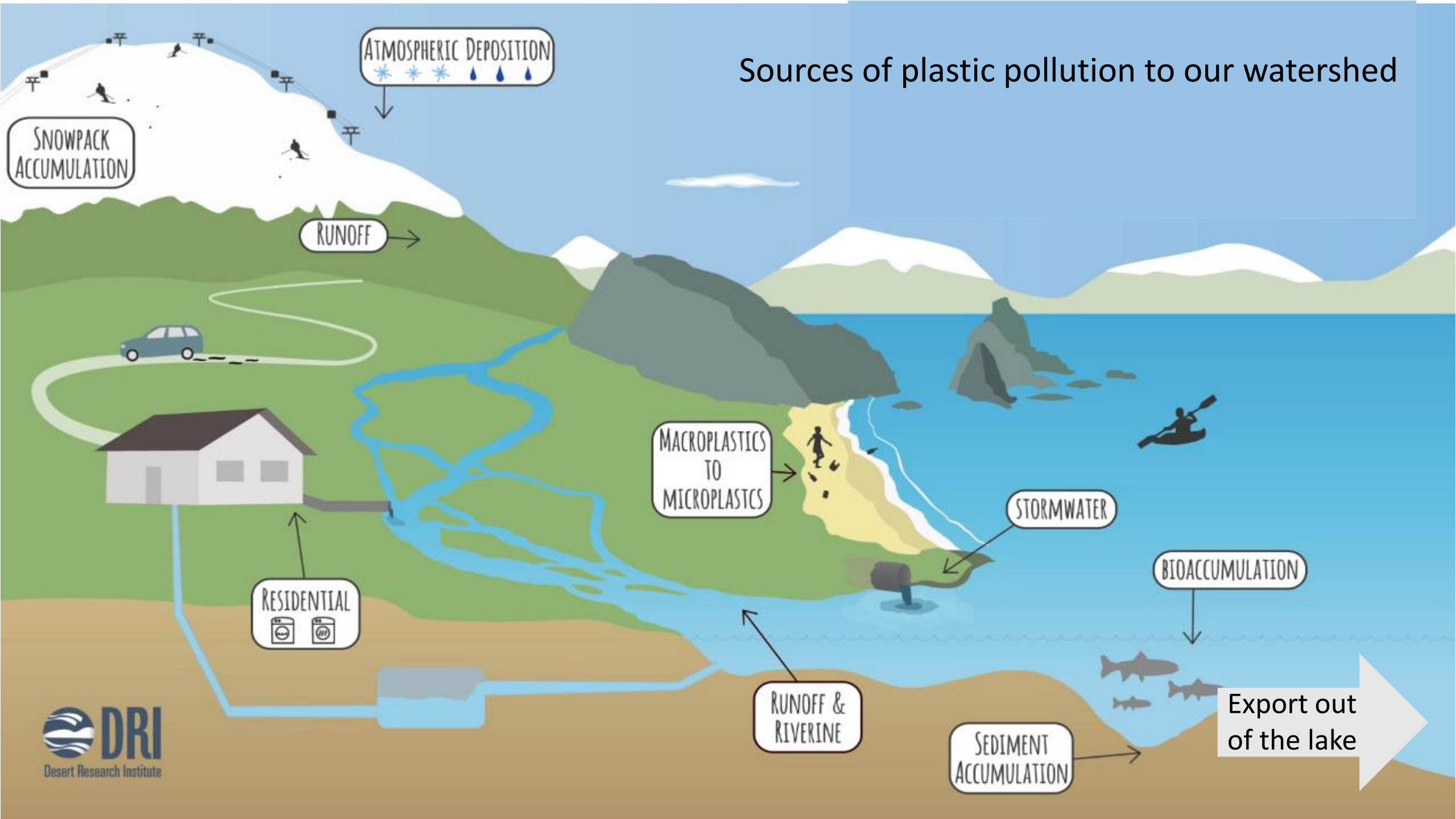
Snow

Citizen Science

Sources of plastic pollution to our watershed



Sources of plastic pollution to our watershed



How to address the plastic pollution issue at Lake Tahoe?

- Tahoe Science Advisory Council microplastics work group
  - Bringing together scientists, managers, and stakeholders to understand what is known, unknown, and what the future may hold

Generated with AI

Why this approach?

- Limited research, great uncertainty.
  - Avoid decision paralysis
- Create a more informed group of stakeholders.
  - Elevate knowledge in the Basin
- Consider management and science priorities to guide future microplastic efforts.
  - Driving action through the stakeholder process

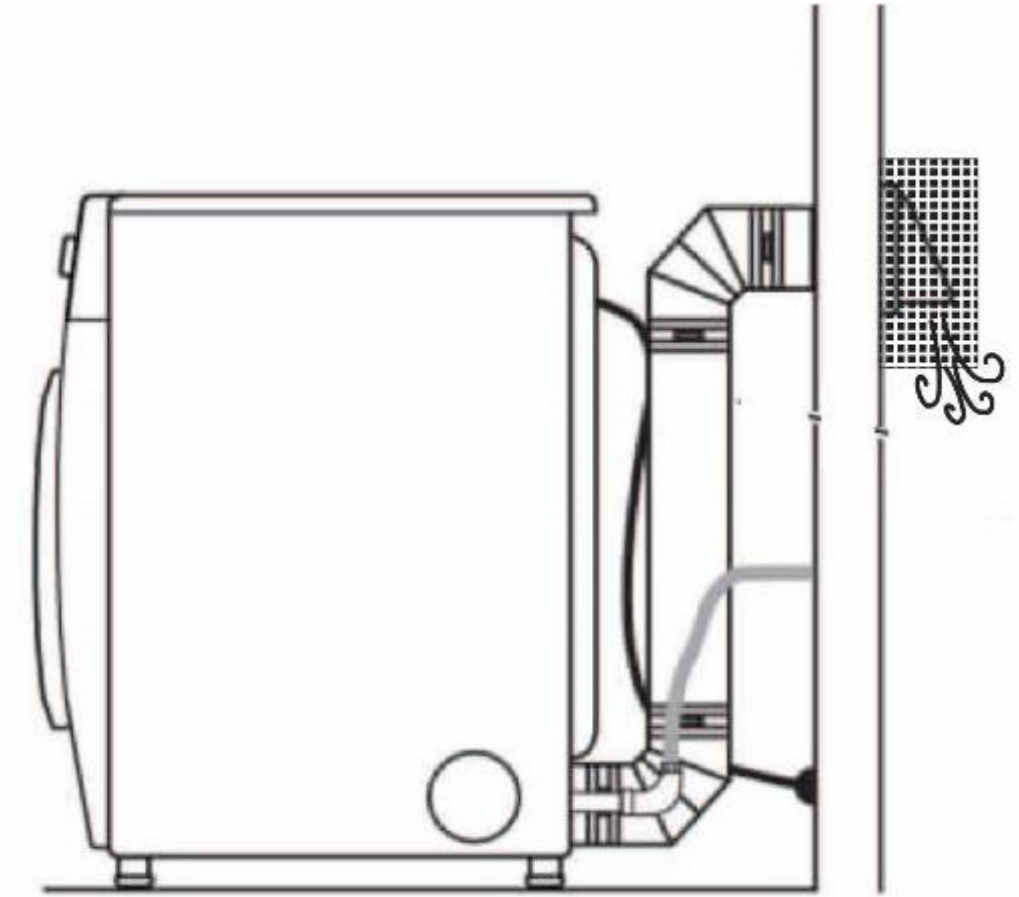
What does the white paper include?

- Current research (peer reviewed and otherwise)
- Existing monitoring efforts
- Processes and impacts
- Suspected sources
- Control methods
- Next steps

https://www.onebridge.tech/partner/denodo-data-virtualization

What are the potential sources?

- Dryers
- Car tires
- Roadways/asphalt
- Construction materials
- Erosion control products
- Litter



What are the control options?

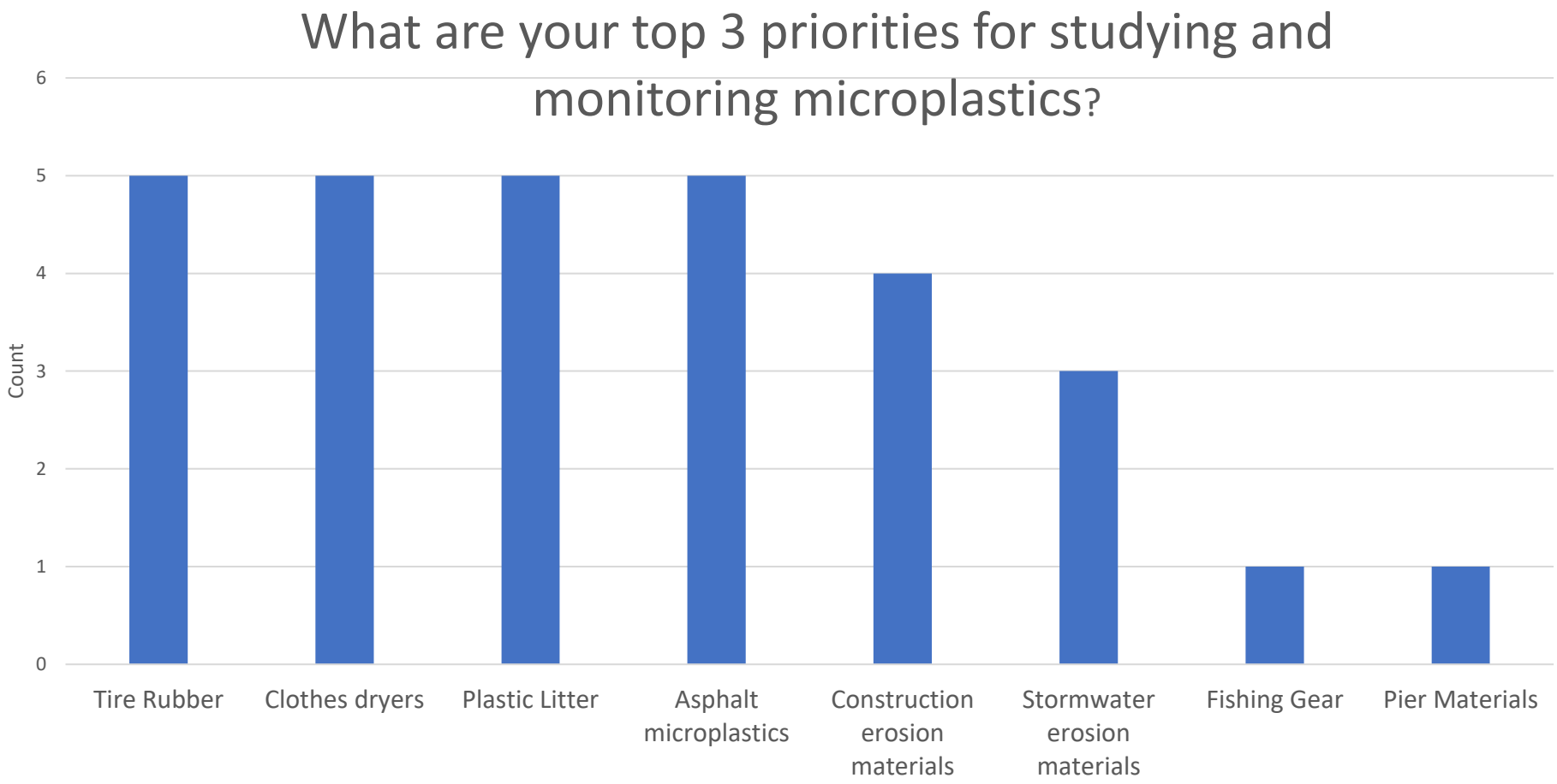
Local solutions

- Plastic reduction
- Litter control

Regional solutions

- California regulations
- US EPA program
- UN resolution

Stakeholder survey results



Where do we go from here?

Science

- Monitor to understand sources
- Assess ecological impacts

Management

- Reduce plastic consumption
- Focus on known harmful plastics
  - Ex. tires produce a by-product that is harmful to some fish.

Monitoring microplastics at Commons Beach

DRI

Thank you!

www.dri.edu/labs/microplastics/

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