



# SUSTAINABILITY: MOUNTIES, MARSHES & MAKING THE FUTURE

Teacher's Guide

## Length

### 1 hour 30 minutes

Introduction	20 minutes
Wetlands Journaling	40 minutes
Decomposing Activity	10 minutes
Web of Life Activity	15 minutes
Conclusion	5 minutes

## Curriculum Connections

### Science

Grade Five Topic E: Wetland Ecosystem

### Social Studies

Grade Five 5.1.1 / 5.2.1 / 5.2.2 / 5.2.7

## LEARNING OBJECTIVES

1. Students will gain a better understanding of the history of this area from 3,000 years ago until shortly after the NWMP left Calgary.
2. Students will be able to distinguish between Calgary's early communities and the different types of impacts these communities might have had on the environment.
3. Students will build on their knowledge of wetlands in order to complete a journaling activity at Fort Calgary's wetlands.
4. Students begin to understand the meaning of sustainability and how humans are vital part of our ecosystem.

## PROGRAM OVERVIEW

At the beginning of the program students will brainstorm what they think sustainability might mean. Then they will look at a historic map in order to chart and discuss historic waste and the history of the area. With the map they will talk about some of the changes that have taken place on the prairies and in this area and the impact it has had on our environment. This discussion will lead into East Village and its utilization of a wetland in order to emphasize how humans are a vital part of the environments ecosystem.

After the introduction, there will be a brief discussion about the different components of a wetland and then the students will be brought to the Fort Calgary wetlands. In smaller groups the students will explore the wetlands species by completing a journaling activity.

With any time remaining after the wetlands visit, students will partake in two more activities that will illustrate how humans are a vital part of our earth's ecosystem.

## PREPARING YOUR CLASS

1. Review vocabulary words to prepare students for their visit.
2. Discuss the definition of First Nations and have the students understand that there are various, separate, and unique First Nations communities living across Canada. You can do so if you compare and contrast the Inuit community with the First Nations/Blackfoot community who lived on the prairies where Calgary is today. Talk about how the geography around these two groups informs the way that they live such as natural resources available, food source, and climate. Discuss with them how are they similar and how they differ.
3. Discuss the concept of settling and how the settlers had to make a difficult journey to come to the prairies. Discover where the settlers would have come from originally (France, Britain, Ukraine, etc.) and why they would come all the way to Calgary.
4. Discuss who the NWMP were and what their role on the prairies was. Discuss why they came to the North West Territories and that it was the NWMP that built and help to establish this area for the settlers.
5. Discuss concepts of sustainability. A good place to start could be “Reduce, Reuse, and Recycle.”

## VOCABULARY

**Aboriginal Peoples** – the descendants of the original inhabitants of North America. First Nations, Inuit, and Métis peoples have unique heritages, languages, cultural practices and spiritual beliefs

**Algae** – a food source for invertebrates and small fish in wetlands

**Aquatic Zone** – the area below the high water mark. In this area the water levels change both seasonally and annually. Within this zone, three distinctive types of plants grow – emergent, submergent, and floating

**Archaeology** – the science concerned with the recovery, analysis, description and explanation of the remains of past human cultures

**Artifact** – any object manufactured, modified or deliberately shaped by humans. Includes tools, weapons, ceremonial items, art objects, garbage, clothing and all food remains

**Blackfoot Confederacy** – a First Nations alliance that includes the Kainai (Blood), the Siksika (Blackfoot), and the Piikani (Peigan) tribes

**Bog** – a wetland that receives most of its water supply from rainfall and has no drainage of water making them very acidic with little oxygen. Very few organisms survive in them. They are composed mostly of sphagnum moss and peat

**Bow and Elbow Rivers** – The two rivers that flow from the mountains and through Calgary. The Elbow river flows into the Bow river and their confluence is at the site of Fort Calgary

**Buffalo/Bison** – the North American species, better known as buffalo, has short, black, curved horns; a beard, shoulder hump, short tail; and long, shaggy, and woolly hair on the shoulders.

**Carbon cycle** – the movement of carbon through the earth's sphere. Wetlands contain a large portion of the earth's carbon pool. Therefore, they can help slow down climate change

**Decompose** – to break down; to rot. Organic materials will decompose if not preserved in some way

**Emergent Plants** – vegetation with roots in water, but grows, well above the surface, and most often close to the water's edge or in shallower areas. Examples – Reed grass, common cattail, bulrush, march marigold, small-flowered buttercup, and giant bur-reed

**Emergent Zone** – the water is above ground. Plants are rooted in the bottom and have their stems and leaves above water level

## VOCABULARY (CONT.)

**Fen** – a wetland that is in the transitory stage to becoming a bog. Unlike bogs, fens have a source of water such as a stream, lake or groundwater that feed into them. This water provides more nutrients to the fen and as a result, more plants such as sedges grow

**First Nations** – refers to the various governments of the First Nations peoples of Canada. There are over 630 First Nations across Canada with 46 in Alberta

**Floating Plants** – plants whose leaves float at the surface and roots hang down. Often, they have pockets of air that help them to stay afloat, such as bladderwort

**Floating Zone** – found on the surface of the water where most plants float

**Fort Calgary** – the birthplace of the city of Calgary, and the original location of the North West Mounted Police fort built at the confluence of the Bow and Elbow Rivers in 1875

**Freshwater Wetlands** – usually established in the spring when water levels are highest because of melting snow and flooding. Summer droughts, evaporation and infiltration will gradually cause the areas to dry up, sometimes completely

**Inorganic** – objects made of mineral-based materials - e.g. metal tools, stone arrowheads. These things will not decompose easily

**Marsh** – the wet areas of wetlands filled with a variety of grasses and rushes. There are two basic types of marshes: freshwater and saltwater

**North West Mounted Police** – a police force established in 1873 to maintain colonial law and order in the newly acquired North West Territories

**Organic** – a word used to describe objects made of plant or animal material - e.g. furs, woven baskets made of grass. These things usually decompose quickly

**Riparian Zone** – the lush green areas surrounding a body of water that include smaller plants and grasses as well as larger trees and shrubs. Riparian areas filter water; slow the flow of water; strengthen banks and decrease erosion; store water; and provide habitat

**Saltwater Wetlands** – these are caused by ocean tides. Some are flooded and dry up twice each day, others are flooded only by particularly high tides that occur at less regular intervals

**Settlers** – a person who has moved to an area and established a permanent residence there

**Submergent Zone** – found below the floating zone, the plants and under water and their roots are anchored in the bottom

**Submergent Plants** – plants that are completely underwater. Their stems are floppy because the water holds them up. Always underwater, they change positions with the water level.

Examples – Coontail, Richardson pondweed, whitestem pondweed

**Surface Runoff** – when precipitation exceeds infiltration, the soil becomes saturated and water moves down slope. The runoff enters streams, rivers, etc. replenishing reservoirs

**Sustainability** – able use resources without being completely used up or destroyed, which involve using methods that do not completely use up or destroy natural resources

**Swamp** – a wetland that is periodically or permanently covered with water. Swamps usually are forested with trees and shrubs

**Upland Zone** – the driest areas furthers from the wetland, occupied by trees, shrubs, and grasses. The uplands provide vital food and shelter for wetlands animals

**Wetlands** – the transition between dry areas and water areas. They can be covered with water for a part of the day or part of the year. There are four major types of wetlands: swamps, marshes, bogs and fens