Science 8 Water Systems on Earth Unit

Big Idea: **We can’t live without water**

Outcome:

WS8.3 Analyze natural factors and human practices that affect productivity and species distribution in marine and fresh water environments.

Understandings:

* First Nations and Métis people valued, depended upon and cared for aquatic wildlife and plants.
* Biodiversity is an indicator of health in marine and freshwater ecosystems.
* Many factors affect productivity and species distribution in aquatic environments.
* Many factors indicate the quality of water.
* Many individuals contribute to the sustainability of water.
* Water is so important; careers have been built on it.
* Examining one species in an ecosystem can inform us about an entire ecosystem.
* Examining data can help us identify patterns and trends.
* Water availability and quality is impacted by the ecosystems within and around it and vice versa.

Essential questions:

1. How do First Nations and Métis value, depend upon and care for aquatic life?
2. How is biodiversity an indicator of health in marine and freshwater ecosystems?
3. What factors affect productivity and species distribution in aquatic environments?
4. What factors indicate the quality of water?
5. How do individuals contribute to the sustainability of water?
6. Why is water so important?
7. What counts as water?
8. How long can we live without water?
9. What can we learn about ecosystems from a single species?
10. What does data tell us?
11. How are water and ecosystems in and around water connected?

Students need to know: (essential questions they are related to are in brackets)

* How First Nations and Métis people valued, depended upon and cared for wildlife. (1)
* Vocabulary: aquatic, marine, fresh, distribution, productivity, ecosystem, organism, intertidal, estuary, saline, pollutant, viability, nitrate, phosphate, macro invertebrate, variable, stewardship
* Water ecosystems – wetlands, lakes, rivers, salt marshes, estuary, ocean, intertidal zone
* Factors that affect productivity and distribution – temperature, turbidity, sunlight, nutrients, salinity, water depth, currents, over fishing, upwelling, pollutants

And be able to: (essential questions they are related to are in brackets)

* Examine ways First Nations and Métis people valued, depended upon & cared for aquatic wildlife and plants. (1)
* Identify diverse examples of organisms and factors that affect productivity in marine and freshwater ecosystems. (2, 3)
* Measure and interpret factors that provide indicators of water quality. (4)
* Describe examples of technologies used to assess water quality. (4)
* Provide examples of how people contribute to the sustainable stewardship of water. (5)
* Research a student-selected aquatic species – link to ecosystem.
* Interpret patterns and trends in data – explain relationships among variables.
* Identify strengths and weaknesses in data collection methods.
* Identify careers related to stewardship and study of water.