

# SRPSD Environmental Science 20 Rubrics

## Career Exploration

**ES20-CE1** Analyze and explore environmental science related career paths in Saskatchewan, Canada and the world.

<b>Beginning (1)</b>	<b>Approaching (2)</b>	<b>Proficiency (3)</b>	<b>Mastery (4)</b>
I can identify relevant and/or undersubscribed environmental science related career options locally, regionally, and/or nationally.	I have an understanding of an environmental science related career and the possible paths I could take to achieve such a career.	I have an understanding of an environmental science related career and how suited I am to such a career.	I have an understanding of an environmental science related career by including personal interviews/discussions with professionals in my research.

## Student-Directed Study

**ES20-STS1** Create and carry out a plan to explore one or more topics of personal interest relevant to Environmental Science 20 in depth.

<b>Beginning (1)</b>	<b>Approaching (2)</b>	<b>Proficiency (3)</b>	<b>Mastery (4)</b>
I can identify a personally relevant or interesting topic in environmental science.	I can develop a proposal for a scientific investigation, or a plan for an experiment, using the scientific method.	I can assemble a product demonstrating an understanding of an environmental science related topic of interest. I can develop materials to support the arguments for my position on an environmental science related issue.	I can develop materials to support the arguments for and arguments against a position related to an environmental science issue.

## The Nature of Environmental Science

**ES20-ES1** Examine the methods, mindsets and purposes of environmental science.

<b>Beginning (1)</b>	<b>Approaching (2)</b>	<b>Proficiency (3)</b>	<b>Mastery (4)</b>
I can make a connection between issues/perspectives and their connection to environmental science.	I am able to identify that the environment will be affected by a variety of circumstances/perspectives and issues, and vary in length of time.	I am able to express how my environmental decisions connect to other areas of impact, like economics, social, and cultural.	I can see the connections of the factors that have affected and continue to affect the environment, through action and inaction, and can express the effect.

## Atmosphere and Human Health

**ES20-AH1** Assess the impact of human activities on indoor and outdoor air quality and the need for regulations and mitigating technologies to minimize risks to human health.

<b>Beginning (1)</b>	<b>Approaching (2)</b>	<b>Proficiency (3)</b>	<b>Mastery (4)</b>
I still have questions about how contaminants affect air quality. I know there needs to be rules, but can't think of an example. I can identify either a residential, commercial or industrial technology.	I can identify contaminants that cause poor air quality. I understand the need for rules about air quality, and can provide an example. I can identify a residential, industrial, and/or commercial technology for air quality.	I can assess factors and give examples of how air affects living and nonliving things. I can assess legislation surrounding air quality in Canada and the world. I can assess differences in technologies that are being used to produce clean air in multiple applications.	I can show in a unique way how air quality, rules and technology would be required or necessary to preserve our population.

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**ES20-AH2** Analyze the production, reliability and uses of geoscience data to investigate the effects of a changing climate on society and the environment.

<b>Beginning (1)</b>	<b>Approaching (2)</b>	<b>Proficiency (3)</b>	<b>Mastery (4)</b>
<p>I know data is necessary to investigate climate change.</p> <p>I can identify that there is an economic impact on SK industry because of climate change.</p>	<p>I am able to connect my personal experience of data with climate change.</p> <p>I can identify the economic impact of climate change on some industries in SK.</p>	<p>I am able to analyze how ecosystems are vulnerable to climate change.</p> <p>I am able to analyze data necessary to investigate climate change.</p> <p>I am able to identify the economic impact of climate change on our agriculture, energy, forestry, tourism, and/or transportation.</p>	<p>I can describe an environmental ripple effect of climate change.</p> <p>I can use data to predict a change in climate.</p> <p>I can create a developmental plan based on SK industries (based on current patterns for recreation or to meet transportation).</p>

### Human Population and Pollution

**ES20-HP1** Investigate technologies and processes used for mitigating and managing resource use, waste generation and pollution associated with a growing human population.

<b>Beginning (1)</b>	<b>Approaching (2)</b>	<b>Proficiency (3)</b>	<b>Mastery (4)</b>
<p>I know waste when I see waste.</p> <p>I can identify that waste needs to be controlled.</p> <p>I know a method used to manage waste.</p>	<p>I can identify the difference between household and other waste.</p> <p>I am able to identify locations of waste management.</p> <p>I am able to describe a method of waste management.</p>	<p>I am able to identify a number of ways humans have produced waste.</p> <p>I can explain the reasoning behind managing waste effectively.</p> <p>I can explain methods used to mitigate waste today.</p>	<p>I am able to identify wastes that are going to be problematic in the future.</p> <p>I am able to identify the impact of mismanaged waste.</p> <p>I can predict improvements to a current technology that could be explored to manage waste.</p>

### Aquatic Systems

**ES20-AS1** Analyze the function and condition of freshwater aquatic systems such as rivers, streams, lakes, wetlands and watersheds.

<b>Beginning (1)</b>	<b>Approaching (2)</b>	<b>Proficiency (3)</b>	<b>Mastery (4)</b>
<p>I know living things and non-living things interact, but not sure how they affect water quality.</p> <p>I know I can test for quality of water, but I am unsure what tests I would use.</p>	<p>I can identify some biotic and abiotic factors that affect water quality.</p> <p>I know how living things are affected by non-living things and vice versa in water.</p> <p>I can test for water quality and identify why I am using a specific test.</p>	<p>I can identify biotic and abiotic factors that affect water quality and how they affect the quality.</p> <p>I can identify specific connections between non-living and living things that affect water sources.</p> <p>I can test for water quality and identify good water quality with tests.</p> <p>I can assess the importance of a riparian area and how they contribute to watershed health.</p>	<p>I can make predictions of the health of an aquatic ecosystem based on human actions.</p> <p>I can apply to a new body of water, tests that would be used to indicate quality of water as well as what the tests would indicate.</p> <p>I can assess the interdependencies between abiotic and biotic factors in a functioning aquatic ecosystem.</p> <p>I can provide an in depth and detailed critique of the management of a watershed and the ecological goods and services they provide.</p>

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### ES20-AS2 Assess the importance of maintaining healthy water for humans and the environment

<b>Beginning (1)</b>	<b>Approaching (2)</b>	<b>Proficiency (3)</b>	<b>Mastery (4)</b>
I can explain the importance of healthy water to an ecosystem.	I can identify an organization that works to protect the watershed. I can identify a point and non-point source pollution to an aquatic system.	I can identify and explain how an organization works to protect a watershed. I can identify and explain sources of pollution and technologies that are used to protect drinking water.	I can explain how irrigation and other human actions affect food production, water availability, soil salinization and groundwater. I can determine the effectiveness on a mitigation technology and identify additional actions that should be taken.

### Terrestrial Ecosystems

#### ES20-TE1 Analyze the importance of soil as an integral component of terrestrial ecosystems

<b>Beginning (1)</b>	<b>Approaching (2)</b>	<b>Proficiency (3)</b>	<b>Mastery (4)</b>
I can explain the components and structure of soil.	I can explain the role of microorganisms and how this affects the quality of the soil.	I can briefly explain how soil is degraded and ways to protect soil quality to sustain a terrestrial ecosystem.	I can provide an in-depth and detailed explanation of how soil is degraded and ways to protect soil quality. I can describe the effectiveness of methods used to improve soil quality in an effort to protect terrestrial ecosystems.

#### ES20-TE2 Examine the role plants play in an ecosystem, including ways in which humans use plants.

<b>Beginning (1)</b>	<b>Approaching (2)</b>	<b>Proficiency (3)</b>	<b>Mastery (4)</b>
I can identify a role plants play in an ecosystem, or a way they are used.	I can describe roles plants play in an ecosystem, or ways they are used. I can explain basic uses of plants in forestry and agriculture.	I can explain the role plants play in an ecosystem, or ways they are used, based on their structure. I can connect social, agricultural, and/or forestry practice to how, why and where plants grow.	I can provide an in-depth and detailed critique of agricultural and forestry practices.

#### ES20-TE3 Recognize the need for intact habitat to support animal populations and biodiversity.

<b>Beginning (1)</b>	<b>Approaching (2)</b>	<b>Proficiency (3)</b>	<b>Mastery (4)</b>
I can identify some adaptations that animals have for their specific environment.	I can explain the relationship between an animal's adaptations and its role in an ecosystem (including the role of a keystone species).	I can explain the effect of various conditions on certain species within an ecosystem.	I can predict the effects of a disruptive event on certain species within an ecosystem and I can relate the efforts being made to protect these species.