

**Career and Technology Studies ENS Project D**  
***Wading in for Water Action Project***

**Long Range Planning:**

- 100% of ENS 3040, 100% of ENS 3910, ~20% ENS 3050
- ~ 20 hours
- Consists of 9 lessons (varying from one class to three classes for a total of 12-15 classes) and the implementation of the action project where applicable.
- Additional materials will be made available for the completion of ENS 3050 (which will involve additional hours) as the credits for ENS 3910 are dependent on the completion of both ENS 3040 and ENS 3050.

**Documents Included with this Project Plan (links provided)**

- [Project Proposal Sheet](#) (supporting document)
- [Project Planning Template](#) (supporting document)
- WebQuest Presentation Sample: <https://seedsconnections.org/resources>
- [Project Rubric](#) (supporting document)

**Links required/recommended:**

- WebQuest Site: <https://seedsconnections.org/webquest-student-introduction>

## **SEEDS Connections *Wading in for Water* Action Project**

### *Career and Technology Studies Curricular Connections*

Project Course Code:	Project Course Title:
<b>ENS 3910-Project D</b>	<b>SEEDS Connections Wading in for Water Action Project</b>

CTS course connections and the year the credits were or will be awarded.

<b>CTS courses that the project course connects with (minimum 2)</b>	<b>When the credits were or will be awarded</b>	<b>Occupational Area(s)</b>
<b>CTS advanced course</b> ENS 3040: ENERGY & THE ENVIRONMENT	<b>Credits will be awarded for</b> ENS 3910 will be awarded at the same time as ENS 3040.	<b>Environmental Stewardship (ENS)</b>
<b>CTS advanced course</b> ENS 3050: ENVIRONMENTAL POLITICS	<b>Credits will be awarded for</b> ENS 3910 will be awarded at the same time as ENS 3050	<b>Environmental Stewardship (ENS)</b>

### Project Description

Students will conduct a field study of a waterway in their community. They will collect multiple samples from multiple sites. Upon completion of their data collection, they will analyze the water quality of the ecosystem and determine factors that might contribute to the overall function of the system. They can then compare the water quality of this system to another in Alberta using a resource such as <http://www.riverwatch.ab.ca/science/data>. Once they have completed their analysis, students will design a plan for personal and community-based strategies to address aquatic water quality that considers environmental, social, political, economic and technological factors.

### What are the attitudes, skills and knowledge that will be enhanced and extended by completing this project?

Students will develop a personal and community action project that addresses the key findings from their aquatic field study. The purpose of this project is to determine ways to maintain or improve water quality in their study area. The project will improve student understanding of water conservation issues,

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develop students' leadership skills, team work skills, group management abilities, and improve their understanding of the complex environmental, political, social, and economic factors that must be considered with regard to the health of their local waterways.

What are the safety concerns for this project?

The safety concerns for the action project are dependent on the actions students choose to pursue. Exploration and acknowledgement of these concerns will be an important step of project planning and are included on the [project planning template](#).

What will be needed to accomplish this project (e.g., tools, materials, money, people, time)?

The requirements for project completion will differ from project to project depending on the actions students choose to pursue. Exploration and acknowledgement of these requirements will be an important step of project planning and are included on the [project planning template](#).

Relevant CTS Course Connections

Connected courses	Outcomes being linked
<b>ENS 3040: Energy and the Environment</b>	<b>Outcome</b> 1. Describe the social, economic and environmental significance of energy development  1.1 describe the social, economic and environmental significance of an energy development; e.g., a hydro dam (Brazeau and Bighorn dams), windfarms (Pincher Creek), coal or gas fired power plant (Keephills)  1.2 analyze the relationship between an energy development and the environment; e.g., greenhouse gases, acid deposition, ecosystem destruction, resource depletion, ozone depletion, smog, water pollution

	<p>1.3 describe actions taken by industry to reduce or eliminate the environmental impacts of an energy development; e.g., development practices, reclamation technologies, environmental monitoring procedures, capture and recovery technologies</p> <p>1.4 evaluate government policy and regulation at provincial and national levels intended to respond to social, economic and environmental concerns regarding an energy development; e.g., royalty legislation, Kyoto Protocol, Montreal Protocol, land-use policies, environmental legislation</p> <p>1.5 describe public consultation and consensus procedures that respond to social, economic and environmental concerns; e.g., town hall meetings, round table discussions, focus group discussions</p>
	<p><b>Outcome</b></p> <p>2. Plan and implement a strategy for personal action that promotes an environmentally sustainable lifestyle</p> <p>2.1 conduct a personal energy audit; e.g., maintain a log, chart or graph of personal energy use</p> <p>2.2 identify personal needs and wants based on the energy audit</p> <p>2.3 evaluate the impact of your personal energy use and lifestyle factors on the environment</p> <p>2.4 describe and implement a strategy that enables an environmentally sustainable lifestyle</p> <p>2.5 evaluate the social, economic and environmental consequences of implementing your strategy</p>

	<p>2.6 revise your strategy according to environmental, social and economic outcomes</p>
	<p><b>Outcome</b></p> <p>3. Plan and implement a group action campaign that fosters environmental awareness, energy conservation and energy efficiency; e.g., class, school, community</p> <p>3.1 identify and assess opportunities for reducing the environmental impacts of energy use within the classroom, school and/or community; e.g., conduct a cost-benefit analysis of an energy-saving technology and/or activity</p> <p>3.2 identify potential obstacles to group action aimed at reducing environmental impacts</p> <p>3.3 plan and implement a classroom, school and/or community campaign that promotes environmental awareness and energy conservation; e.g., develop a marketing campaign to increase public awareness</p> <p>3.4 identify constructive ways in which individuals can influence group decisions that affect energy consumption and the environment; e.g., voting, lobbying, seeking office, supporting compatible interest groups</p> <p>3.5 design a social, economic and/or environmental impact assessment and consultation process for a proposed energy project</p>
	<p><b>Outcome</b></p> <p>4. demonstrate basic competencies</p> <p>4.1 demonstrate fundamental skills to:</p> <ul style="list-style-type: none"><li>4.1.1 communicate</li><li>4.1.2 manage information</li><li>4.1.3 use numbers</li><li>4.1.4 think and solve problems</li></ul>

	<p>4.2 demonstrate personal management skills to:</p> <ul style="list-style-type: none"> <li>4.2.1 demonstrate positive attitudes and behaviours</li> <li>4.2.2 be responsible</li> <li>4.2.3 be adaptable</li> <li>4.2.4 learn continuously</li> <li>4.2.5 work safely</li> </ul> <p>4.3 demonstrate teamwork skills to:</p> <ul style="list-style-type: none"> <li>4.3.1 work with others</li> <li>4.3.2 participate in projects and tasks</li> </ul> <p><b>Outcome</b></p> <p>5. create a transitional strategy to accommodate personal changes and build personal values</p> <ul style="list-style-type: none"> <li>5.1 identify short-term and long-term goals</li> <li>5.2 identify steps to achieve goals</li> </ul>
<p><b>Course Name and Code</b></p> <p><b>ENS 3050: Environmental Politics</b></p>	<p><b>Outcome</b></p> <p>2. analyze challenges in developing, influencing and implementing environmental policies</p> <ul style="list-style-type: none"> <li>2.1 identify how government structure affects developing, influencing and implementing environmental policies</li> <li>2.2 describe a variety of principles that guide the development and implementation of environmental policies; e.g., humility principle, precautionary principle, public participation principle, human rights principles, environmental justice principle</li> <li>2.3 assess the impact of individual actions on developing and implementing environmental policy</li> </ul>

	<p>2.4 investigate trends in the structure of organizations (e.g., businesses, governments, NGOs) that positively affect the development and implementation of environmental policies 3. assess the impact of the legal system in developing, influencing and implementing</p>
<p><b>Other Potential Connections to courses and outcomes*</b></p> <p><b>Relevant only if students already have earned these credits previously, as all courses listed below have prerequisites that are required before completion.</b></p>	
<p><b>ENS 2120 Water Management I</b></p>	<p>Relates to all curricular outcomes</p>
<p><b>ENS 2130: Renewable and Non-renewable Energy Resources</b></p>	<p>2. analyze the potential environmental and economic impacts of a variety of current and future renewable and non-renewable energy sources (e.g., conventional oil, oil sands, hydrogen, direct solar, hydro, nuclear, wind, geothermal, biomass, waste, biofuels), considering but not limited to:</p> <ul style="list-style-type: none"> <li>• net energy and/or energy returned on energy invested (EROEI)</li> <li>• availability of source</li> <li>• cost to develop, phase in and use</li> <li>• governmental incentives</li> <li>• national and global economic and political security</li> <li>• facilities and equipment essential to energy production</li> <li>• basic steps, including safety measures, involved in energy production</li> <li>• effects of extraction, transportation and use on the environment</li> </ul>
<p><b>ENS 3110: Integrated Resource Management</b></p>	<p>1. describe basic principles of resource management</p> <p>1.1 describe principles of supply-side resource management and demand-side resource management by citing examples of each within Alberta</p> <p>1.2 compare principles of integrated land use with principles of multiple use management by citing examples of each within Alberta</p> <p>1.3 explain sustainable development and resource management within the context of Alberta's natural resources</p>

	<p>1.4 examine local opportunities for consultation and public involvement in resource management decisions; e.g., community associations, industry, local government, provincial departments and/or agencies</p> <hr/> <p>2. describe government legislation and policies that influence the development of a natural resource</p> <p>2.1 explain the mandate and responsibilities of key government departments and agencies in managing natural resources within provincial boundaries; e.g., disposition of mineral rights, regulation of exploration and development, development of conservation practices and environmental standards, collection of fair returns from resource development</p> <p>2.2 explain current and potential opportunities for industry, NGO and public interest group involvement in managing natural resources within provincial boundaries</p> <p>2.3 examine the role of important federal and provincial legislation in managing exploration and development activities within one of Alberta’s natural resource industries</p> <p>2.4 evaluate the short- and long-term effects of one or more government legislations and regulations on one of Alberta’s natural resources</p>
<p><b>ENS 3120: Water Management II</b></p>	<p>Relates to all curricular outcomes</p>
<p><b>ENS 3130: Sustainable Energy</b></p>	<p>2. identify issues involving current and future energy supply and demand</p> <p>2.1 describe recent applications of technology in renewable and non-renewable energy development; e.g., technologies designed to improve production and lessen environmental impacts</p> <p>2.2 examine social, economic and environmental perspectives regarding renewable and non-renewable energy supply; e.g., trends in energy conservation, efficiency and lifestyle choices</p>

	<p>2.3 describe applications of renewable energy in reducing demand on non-renewable energy sources; e.g., domestic and industrial heating, transportation</p> <p>2.4 research forecasts regarding future energy supply and demand and options for ensuring a sustainable energy future</p> <hr/> <p>5. present a plan for sustainable energy development</p> <p>5.1 provide a definition and examples of sustainable energy development</p> <p>5.2 compare the roles of renewable and non-renewable technologies in sustainable energy development</p> <p>5.3 cite examples of sustainable energy path development that involve least-cost combinations and efficient use of both renewable and non-renewable energy sources, considering that sustainable energy path development involves matching the “quality” of the energy provided to the “quality” of the energy required</p> <p>5.4 suggest a rationale for sustainable energy development that addresses social, economic and environmental perspectives</p> <p>5.5 propose changes to current social values and political structures that may facilitate sustainable energy development; e.g., consumer practices, government policy, technology</p> <p>5.6 develop and present a plan for sustainable energy path development that includes supply-side management solutions and demand-side management solutions</p> <p>5.7 evaluate the plan on the basis of predicted social, economic and environmental consequences</p>
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What will be accomplished by linking these outcomes in this project?

Through the *Wading in for Water Action Project*, students will have the opportunity to analyze and evaluate the effects of various types of development on the quality of their aquatic ecosystems. The project will have students focus on how various economic, environmental, political and technological factors contribute to the quality and sustainability of these ecosystems and consider how these factors can be managed in the most sustainable way. By connecting ENS 3910: Project D to the above mentioned outcomes, students will have the opportunity to explore these outcomes in more depth and put their knowledge and understanding in action. Students will have the opportunity to choose how to address complex societal issues in a meaningful way and feel empowered that they can have a direct impact on issues in their communities (this also has direct connections to the *Science-Technology-Society* foundational statements found in the Alberta Education Science 14 Program of Studies).

Why were these courses and key outcomes chosen?

These outcomes most closely link the Science 14 field study component of our program and the action project.