

WASHINGTON STATE LASER

Alignment of Washington 6-8
Science Standards by Lesson Number for

FOSS/MS

Populations & Ecosystems

November 1, 2010

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Populations & Ecosystems ~ Investigation 01**

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
SYSB	The boundaries of a system can be drawn differently depending on the features of the system being investigated, the size of the system, and the purpose of the investigation.	<ul style="list-style-type: none"> Explain how the boundaries of a system can be drawn to fit the purpose of the study (e.g., to study how insect populations change, a system might be a forest, a meadow in the forest, or a single tree). 	Investigation 1 pp 42-59	Aligned with modifications (see comments)	This is part of a learning progression moving from a simple habitat to studies of larger ecosystems. Teacher must be intentional about the use of the term system and subsystem. Teacher must be intentional about using the term boundaries when looking at the system.
SYSC	The output of one system can become the input of another system.	<ul style="list-style-type: none"> Give an example of how output of matter or energy from a system can become input for another system 	pp 41-59	Aligned with modifications (see comments)	This is part of a learning progression moving from a simple habitat to studies of larger ecosystems. Teacher must be intentional about the use of the terms systems, subsystems, and boundaries. Teacher must be intentional about using the terms input and output when looking at the system.
SYSD	In an open system, matter flows into and out of the system. In a closed system, energy may flow into or out of the system, but matter stays within the system.	<ul style="list-style-type: none"> Given a description of a system, analyze and defend whether it is open or closed. 	pp 42-59	Aligned with modifications (see comments)	This is part of a learning progression moving from a simple habitat to studies of larger ecosystems. Teacher must be intentional about the use of the term systems, subsystems, boundaries, input and output. The investigation contains many opportunities to discuss matter, energy, closed system and open system.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Populations & Ecosystems ~ Investigation 02**

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
SYSA	Any system may be thought of as containing subsystems and as being a subsystem of a larger system.	<ul style="list-style-type: none"> Given a system, identify subsystems and a larger encompassing system 	Investigation 2 pp 72-79	Aligned with modifications (see comments)	Teacher must be intentional about the use of the term system and subsystem. Teacher must be intentional about using the terms input and output of matter and energy when looking at the system.
SYSB	The boundaries of a system can be drawn differently depending on the features of the system being investigated, the size of the system, and the purpose of the investigation.	<ul style="list-style-type: none"> Explain how the boundaries of a system can be drawn to fit the purpose of the study (e.g., to study how insect populations change, a system might be a forest, a meadow in the forest, or a single tree). 	Investigation 2 pp 72-29	Aligned with modifications (see comments)	Teacher must be intentional about the use of the term system and subsystem. Teacher must be intentional about using the term boundaries when looking at the system.
SYSC	The output of one system can become the input of another system.	<ul style="list-style-type: none"> Give an example of how output of matter or energy from a system can become input for another system 	pp 72-79	Aligned with modifications (see comments)	Teacher must be intentional about the use of the terms systems, subsystems, and boundaries. Teacher must be intentional about using the terms input and output when looking at the system.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Populations & Ecosystems ~ Investigation 02**

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
SYSD	In an open system, matter flows into and out of the system. In a closed system, energy may flow into or out of the system, but matter stays within the system.	<ul style="list-style-type: none"> Given a description of a system, analyze and defend whether it is open or closed. 	pp 72-79	Aligned with modifications (see comments)	Teacher must be intentional about the use of the term systems, subsystems, boundaries, input and output. The investigation contains many opportunities to discuss matter, energy, closed system and open system.
LS2A	An ecosystem consists of all the populations living within a specific area and the nonliving factors they interact with. One geographical area may contain many ecosystems.	<ul style="list-style-type: none"> Explain that an ecosystem is a defined area that contains populations of organisms and nonliving factors. Give examples of ecosystems (e.g., Olympic National Forest, Puget Sound, one square foot of lawn) and describe their boundaries and contents. 	Investigation 2 parts 1-2 pp 72-79; Resource book pp 6-7; Lab Notebook pp 11, 13. Video: Among the Chimpanzees	Aligned as designed	Investigation 1 is an integral part of the learning progression.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Populations & Ecosystems ~ Investigation 03**

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
SYSA	Any system may be thought of as containing subsystems and as being a subsystem of a larger system.	<ul style="list-style-type: none"> Given a system, identify subsystems and a larger encompassing system 	Pages 94-107; Resource book pp 8-13	Aligned with modifications (see comments)	Teacher must be intentional about the use of the term systems and subsystems. The reading contains opportunities to address the standard but the teacher must be intentional focusing students on the systems presented on pp 12 and 13.
SYSB	The boundaries of a system can be drawn differently depending on the features of the system being investigated, the size of the system, and the purpose of the investigation.	<ul style="list-style-type: none"> Explain how the boundaries of a system can be drawn to fit the purpose of the study (e.g., to study how insect populations change, a system might be a forest, a meadow in the forest, or a single tree). 	Investigation 3 pp 92-107; Resource book pp 12-13	Aligned with modifications (see comments)	Teacher must be intentional about the use of the term system and subsystem. The reading contains opportunities to address the standard but the teacher must be intentional about using the terms system, subsystem, and boundaries when looking at the systems mentioned on pages 12-13. An alternate lesson can be found at: EcoColumns http://www.pcc.edu/about/faculty/sustainability-training/documents/ecosystem-in-a-bottle.pdf
SYSC	The output of one system can become the input of another system.	<ul style="list-style-type: none"> Give an example of how output of matter or energy from a system can become input for another system 	pp 94-107	Aligned with modifications (see comments)	Teacher must be intentional about the use of the terms systems, subsystems, and boundaries. Teacher must be intentional about using the terms input and output when looking at the system.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Populations & Ecosystems ~ Investigation 03**

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
SYSD	In an open system, matter flows into and out of the system. In a closed system, energy may flow into or out of the system, but matter stays within the system.	<ul style="list-style-type: none"> Given a description of a system, analyze and defend whether it is open or closed. 	Investigation 3 pp 94-107; Resource book pp 8-13	Aligned with modifications (see comments)	Teacher must be intentional about the use of the term systems, subsystems, boundaries, input and output. The investigation and reading contains many opportunities to discuss matter, energy, closed system and open system.
SYSF	The natural and designed world is complex; it is too large and complicated to investigate and comprehend all at once. Scientists and students learn to define small portions for the convenience of investigation. The units of investigation can be referred to as “systems.”	<ul style="list-style-type: none"> Given a complex societal issue with strong science and technology components (e.g., overfishing, global warming), describe the issue from a systems point of view, highlighting how changes in one part of the system are likely to influence other parts of the system. 	Resource book pp 8-13 (Questions on p 13)	Aligned as designed	
APPA	People have always used technology to solve problems. Advances in human civilization are linked to advances in technology.	<ul style="list-style-type: none"> Describe how a technology has changed over time in response to societal challenges. 	Resource book pp 8-13	Aligned with modifications (see comments)	The reading contains an opportunity to discuss this standard.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Populations & Ecosystems ~ Investigation 03**

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
APPB	Scientists and technological designers (including engineers) have different goals. Scientists answer questions about the natural world; technological designers solve problems that help people reach their goals.	<ul style="list-style-type: none"> Investigate several professions in which an understanding of science and technology is required. Explain why that understanding is necessary for success in each profession. 	Resource book pp 8-13	Aligned with modifications (see comments)	This reading contains many opportunities to discuss several professions such as biologist, engineer, chemist, etc.
APPC	Science and technology are interdependent. Science drives technology by demanding better instruments and suggesting ideas for new designs. Technology drives science by providing instruments and research methods.	<ul style="list-style-type: none"> Give examples to illustrate how scientists have helped solve technological problems (e.g., how the science of biology has helped sustain fisheries) and how engineers have aided science (e.g., designing telescopes to discover distant planets). 	Resource book pp 8-13	Aligned with modifications (see comments)	Teacher must be intentional about sharing examples of how scientists and technology have played a role in this reading. Teacher questioning should elicit student understanding of the roles that scientists and engineers play in Biosphere 2.
APPE	Scientists and engineers often work together to generate creative solutions to problems and decide which ones are most promising.	<ul style="list-style-type: none"> Collaborate with other students to generate creative solutions to a problem, and apply methods for making tradeoffs to choose the best solution. 	Resource book pp 8-13	Aligned with modifications (see comments)	The unit/ lesson contains many opportunities to discuss how scientists and engineers work together to solve problems. Teachers need to ask students to explain where in the text they find evidence that scientists and engineers worked together to solve problems and possibly come up with their own solutions if none is given.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Populations & Ecosystems ~ Investigation 03**

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
APPF	Solutions must be tested to determine whether or not they will solve the problem. Results are used to modify the design, and the best solution must be communicated persuasively.	<ul style="list-style-type: none"> • Test the best solution by building a model or other representation and using it with the intended audience. Redesign as necessary. • Present the recommended design using models or drawings and an engaging presentation. 	Investigation 3 Parts 1-3 pp 94-107; Resource book pp 8-13	Aligned with modifications (see comments)	The lesson contains opportunities to address the standard but the teacher must be intentional in giving the students the opportunity to go further. Students identify a problem within their ecosystem, test possible solutions, and present recommendations to solve problem. Alternate lesson can be found at: EcoColumns http://www.pcc.edu/about/faculty/sustainability-training/documents/ecosystem-in
LS2A	An ecosystem consists of all the populations living within a specific area and the nonliving factors they interact with. One geographical area may contain many ecosystems.	<ul style="list-style-type: none"> • Explain that an ecosystem is a defined area that contains populations of organisms and nonliving factors. • Give examples of ecosystems (e.g., Olympic National Forest, Puget Sound, one square foot of lawn) and describe their boundaries and contents. 	Investigation 3: parts 1-3 pp 94-107; Resource book pp 8-13, 64-68; Lab Notebook pp 15-17; CD ROM: Organism Database	Aligned as designed	Alternate Lesson: Eco columns http://www.pcc.edu/about/faculty/sustainability-training/documents/ecosystem-in-a-bottle.pdf
LS2E	Investigations of environmental issues should uncover factors causing the problem and relevant scientific concepts and findings that may inform an analysis of different ways to address the issue.	<ul style="list-style-type: none"> • Investigate a local environmental issue by defining the problem, researching possible causative factors, understanding the underlying science, and evaluating the benefits and risks of alternative solutions. • Identify resource uses that reduce the capacity of ecosystems to support various populations (e.g., use of pesticides, construction). 	Investigation 3; Resource book pp 8-13	Aligned as designed	Teacher and students must make use of information found in the reading in the resource book to meet this standard.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Populations & Ecosystems ~ Investigation 04**

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
SYSA	Any system may be thought of as containing subsystems and as being a subsystem of a larger system.	<ul style="list-style-type: none"> Given a system, identify subsystems and a larger encompassing system 	pp 121-129	Aligned with modifications (see comments)	Teacher must be intentional about the use of the term systems and subsystems.
SYSB	The boundaries of a system can be drawn differently depending on the features of the system being investigated, the size of the system, and the purpose of the investigation.	<ul style="list-style-type: none"> Explain how the boundaries of a system can be drawn to fit the purpose of the study (e.g., to study how insect populations change, a system might be a forest, a meadow in the forest, or a single tree). 	Investigation 4 pp 120-129	Aligned with modifications (see comments)	Teacher must be intentional about the use of the term system and subsystem. Teacher must be intentional about using the term boundaries when looking at the system.
SYSC	The output of one system can become the input of another system.	<ul style="list-style-type: none"> Give an example of how output of matter or energy from a system can become input for another system 	pp 121-129	Aligned with modifications (see comments)	Teacher must be intentional about the use of the terms systems, subsystems, and boundaries. Teacher must be intentional about using the terms input and output when looking at the system.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Populations & Ecosystems ~ Investigation 04**

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
SYSD	In an open system, matter flows into and out of the system. In a closed system, energy may flow into or out of the system, but matter stays within the system.	<ul style="list-style-type: none"> Given a description of a system, analyze and defend whether it is open or closed. 	pp 121-129	Aligned with modifications (see comments)	Teacher must be intentional about the use of the term systems, subsystems, boundaries, input and output. The investigation contains many opportunities to discuss matter, energy, closed system and open system.
PS3A	Energy exists in many forms: heat, light, chemical, electrical, motion of objects, and sound. Energy can be transformed from one form to another and transferred from one place to another.	<ul style="list-style-type: none"> List different forms of energy (e.g., thermal, light, chemical, electrical, kinetic, and sound energy). Describe ways in which energy is transformed from one form to another and transferred from one place to another (e.g., chemical to electrical energy in a battery, electrical to light energy in a bulb). 	pp 121-129	Module/Unit requires changes (see comments)	The unit contains many opportunities address the standards but the teacher must be intentional in using the terms energy, energy transfer, and energy transformations and include activities for these ideas.
LS2A	An ecosystem consists of all the populations living within a specific area and the nonliving factors they interact with. One geographical area may contain many ecosystems.	<ul style="list-style-type: none"> Explain that an ecosystem is a defined area that contains populations of organisms and nonliving factors. Give examples of ecosystems (e.g., Olympic National Forest, Puget Sound, one square foot of lawn) and describe their boundaries and contents. 	Investigation 4 part 1 p 121; Lab Notebook p 19; Video: Of Ice and Fire: A Portrait of the Mono Basin	Aligned as designed	

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Populations & Ecosystems ~ Investigation 04**

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
LS2B	Energy flows through an ecosystem from producers (plants) to consumers to decomposers. These relationships can be shown for specific populations in a food web.	<ul style="list-style-type: none"> Analyze the flow of energy in a local ecosystem, and draw a labeled food web showing the relationships among all of the ecosystem's plant and animal populations. 	Investigation 4 part 2 pp 124-129; Lab Notebook p 21; CD ROM: Ecoscenarios, Mono Lake, Food Webs	Aligned as designed	

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Populations & Ecosystems ~ Investigation 05**

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
SYSA	Any system may be thought of as containing subsystems and as being a subsystem of a larger system.	<ul style="list-style-type: none"> Given a system, identify subsystems and a larger encompassing system 	Investigation 5 pp 146-169	Aligned with modifications (see comments)	Teacher must be intentional about the use of the term system and subsystem. Teacher must be intentional about using the terms input and output of matter and energy when looking at the system.
SYSB	The boundaries of a system can be drawn differently depending on the features of the system being investigated, the size of the system, and the purpose of the investigation.	<ul style="list-style-type: none"> Explain how the boundaries of a system can be drawn to fit the purpose of the study (e.g., to study how insect populations change, a system might be a forest, a meadow in the forest, or a single tree). 	Investigation 5 pp 146-169	Aligned with modifications (see comments)	Teacher must be intentional about the use of the term system and subsystem. Teacher must be intentional about using the term boundaries when looking at the system.
SYSC	The output of one system can become the input of another system.	<ul style="list-style-type: none"> Give an example of how output of matter or energy from a system can become input for another system 	pp 146-169.	Aligned with modifications (see comments)	Teacher must be intentional about the use of the terms systems, subsystems, and boundaries. Teacher must be intentional about using the terms input and output when looking at the system.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Populations & Ecosystems ~ Investigation 05**

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
SYSD	In an open system, matter flows into and out of the system. In a closed system, energy may flow into or out of the system, but matter stays within the system.	<ul style="list-style-type: none"> Given a description of a system, analyze and defend whether it is open or closed. 	pp 146-169	Aligned with modifications (see comments)	Teacher must be intentional about the use of the term systems, subsystems, boundaries, input and output. The investigation contains many opportunities to discuss matter, energy, closed system and open system.
SYSE	If the input of matter or energy is the same as the output, then the amount of matter or energy in the system won't change; but if the input is more or less than the output, then the amount of matter or energy in the system will change.	<ul style="list-style-type: none"> Measure the flow of matter into and out of an open system and predict how the system is likely to change (e.g., a bottle of water with a hole in the bottom, an ecosystem, an electric circuit). 	Investigation 5 part 1 pp 146-150; Lab Notebook pp 22-23; part 2 pp 153-155; Lab Notebook p 25; part 4 pp 164-169	Aligned with modifications (see comments)	Teacher must be intentional about the use of the term systems, subsystems, boundaries, flows, input and output. The investigation contains many opportunities to discuss matter, energy, closed system and open system.
INQA	Scientific inquiry involves asking and answering questions and comparing the answer with what scientists already know about the world.	<ul style="list-style-type: none"> Generate a question that can be answered through scientific investigation. This may involve refining or refocusing a broad and ill-defined question. 	Part 1 pp 146-150; Lab Notebook pp 22-23; Part 2 pp 153-155; Lab Notebook p 25	Aligned with modifications (see comments)	The teacher needs to intentionally take advantage of the opportunities to address asking questions in terms of the scientific method.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Populations & Ecosystems ~ Investigation 05**

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
INQB	Different kinds of questions suggest different kinds of scientific investigations.	<ul style="list-style-type: none"> • Plan and conduct a scientific investigation (e.g., field study, systematic observation, controlled experiment, model, or simulation) that is appropriate for the question being asked. • Propose a hypothesis, give a reason for the hypothesis, and explain how the planned investigation will test the hypothesis. • Work collaboratively with other students to carry out the investigations. 	Investigation 5 Part 1 pp 146-150; Lab Notebook pp 22-23; Part 2 pp 153-155; Lab Notebook p 25	Aligned with modifications (see comments)	The teacher needs to intentionally take advantage of the opportunities to address planning and conducting scientific investigations in terms of the scientific method.
INQC	Collecting, analyzing, and displaying data are essential aspects of all investigations.	<ul style="list-style-type: none"> • Communicate results using pictures, tables, charts, diagrams, graphic displays, and text that are clear, accurate, and informative. • Recognize and interpret patterns – as well as variations from previously learned or observed patterns – in data, diagrams, symbols, and words. • Use statistical procedures (e.g., median, mean, or mode) to analyze data and make inferences about relationships. 	Investigation 5 Part 1 pp 146-150; Lab Notebook pp 22-23; Part 2 pp 153-155; Lab Notebook p 25	Aligned with modifications (see comments)	The teacher needs to intentionally take advantage of the opportunities to address the standard in terms of the scientific method.
INQF	It is important to distinguish between the results of a particular investigation and general conclusions drawn from these results.	<ul style="list-style-type: none"> • Generate a scientific conclusion from an investigation using inferential logic, and clearly distinguish between results (e.g., evidence) and conclusions (e.g., explanation). • Describe the differences between an objective summary of the findings and an inference made from the findings. 	Part 2 pp 152-156; Lab Notebook p 25	Aligned with modifications (see comments)	The lesson contains an opportunity to address the standard but the teacher must be intentional in addressing the differences between results and general conclusions.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Populations & Ecosystems ~ Investigation 05**

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
PS3A	Energy exists in many forms: heat, light, chemical, electrical, motion of objects, and sound. Energy can be transformed from one form to another and transferred from one place to another.	<ul style="list-style-type: none"> • List different forms of energy (e.g., thermal, light, chemical, electrical, kinetic, and sound energy). • Describe ways in which energy is transformed from one form to another and transferred from one place to another (e.g., chemical to electrical energy in a battery, electrical to light energy in a bulb). 	pp 146-169; Resource book pp 14-21	Aligned with modifications (see comments)	The unit contains many opportunities address the standards but the teacher must be intentional in using the terms energy, energy transfer, and energy transformations and include activities for these ideas. Teacher must be intentional about using the reading materials.
LS2B	Energy flows through an ecosystem from producers (plants) to consumers to decomposers. These relationships can be shown for specific populations in a food web.	<ul style="list-style-type: none"> • Analyze the flow of energy in a local ecosystem, and draw a labeled food web showing the relationships among all of the ecosystem's plant and animal populations. 	Investigation 5 parts 1-4, pp 146-169; Resource book pp 14-21; Lab Notebook pp 23 and 24	Aligned as designed	
LS2C	The major source of energy for ecosystems on Earth's surface is sunlight. Producers transform the energy of sunlight into the chemical energy of food through photosynthesis. This food energy is used by plants, and all other organisms to carry on life processes. Nearly all organisms on the surface of Earth depend on this energy source.	<ul style="list-style-type: none"> • Explain how energy from the Sun is transformed through photosynthesis to produce chemical energy in food. • Explain that producers are the only organisms that make their own food. Animals cannot survive without producers because animals get food by eating producers or other animals that eat producers. 	Investigation 5 parts 1-4 pp 146-169; Resource book pp 14-21; Lab Notebook pp 23-24	Aligned as designed	

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Populations & Ecosystems ~ Investigation 06**

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
SYSA	Any system may be thought of as containing subsystems and as being a subsystem of a larger system.	<ul style="list-style-type: none"> Given a system, identify subsystems and a larger encompassing system 	Investigation 6 part 3 pp 191-197	Aligned with modifications (see comments)	Teacher must be intentional about the use of the term systems and subsystems.
SYSE	If the input of matter or energy is the same as the output, then the amount of matter or energy in the system won't change; but if the input is more or less than the output, then the amount of matter or energy in the system will change.	<ul style="list-style-type: none"> Measure the flow of matter into and out of an open system and predict how the system is likely to change (e.g., a bottle of water with a hole in the bottom, an ecosystem, an electric circuit). 	pp 180-197; Lab Notebook pp 31-41	Aligned with modifications (see comments)	Teacher must be intentional about the use of the term systems, subsystems, boundaries, flows, input and output. The investigation contains many opportunities to discuss matter, energy, closed system and open system.
INQA	Scientific inquiry involves asking and answering questions and comparing the answer with what scientists already know about the world.	<ul style="list-style-type: none"> Generate a question that can be answered through scientific investigation. This may involve refining or refocusing a broad and ill-defined question. 	Part 1 pp 181-186; Lab Notebook pp 31-33; Part 2 pp 189-190; Lab Notebook pp 35-37	Aligned with modifications (see comments)	The lesson contains opportunities to address the standards but the teacher must be intentional about leading students to independently use the components of the scientific method (i.e., writing own question).

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Populations & Ecosystems ~ Investigation 06**

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
INQB	Different kinds of questions suggest different kinds of scientific investigations.	<ul style="list-style-type: none"> • Plan and conduct a scientific investigation (e.g., field study, systematic observation, controlled experiment, model, or simulation) that is appropriate for the question being asked. • Propose a hypothesis, give a reason for the hypothesis, and explain how the planned investigation will test the hypothesis. • Work collaboratively with other students to carry out the investigations. 	Investigation 6 part 1 pp 181-186; Lab Notebook pp 31-33; part 2 pp 188-191; Lab Notebook pp 34-37	Aligned with modifications (see comments)	The lesson contains opportunities to address the standards but the teacher must be intentional about leading students to independently use the components of the scientific method (i.e., writing own question and propose a hypothesis).
INQD	For an experiment to be valid, all (controlled) variables must be kept the same whenever possible, except for the manipulated (independent) variable being tested and the responding (dependent) variable being measured and recorded. If a variable cannot be controlled, it must be reported and accounted for.	<ul style="list-style-type: none"> • Plan and conduct a controlled experiment to test a hypothesis about a relationship between two variables. Determine which variables should be kept the same (controlled), which (independent) variable should be systematically manipulated, and which responding (dependent) variable is to be measured and recorded. Report any variables not controlled and explain how they might affect results. 	Part 1 pp 181-186; Lab Notebook pp 31-33; Part 2 pp 188-191; Lab Notebook pp 34-37	Aligned with modifications (see comments)	The lesson contains opportunities to address the standards but the teacher must be intentional about leading students to independently use the components of the scientific method (i.e., opportunity to identify variables).
INQF	It is important to distinguish between the results of a particular investigation and general conclusions drawn from these results.	<ul style="list-style-type: none"> • Generate a scientific conclusion from an investigation using inferential logic, and clearly distinguish between results (e.g., evidence) and conclusions (e.g., explanation). • Describe the differences between an objective summary of the findings and an inference made from the findings. 	Investigation 6 Part 1 pp 181-186; Lab Notebook pp 31-33; Part 2 pp 188-191; Lab Notebook pp 34-37	Aligned with modifications (see comments)	The lesson contains opportunities to address the standards but the teacher must be intentional in addressing the differences between results and general conclusions.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Populations & Ecosystems ~ Investigation 06**

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
LS2D	Ecosystems are continuously changing. Causes of these changes include nonliving factors such as the amount of light, range of temperatures, and availability of water, as well as living factors such as the disappearance of different species through disease, predation, habitat destruction and overuse of resources or the introduction of new species.	<ul style="list-style-type: none"> • Predict what may happen to an ecosystem if nonliving factors change (e.g., the amount of light, range of temperatures, or availability of water or habitat), or if one or more populations are removed from or added to the ecosystem. 	Investigation 6 parts 1-3 pp 179-198; CD ROM: "Milkweed Bugs", "Unlimited & Limited"; Resource book pp 22-30; Lab Notebook pp 27, 29, 31-41	Aligned as designed	

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Populations & Ecosystems ~ Investigation 07**

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
SYSA	Any system may be thought of as containing subsystems and as being a subsystem of a larger system.	<ul style="list-style-type: none"> Given a system, identify subsystems and a larger encompassing system 	pp 214-217	Aligned with modifications (see comments)	Teacher must be intentional about the use of the term systems and subsystems.
SYSB	The boundaries of a system can be drawn differently depending on the features of the system being investigated, the size of the system, and the purpose of the investigation.	<ul style="list-style-type: none"> Explain how the boundaries of a system can be drawn to fit the purpose of the study (e.g., to study how insect populations change, a system might be a forest, a meadow in the forest, or a single tree). 	Investigation 7 pp 214-217	Aligned with modifications (see comments)	Teacher must be intentional about the use of the term system and subsystem. Teacher must be intentional about using the boundaries when looking at the system.
SYSC	The output of one system can become the input of another system.	<ul style="list-style-type: none"> Give an example of how output of matter or energy from a system can become input for another system 	pp 214-217	Aligned with modifications (see comments)	Teacher must be intentional about the use of the term systems, subsystems, and boundaries. Teacher must be intentional about using the terms input and output when looking at the system.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Populations & Ecosystems ~ Investigation 07**

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
SYSD	In an open system, matter flows into and out of the system. In a closed system, energy may flow into or out of the system, but matter stays within the system.	<ul style="list-style-type: none"> Given a description of a system, analyze and defend whether it is open or closed. 	Investigation 7 pp 214-217	Aligned with modifications (see comments)	Teacher must be intentional about the use of the term systems, subsystems, boundaries, input and output. The investigation contains many opportunities to discuss matter, energy, closed system and open system.
SYSF	The natural and designed world is complex; it is too large and complicated to investigate and comprehend all at once. Scientists and students learn to define small portions for the convenience of investigation. The units of investigation can be referred to as “systems.”	<ul style="list-style-type: none"> Given a complex societal issue with strong science and technology components (e.g., overfishing, global warming), describe the issue from a systems point of view, highlighting how changes in one part of the system are likely to influence other parts of the system. 	pp 214-217; Lab Notebook pp 42-44	Aligned as designed	
APPF	Solutions must be tested to determine whether or not they will solve the problem. Results are used to modify the design, and the best solution must be communicated persuasively.	<ul style="list-style-type: none"> Test the best solution by building a model or other representation and using it with the intended audience. Redesign as necessary. Present the recommended design using models or drawings and an engaging presentation. 	Extension p 218	Module/Unit requires changes (see comments)	The extension contains opportunities to address the standard but the teacher must be intentional in giving students the opportunity to go further. Students could suggest a solution to their issue then create a model for their solution. This would be a great opportunity for differentiation for students that are ready for a challenge.

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Populations & Ecosystems ~ Investigation 07**

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
LS2B	Energy flows through an ecosystem from producers (plants) to consumers to decomposers. These relationships can be shown for specific populations in a food web.	<ul style="list-style-type: none"> Analyze the flow of energy in a local ecosystem, and draw a labeled food web showing the relationships among all of the ecosystem's plant and animal populations. 	Investigation 7 pp 214-217; Resource book pp 30-41; Lab Notebook pp 42-44; CD ROM: Ecoscenarios, Food Web Simulations for Ecoscenarios	Aligned as designed	
LS2D	Ecosystems are continuously changing. Causes of these changes include nonliving factors such as the amount of light, range of temperatures, and availability of water, as well as living factors such as the disappearance of different species through disease, predation, habitat destruction and overuse of resources or the introduction of new species.	<ul style="list-style-type: none"> Predict what may happen to an ecosystem if nonliving factors change (e.g., the amount of light, range of temperatures, or availability of water or habitat), or if one or more populations are removed from or added to the ecosystem. 	Investigation 7 pp 214-217; Resource book pp 30-41; Lab Notebook pp 42-44; CD ROM: Ecoscenarios, Food Web Simulations For Ecoscenarios	Aligned as designed	Teacher needs to be intentional about asking students to explain changes in the ecosystem (seasonal, etc.). This is a good place for the teacher to refer back to the Mono Lake scenario.
LS2E	Investigations of environmental issues should uncover factors causing the problem and relevant scientific concepts and findings that may inform an analysis of different ways to address the issue.	<ul style="list-style-type: none"> Investigate a local environmental issue by defining the problem, researching possible causative factors, understanding the underlying science, and evaluating the benefits and risks of alternative solutions. Identify resource uses that reduce the capacity of ecosystems to support various populations (e.g., use of pesticides, construction). 	Investigation 7 pp 214-217; Resource book pp 30-41; Lab Notebook pp 42-44; CD ROM: Ecoscenarios, Food Web Simulations For Ecoscenarios	Aligned as designed	

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Populations & Ecosystems ~ Investigation 08**

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
INQB	Different kinds of questions suggest different kinds of scientific investigations.	<ul style="list-style-type: none"> • Plan and conduct a scientific investigation (e.g., field study, systematic observation, controlled experiment, model, or simulation) that is appropriate for the question being asked. • Propose a hypothesis, give a reason for the hypothesis, and explain how the planned investigation will test the hypothesis. • Work collaboratively with other students to carry out the investigations. 	Investigation 8 part 2 pp 234-243; Lab Notebook pp 51-53	Aligned with modifications (see comments)	The lesson contains opportunities to address the standards but the teacher must be intentional about leading students to independently use the components of the scientific method (i.e., writing own question and propose a hypothesis).
INQC	Collecting, analyzing, and displaying data are essential aspects of all investigations.	<ul style="list-style-type: none"> • Communicate results using pictures, tables, charts, diagrams, graphic displays, and text that are clear, accurate, and informative. • Recognize and interpret patterns – as well as variations from previously learned or observed patterns – in data, diagrams, symbols, and words. • Use statistical procedures (e.g., median, mean, or mode) to analyze data and make inferences about relationships. 	Investigation 8 part 2 pp 234-243; Lab Notebook pp 51-53	Aligned with modifications (see comments)	The teacher needs to intentionally take advantage of the opportunities to address the standard in terms of the scientific method.
LS3E	Adaptations are physical or behavioral changes that are inherited and enhance the ability of an organism to survive and reproduce in a particular environment.	<ul style="list-style-type: none"> • Give an example of a plant or animal adaptation that would confer a survival and reproductive advantage during a given environmental change. 	Investigation 8 parts 1 and 2 pp 230-243; Resource book pp 42-45; Lab Notebook pp 49, 51-53; CD ROM: Organism Database, Octopus Color Change, Walking Stick Predation; Video: Strangers in Paradise	Aligned as designed	

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Populations & Ecosystems ~ Investigation 09**

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
LS3B	Every organism contains a set of genetic information (instructions) to specify its traits. This information is contained within genes in the chromosomes in the nucleus of each cell.	<ul style="list-style-type: none"> Explain that information on how cells are to grow and function is contained in genes in the chromosomes of each cell nucleus and that during the process of reproduction the genes are passed from the parent cells to offspring. 	Investigation 9 parts 1-4 pp 262-291; Resource book pp 46-57; Lab Notebook pp 55-65	Aligned as designed	An extension that can be used is: Design-a-Kid: http://reocities.com/Athens/Parthenon/1020/parenthood.html
LS3C	Reproduction is essential for every species to continue to exist. Some plants and animals reproduce sexually while others reproduce asexually. Sexual reproduction leads to greater diversity of characteristics because offspring inherit genes from both parents.	<ul style="list-style-type: none"> Identify sexually and asexually reproducing plants and animals. Explain why offspring that result from sexual reproduction are likely to have more diverse characteristics than offspring that result from asexual reproduction. 	pp 263-291	Aligned with modifications (see comments)	Covers sexual reproduction only. Additional information about asexual reproduction would need to be added. An extension lesson is: Design-a-Kid at: http://reocities.com/Athens/Parthenon/1020/parenthood.html
LS3D	In sexual reproduction the new organism receives half of its genetic information from each parent, resulting in offspring that are similar but not identical to either parent. In asexual reproduction just one parent is involved, and genetic information is passed on nearly unchanged.	<ul style="list-style-type: none"> Describe that in sexual reproduction the offspring receive genetic information from both parents, and therefore differ from the parents. Predict the outcome of specific genetic crosses involving one characteristic (using principles of Mendelian genetics). Explain the survival value of genetic variation. 	pp 263-291	Aligned with modifications (see comments)	Covers sexual reproduction only. Additional information about asexual reproduction would need to be added. Resource book pages 46-55 covers Mendelian Genetics. An extension lesson is: Design-a-Kid at: http://reocities.com/Athens/Parthenon/1020/parenthood.html

**Alignment of Washington 6-8 Science Standards with
FOSS/MS Populations & Ecosystems ~ Investigation 10**

Standard	Content Standard	Performance Expectation	Evidence of Alignment	Alignment	Alignment Comments
LS3A	The scientific theory of evolution underlies the study of biology and explains both the diversity of life on Earth and similarities of all organisms at the chemical, cellular, and molecular level. Evolution is supported by multiple forms of scientific evidence.	<ul style="list-style-type: none"> • Explain and provide evidence of how biological evolution accounts for the diversity of species on Earth today. 	pp 305-317	Module/Unit requires changes (see comments)	The unit contains many opportunities address the standards but the teacher must be intentional in using the terms theory of evolution, diversity of life. Teacher must make use of information found in Scientific and Historical Background pp 296-301.
LS3F	Extinction occurs when the environment changes and the adaptive characteristics of a species, including its behaviors, are insufficient to allow its survival.	<ul style="list-style-type: none"> • Given an ecosystem, predict which organisms are most likely to disappear from that environment when the environment changes in specific ways. 	Investigation 10 parts 1-3 pp 305-317; Resource book pp 58-63; Lab Notebook pp 66-71, 73; Video: Voyage to the Galapagos; CD ROM: Larkeys, Natural Selection, Larkeys, Selective Breeding, Walkingstick	Aligned with modifications (see comments)	The lesson contains opportunities for the use of the term extinction, adaptive characteristics, and species but it requires the intentional use by teacher.